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MICRO PHOTO DIVISION

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PATENT EXAMINING CORPS

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CONDITION OF PATENT APPLICATIONS AS OF MAR[illegible]

PATENT EXAMINING GROUPS

[illegible]

CHEMICAL EXAMINING GROUPS

[illegible]

ELECTRICAL EXAMINING GROUPS

[illegible]

MECHANICAL EXAMINING GROUPS

[illegible]

Expiration of patents. The patents within the range of numbers indicated below expire during April 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946, 60 Stat. 940, and Public Law 619, 83rd Congress, approved August 23, 1954, 68 Stat. 764, or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,700,822 to 2,700,[illegible] inclusive
Plant Patents..... Numbers 1,874 to 1,[illegible] inclusive

PLANT PATENTS

[illegible]

3,143
AZALEA PLANT
Henry W. Motzkau, Whitewater, Wis., assignor to Yoder Brothers, Inc., Barberton, Ohio
Filed Aug. 26, 1970, Ser. No. 67,209
Int. Cl. A01h [illegible]
U.S. Cl. Plt.—57 1 Claim

[illegible]

3,144
ROSE PLANT
William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.
Filed Sept. 9, 1970, Ser. No. 70,933
Int. Cl. A01h [illegible]
U.S. Cl. Plt.—28 1 Claim

[illegible]

3,145
NECTARINE TREE
John H. Enns, 39572 Road 64, Dinuba, Calif. 93618
Filed Sept. 10, 1970, Ser. No. 71,282
Int. Cl. A01h 5/08
U.S. Cl. Plt.—41 1 Claim

A large, vigorous, spreading, vase-formed, open nectarine tree which is hardy and a regular and productive bearer of large, uniform, early ripening fruit having yellow skin substantially overspread with red and yellow flesh with red near the stone, the latter being semi-free.

3,146
AFRICAN VIOLET
Hermann Holtkamp, Werther Strasse 5–7, Postfach 19, 4243 Isselburg, Germany
Original application Oct. 7, 1968, Ser. No. 765,700, now Patent No. 3,053. Divided and this application Sept. 14, 1970, Ser. No. 72,245
Int. Cl. A01h 5/00
U.S. Cl. Plt.—69 1 Claim

A hybrid violet of a descendant of a cross between the *Saintpaulia ionantha* and *Saintpaulia shumensis* species which has permanent new characteristics including strength of stem, fast and vigorous growth, profuse flowering, uniform bouquet, prolonged blooming period, resistance to disease, reliability in initiating new plantlets, retention of flowers past maturity on their respective stems, reliability [illegible]

[illegible]

3,147
AFRICAN VIOLET
Hermann Holtkamp, Werther Strasse 5–7, Postfach 19, 4243 Isselburg, Germany
Original application Oct. 7, 1968, Ser. No. 765,700, now Patent No. 3,053. Divided and this application Sept. 14, 1970, Ser. No. 72,246
Int. Cl. A01h 5/00
U.S. Cl. Plt.—69 1 Claim

A hybrid violet of a descendant of a cross between the *Saintpaulia ionantha* and *Saintpaulia shumensis* species which has permanent new characteristics including strength of stem, fast and vigorous growth, profuse flowering, uniform bouquet, prolonged blooming period, resistance to disease, reliability in initiating new plantlets, retention of flowers past maturity on their respective stems, reliability in new plants retaining characteristics of the parent and pronounced uniformity throughout the [illegible]

3,148
AFRICAN VIOLET
Hermann Holtkamp, Werther Strasse 5–7, Postfach 19, 4243 Isselburg, Germany
Original application Oct. 7, 1968, Ser. No. 765,700, now Patent No. 3,053. Divided and this application Sept. 14, 1970, Ser. No. 72,247
Int. Cl. A01h 5/00
U.S. Cl. Plt.—69 1 Claim

A hybrid violet of a descendant of a cross between the *Saintpaulia ionantha* and *Saintpaulia shumensis* species which has permanent new characteristics including strength of stem, fast and vigorous growth, profuse flowering, uniform bouquet, prolonged blooming period, resistance to disease, reliability in initiating new plantlets, retention of flowers past maturity on their respective stems, reliability in new plants retaining characteristics of the parent and pronounced uniformity throughout the life cycle.

3,149
KALANCHOE PLANT
James T. Irwin, Canyon, Tex., assignor to Irwin Greenhouses, Inc., Canyon, Tex.
Filed Sept. 15, 1970, Ser. No. 72,557
Int. Cl. A01h 5/00
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of kalanchoe plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a highly branched, but sturdy and upright plant habit, a consistent plant height ranging between about 12 inches and 15 inches tall, medium sized foliage of an attractive Moss Green to Fern Green color, a profuse blooming habit, a substantially uniform blooming date, but with an ability to respond to short day treatment making it capable of year-round blooming, an unusual, attractive and distinctive soft orange flower color, long-lasting qualities as a potted plant, and an ability to initiate and develop flower buds under high night temperatures of summer when other varieties fail.

3,150
NEW AND DISTINCT VARIETY OF BLUEGRASS PLANT
Gerard William Pepin, North Brunswick, and Cyril Reed Funk, Jr., Milltown, N.J., assignors to Rutgers University, New Brunswick, N.J.
Filed Sept. 17, 1970, Ser. No. 73,270
Int. Cl. A01h 5/00
U.S. Cl. Plt.—88 1 Claim

A Kentucky bluegrass plant which exhibits excellent seed producing properties and a rich dark green color. The turf is quite leafy and of high quality, with good density and vigor. The plant has good resistance to common grass diseases, particularly stripe smut, leaf spot and leaf rust.

3,151
NEW AND DISTINCT VARIETY OF BLUEGRASS PLANT
Cyril Reed Funk, Jr., Milltown, N.J., assignor to Rutgers University, New Brunswick, N.J.
Filed Sept. 17, 1970, Ser. No. 73,271
Int. Cl. A01h 5/00
U.S. Cl. Plt.—88 1 Claim

A Kentucky bluegrass plant which exhibits a rich, dark green color, a moderately fine leaf texture, good rhizome and tiller development, a short ligule without hair, and moderately small panicles and spikelets, with three florets per spikelet. The plant has very good turf density and horizontal spreading ability and is highly resistant to common grass diseases, particularly stripe smut, powdery mildew, and leaf rust.

3,152
NEW AND DISTINCT VARIETY OF BLUEGRASS PLANT
Gerard William Pepin, North Brunswick, and Cyril Reed Funk, Jr., Milltown, N.J., assignors to Rutgers University, New Brunswick, N.J.
Filed Sept. 17, 1970, Ser. No. 73,272
Int. Cl. A01h 5/00
U.S. Cl. Plt.—88 1 Claim

A Kentucky bluegrass plant having a wide plant spread and a dark, bluish-green color which is maintained from early spring to late fall. The plant is aggressive, highly apomictic and exhibits good resistance to stripe smut disease.

PATENTS

GRANTED MAY 2, 1972

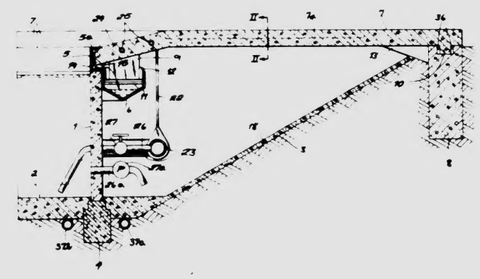
GENERAL AND MECHANICAL

3,659,294
ADJUSTABLE LINK FOR PROSTHETIC LIMB
Richard Glabiszewski, Duderstadt/Han, Germany, assignor to Otto Bock, Orthopadische Industrie KG, Industriestrasse, Duderstadt, Germany
Filed May 1, 1970, Ser. No. 33,793
Claims priority, application Germany, May 3, 1969, P 19 22 619.8
Int. Cl. A61f 1/08
U.S. Cl. 3—21 4 Claims

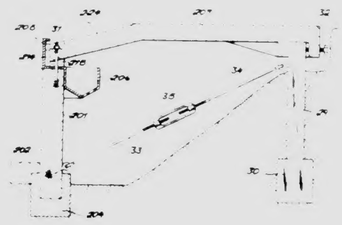


A link between members of a prosthetic limb, such as a connector between a knee joint and an artificial shank, has a frustopyramidal four-sided boss divergingly projecting from a spherically convex base which slidably engages a correspondingly concave annular socket surrounding the boss. Two pairs of setscrews, lodged 90° apart in the annular socket, bear upon the sides of the frustopyramidal boss to enable its adjustment, within a limited swing angle, in two mutually orthogonal planes.

3,659,295
SWIMMING POOL
Josef Linecker, Rosengasse 5, A5230 Mattighofen, Austria
Filed Jan. 20, 1970, Ser. No. 4,290
Claims priority, application Austria, Jan. 21, 1969, A 631/69; Mar. 25, 1969, A 2940/69
Int. Cl. E04h 3/16, 3/18
U.S. Cl. 4—172.19 8 Claims

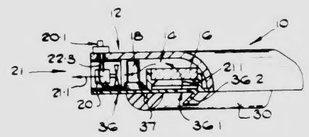


A swimming pool is constructed from a tank having sidewalls supported against the outwardly acting water pressure only by engagement along their upper edges with a surrounding platform braced along its outer circumference against a peripheral sill or set of posts sunk into the soil at a distance from the basin. The space between the sidewalls of the basin and the peripheral support means is largely empty



and accommodates water supply ducts as well as troughs to catch the overflow spilling across the platform; when provided with a fluidtight bottom lining, this space can also serve for the temporary storage of excess pool water.

3,659,296
TOILET SEAT
Robin Harry Stamper, 1891 Westbourne Rd., Bryanston, Transvaal Province, Republic of South Africa
Filed June 16, 1970, Ser. No. 46,655
Claims priority, application South Africa, June 24, 1969, 69/4489
Int. Cl. A47k 13/30
U.S. Cl. 4—217 8 Claims

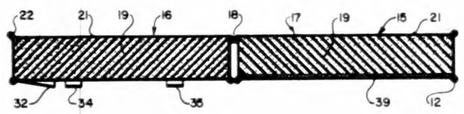


A toilet seat embodying a fan and a deodorizing element. The toilet seat has a cavity to accommodate the fan and the deodorizing element. Conveniently the fan and the said element are mounted on a cover member adapted to seat over the cavity. The toilet seat further includes a seal on its underside to enable the seat to seat sealingly on the rim of a toilet bowl.

3,659,297
BABY DRESSING TABLE PAD REPLACEMENT
Bernard Schutz, 40 East 78th St., New York, N.Y.
Filed July 22, 1970, Ser. No. 57,042
Int. Cl. A47c 27/00, 7/00
U.S. Cl. 5—357 5 Claims

A baby dressing table pad replacement that can universally replace the original pad of a baby dressing table in a removable manner by means of a pocket provided by stitching on the underside of the pad or in the form of a flap hingedly connected by stitching to the beading of the underside of the pad at one side thereof and made into a pocket by the securement of laterally extending snap fastener straps secured to the opposite sides of the pad and adapted so that

the pocket can either by extended over an extending lip of the table top or can be wrapped about a tubular open top type of baby dressing table. The pad may have a stiffening member when being used with an open top table and is further secured to the table top by straps extending from the bottom side of the pad. The second pad is hingedly connected at its top to the top edge of the first pad and itself has its own stiffening board for support when opened from the first pad and extended over an open table. Where the table has a top, this pad takes advantage of an extending lip that remains on the old dressing table top since the pad has the pocket which slips over the extending lip.

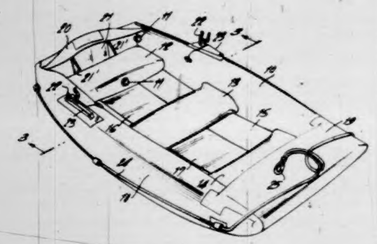


3,659,298

INFLATABLE BOAT

David V. Edwards, Godalming, England, assignor to West Products Corp., Newark, N.J.

Filed May 28, 1970, Ser. No. 41,248
Int. Cl. B63b 7/08
U.S. Cl. 9—2 A 8 Claims



An inflatable boat is provided made up of inflatable side tubes, a connecting fabric floor, inflatable aft, midship and forward thwarts between and connecting the side tubes above the fabric floor and below the uppermost level of the inflated tubes, the thwarts when inflated constituting occupant seats, a fabric bow and member fabric stern member and optionally a removable hinged floorboard including stern and forward portions curved in a fore and aft direction together with a rigid transom connected to the stern floorboard. There are keel-like skegs provided for the stern and forward floorboard portion.

In place of the side tubes, a single U-shaped inflatable tube can be utilized.

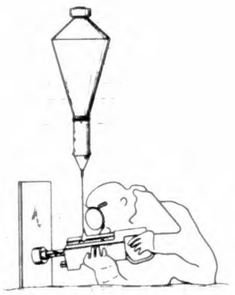
3,659,299

VARIABLE DISPLACEMENT RECOVERY DEVICES

William M. Davidson, and Howard W. Cole, Jr., both of Mountain Lakes, N.J., assignors to Proteus, Inc., Mountain Lakes, N.J.

Filed Dec. 29, 1969, Ser. No. 888,345
Int. Cl. B63c 11/00, 7/00
U.S. Cl. 9—8 R 8 Claims

This invention provides controlled buoyancy at depth displacement of water. The apparatus includes an expansible lift bag, a gas source, with a gas delivery device connecting the gas source with the lift bag. A valve controls the supply of gas from the source, while another valve vents gas from the lift bag. Both valves are controlled by ascent velocity sensing devices controlling the supply and vent valves in sequence either to regulate ascent velocity or to suspend a load at



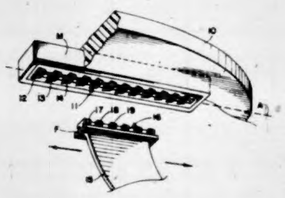
depth. An outer container is provided for packing all components and for attachment of loads.

3,659,300

FIN ATTACHMENT STRUCTURE FOR SURFBOARDS

Robert Karl Johnson, Ventura, Calif., assignor to W. A. V. E. Corporation

Filed July 25, 1969, Ser. No. 844,902
Int. Cl. A63c 15/00
U.S. Cl. 9—310 E 7 Claims



A means for securing a fin to a surfboard in a desired adjusted longitudinal position is provided in the form of a mounting box imbedded on the under rear surface of the surfboard for cooperation with a fin base structure on the fin. The box defines an elongated channel having a series of enlargements in the form of cavities for cooperation with a series of flanges formed on a longitudinal rib on the fin base. The cavities each include undercut portions for reception of the flanges so that the rib may be inserted in the channel and the entire fin base then urged longitudinally to cause the flanges to engage within the undercut portions of the cavities. By providing converging walls in each of the cavities, a wedging action takes place with respect to the flanges to secure in a very tight position the fin to the surfboard. The desired longitudinal position of the fin relative to the surfboard can be preselected by preselecting portions of the series of the cavities with which the flanges are to cooperate.

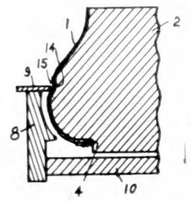
3,659,301

FOOTWEAR WITH METHOD AND DEVICE FOR ITS MANUFACTURE

Horace R. Auberry, and Anton Liebscher, both of Waynesville, N.C., assignors to Ro-Search, Incorporated, Waynesville, N.C.

Filed May 4, 1970, Ser. No. 34,003
Int. Cl. A43d 3/00
U.S. Cl. 12—133 R 1 Claim

The invention refers to the manufacture of shoes with uppers lasted by pulling a string secured to the lasting margin of the upper. Improvements are presented which reduce costs of manufacture especially if the sole is molded directly to the upper. The method of manufacture includes use of a last deformed to obtain preselected location of the lasting margin and to prevent the formation of undesirable spew.

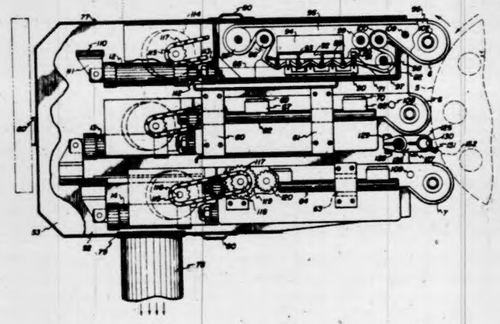


3,659,302

CLEANING APPARATUS

Raymond K. Egnaczak, Williamson, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Nov. 14, 1969, Ser. No. 876,975
Int. Cl. G03g 15/00, 17/00, 19/00
U.S. Cl. 15—1.5 15 Claims



A modular cleaning unit for cleaning relatively smooth surfaces of contaminants. The unit has one or more belts that contact the surface and scrub it. The belts contain fluids to help remove the particles and are electrically biased to attract the particles loosened from the surface. Optionally, lamps radiate the particles to ease removal from the surface. The continuous belts are driven through cleaning fluids and over belt cleaning and wringing devices before passing in contact with the surface to be cleaned.

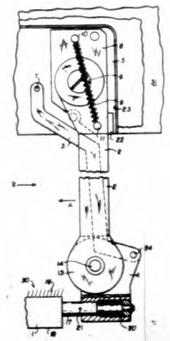
3,659,303

COMBINED DIRT SCRAPER AND BRUSH FOR SHOES

Hermann Schroder, Langenberg, Rhineland, and Ralf Biedron, Bochum-Linden, both of Germany, assignors to Colsman & Kirschner, Essen-Kupferdreh, Germany

Continuation of application Ser. No. 796,306, Jan. 30, 1969, now abandoned. This application Sept. 14, 1970, Ser. No. 72,063
Claims priority, application Germany, Feb. 1, 1968, P 16 80 002.5
Int. Cl. B60r 27/00
U.S. Cl. 15—112 16 Claims

Shoe scraper which can be mounted in an open recess in the bottom of a car door. The scraper is movable between a retracted, folded position, in which it is contained in the recess, and an unfolded position, in which a scraper blade or cleaning element is disposed below and spaced from the bottom of the door, generally parallel to the plane thereof.

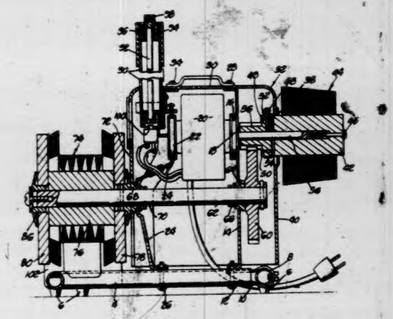


3,659,304

SHOE CLEANER AND POLISHER

Lloyd H. Leonard, 14877 Valley Vista Blvd., Sherman Oaks, Calif.

Filed Aug. 12, 1970, Ser. No. 63,082
Int. Cl. A47l 23/02
U.S. Cl. 15—36 4 Claims



A shoe cleaner and polisher comprising a pair of motor driven rotary brushes offset from each other and of such heights as to permit the placing of one's shod shoe beneath one brush to brush and polish the top of the shoe and on the top of the other brush to permit cleaning of the bottoms and sides of the soles of the shoe, the brushes having a common power source and being drivingly connected for rotation in opposite directions.

3,659,305

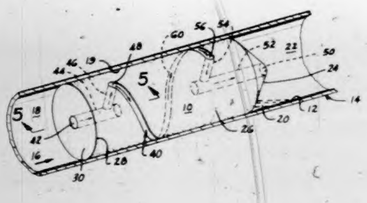
FLEXIBLE PIPELINE PIGS

Marvin D. Powers, 6060 Skyline Drive, Apt. 14, Houston, Tex.

Filed Apr. 6, 1970, Ser. No. 25,998
Int. Cl. B08b 9/04
U.S. Cl. 15—104.06 R 7 Claims

A flexible pipeline pig adapted for removing liquids and debris from pipelines. The pig includes at least one plug having a deformable peripheral wall formed of resilient material. The wall defines a peripheral surface which establishes a movable seal with the adjacently surrounding portion of the inner cylindrical wall of the pipe. An arcuate channel defined

by the pipe's inner cylindrical wall, on one side, and a spiral groove in the outer peripheral wall of the plug, on the other side, establishes fluid communication between the upstream and downstream sections of the pipeline. Through the fluid communication channel is controllably routed a fraction of



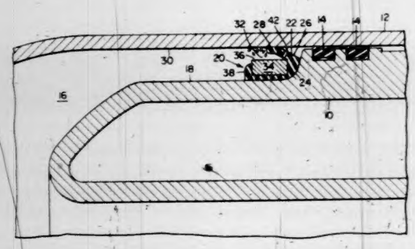
the pig-propelling fluid which sweeps the pipe's inner wall between the ends of the pig as it moves through the pipeline. The liquids and debris which exist in said channel or on said portion of the pipe's inner cylindrical wall are cleared through said channel and discharged downstream in front of the pig.

3,659,306

WIPER FOR MACHINED SURFACES

Leon Stoltze, East Hartford, and Fred David Laun, Granby, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 22, 1970, Ser. No. 48,250
Int. Cl. F16j 15/32
U.S. Cl. 15—246 **2 Claims**



A wiper ring for cleaning the inside wall of the operating cylinder of a hydromatic variable pitch aircraft propeller. The ring has a debris collecting wiper edge and incorporates a plurality of permanent magnets spaced at intervals along its length to attract and hold ferrous particles collected by the wiper edge and prevent them from being abraded into the inside wall of the operating cylinder.

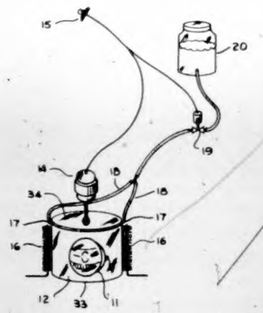
3,659,307

AUTOMOBILE HEADLIGHT CLEANING SYSTEM

Constantine K. Vitou, 2101 Graham Blvd. West, Montreal, 16 Quebec, Canada

Filed Aug. 22, 1969, Ser. No. 852,174
Claims priority, application Canada, July 22, 1969, 57,720
Int. Cl. A47l 1/00
U.S. Cl. 15—250.01 **11 Claims**

An automobile headlamp cleaning system which comprises a continuous transparent shield which is mounted about the headlamp and substantially prevents dirt from contacting the headlamp. The transparent shield is cleaned automatically by



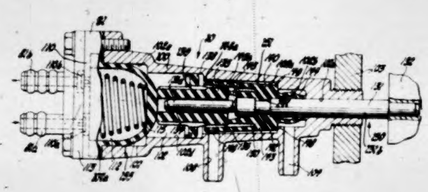
rotating it about the headlamp and bringing it into contact with a spray of cleaning fluid and a brush.

3,659,308

COMBINED FINGER PUMP AND VALVE CONTROL FOR A TAILGATE WINDOW CLEANING SYSTEM

Loren R. Gute, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 7, 1970, Ser. No. 95,693
Int. Cl. B60s 1/48
U.S. Cl. 15—250.02 **4 Claims**



In a preferred form, this disclosure relates to a combined manually actuatable washer pump and control means for controlling operation of a washer and wiper unit of a tailgate window cleaning system for a station wagon vehicle. The combined washer pump and control means comprises a depressible pumping element and a manually manipulatable actuating means including a pair of serially arranged plungers for controlling communication between a pressure source and a fluid motor of the wiper unit and for depressing the pump to initiate washer unit operation. The actuating means is constructed and arranged such that partial depression thereof will cause the plungers to move relative to each other to effect wiper unit operation alone and full depression thereof will cause conjoint energization of the wiper and washer units.

3,659,309

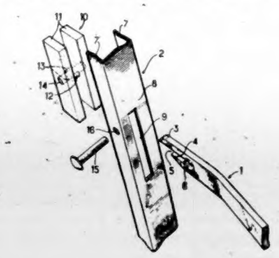
MEANS FOR ATTACHING THE ARM OF A WINDSHIELD WIPER TO THE BLADE SUPPORT THEREOF

Marcel Besnard, Romainville, France, assignor to Societe Anonyme Pour L'Equipement Electrique des Vehicules S.E.V. Marchal

Original application Jan. 30, 1969, Ser. No. 795,261, now Patent No. 3,596,044, dated Apr. 27, 1971. Divided and this application Sept. 8, 1970, Ser. No. 70,079
Int. Cl. A47l 1/00
U.S. Cl. 15—250.32 **4 Claims**

Means for attaching a windshield wiper arm to a wiper blade support, said means comprising a male member pro-

vided with a cylindrical element having two diametrically opposed flattened surface areas, and a female member having a slot therein equal in width to the diametral distance between



said flattened areas which terminates in a circular seat having a radius equal to that of said cylindrical member, one of said members being made of a plastic material and fastened to said blade support.

3,659,310

SPINE PIECE FOR SQUEEGEE BLADES

Ian K. Rosen, North Muskegon, Mich., assignor to The Wypco Corporation, Muskegon, Mich.

Filed June 3, 1970, Ser. No. 42,977
Int. Cl. B60s 1/38
U.S. Cl. 15—250.42 **6 Claims**



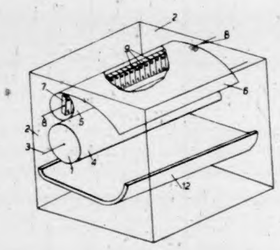
A bifurcated spine piece for securing squeegee blades against bending in one plane while allowing controlled bending to conform to the surface plane to which the squeegee is to be applied. The squeegee is secured between the bifurcations in a selected compression thereby preventing longitudinal shifting of the squeegee or blade. The spine piece is grippable at both ends by typical claw elements found on wiper blade holder assemblies and the spine piece includes a cam grip surface engageable with the squeegee.

3,659,311

MAGNETIC POWDER SCAVENGING ARRANGEMENT

Frank Arthur Oakley Waren, Hove, England, assignor to Creed & Company, Sussex, England

Filed Apr. 22, 1970, Ser. No. 30,730
Claims priority, application Great Britain, May 30, 1969, 27,474/69
Int. Cl. A47l 13/41; G03g 19/00
U.S. Cl. 15—256.5 **4 Claims**



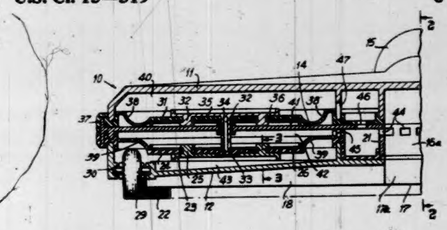
A device for scavenging magnetizable powder from e. g. a drum in a printing apparatus. The powder is attracted from the drum to the surface of a nonmagnetic tube positioned parallel to the drum, which has contained therein a rotatable set of adjacent bar magnets. The rotation of the magnets causes, via the bar magnets' divergent magnetic flux field, the attracted powder to work its way around the surface of the tube in opposite direction to the magnet rotation and onto a ledge extension of the tube surface. The powder eventually is moved sufficiently distant from the field to enable it to fall into a collector trough.

3,659,312

MULTI-PURPOSE VACUUM CLEANER NOZZLE

Bo Gunnar Mattsson, Upplands Vasby, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Nov. 25, 1970, Ser. No. 92,695
Claims priority, application Sweden, Nov. 28, 1969, 16382/69
Int. Cl. A47l 9/02
U.S. Cl. 15—319 **6 Claims**



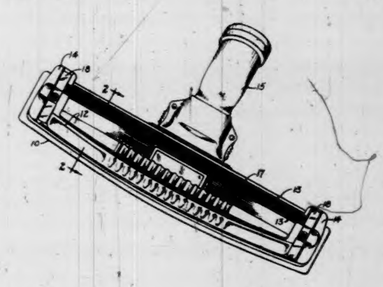
A multi-purpose vacuum cleaner nozzle has a suction inlet which is movable over a porous object like a rug to remove dirt therefrom. A brush is mounted on the nozzle at the vicinity of the suction inlet for movement between upper and lower positions. The brush in its lower position is below the suction inlet and functions to remove dirt from a non-porous object like a floor. The suction inlet functions to remove dirt from a porous object when the brush is in its upper position above the suction inlet. The brush is moved to its upper and lower positions by a variable pneumatic force which acts upward or downward depending upon the rate at which air at a partial vacuum flows per unit interval of time in a path of flow from the suction inlet to an air outlet socket. The variable pneumatic force is produced by mechanism which is characterized by the absence of any springs or spring biasing means.

3,659,313

VACUUM CLEANER NOZZLE

William E. Ferris, Stamford, Conn., assignor to Consolidated Foods Corporation, Old Greenwich, Conn.

Filed Dec. 9, 1968, Ser. No. 782,348
Int. Cl. A47l 9/06
U.S. Cl. 15—402 **1 Claim**



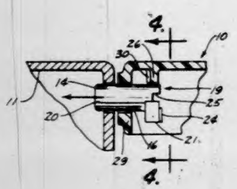
A suction nozzle for a vacuum cleaner in which a rod having a knurled surface is provided in a rug cleaning surface for loosening lint, hair, thread and such litter on the rug surface

so that this litter is entrained in the airflow through the nozzle opening.

3,659,314
HINGE STRUCTURE

Frank E. Ross, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed July 22, 1969, Ser. No. 843,380
Int. Cl. A47g 27/04
U.S. Cl. 16—168 2 Claims



A hinge structure includes a pivot pin element having an elongated pivot portion and is axially insertable into a hinge pin hole formed in one of a pair of hinged members. The pivot pin element further includes a radially larger head portion that is engageable with one of the hinged members upon rotation of the pivot pin element for preventing axial movement of the pivot pin element from the operative position.

3,659,315
PROCESS OF CLAM EVISCERATION

Ronald K. Finley, Towson; Donald J. Langlois, Pasadena, both of Md., and Robert H. Nicholson, Lewes, Del., assignors to HCA Food Corporation, Baltimore, Md.

Filed Nov. 5, 1970, Ser. No. 87,293
Int. Cl. B01d 43/00
U.S. Cl. 146—222 7 Claims

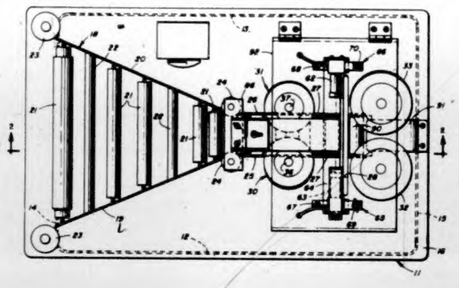
A method for effecting the separation of visceral material from shucked clams is disclosed. Clean clam meat in essentially viscera-free form is obtained by subjecting shucked uneviscerated clam pieces to agitation in a hot aqueous medium for a controlled period of time. As a result of this step, the visceral material is transferred to the liquid medium and remains as a fully liquid body which can be separated from the pieces of clam meat. The recovered clam pieces may then be washed to remove any residual liquid or small fragments which remain on the surfaces of the pieces.

3,659,316
LINK SEPARATOR

Gerald C. Berendt, 32 Dale Drive, Chatham Tsp., Morris County, and Leslie B. Melanson, Bay Isle Drive, Point Pleasant, both of N.J.

Continuation-in-part of application Ser. No. 846,042, July 30, 1969. This application Dec. 1, 1970, Ser. No. 93,991
Int. Cl. A22c 11/00
U.S. Cl. 17—1 F 10 Claims

A link separator for severing a continuous link or chain of frankfurters or similar articles at successive joining segments comprising a pair of opposed, spaced-apart, contra-rotating driven feed wheels engageable with and defining a generally axial path along which the chain is fed, the feed wheels each being resiliently deflectable normal to the path of movement of the chain, a photocell and opposed light source on the emergent side of the feed wheels, the chain passing therebetween, a cutting station proximal to the photocell, a relatively thin knife rotatable in a plane generally perpendicular to and extending through the longitudinal axis of each successive joining segment, drive and control means for the knife whereby the knife rotates through a fixed arc only once for each joining segment, the control means being governed by a signal from the photocell generated by the presence of a joining segment, the rotation of the knife being timed to sever each successive joining segment, and a pair of spaced apart, power driven, contra-rotating discharge wheels on the emergent side of the cutting station mutually engageable with

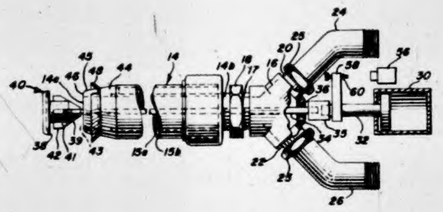


each severed frankfurter, the discharge wheel on the side of each frankfurter opposite the direction of movement of the knife being resiliently deflectable generally normal to the path of movement of the frankfurters, the other discharge wheel being undeflectable.

3,659,317
STUFFING APPARATUS

Vytautas Kupcikevicius, Chicago, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 30, 1970, Ser. No. 23,934
Int. Cl. A22c 11/06
U.S. Cl. 17—35 8 Claims



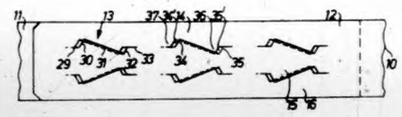
Apparatus is disclosed for stuffing a conglomerate meat mass into a flexible container which comprises a stuffing means, shut-off and/or severing means mounted on the outlet end of said stuffing means comprising a member mounted on the outlet end of the stuffing means and a cooperating moving member adjacent to and aligned with said mounted member and means for advancing and retracting said cooperating moving member into and out of positive engagement with said mounted member wherein such engagement seals said outlet end of the stuffing means, severs product protuding therefrom and stops passage of product therefrom.

3,659,318
STRAPPING TIE

Eberhard Timmerbell, and Harald Timmerbell, both of Schwelm, Germany, assignors to Titan Verpackungssysteme GmbH, Schwelm, Germany

Filed Nov. 24, 1970, Ser. No. 92,438
Int. Cl. B65d 63/02
U.S. Cl. 24—20 EE 13 Claims

A metal tape has spaced end portions each of which is formed with a plurality of locking catches with those of one end portion being adapted for engaging those of the other end portion in overlapping relationship of the end portions. Each locking catch comprises an elongated strip portion deformed out of the general plane of the tape and bounded

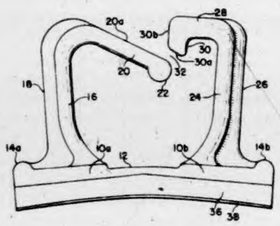


at opposite sides of the longitudinal plane of the tape by a pair of lateral edges each of which has a pair of projections extending transversely of the tape and outwardly away from the longitudinal axis of the latter.

3,659,319
ADHESIVE WIRE ROUTING CLIP

Lloyd A. Erickson, 8501 West Higgins Road, Chicago, Ill.

Filed Nov. 30, 1970, Ser. No. 93,599
Int. Cl. A44b 21/00; F16l 3/08
U.S. Cl. 24—73 AP 5 Claims



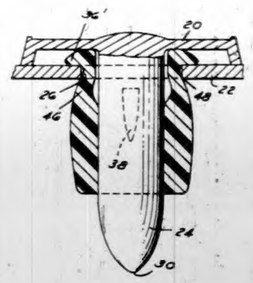
A routing clip for mounting conduits, electrical conductors. tubing and similar workpiece elements, and having a base with outwardly extending posts terminating in inwardly directed hook-like extensions with the free ends thereof relatively underlying one another with respect to the base and in spaced relationship to form a relatively narrow entrance throat to trap included workpiece element; the base being somewhat flexible for attachment thereof, as by adhesive means, to other than perfectly flat surfaces, such as surfaces curved on a relatively large radius, and without substantially changing the size of the entrance throat.

3,659,320
FASTENER ASSEMBLY

Engelbert A. Meyer, Union Lake, Mich., assignor to USM Corporation, Warren Division, Mount Clemens, Mich.

Filed July 9, 1971, Ser. No. 161,142
Int. Cl. F16b 5/12, 13/04
U.S. Cl. 24—73 HS 5 Claims

A fastener assembly for securing an emblem, medallion or the like provided with a plurality of projecting pins to a panel member having a plurality of apertures therethrough corresponding in number and spacing to said pins, with a plastic grommet disposed in each aperture, each grommet having a reduced internal diameter portion, whereby upon insertion of the pin, the grommet walls will expand into sealing engagement about the panel aperture and also tightly frictionally engage the pin surface to retain the emblem against the panel. The grommet may be additionally provided with a pair of radially projecting protuberances which are resiliently deformable upon insertion of the grommet through the panel



aperture, and serve to retain the grommet therein prior to assembly of the emblem or medallion.

3,659,321
MULTIPLE WEDGE ANCHORAGE DEVICE FOR PRESTRESSING TENDONS

Michel Laurent, Bagnolet, France, assignor to Societe Technique Pour L'Utilisation De La Precontrainte, Boulogne, Hauts de Seine, France

Filed June 12, 1970, Ser. No. 45,643
Claims priority, application France, June 24, 1969, 6921121
Int. Cl. F16g 11/04, 11/10
U.S. Cl. 24—122.6 3 Claims



The units of a prestressing cable made of multiple parallel tendon units are individually clamped between two wedges of a crown of wedges clamping all the units being itself located in a frusto-conical hole of a bearing part of which the apex angle is greater than 15°.

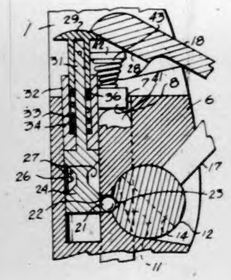
3,659,322
LOCKING DEVICE FOR RELEASABLE STRAP CONNECTORS

John A. Gaylord, Greenbrae, Calif., assignor to A. Koch & Sons, Inc., a division of Global Systems, Corte Madera, Calif.

Filed Aug. 21, 1970, Ser. No. 65,908
Int. Cl. A44b 19/00
U.S. Cl. 24—230 7 Claims

In a releasable strap connector wherein the male member has at least one prong insertable into a socket in the female member, which socket is intersected by a transverse oscillating bar cut away at the intersection so as to leave the socket unobstructed for the insertion of the prong before being resiliently urged into an obstructing position into engagement with a notch in the prong to hold the prong connected, and wherein levers are employed for oscillating the bar from an obstructing to an unobstructing position for the release of the prong; the improvement of a safety lock for directly locking the oscillating bar against accidental oscillation which includes a ball in the female connector spaced from said socket

but engaging a keeper recess in the oscillating bar and being held there by a plunger which plunger is held in a guide by a spring in such locking position; a part of a lever in the manipulating device for the oscillating bar is engageable with the plunger about when the bar is to be oscillated to push the plunger down and bring a releasing recess in the plunger in



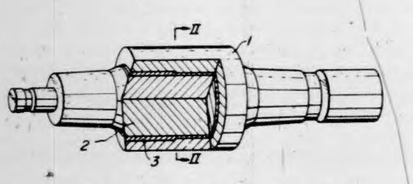
registry with the ball thereby to release the lock. A spring pressed ejector associated with the plunger guide and slideable in the female member urges the unobstructed prong out of the socket and continues to hold the plunger in the unlocking position until the prong is again inserted so as to push the guide and the plunger up into the locking position.

3,659,323

A METHOD OF PRODUCING COMPOUND CAST ROLLS

Mikio Hachisu; Chikanori Saito; Osamu Sitamura, and Yasuo Nambu, all of Katsuta-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 23, 1969, Ser. No. 844,038
Claims priority, application Japan, Jan. 20, 1969, 44/3432; July 26, 1969, 44/52442
Int. Cl. B21d *53/12*; B21h *1/12*
U.S. Cl. 29—148.4 D **11 Claims**



A compound cast roll comprising a shell made of a steel having excellent rolling properties, an arbor having a body portion made of a steel or iron having high toughness and a cylindrical partition member interposed between said shell and said core, said three members being metallurgically connected together into an integral body and subjected to a heat treatment to impart desired properties to said shell and said core.

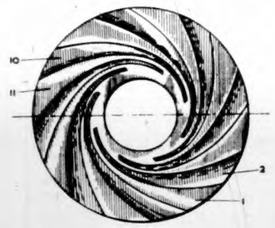
3,659,324

METHOD FOR MANUFACTURING AN AXIAL BEARING

Hans E. H. Murray, Lerum, Sweden, assignor to Aktiebolaget Svenska Kullagerfabriken, Goteborg, Sweden

Filed Feb. 20, 1970, Ser. No. 12,934
Claims priority, application Netherlands, Feb. 24, 1969, 6902851
Int. Cl. B21d *53/10*; B23p *13/04*
U.S. Cl. 29—149.5 PM **8 Claims**

A method of manufacturing an axial bearing part made of a sintered metal powder having a carbon content of less than 0.1 percent and having a plurality of spiral grooves in at least one face thereof consisting of the steps of forming in a pressing die a plurality of grooves corresponding to the ridges between the grooves in the bearing part, grinding the die face



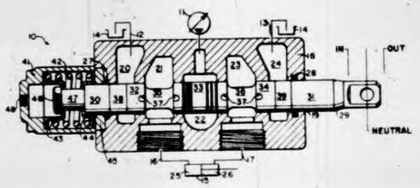
smoothly and thereafter pressing the die face in the bearing part to form the spiral grooves.

3,659,325

CONTROL VALVE METHOD OF MANUFACTURE

Robert D. Krehbiel, and Warren E. McCammond, both of Hutchinson, Kans., assignors to The Cessna Aircraft Company, Wichita, Kans.

Original application Nov. 1, 1968, Ser. No. 772,668,. Divided and this application June 3, 1970, Ser. No. 54,033
Int. Cl. B21d *53/00*; B21k *29/00*; B23p *15/26*
U.S. Cl. 29—157.1 R **4 Claims**



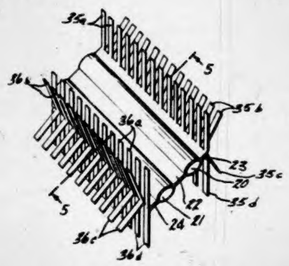
A fluid control valve including a spool whose end exposable to corrosion environment is tapered to a reduced diameter and coated with corrosion resistant material. The reduced diameter facilitates fast, economical final machining and sizing of the spool without damaging the protective coating, for selective fitting within a fluid control valve body bore.

3,659,326

PROCESS FOR PREPARING HEAT EXCHANGE COMPONENT

Norval A. Keith, East Alton, Ill., assignor to Olin Corporation

Continuation-in-part of application Ser. No. 708,463, Dec. 7, 1967, now abandoned , and a continuation-in-part of 774,577, Nov. 1, 1968, now Patent No. 3,495,657, which is a division of application Ser. No. 630,376, Apr. 12, 1967, now abandoned. This application Feb. 2, 1970, Ser. No. 7,729
Int. Cl. B21d *53/00*; B21k *29/00*; B23p *15/26*
U.S. Cl. 29—157.3 V **28 Claims**



A process of producing continuous strip having at least one fluid passageway with integrally formed fin members, which comprises forming a pattern of weld inhibiting material on a first strip or sheet with a portion of the pattern defining the fluid passageway, and a further portion of the pattern extending along the edge of the strip or sheet defining a fin surface. A second strip or sheet of metal is pressure welded to the first strip or sheet in substantially all areas not containing the weld inhibiting material and the fin surface is formed into a plurality of fin members. The fin members may be formed by cutting, or by a combination of cutting, bending and twisting. Additional fin surface is obtained by separating the strip or sheet at their edge corresponding to the further portion of the pattern of weld inhibiting material. The strip or sheet, in accordance with the invention, may be formed into heat exchangers of any desired shape including a helix, spiral or serpentine.

3,659,327

METHOD OF MAKING CAST PICTORIAL REPRODUCTION

James J. Beverick, 1202 North 5th Street, Sandusky, Ohio, and David P. Winters, 1300 1/2 Croghan Street, Fremont, Ohio

Filed Mar. 13, 1970, Ser. No. 19,475
Int. Cl. B21f *43/00*; B23p *13/00*
U.S. Cl. 29—160.6 **7 Claims**

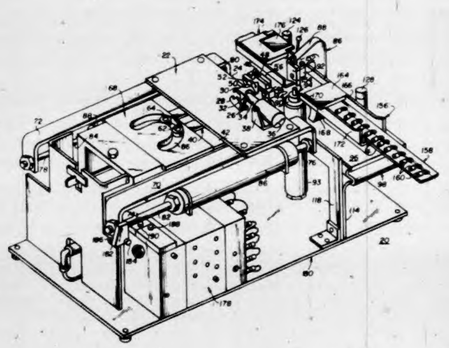
A reproduction in castable material of a photo or other form of picture and a method of producing the cast picture. A photo or other desired form of scene is reproduced as a black and white negative with shading eliminated, and the negative is processed to produce a likeness thereof in the castable material with the dark lines standing in relief and the light areas recessed. The recessed areas are filled with powdered enamel to a level somewhat below the top of the relief features, and the object is baked to fuse the enamel and bond it to the casting.

3,659,328

STRIPPING AND CRIMPING APPARATUS

Avigdor Klein, Highland Park, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Aug. 17, 1970, Ser. No. 64,516
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 D **23 Claims**



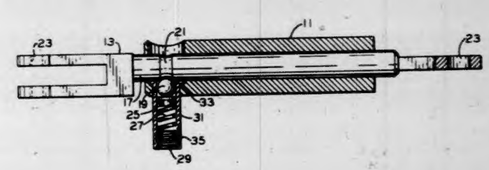
The invention is directed to an improved, compact, pneumatically actuated semi-automatic stripping and crimping apparatus having means for transferring a stripped conductor in a single, direct linear path from a stripping zone to a crimping zone. Adjustable crimping means comprising a pair of releasable die members is disposed in direct linear alignment forward of the stripping zone. Wire holding and transfer means, disposed adjacent stripping means which is planarly rotatable away from the stripping zone, is reciprocatingly displaceable in a direct linear unobstructed path between the stripping zone and the crimping zone. Terminal feed means comprising a channel-like terminal guide member and a reciprocating, resiliently mounted pawl is provided to intermittently advance a plurality of conductor terminating connectors selectively disposed on a tape carrier towards and into the crimping zone.

3,659,329

FEED MECHANISM OVERLOAD RELEASE

Robert G. Walker, Brighton, Mich., assignor to Industra Products, Inc., Fort Wayne, Ind.

Filed Aug. 6, 1970, Ser. No. 61,681
Int. Cl. H02k *15/00*
U.S. Cl. 29—205 E **5 Claims**



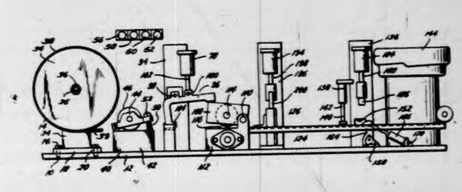
A connecting link for transmitting linear motion along its axis to feed bore wedges of insulating material and having an overload release mechanism is disclosed. The connecting link consists of an outer link, and an inner link slidable relative to the outer link in the direction of transmission of the force. The inner link is provided with a recess and the outer link is provided with a spring loaded plunger arrangement which engages the recess and which yields allowing the relative sliding of the inner and outer links when the force being transmitted by the connecting link exceeds a predetermined value.

3,659,330

BINDING STRIP MEASURING AND ASSEMBLY MACHINE

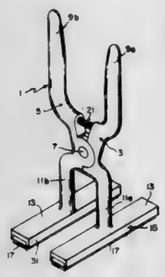
Frank De Villier, 9930 Aves Street, Houston, Tex., and Brown Isaacs, 702 "B" Avenue, South Houston, Tex.

Filed May 12, 1970, Ser. No. 36,572
Int. Cl. B23p *19/04*; B23a *7/10*
U.S. Cl. 29—208 C **11 Claims**



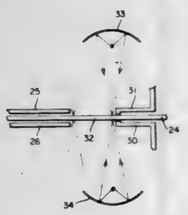
A machine for automatically assembling a binding clip to one extremity of a strip of metal material, measuring a desired length of the strip material and severing the desired length of strip material from a storage roll. The machine is provided with a strip guide bar having a strip guide groove formed therein. A brake mechanism, a strip drive mechanism, and a strip extremity immobilizing mechanism, are disposed adjacent the strip guide groove to control movement of the strip material. A strip cutter, a strip binding apparatus, and a clip fastening device are provided adjacent the strip guide groove to perform cutting, bending, and fastening operations on the strip material. A clip orienting and feed device is provided to orient binding clips so that a clip may be connected to the free extremity of the strip material. Control of the entire mechanism is achieved by an adjustable sequence timing control device which is responsive to linear movement of the strip material being driven.

3,659,331
CLAMPING APPARATUS
Jack W. Drake, and Roger L. Case, both of Indianola, Iowa, assignors to Commercial Affiliates, Inc., New York, N.Y.
Filed Mar. 20, 1970, Ser. No. 21,270
Int. Cl. A47g 27/04; B25b 7/00
U.S. Cl. 29—268 7 Claims



A clamping apparatus having two members pivotally joined together to form a squeeze handle means on one side of the point of juncture and a pair of leg portions on the other side. Each leg is attached to a contact member which has a plurality of pin members on its lower surface and a flat clamping side surface facing the other contact member. A spring urges the contact members towards one another when the handle is released from a squeezed position.

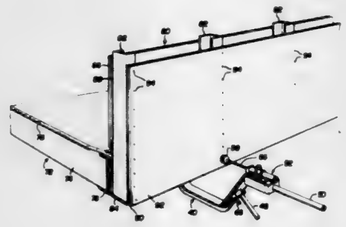
3,659,332
METHOD OF PREPARING ELECTRICAL CABLES FOR SOLDERING
Ross F. Morrone, Trenton, N.J., assignor to Spectra Instruments, Inc., Trenton, N.J.
Filed May 5, 1969, Ser. No. 821,834
Int. Cl. B23p 19/02
U.S. Cl. 29—427 4 Claims



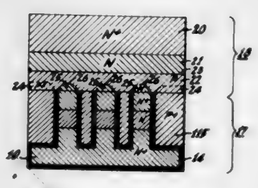
The disclosure relates to a method for using infra-red, ultra-sonic and mechanical energy in certain desired combinations for the purpose of removing insulating plastic from flat, flexible electrical cables.

3,659,333
METHOD AND APPARATUS FOR CONSTRUCTION OF MODULAR BUILDINGS
John A. Johnson; Nicholas F. Alberti, and Joseph E. Schuette, all of Fort Lauderdale, Fla., assignors to Behring Corporation, Fort Lauderdale, Fla.
Filed Apr. 9, 1970, Ser. No. 26,953
Int. Cl. B23k 31/02
U.S. Cl. 29—471.1 9 Claims

In constructing a modular building, a floor frame and a wall frame are assembled at a right angle, with a perimeter beam of the floor frame next to the inner faces of vertical studs of the wall frame. Since the outer faces of the studs are covered by surfacing material, they are not accessible for welding, so a welder and pressure device, both mounted on the same support, are positioned to place the welder inside the perimeter beam opposite a stud and the pressure device on the outer side of the wall frame next to the surfacing material. The welder may be aligned with a stud by aiming the pressure device relative to a reference which may be fasteners in the surfacing material. The pressure device is operated to apply force to the wall frame and thus press the welder against the perimeter beam. The welder is operated to make the weld, and the sequence is repeated to make further welds. The method and the apparatus are claimed.

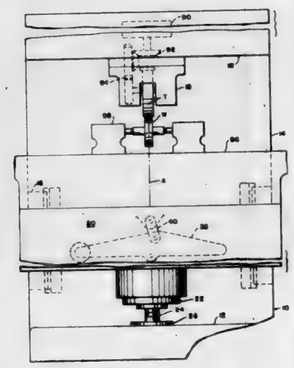


3,659,334
HIGH POWER HIGH FREQUENCY DEVICE
Hans W. Becke, Morristown; Eric F. Cave, Somerville, and Daniel Stainitz, Raritan, all of N.J., assignors to RCA Corporation
Original application June 19, 1968, Ser. No. 738,343, now abandoned. Divided and this application Oct. 13, 1970, Ser. No. 80,415
Int. Cl. B01j 17/00; H01l 5/00
U.S. Cl. 29—580 3 Claims



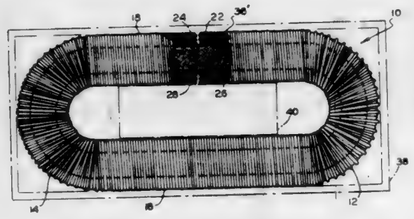
A high power frequency device such as a thyristor or transistor comprises a monolithic body consisting of an emitter assemblage laminated to a base-collector assemblage. The emitter assemblage is a semiconductive wafer of given conductivity type having a plurality of mesas adjacent one surface; a high resistivity ballast layer in each mesa; an insulating film on said one surface and around each mesa; and a layer of high conductivity material, such as heavily doped semiconductive material of opposite conductivity type, on said insulating film over said one surface and surrounding said mesas, the surface of said high conductivity layer being co-planar with the top of said mesas. The base-collector assemblage is a semiconductive wafer which includes at least two layers of mutually opposite conductivity types, the surface of one layer being planar and constituting a major surface of said body.

3,659,335
COMBINED GEAR SHAVING AND ROLLING MACHINE
Benjamin F. Bregi, Grosse Pointe Shores; Carl H. Motz, Harper Woods, and Arthur B. Bassoff, Oak Park, all of Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.
Filed Sept. 29, 1969, Ser. No. 861,594
Int. Cl. B23f 19/06
U.S. Cl. 29—560 15 Claims



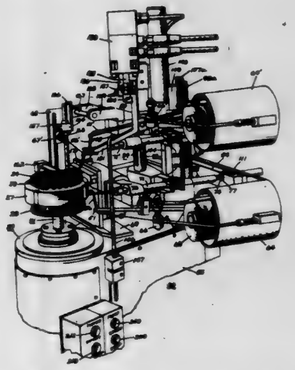
A machine which can be used selectively for crossed axes gear shaving employing a gear-like shaving cutter having cutting edges in the sides of its teeth, and as a gear rolling machine employing a die in the form of a hardened gear. Provision is made for relative traverse while shaving in a direction occupying a plane parallel to the axes of the gear and tool, and for incremental infeed during shaving and continuous infeed during gear rolling.

3,659,336
METHOD OF MANUFACTURING AN INDUCTIVE DEVICE
Arthur P. Horne, Portland, Oreg., assignor to Electronic Diversified, Inc., Portland, Oreg.
Filed Jan. 30, 1970, Ser. No. 7,039
Int. Cl. H01f 7/06
U.S. Cl. 29—605 14 Claims



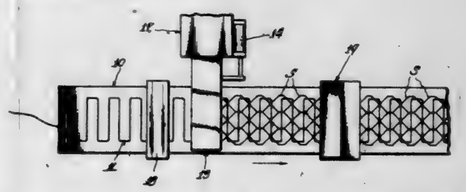
An inductive choke coil comprises a multi-layer toroidal coil enclosing a core formed from powdered iron and a binder. The coil is first wound in linear fashion, after which a flexible tubular member is inserted therewithin and filled with the core material. The coil is then formed into a toroid, and the binder material is activated for forming a substantially continuous core.

3,659,337
APPARATUS AND METHOD FOR TYING COILS
Roy E. Gawthrop, and Lowell M. Mason, both of Fort Wayne, Ind., assignors to General Electric Company
Continuation of application Ser. No. 812,631, Apr. 2, 1969, now abandoned. This application Feb. 9, 1971, Ser. No. 114,085
Int. Cl. H01f 41/02
U.S. Cl. 29—606 25 Claims



Apparatus and method for concurrently tying cord about two sets of end turn portions of coils projecting beyond each side surface of a magnetic core. The core having coils is supported in a holder assembly and periodically indexed through an angular path of travel by an assembly having adjustable arms. Each set of end turn portions is tied with cord in a stitch pattern having double loops in each stitch interval by a tying unit having a cord feeder member, mounted for combined longitudinally swinging and turning motion, which passes over the associated set of end turn portions and cooperates with an elongated hook member, mounted for combined rectilinear and oscillatory motion. One tying unit is carried for preselected movement by a movable platform, and a core-surface and tying unit position-sensing and controlling unit automatically determines the relative positions of the one tying unit with respect to an adjacent region of an associated core surface. Thus, desirable stitch patterns are simultaneously, quickly, and efficiently provided for the two sets of end turn portions. Also, dimensional variations in cores of a given size as well as different sized and types of cores are compensated for in an effective and economical manner.

3,659,338
METHODS OF MAKING ELECTRIC RESISTANCE HEATING MATS
William McFarlane, Murfreesboro, Tenn., assignor to Emerson Electric Co.
Original application Aug. 23, 1967, Ser. No. 662,796. Divided and this application June 29, 1970, Ser. No. 60,165
Int. Cl. H06b 3/00
U.S. Cl. 29—611 9 Claims



The method of making an electric heating mat including disposing laterally spaced portions of electric resistance wire

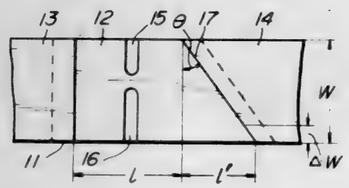
on a support, disposing a plastic extrusion head over the support and extruding a strand of plastic downwardly toward the wire portions, and relatively moving the support and extrusion head to lay the downwardly extruded strand cross-wise of and over the wire portions, the strand adhering to the portions at the places of crossing to form a dielectric strand connection between the wire portions.

3,659,339

METHOD OF MAKING A FILM RESISTOR

Isao Yamaguchi, Kodaira-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 24, 1969, Ser. No. 860,523
Claims priority, application Japan, Oct. 11, 1968, 43/73529
Int. Cl. H01c 7/00, 17/00
U.S. Cl. 29—620 8 Claims



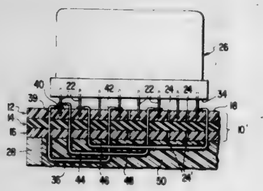
A method of making a resistor comprising the steps of depositing resistor materials onto a substrate in the form of a film and connecting conductors to the two ends thereof, wherein the said resistor film is formed so that it includes a first part where the current path between the said conductors is long and a second part where the current path is short, and first and second ditches are provided in the said first and second parts of the resistor film in a direction crossing the direction of the current so as to adjust the resistance between the said two conductors to the desired values.

3,659,340

METHOD OF FABRICATING COAXIAL WIRES IN BACK PANELS

Gary R. Gledd, and Merlyn H. Perkins, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of application Ser. No. 606,129, Dec. 30, 1966, now abandoned. This application Dec. 16, 1969, Ser. No. 885,639
Int. Cl. B41m 3/08; H01b 13/00
U.S. Cl. 29—627 8 Claims



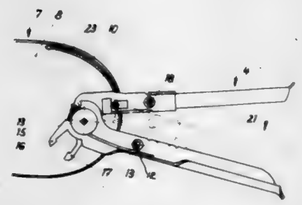
The plastic insulated cross-connection wires on the backside of an electrical panel are coaxed by momentarily applying a mass of molten, low melting temperature metal to the backside of the panel with the major portion then removed. The adhering portion solidifies and the shielded cross-connections are potted in a plastic mass to maintain the wires in position and to protect the same against mechanical impact.

3,659,341

TOOL FOR OPENING CONTAINERS HAVING A BEADED TOP

Karl Kappler, Hauptstrasse 5, Pfinzweiler, Wurttemberg, Germany

Continuation-in-part of application Ser. No. 661,106, Aug. 16, 1967, now Patent No. 3,514,583. This application Mar. 30, 1970, Ser. No. 23,582
Int. Cl. B67b 7/30
U.S. Cl. 30—14 3 Claims



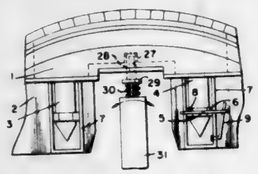
A tool for cutting open the tops of containers having beaded tops has first and second levers pivotally connected near one end with a first spring holding ends of the levers apart. A knife with curved and straight opposite sides is carried on the first lever which has two pivotally attached sections. The second lever has a fixed first jaw and carries a spring biased pivotable lever formed with a second jaw having a projecting tooth, which engages under the bead of a container and holds the second lever stationary, while the first lever draws the knife along the top of the container cutting the top and forming a peripheral turned up lip in the cut top.

3,659,342

MECHANICAL RAZORS

Paul Kobler, 81 Fenimore Street, Lynbrook, N.Y.

Filed Oct. 21, 1969, Ser. No. 868,052
Int. Cl. B26b 19/00
U.S. Cl. 30—43.1 5 Claims



A dry shaver having a plurality of shearheads one of them moving with its cutting surface sideways through friction with the skin.

3,659,343

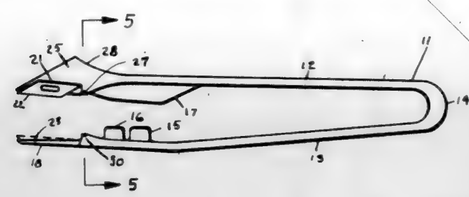
SUTURE CUTTER

Albert E. Straus, 5844 Georgetown Drive, Erie, Pa.

Filed Apr. 6, 1970, Ser. No. 25,983
Int. Cl. B26b 17/04
U.S. Cl. 30—124 2 Claims

This specification discloses a cutter for use by physicians to cut and remove sutures. The suture cutter has a handle made of resilient material having two arms resiliently and integrally connected together. The arms have the cutting elements supported on the distal ends. The cutting elements are a sharp blade connected to one arm and an anvil surface on a probe on the other arm. The elongated resilient probe may be inserted under a suture during cutting. To lift the suture a

rigid laterally extending jaw is attached to each side of each arm which close together when the cutter is closed and act as tweezers. Thus the combination cutter and tweezers actually



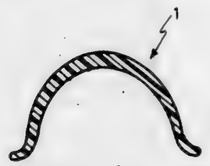
form two tools in one and eliminate the need of two separate instruments. The tool is shaped for hand comfort and ambidexterity.

3,659,344

METHOD OF MAKING A DENTAL PROSTHESIS

Leo Gavazzi, Via Italia 13, Biella, Italy

Filed Dec. 7, 1970, Ser. No. 95,780
Claims priority, application Italy, Dec. 15, 1969, 54390 A/69
Int. Cl. A61c 13/00
U.S. Cl. 32—2 5 Claims



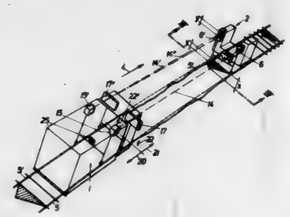
A denture is formed by a rigid acrylic resin tooth-bearing support element and an underlying cushion element of soft thermoplastics material. The cushion element and the support element are interlocked by the process of the invention, which entails sticking irregularly shaped thermoplastics granules on the outer surface of the preformed cushion element, and then pressing the latter into the preformed support element, before the latter is polymerized. The subsequent application of heat melts the granules to form integral undercut appendages on the cushion element, and also polymerizes the acrylic resin, hardening the support element and thereby interlocking the two elements.

3,659,345

MOBILE TRACK SURFACING APPARATUS

Franz Plasser, and Josef Theurer, both of Johannesgasse 3, Vienna, Austria

Filed Nov. 5, 1970, Ser. No. 87,166
Claims priority, application Austria, Dec. 19, 1969, 11907
Int. Cl. E01b 29/04
U.S. Cl. 33—60 7 Claims



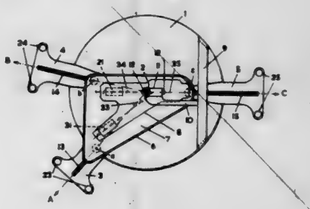
In a track grading machine, which operates with two reference beams associated with respective rails and wherein the beam stops and receivers are held at a constant distance from the rails, drive motors are provided for automatically adjusting the vertical position of each beam transmitter independently. The drive motors are operated in response to any deviation of the track from the horizontal, taking into account the different between the actual and the desired superelevation.

3,659,346

POSITION DISPLAY METHOD AND DEVICE

Gerrit Hendrik Te Kroonie; Karel Hero Volkers, both of Van Breestraat 171, Amsterdam, and Poul Albert Poulsen, Bezuidenhoutseweg 74, Wassenaar, all of Netherlands

Filed May 13, 1969, Ser. No. 824,193
Claims priority, application Netherlands, May 16, 1968, 6806926
Int. Cl. G01c 21/22
U.S. Cl. 33—65 4 Claims



A method and device for displaying on a chart the position and orientation of a relatively large moving vehicle, such as a ship, in which the chart is moved so as to bring three selected points thereof on the lines of sight from an observation station on the vehicle to three remote objects corresponding to such selected points, and in which an outline projection of the vehicle at the scale of the chart is made visible on the chart, said projection having a fixed orientation with respect to the vehicle itself.

3,659,347

METHOD AND MEANS FOR DRYING MOIST MATERIAL, SUCH AS PAPER, CELLULOSE, OTHER FIBRES OR THE LIKE

Hans I. Wallsten, Saffle, Sweden, assignor to AB Inventing, Saffle, Sweden

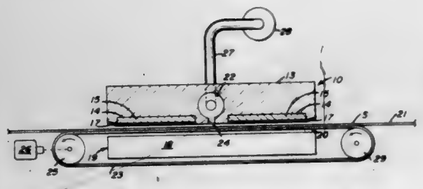
Filed Aug. 10, 1970, Ser. No. 62,428
Claims priority, application Sweden, Aug. 13, 1969, 11294/69
Int. Cl. F26b 3/00
U.S. Cl. 34—9 10 Claims



A method and means for drying moist material in which heat from a source of heat is supplied at least partially to one side of a porous layer, the pores of which are capable of conducting vapor. The moist material is in contact with the opposite side of the porous layer, so that due to the heat from the source of heat the moisture in said moist material is vaporized to vapor which thus is generated as a result of

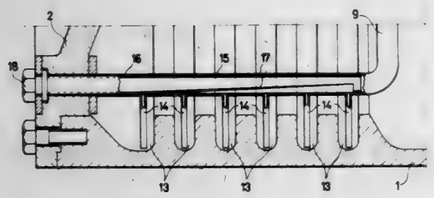
evaporation of moisture in said moist material and is at least partially forced into and through said porous layer in a direction opposite to that of the temperature gradient caused by heat supplied mainly by means of thermal conductivity from the source of heat to the porous layer through a homogeneous, heat-conducting wall. The wall is arranged in at least partial heat-conducting contact with the porous layer and defines a partition between the porous layer and the source of heat, blocking the passage of steam through said porous layer. The generated vapor is discharged in direction mainly perpendicular to said temperature gradient.

3,659,348
APPARATUS FOR FUSING XEROGRAPHIC TONERS
Lee F. Frank, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 27, 1970, Ser. No. 40,841
Int. Cl. F26b *11/02*
U.S. Cl. 34—122 6 Claims



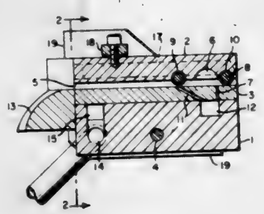
A device for thermofusing an electroscopic toner image to the surface of a support by moving the support through a passageway formed by a pair of platens, at least one of which is heated. The heated platen is connected to an air supply, the air being discharged under pressure through a slot in the heated platen and directed toward the image-bearing surface. The air is heated as it is discharged and attains a temperature sufficient to fuse the toner image. The air pressure is sufficient to hold the support in a spaced relation with respect to the heated platen. In another embodiment, a vacuum platen is arranged adjacent the other surface of the support, the applied vacuum or suction drawing the thin layer of air on the image-bearing surface through the support to increase the efficiency of the device by utilizing the heated air more effectively.

3,659,349
DRYING CYLINDER
Erik A. Nykopp, Tampere, Finland, assignor to Oy-Tampella Ab, Tampere, Finland
Filed Nov. 26, 1969, Ser. No. 880,345
Int. Cl. F26b *11/02*
U.S. Cl. 34—124 3 Claims



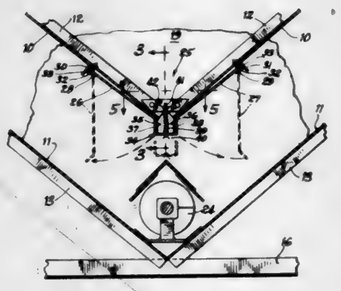
A drying cylinder in which the inside of the mantle or at least its end portions have circumferential grooves for collecting condensate. The inlet of a condensate drain pipe is placed in each groove and the pipes have been joined to a common condensate collecting pipe having adjustment means for regulating the amount of condensate from the drain pipes. The condensate collecting pipe is further connected to a condensate draining system of the cylinder.

3,659,350
YARN HEATING JET
James D. McCullough, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Mar. 25, 1970, Ser. No. 22,507
Int. Cl. D06c *1/06*
U.S. Cl. 34—155 5 Claims



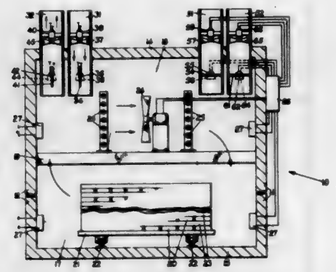
Improvements are disclosed in apparatus for fluid heat-treatment of continuous multifilament yarn. These include 90° impingement jets for initiating treatment, 30° impingment jets for completing the treatment, and means for redirecting fluid against the yarn. Hot fluid passages in a manifold block are arranged to heat the block uniformly and dead air spaces in a cap member reduce heat loss.

3,659,351
CLEAN-OUT MEANS FOR GRAIN DRYER
Erhard E. Aims, Barrington, and James E. Mitchell, Cary, both of Ill., assignors to AFE Industries, Inc., Lake Zurich, Ill.
Filed May 4, 1970, Ser. No. 34,027
Int. Cl. F26b *17/12*
U.S. Cl. 34—174 3 Claims



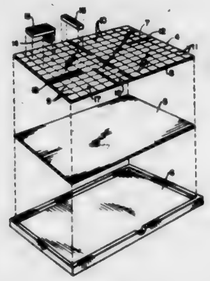
An improved means for cleaning out the grain that makes its way into the plenum chamber of a grain dryer. The hinged or flexible sheets normally used at the bottom of the chamber are held up in closed position by spring-biased clips which, although readily released by hand, nevertheless hold the sheets in such manner that they are able to support the weight of a man walking on the said sheets.

3,659,352
CIRCULATING AIR DRYER
Franklin W. Cook, Portland, Oreg., assignor to F. W. Cook & Associates Inc., Portland, Oreg.
Filed May 18, 1970, Ser. No. 38,451
Int. Cl. F26b *21/06*
U.S. Cl. 34—191 9 Claims



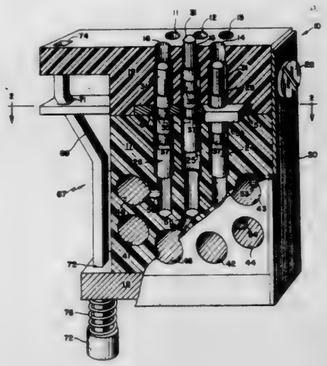
A circulating air dryer including a chamber for holding articles to be dried, and a reversible, power-operated air mover for selectively moving air through the chamber in opposite directions. With the air mover operating in either of opposite directions, the dryer also includes means within the chamber for exhausting a portion of the air circulated upstream from the air mover, means for introducing heat to the air being circulated downstream from where the air is exhausted, and means for introducing make up air into the chamber between the exhaust means and the heating means.

3,659,353
MODULAR LAYOUT METHOD
Rosario D'Agrosa, Dobbs Ferry, N.Y., assignor to J. C. Penny Company, Inc., New York, N.Y.
Filed Apr. 16, 1970, Ser. No. 29,133
Int. Cl. G09b *25/04*
U.S. Cl. 35—16 10 Claims



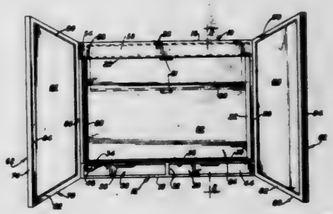
A method and system for planning the layout of commercial space comprising forming a modular layout of the space by selectively arranging a plurality of thin modules representing objects to be placed within the space over a planning surface to which the modules are magnetically attracted, said modules having indicia contrasting with the planning surface and making a clear and distinct shadow free photographic reproduction of the layout at any desired scale.

3,659,354
BRAILLE DISPLAY DEVICE
Norman B. Sutherland, Bedford, Mass., assignor to The Mitre Corporation, Bedford, Mass.
Filed Oct. 21, 1970, Ser. No. 82,564
Int. Cl. G09b *21/00*
U.S. Cl. 35—35 A 11 Claims



In the Braille display system disclosed herein a plurality of identical cells are arranged in a row and each cell is adapted to display a single Braille character. Each cell employs a plurality of pins which can be selectively raised to projecting positions by pneumatic signals which are common to all of the cells in a given row. Further, each cell includes an electrically actuable interposer member which can be selectively operated to either lock the pins in that cell in their existing positions or to free them and thereby enable them to respond to the common pneumatic signals.

3,659,355
WALL MOUNTED COMBINATION CHALKBOARD, PROJECTOR SCREEN AND INFORMATION DISPLAY APPARATUS
Adelard L. Aubin, Jr., 14 Lakeshore Drive, South Bellingham, Mass.
Filed Nov. 2, 1970, Ser. No. 86,226
Int. Cl. B43l
U.S. Cl. 35—62 11 Claims

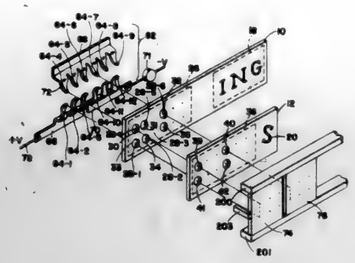


An upright wall supported receptacle having a compound back wall including a chalkboard, an oppositely disposed open front side, a projector screen supported on the receptacle and being selectively movable into and out of confronting juxtaposition relative to the chalkboard, and wing extensions comprising tack boards pivotally connected on the receptacle for swinging movement toward one another to close the open side of the receptacle.

3,659,356
ELEMENT MATCHING DEVICE

Roy A. Nelson, 25 Oakwood Road, Acton, Mass.

Filed June 30, 1970, Ser. No. 51,177
Int. Cl. G09b 5/02
U.S. Cl. 35—35 D 14 Claims

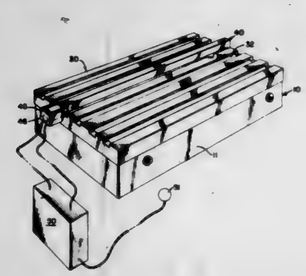


Element unit having coded aperture array and visible element indicia is matched to control unit having compatibly coded aperture array and visible control indicia by placing element unit and control unit in fixed mutual spatial relationship in which apertures of compatibly coded arrays cooperate to form one or more continuous paths for a signal. An indicator is actuated in response to a signal received after traversing continuous paths, and element and control indicia remain visible while units are matched.

3,659,357
AUDIO-VISUAL APPARATUS

Dimitri Martinesco, 51 Residence du Clos, Verrieres-le-Buisson, 91, and Charles L. Marsot, 3 Avenue Foch, Paris, 16, both of France

Filed Dec. 11, 1969, Ser. No. 884,241
Claims priority, application France, Dec. 12, 1968, 177825
Int. Cl. G09b 5/06; G11b 5/00
U.S. Cl. 35—35 C 5 Claims

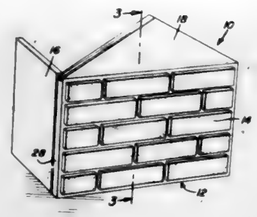


An audio-visual device adapted for instance for teaching foreign languages is provided with a substrate on which is disposed alternating rows of written matter and sound recorded tracks, adjacent rows being logically related to one another, for example, a recorded track may contain a translation of the adjacent written matter. Several embodiments are shown including one in which a sound track reading head disposed in a reading arm is driven along a sound track wherein the reading arm is removed from above one line when it has been read and put into position above the next line. In another embodiment, the substrate is formed as sheets in a loose-leaf binder which are turned after a side has been read and listened to. In a final embodiment, means are provided for automatically displacing the reading arm and the magnetic tape reading head between adjacent lines as well as a drive for returning the magnetic tape reading head to its starting position at a high speed.

3,659,358
BRICK DISPLAY UNIT

Jack S. Brown, P.O. Box 583, Eastland, Tex.

Filed Mar. 24, 1970, Ser. No. 22,257
Int. Cl. G09b 25/00
U.S. Cl. 35—53 12 Claims

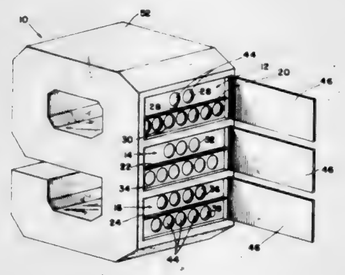


Brick samples are displayed by insertion into recesses of a molded panel, the recesses being separated by mortar simulating surfaces. Side flaps hinged to the panel unfold from the back to support it in an upright position. A roof section is mounted on the top edge of the panel for color comparison purposes.

3,659,359
MULTISENSORY LEARNING AID DEVICE

Priscilla Laubenstein, 15 Half Mile Road, Barrington, R.I.

Filed Nov. 3, 1970, Ser. No. 86,546
Int. Cl. G09b 23/02
U.S. Cl. 35—70 10 Claims



A multisensory learning aid device comprising a series of three-dimensional blocks representing the numerals one through nine and zero, each block having a compartment therein for each combination of numbers that may be added to arrive at the numeral represented by the block, each compartment having a pair of rows of recesses therein with the number of recesses in each row corresponding to the numbers which may be added to arrive at the numeral represented by the block, an article removably positioned in each recess with all of the articles in each block being of the same color and significance but being of a different color and significance from all of the articles in each other block, and closure means for each compartment.

3,659,360
REGULAR AND SEMI-REGULAR POLYHEDRONS CONSTRUCTED FROM POLYHEDRAL COMPONENTS

Walter Zelschegg, Neu-Ulm, Germany, assignor to Hansfriedrich Hefendehl, Lerchenweg, Klerspe, Germany

Filed June 2, 1969, Ser. No. 829,252
Claims priority, application Germany, June 4, 1968, P 17 72 572.3
Int. Cl. A63h 33/14
U.S. Cl. 35—72 10 Claims

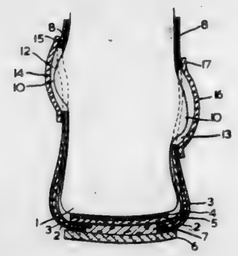


A construction set, for building structures assembled from geometric parts having plane surfaces, comprises a plurality of geometric parts including at least one group of equal pyramids each having three, four, or five equal side faces and at least one part in the form of a semi-regular or regular polyhedron having at least one plane of symmetry. This latter part can be assembled from partial bodies, such as base-abutted pyramids, or may be a single unitary body. Adhesive means are provided to interconnect the geometrical parts selectively in either face-abutting or articulated edge-abutting relation.

3,659,361
SKATE BOOT

Thomas Paul White, Sr., 109 Gilbert Street, Saint John, New Brunswick, Canada

Filed Dec. 19, 1969, Ser. No. 886,704
Int. Cl. A43b 00/00
U.S. Cl. 36—2.5 AL 6 Claims



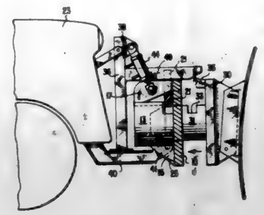
The present invention relates to skate boots and in particular the present invention relates to an improved skate boot in which the high top shoe quarters thereof fit in a snug or glove-like fashion around the ankles of the wearer.

3,659,362
IMPLEMENT HITCH

Charles Gilbert Bell, Sioux City, Iowa, assignor to City of Sioux City, Iowa

Filed May 14, 1970, Ser. No. 37,261
Int. Cl. A01b 51/00
U.S. Cl. 37—42 R 6 Claims

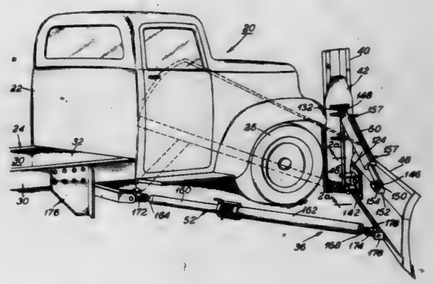
A hitch for implements of the pushed type including first and second plates, one mounted on a truck and the other on the implement. The plates are aligned and held together by a peg which protrudes from one plate and through a tube attached to the other. A latch lever holds the peg in the tube. Guide blocks on one plate mate with notches on the other to limit relative rotation of the plates. A hydraulic or pneumatic cylinder operates between the hitch and the truck to move the hitch about pivots by which the hitch is connected to the truck.



3,659,363
ADJUSTABLE WING PLOW WITH MEANS TO POSITIVELY MAINTAIN ADJUSTMENT

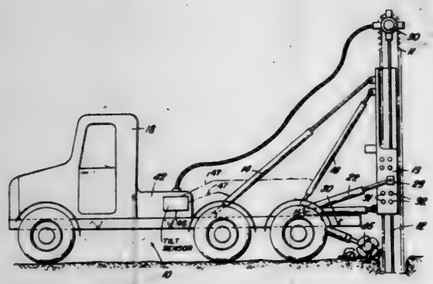
Roderick C. Snyder, Wausau, Wis., assignor to Wausau Iron Works, Wausau, Wis.

Filed June 15, 1970, Ser. No. 46,044
Int. Cl. E01h 5/06
U.S. Cl. 37—50 7 Claims



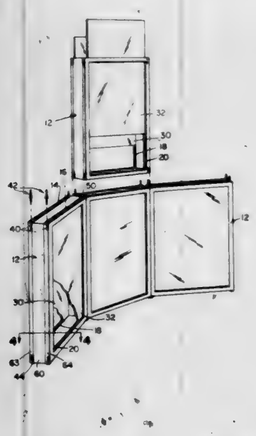
A wing plow attachable to the side of a vehicle such as a truck. A horizontal mounting bar is shaped to fit across the frame, in place of the conventional front bumper. An upstanding post is supported at one end of the post ahead of the front wheels. A slide member is movable up and down on the post, and is movable up and down by a first power cylinder within the post. A pivot member and a hinge member are supported, at upper and lower positions, respectively, on the slide member, for horizontal swinging movement. A plow blade is tiltable up and down on the hinge member. A second power cylinder is connected between the pivot member and the plow blade. A resilient compression member extends between the back of the plow blade and the truck frame. The second power cylinder adjusts the slope angle of the blade and moves the blade between and upper, out-of-the-way position folded against the side of the truck, and a lower operating position. The compression member is variable in length to adjust the sweep angle of the plow blade. The first power cylinder can elevate the plow blade without changing its slope or sweep angles.

3,659,364
TRENCH CUTTER USING ENDLESS CUTTER CHAIN
Leslie Peter Stuart Wilson, Nassau, Bahamas, assignor to Gimda Inc., Nassau, N.P., Bahamas
Filed June 24, 1969, Ser. No. 836,111
Claims priority, application Great Britain, June 25, 1968, 30,276/68; July 25, 1968, 35,671/68; Feb. 24, 1969, 9,830/69
Int. Cl. E02f 5/06
U.S. Cl. 37—83 14 Claims



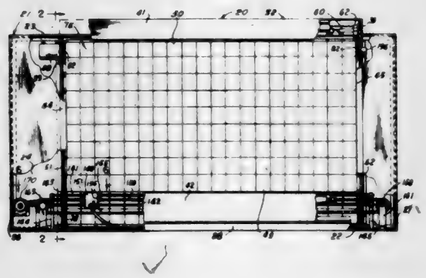
Trench cutting apparatus particularly for cutting deep narrow trenches has a power-driven endless cutter chain on an elongated chain support which is linearly movable in a carrier mounted on a vehicle. In operation the carrier is vertical (or inclined to the vertical if a sloping trench is required) and is held in position by adjustable rams which permit the cutter to be positioned across the width of the vehicle as required and serve to maintain the carrier in the required plane.

3,659,365
ADVERTISING DISPLAY STRUCTURES
Robert A. Eaton, Hingham, Mass., assignor to Norman-Buffett Display Industries, Inc., Boston, Mass.
Filed July 15, 1970, Ser. No. 55,005
Int. Cl. G09f 3/18
U.S. Cl. 40—16 1 Claim



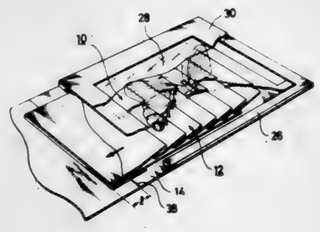
A display structure is made up of a multiplicity of modules in the form of rigid plastic foam frames which are grooved and slotted to receive one or more interchangeable display panels so that the frames of the module are reusable with different panels.

3,659,366
DISPLAY APPARATUS
Robert L. Woolfolk, Dallas, Tex., assignor to Dow Jones & Company, Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 645,022, June 9, 1967, now Patent No. 3,487,568. This application Jan. 5, 1970, Ser. No. 674
Int. Cl. G09f 11/12
U.S. Cl. 40—28 C 17 Claims



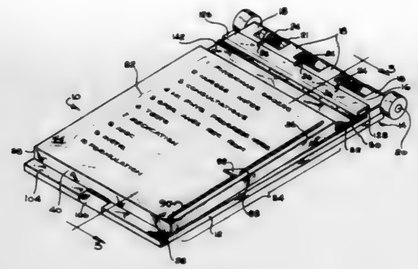
Display apparatus for presenting data in visual form having panels provided with passages in which display elements, such as balls, are movably positioned and means for selectively moving the balls in their passages between their operative visible positions and their inoperative positions to cause the balls to form or delinate characters. The display apparatus may include a plurality of such panels connected in an endless belt and movable before an opening or window so that the data on more than one panel may be visible at a single time. The means for moving the balls may be jets of air delivered by nozzles mounted on a carriage movable relative to a panel when it is in a predetermined position.

3,659,367
FEATURE VARIABLE PICTURE AND BOOK
Hirokazu Yumoto, Tokyo, Japan, assignor to Sumida Shiko Co., Ltd., Tokyo, Japan
Filed June 15, 1970, Ser. No. 46,161
Int. Cl. G09f 11/30
U.S. Cl. 40—65 4 Claims



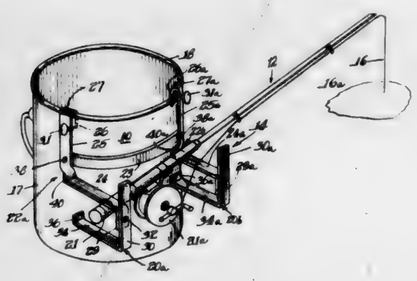
A feature variable picture embodying a stationary picture assembly and a sliding picture assembly of different feature from the stationary picture assembly which are slideably incorporated one another to present two different features of picture alternately.

3,659,368
CHART HOLDER
Isabella J. Colbert, 425 West 63rd St., Los Angeles, Calif.
Filed Aug. 29, 1969, Ser. No. 854,211
Int. Cl. G09f 11/06
U.S. Cl. 40—104.01 6 Claims



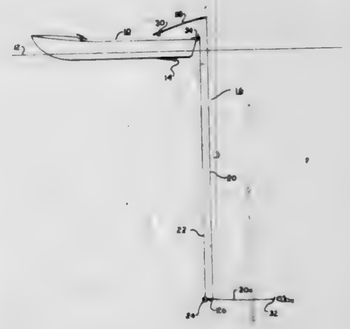
An index charge holder in which a plurality of indexed cards are clamped to a supporting base and a cover is provided pivotally connected to the clamping means. The cards have keyed cutaway edges and a slider is disposed on the cover having an inwardly extending portion beneath the cover adapted for selective coaction with the cutaway card edges, so that when the cover is raised, a selected quantity of the cards are lifted therewith. The upper portions of the cards are secured to the base independent of the clamping means and a plurality of sheets are disposed between the indexed cards secured by the clamping means, but otherwise unsecured so that they may be removed upon opening of the clamping means. The cover is formed to pivotally swing onto the clamping means for levered opening thereof.

3,659,369
FISH POLE HOLDER
Everet T. Hermanson, 2318 Mannheim Rd., Melrose Park, Ill.
Filed Dec. 17, 1969, Ser. No. 885,903
Int. Cl. A01k 97/10
U.S. Cl. 43—21.2 8 Claims



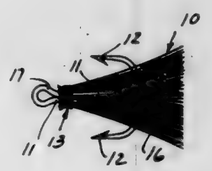
A device for supporting a fishing rod in an inclined position alongside a container such as a minnow container or the like. The device comprises a frame engaging the container wall and a pair of bracket arms secured to and extending outwardly from the frame providing support means for the rod. The bracket arms are laterally spaced from each other and include a lower support member for accommodating the portion of the rod rearwardly of the reel and an upper support member for accommodating the portion of the rod forwardly of the reel.

3,659,370
TROLLING DEVICE AND SYSTEM
Charles P. Ritter, 704 E. Prairie Ronde, Dowagiac, Mich.
Filed Sept. 10, 1969, Ser. No. 856,554
Int. Cl. A01k 91/00, 95/00
U.S. Cl. 43—43.12 5 Claims



A trolling system in which a weight suspended by a line is used to hold a fishing line at the desired depth in the water. A control device releasably connects the fishing line to the weight line and includes a pair of jaws and means for varying the spacing of the jaws to vary the force required to disengage the line from the jaws when a fish is caught. The fishing line, upon being released from the control device, gives the fisherman full control over reeling in and landing the fish.

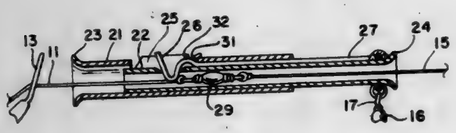
3,659,371
FLY TYING PROCESS
Wayne O. Duescher, 951 West County Rd. C-2, St. Paul, Minn.
Filed Apr. 29, 1970, Ser. No. 32,862
Int. Cl. A01k 85/08
U.S. Cl. 43—42.25 9 Claims



A fly tying process in which hairs or fibers are precut to length and a bundle or bundles of hair are placed uniformly about and along the shank of a fishhook or lure. The bundle of hair and shank are encompassed by two continuous adjacent loops with a slip knot connecting an inner loop to an outer loop and an outer slip knot in the outer loop having free ends extending in opposite directions from the shank. Where the loops are formed from wire, the knots will not hold until reduced to a small diameter and deformed past the yield point of the wire. The reduction in size of the loops by drawing on the free ends of the wire, produces a rotating motion of the hair relative to the shank which uniformly spreads

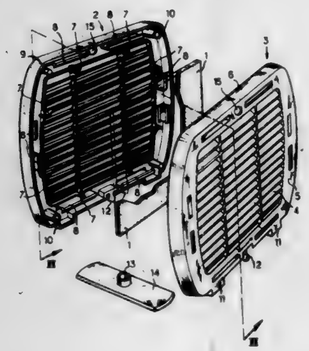
the hair before flaring of the hair as the wire is finally tightened. The wire loop is then covered with epoxy cement or plastic. The hair may be animal hair or synthetic fibers. As an alternate form of the disclosure, the loops are formed from thread and a split metal ring is crimped to the thread to hold the thread to the hair and shank.

3,659,372
SINKER RELEASE METHOD AND APPARATUS
Robert E. Cullen, 15806 Presswick Lane, Bowie, Md.
Filed Jan. 29, 1971, Ser. No. 111,056
Int. Cl. A01k *95/00*
U.S. Cl. 43—44.88 **13 Claims**



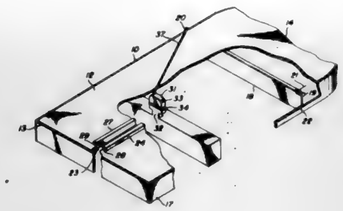
A fishing apparatus attachable to and moveable along a fishing line so as to provide a recoverable sinker release that is operative when retrieving a catch. A fishing line with a swivel connecting a leader and bait or lure is threaded through two concentric, interlocking, cylindrically shaped members, the inner one of which is provided with an attaching means for carrying various sized sinkers. The concentric members are locked together in use by a spring extending through an opening in the inner member to rest against said swivel. As a catch is retrieved, the outer concentric member contacts the tip of a fishing rod or pole and disengages said spring from contact with the swivel, thereby permitting said catch to be retrieved.

3,659,373
RECEPTACLE FOR INSECTICIDE PLATE
Jean Daeninckx, Saint-Denis, France, assignor to Societe anonyme dite: LOreal
Filed Feb. 4, 1970, Ser. No. 8,515
Claims priority, application France, Feb. 5, 1969, 6902574
Int. Cl. A01m *13/00*
U.S. Cl. 43—125 **5 Claims**



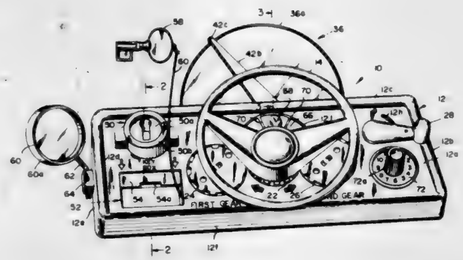
The receptacle includes two identical covers provided with grilles for circulation of air and snaps for holding the two covers together with the insecticide plate enclosed between them and held spaced from the grilles by spacer elements formed on the insides of the covers.

3,659,374
INSECT CATCHER ASSEMBLY
Leon F. Steves, 1181 Mead Lane, Flagstaff, Ariz.
Filed Jan. 11, 1971, Ser. No. 105,362
Int. Cl. A01m *3/00*
U.S. Cl. 43—134 **3 Claims**



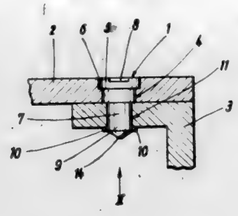
A hand-held insect catcher assembly for entrapping and dispatching an insect located upon a surface. The assembly has a box-like trap which is open on the underside and an elongate handle extending rearwardly therefrom. When the assembly is positioned over an insect, and upon striking the surface, a bias loaded slide bar within the trap is triggered and released to travel rearwardly to dispatch the insect and deposit same into the hollow handle. An end cap on the handle facilitates removal of the collected insects.

3,659,375
TOY WITH PSEUDO AUTOMOBILE CONTROLS AND PSEUDO AUTOMOBILE WINDSHIELD AND WINDSHIELD WIPER MECHANISM
Albert Stubbmann, Franklin Lakes, N.J., assignor to Kohner Bros., Inc., East Paterson, N.J.
Filed May 4, 1970, Ser. No. 34,066
Int. Cl. A63h *33/00*
U.S. Cl. 46—1 B **11 Claims**



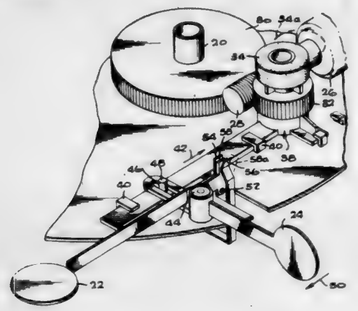
A toy which enables a child to simulate to some extend the motions required in driving an automobile. The toy includes a frame and a number of parts in operative relation therewith, the parts simulating some of the controls of an automobile and an automobile windshield and windshield wiper. One of the parts is a lever that is pivotally fixed to the frame and which simulates the automobile transmission shift lever. A plastic shield which simulates the automobile windshield is fixed to the frame and a pair of arms that simulate a windshield wiper flank both sides of the plastic shield. A kinematic linkage connects the lever and arms so that manipulation of the lever results in the arms sweeping across the opposite sides of the plastic shield to simulate the action of a windshield wiper.

3,659,376
CONNECTING ARRANGEMENT FOR USE IN A TOY ASSEMBLY KIT
Artur Fischer, Altheimer Str. 219, Tumlingen, Germany
Filed May 4, 1970, Ser. No. 34,474
Claims priority, application Germany, May 30, 1969, P 19 27 626.7; June 24, 1969, G 69 24 984.9; June 28, 1969, G 69 25 750; Oct. 22, 1969, G 69 41 000.0
Int. Cl. A63h *33/10*
U.S. Cl. 46—31 **12 Claims**



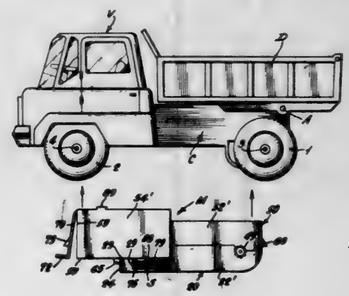
In a toy assembly kit two elements are to be connected with one another. They are superimposed and have juxtaposed first surfaces and second surfaces which face away from one another. Registering apertures are provided in both elements. An elongated connecting member extends through both of the apertures and is turnable therein. It has a head portion which engages the second surface of one of elements and a free end portion provided with projections which are receivable in response to turning of the connecting member in corresponding recesses provided in the inner circumferential surface of the aperture in the other element or in the second surface of the other element. Thereby, the elements are connected against separation but can be turned with reference to one another.

3,659,377
CHECKOUT STAND TOY WITH TURNTABLE DRIVE
Larry D. Workman, Fountain Valley; Ralph R. Laing, Hermosa Beach; J. Stephen Lewis, Pacific Palisades, and Emil H. VonWinckelmann, Van Nuys, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Apr. 1, 1970, Ser. No. 130,388
Int. Cl. A63h *33/30*
U.S. Cl. 46—40 **9 Claims**



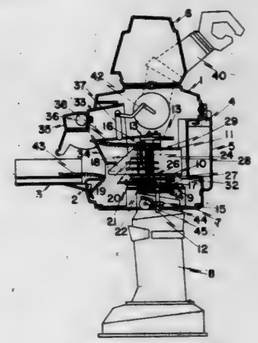
A toy supermarket checkout stand with a rotatable turntable for holding goods and a constantly rotating sign over it, which uses a simple self-disengaging drive for the turntable. A drive roller for rotating the turntable, is fixed to a worm wheel that is rotated by a screw. The worm wheel is mounted on a frame that slides parallel to the axis of the screw so that the worm wheel is always engaged with the screw, the frame sliding between an engaged position wherein the drive roller engages the turntable and a disengaged position wherein it is disengaged from the turntable. The motor rotates the screw in a direction that urges the frame towards the disengaged position, so that there is automatic disengagement without the use of a spring, whenever a child is not pushing the frame towards the engaged position.

3,659,378
MOTOR DRIVEN TOY VEHICLES
Duncan Tong, No. 23 C Robinson Road, Victoria, Hong Kong
Filed Jan. 23, 1970, Ser. No. 5,308
Int. Cl. A63h *33/26*
U.S. Cl. 46—244 R **20 Claims**



Motor driven toy vehicles which may assume the form of different vehicle bodies, each having a chassis with a baseplate at the bottom thereof provided with a generally rectangular opening into which may be inserted different and interchangeable module casings containing drive mechanisms for the vehicles. These mechanisms may assume different forms although they are composed essentially of a small direct-current motor, a dry cell for energizing the motor and a switch mechanism for controlling the connections therebetween. One embodiment of module makes possible the movement of the vehicle in forward and backward directions from a position of rest. Another embodiment permits energization of the motor in a single direction only which compels movement of the vehicle in diverse and haphazard directions by combining the steering control for the vehicle with the traction drive therefor.

3,659,379
TOY ROBOTS
Kataro Suda, No. 41-1, 4-chome Higashi-Mukojima, Sumida-ku, Tokyo, Japan
Filed Mar. 30, 1970, Ser. No. 23,923
Int. Cl. A63H *33/26*
U.S. Cl. 46—247 **6 Claims**



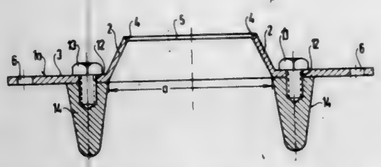
Improvements of toy robots characterized in that the torso of a robot is swung left and right alternatively with suitable

time intervals and angles maintained and, at the same time, both arms are moved up and down at a suitable angle of inclination with respect to each other.

3,659,380
PLATE FOR CONTROLLING THE FILLING DENSITY IN PLANT CONTAINERS BEFORE OR DURING AN AUTOMATIC MAKING OF HOLES FOR PLANTS IN THE FILLING COMPOUND

Georg Mayer, Bolheim, Germany, assignor to Firma Mayer KG, Heidenheim-Mergelstetten, Germany

Filed Sept. 19, 1969, Ser. No. 859,538
Claims priority, application Germany, Sept. 20, 1968, P 17 82 587.5
Int. Cl. A01g 9/08
U.S. Cl. 47—1 4 Claims

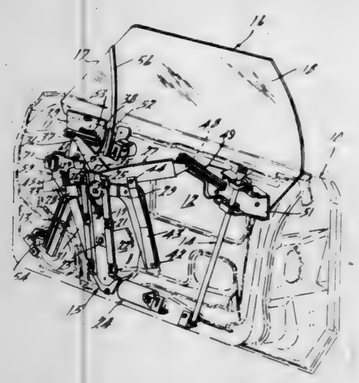


A plate having an upwardly projecting offset for shaping soil inserted into a plant-receiving pot. The plate stacks the soil around the plant-receiving opening to make same available for filling same.

3,659,381
VENT WINDOW SYSTEM FOR VEHICLE BODY STRUCTURE

Stuart M. Frey, Birmingham; Harold C. Gebhard, Livonia, and Julius Rado, Birmingham, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sept. 25, 1970, Ser. No. 75,392
Int. Cl. E05f 5/10
U.S. Cl. 49—103 16 Claims

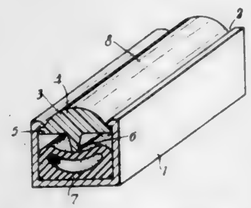


A vehicle body structure having a window opening fitted with a window panel divided vertically into two sections, one of which is substantially smaller than the other. A single window regulator mechanism, which may be manually or power operated, raises and lowers both panel sections in controlled sequence. With the window panel in raised condition, actuation of the window regulator mechanism results in the smaller panel section being lowered into the body structure to provide a ventilation exhaust opening. During the travel of the smaller panel section into the body structure, the larger panel section remains locked in a fully raised position by a latch mechanism that is a component of the window regulator mechanism. When the smaller panel section reaches a predetermined down position, the latch mechanism is released allowing the larger panel section to travel to a full down position. Upon movement of the window panel section from its lowered position to a raised position, a reverse sequence occurs during which the larger panel section again becomes locked in a fully raised position as the smaller panel section continues to move out of the body structure into fully raised position.

3,659,382
SEALS

Bernard Dixon, Harpenden, England, assignor to Sealmaster Limited, London, England

Filed Mar. 17, 1971, Ser. No. 125,347
Claims priority, application Great Britain, June 16, 1967, 27,950/67
Int. Cl. E06b 7/16
U.S. Cl. 49—481 6 Claims

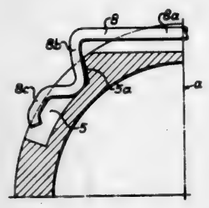


A door seal having a channel-shaped rigid member in which is contained a sealing member. A resilient member is located between the sealing member and the channel member and a longitudinal ridge, which forms part of either the sealing member of the channel member, is arranged so as to deform the resilient member when the sealing member is depressed in use.

3,659,383
WRIST WATCH STRAP CONNECTIONS

Gerard Cachelin, and Etienne Jeannottat, both of Le Locle, Switzerland, assignors to Fabrique d'horlogerie Chas. Tissot & Fils SA, Le Locle, Switzerland

Filed Apr. 15, 1971, Ser. No. 134,257
Claims priority, application Switzerland, Apr. 22, 1970, 5991/70
Int. Cl. G04b 37/00
U.S. Cl. 58—88 SC 2 Claims

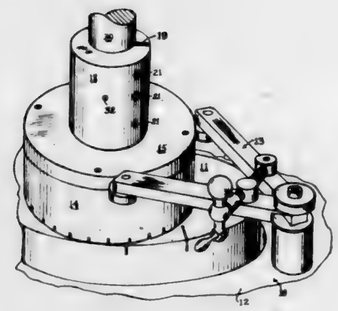


A wristwatch case has a side wall over which an outer ring is removably engaged and held by two spring members each having a middle part forming a bracelet loop and curved extremities engaging in facing grooves of the case and wall. An outer terminal part of each extremity normally engages in the groove of the ring but, for fitting or removal of the ring, can be compressed into a groove of the case by an inclined surface on the ring.

3,659,384
MACHINE FOR PARALLELLY LAPPING OPPOSITE SURFACES OF A WORKPIECE

Lawrence Day, Chicago, Ill., assignor to Spitfire Tool & Machine Co., Inc., Chicago, Ill.

Filed Mar. 16, 1970, Ser. No. 19,967
Int. Cl. B24b 37/00
U.S. Cl. 51—131 2 Claims

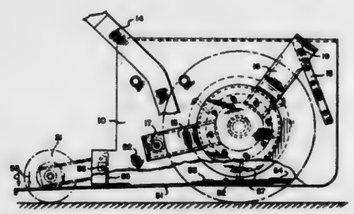


An improvement in a machine for parallelly lapping opposite surfaces of a workpiece by a rotatable lapping plate on which the work is positioned within a base or workholding ring beneath a pressure plate keyed to the ring for rotation therewith about a fixed vertical axis common to both the ring and the pressure plate and with the pressure plate self-adjustable vertically relative to such axis by engagement of the pressure plate with the work being lapped.

3,659,385
DETACHABLE SHARPENER FOR A CROSS-FLOW MOWER

Hugo S. Ferguson, Averill Park, N.Y., assignor to Reel Vortex, Inc., Poestenkill, N.Y.

Filed May 15, 1970, Ser. No. 37,774
Int. Cl. B24b 19/00; A01d 75/08
U.S. Cl. 51—250 6 Claims

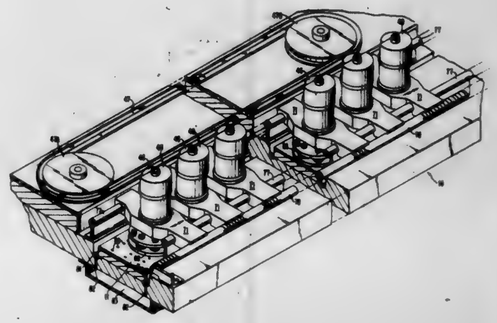


The sharpener comprises a treadle having a front section of stiffly flexible material with an abrasive surface on the upper side thereof adapted to extend across the width of the reel of the mower. The treadle is hingeably attached to the mower intermediate the front and rear ends of the treadle with the front section extending beneath the mower reel and the rear section accessible for foot operation. By starting the mower engine and exerting pressure on the rear section of the treadle, the front section sharpens the reel. Advantageously a unitary sheet of stiffly flexible material is employed so that by moving the foot along the rear section different sections of the reel are sharpened.

3,659,386
A METHOD FOR PROVIDING A FINISHED SURFACE ON WORKPIECES

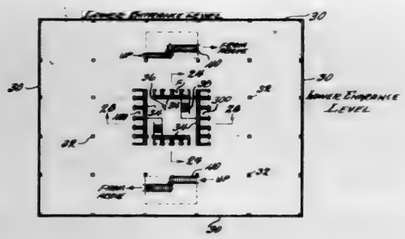
Fred E. Goetz, Wappingers Falls; Perry R. Druzba, Jr., Poughkeepsie; James R. House, La Grangeville, and Gerard Seeley, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Original application Mar. 22, 1968, Ser. No. 715,350, now Patent No. 3,550,325, dated Dec. 29, 1970. Divided and this application Mar. 16, 1970, Ser. No. 20,006
Int. Cl. B24b 1/00
U.S. Cl. 51—318 3 Claims



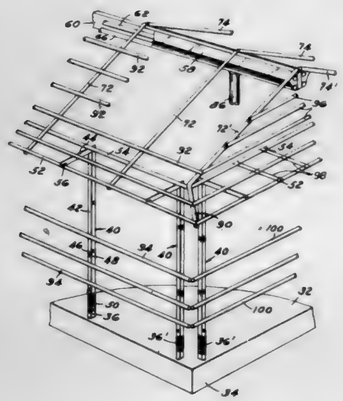
This patent discloses a method of preparing the surface of a workpiece. The disclosed method teaches the provision of a novel workpiece carrier for engaging the workpiece, and oscillating the workpiece holder relative to a finishing surface while simultaneously providing relative linear movement between the workpiece holder and the finishing surface. The apparatus, by which the method is performed, includes a carrier having drive means for moving the carrier along a linear path of travel. A rotatable mount which is carried by the carrier includes a depending workpiece receiver which is rotatably connected to the mount, the receiver being mounted eccentrically with respect to the carrier. Means are provided for imparting rotation to the mount and separate means such as springs are connected between the receiver and the carrier so as to inhibit rotation of the receiver while permitting oscillation thereof. In this manner, an article being held by the receiver may be engaged and oscillated against the finishing surface in substantially coplanar relationship therewith. In addition, as herein disclosed, the finishing table upon which the carriers ride may be provided with a plurality of finishing surfaces, each adapted for different finishing operations with intermediate cleaning surfaces to clean the workpiece of any residue adhering thereto from a previous finishing surface.

3,659,387
BUILDING STRUCTURE WITH ELEVATORS
Clyde C. Pearson, Jr., 503 Collier Rd., N.W., Atlanta, Ga.
Filed Apr. 6, 1970, Ser. No. 26,031
Int. Cl. B66b 9/00
U.S. Cl. 52—30 3 Claims



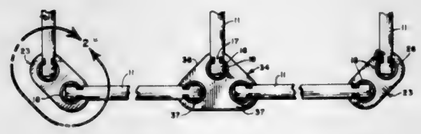
A building structure is described in which the core walls are used as principally horizontal load bearing structures, said walls being capable of receiving and transferring to the ground substantially horizontal forces from any direction. The service elements on each level are placed so that they are directly above the service elements on preceding levels. Banks of elevators serving the various levels are placed outside the core walls with the front or entry portions thereof facing the outer walls of the building. The elevator banks are in front to rear relationship rather than facing each other.

3,659,388
STEEL SHELL FOR USE IN BUILDING CONSTRUCTION
Donald M. Sirianni, 530 N.W. 189 Terrace, Miami, Fla.
Filed Nov. 18, 1969, Ser. No. 877,624
Int. Cl. E04b 1/41, 1/48
U.S. Cl. 52—91 6 Claims



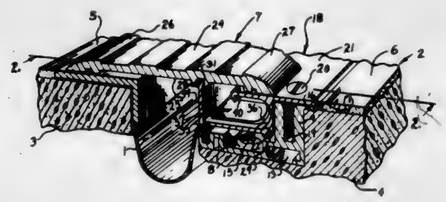
A metal frame is provided for reinforcing a unitary concrete building having side and end walls and a gabled roof. Wall studs and a center ridge beam are first erected. The studs and beam are initially plumbed to be sure they are in proper vertical alignment. Then, roof joists are extended between the beam and the studs without disturbing alignment of the studs. A latticework is provided around the entire frame structure for supporting concrete. The interior of the frame is surfaced with a concrete supporting lath-like layer and then concrete is sprayed onto both the interior and exterior surfaces of the frame to complete a building construction.

3,659,389
DISPLAY DEVICE
Charles Forberg, 115 State Street, Brooklyn, N.Y.
Filed Apr. 24, 1970, Ser. No. 31,545
Int. Cl. E04b 1/40, 2/74
U.S. Cl. 52—285 9 Claims



A display device includes vertical rectangular panels having vertical grooves along their side borders and vertically slotted tubes extending along the panel vertical edges with the edges of the tubes bordering the slots engaging the panel grooves. Connectors intercouple the panels at predetermined angles and include body members with two or more vertical bores having angularly related side openings, the bores snuggly engaging corresponding tubes, the respective panels borders registering with the connector side openings. A plurality of vertically spaced connectors may intercouple adjacent panels and the lower and upper connectors may be elongated and project below and above the panels to function as legs and connectors between upper and lower panels respectively.

3,659,390
EXPANSION JOINT COVER ASSEMBLY
Claude P. Balzer; Edward M. Corman; Almer A. Reiff, and Wilber E. Kirkwood, all of Wichita, Kans., assignors to Balco, Inc., Wichita, Kans.
Filed Nov. 2, 1970, Ser. No. 85,899
Int. Cl. E04b 1/68; E01c 11/02
U.S. Cl. 52—464 14 Claims

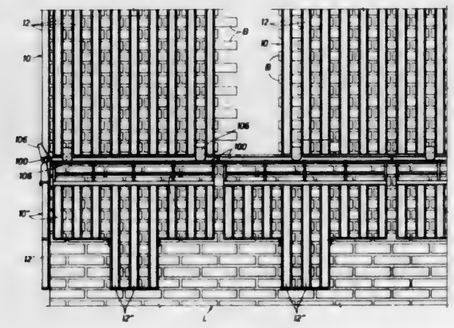


An expansion joint cover assembly for structural sections disposed in spaced relationship and defining an elongated joint therebetween includes an elongated rigid base and/or support member mounted on at least one of the structural sections adjacent a margin thereof and an elongated rigid plate member having a width greater than that of the joint between the structural sections and positioned to overlie same. The expansion joint cover assembly includes a member hingedly connecting the plate member and base and/or support member to permit relative movement therebetween and spaced resilient members engaging the connecting and the support member to hold the plate member in position overlying the joint during the relative movement between the plate member and the base and/or support member.

ERRATUM

For Class 52—537 see:
Patent No. 3,660,482

3,659,391
METHOD OF AND MEANS FOR CONSTRUCTING AND ERECTING BUILDING STRUCTURES FORMED OF BRICKS, OR THE LIKE
Roy A. Nichols, Route 5, Box 1070, Benton, Ark.
Continuation-in-part of application Ser. No. 646,831, June 19, 1967, now Patent No. 3,503,174. This application Mar. 24, 1970, Ser. No. 22,330
Int. Cl. E04g 21/16
U.S. Cl. 52—747 5 Claims

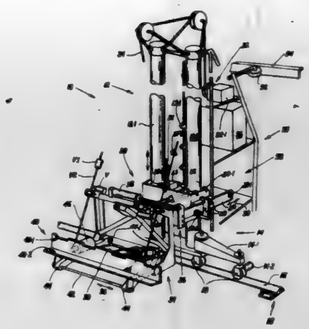


A method of and means for constructing and erecting building structures formed of block-like elements, such as bricks in which the elements are formed into assemblies or sections made up of a plurality of courses cemented together with the end elements of alternate ones of the courses along one side of the assembly extending beyond the ends of the elements of the others of the courses, and the end elements of the other courses along the opposite side of the assembly extending beyond the ends of the end elements of said alternate courses along said opposite side. The method includes the positioning of the assemblies so formed in upright positions for movement toward each other to extend the end elements of the alternate courses of one assembly between the end elements of the other courses of another assembly to permit the joining of the assemblies to complete a building structure. The method also includes the positioning of additional assemblies above a lower portion of a building structure made in accordance with the method of the invention, and supporting such additional assemblies on such lower portion and joining the additional assemblies to form upper portion of the building structure. The invention includes apparatus for holding the assemblies one on top of another in vertically spaced relation for the introduction of mortar therebetween whereby an upper portion of a building structure may be erected on a lower portion thereof.

3,659,392
BRICK-LAYING MACHINE
Andries Johannes Stoltz, Pretoria, Republic of South Africa, assignor to Monres (Proprietary) Limited, Braamfontein, Johannesburg, Transvaal Province, Republic of South Africa
Filed Sept. 3, 1970, Ser. No. 69,290
Claims priority, application South Africa, Sept. 9, 1969, 69/6412
Int. Cl. E04g 21/22
U.S. Cl. 52—749 8 Claims

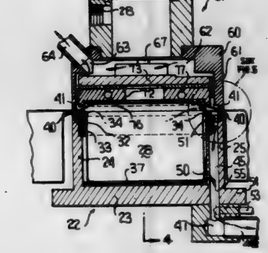
A method of building in which a number of bricks are laid simultaneously in a single course on a previously laid layer of mortar. The bricks may be vibrated to bed them down onto the motor.

A machine having a clamp head adapted to receive a number of bricks in series and to clamp them. The clamp head has a pair of intersecting alignment faces against which the bricks are aligned before being clamped. The clamp head



is displaceable from a loading position to an unloading or brick laying position. The clamp head also has a vibrator for bedding the bricks onto a layer of mortar by vibration.

3,659,393
APPARATUS FOR AND METHOD OF FORMING VACUUM PACKAGES
Joseph Richter, Fair Lawn, N.J., assignor to Royal Packaging Equipment, Inc., Maywood, N.J.
Filed May 28, 1970, Ser. No. 41,304
Int. Cl. B65b 31/02
U.S. Cl. 53—22 A 19 Claims

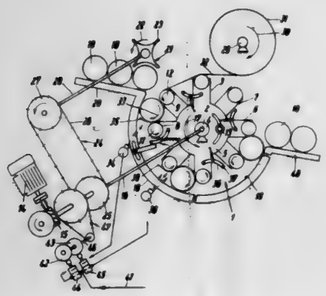


This disclosure relates to apparatus for forming vacuum packages and includes means defining a cavity adapted to receive a package having aperture means in a periphery thereof, means for temporarily sealing a flexible cover to the package periphery outboard of the aperture means, vacuum means for drawing a portion of the flexible cover overlying the sperture means away from the aperture means to form an access opening opening into the package between the flexible cover and the package periphery, means for withdrawing air from the package through the access opening and the aperture means incident to permanently sealing the flexible cover to the package periphery, and means for permanently sealing the flexible cover to the package periphery inboard of the aperture means.

3,659,394
METHOD OF AND MACHINES FOR WRAPPING ARTICLES

Franz Hartleib, Furstenau, and Herbert Windelbandt, Aachen, both of Germany, assignors to Firma Maschinenbau Aachen-Furstenau Gesellschaft mit beschranketer Haftung, Reichsweg, Germany

Filed Nov. 12, 1969, Ser. No. 875,754
Claims priority, application Germany, Nov. 16, 1968, P 18 09 270.1; Oct. 4, 1969, P 19 50 226.2
Int. Cl. B65b *11/0, 49/16;* B65c *9/00*
U.S. Cl. 53—33 31 Claims

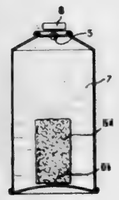


A method and machine for wrapping articles with sheet material involves withdrawing the sheet material from a supply reel and leading it into engagement with the article and thereafter setting the article into rotation so as to entrain the sheet material and wrap the material about the article. The method and machine is useful for packaging and labelling articles.

3,659,395
METHOD FOR FILLING A CONTAINER WITH A FLUID UNDER PRESSURE

Bruno Morane, Paris; Charles Paoletti, Aulnay Sous Bois; Louis Merrien, Fontenay Sous Bois; Robert Sathicq, Villepinte, and Manlio Maurelli, Vaujours, all of France, assignors to L'Oreal, Paris, France

Filed Mar. 17, 1970, Ser. No. 20,214
Claims priority, application France, Dec. 31, 1969, 6945717
Int. Cl. B65b *31/04, 31/10*
U.S. Cl. 53—36 9 Claims

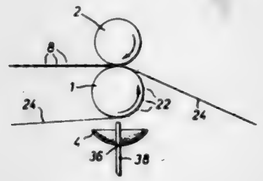


Method and apparatus for storing and dispensing a fluid under pressure which utilizes a container holding a mass of closed-cell foam material. The fluid to be dispensed is introduced under pressure, thereby compressing the foam material, which expands to expel the fluid when a dispensing valve is opened. The foam material may be impregnated with a propellant gas before the fluid to be dispensed is introduced, and in that case the pressure applied when the liquid to be dispensed is introduced may liquefy the propellant gas trapped in the cells of the foam material.

3,659,396
SEED SHEETS

Eric William Baker, Bourne Hill Nursery, Worthing Road, Horsham, Sussex, England

Filed May 4, 1970, Ser. No. 34,427
Int. Cl. B65b *9/02*
U.S. Cl. 53—180 3 Claims



Two overlying sheets of porous material, with seeds contained therebetween, are adhered to each other in a manner defining a plurality of pockets that are arranged in parallel equi-spaced columns and rows, there being at least one seed in each pocket.

The seed sheets are made by causing the seeds to be held in a plurality of positions defining equi-spaced parallel rows and columns on a surface of a first one of said sheets, covering the seeds with the second one of said sheets, and adhering the sheets to each other around said plurality of positions whereby to form said pockets. The seeds may be held against the first sheet by suction. The sheets may be caused to adhere together by passing them between rollers that press the sheets together at locations where they are intended to adhere to each other.

An apparatus for making these seed sheets comprises a rotatable suction drum that is provided in its surface with a plurality of perforations arranged in equi-spaced parallel rows and columns, the drum being positioned above a tray for the seeds. A line of spaced-apart rods, that are vertically reciprocable in unison, extend upwardly through the seed tray. The movement of the rods is so synchronized with the rotation of the perforated drum that when the rods reach the limit of their upward stroke, each rod will have its upper end aligned with, and in close proximity to, an associated one of the perforations of a column in said drum, there being one rod for each of the perforations in a column.

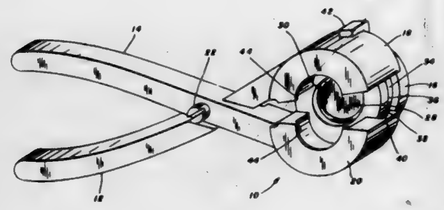
Parallel with the perforated drum is a shaft carrying a plurality of rotatable rollers, there being one roller for each of the rows of perforations in the drum. The rollers define with said drum a plurality of nips in the region of the rows of perforations.

In operation seeds are poured into the tray, and the first sheet of porous material is fed from a first supply source to the underface of the suction drum and thence around the drum to pass between the drum and the plurality of rotatable rollers. The second sheet of porous material is fed from a second supply source to the nip between the rollers and the drum. The reciprocating rods at their lowermost setting dip below the level of the upper surface of the seeds in the tray. On their upward stroke, each of the rods lift one or more seeds from the tray and presents said seed or seeds to the first porous sheet where they are held by the suction in the drum. As the drum rotates the seeds on the first sheet are eventually covered by the second sheet, the two sheets being bonded together around the seeds by the pressure between the nip rollers and the drum.

3,659,397
HAND CRIMPER

James B. Mills, Richmond, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 30, 1970, Ser. No. 33,221
Int. Cl. B65b *7/28, 67/00*
U.S. Cl. 53—329 3 Claims

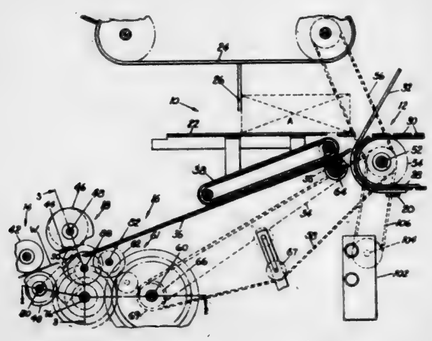


A tool is provided for affixing a closure to a bottle mouth which includes two pivotably connected jaws and a center cap between the jaws, with a pair of integral downwardly directed ears on opposite sides of the center cap to engage the jaws and hold the center cap between the jaws, whereby after affixation of a closure to a container mouth, spreading the jaws of the tool will center the center cap and the closure seated in the cap between the jaws and strip the jaws from the closure.

3,659,398
FILM FEED AND CUTTER FOR FOLD-OVER WRAPPING MACHINE

Ronald Holt, Battle Creek, Mich., assignor to Battle Creek Packaging Machines, Inc., Battle Creek, Mich.

Filed Nov. 2, 1970, Ser. No. 86,075
Int. Cl. B65b *41/12*
U.S. Cl. 53—389 10 Claims



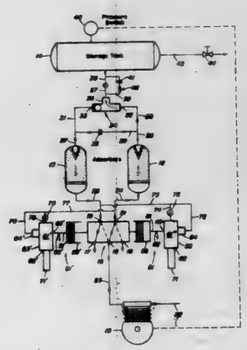
A wrapping machine has an article feeding conveyor delivering to a wrapping conveyor driven at the same speed and having a fold-over bar arranged to fold the trailing end of a wrapper sheet forwardly over the article as the article continues to advance. A film feed conveyor delivers the leading end of a wrapper film to the inlet end of the wrapper conveyor to be trapped under and advanced with the article. A rotary cutter bar located at the inlet end of the film feeding conveyor cuts an individual wrapper from the film as the leading end of the wrapper is trapped by the article. Drive connections to the film feed wrapper and the cutter bar and continuously operating film feed rollers operate the film feed and cutter at a slow speed approximating the lineal speed of the wrapping conveyor while the cutter is operating and then speed up the film feed to a fast speed to advance a sufficient length of the film to provide a complete wrapper before the next actuation of the cutter bar.

The drive to the cutter bar operates the bar at a peripheral speed that is slightly greater than the slow lineal speed of the film feed to prevent the film from piling up behind the cutter.

3,659,399
FRACTIONATION BY ADSORPTION

George C. Kauer, Jr., Plainview, L.I., and Louis E. Brooks, Great Neck, both of N.Y., assignors to Air Techniques Incorporated

Filed June 29, 1970, Ser. No. 50,392
Int. Cl. B01d *53/04*
U.S. Cl. 55—33 12 Claims

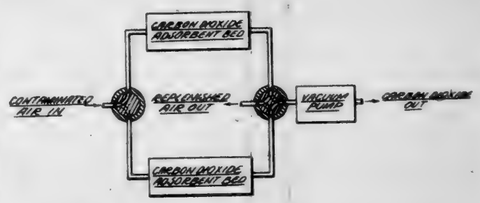


Duel adsorption tower fractionation of a compressed gaseous mixture; in particular dehydration of air, wherein one tower effects adsorption while the other tower is regenerated by a minor portion of the unabsorbed gas while the major portion is passed to a storage tank. The compressor is activated and deactivated in response to predetermined minimum and maximum pressures, respectively, in the storage tank, and the flow path is changed in response to deactivation of the compressor, whereby upon reactivation of the compressor, the functions effected in the towers are reversed. In a preferred embodiment, the flow path is controlled by a pilot operated valve which is pneumatically operated to change the flow paths.

3,659,400
CARBON DIOXIDE REMOVAL FROM BREATHABLE ATMOSPHERES

Frank L. Kester, West Granby, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

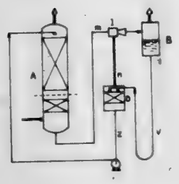
Filed July 21, 1970, Ser. No. 56,794
Int. Cl. B01d *53/02*
U.S. Cl. 55—33 1 Claim



In the purification of breathable atmospheres, carbon dioxide is selectively removed therefrom and concentrated in a

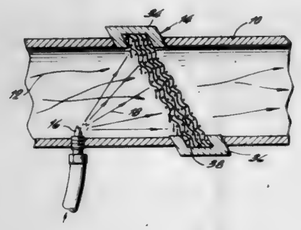
process wherein the contaminated gas stream is passed through a porous bed comprising beads of a solid porous polymer of divinylbenzene coated with polyethylenimine wherein the carbon dioxide is sorbed, the carbon dioxide subsequently being removed from the bed by vacuum desorption at low temperature in a bed regeneration sequence.

3,659,401
GAS PURIFICATION PROCESS
Giuseppe Giammarco, Venice, Italy, assignor to Vetrocoke Cokapuania S.p.A., Venezia Porto Marghera, Italy
Filed Oct. 13, 1969, Ser. No. 865,849
Claims priority, application Italy, Oct. 12, 1968, 53475-A
Int. Cl. B01d *19/00*
U.S. Cl. 55—43 **9 Claims**



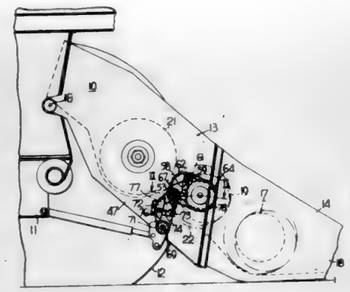
In removing gaseous impurities from a gas mixture under pressure with an absorption liquid which is regenerated in a low pressure zone an improvement comprises taking used absorption liquid from the pressurized absorption zone, expanding it in an ejector whereby a sub-atmospheric pressure is created, freeing contained gaseous impurities. Separation of gaseous impurities and liquid occurs, and separated liquid is subjected to the subatmospheric pressure of the ejector whereby further gaseous impurities are evolved, and returned to the absorption zone.

3,659,402
MULTIPLE SCREEN CONSTRUCTION
Howard Alliger, 10 Ponderosa Drive, Melville, N.Y.
Filed Mar. 30, 1970, Ser. No. 23,911
Int. Cl. B01d *47/06*
U.S. Cl. 55—233 **2 Claims**



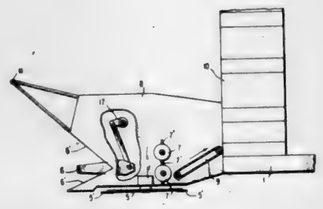
A screen network construction for air pollution control apparatus comprising a plurality of screens arranged in abutting relationship. The screens are secured tightly together to prevent clogging and to form countless tortuous paths for water and air to mix.

3,659,403
FLOATING FEEDER BEATER
Robert S. Reaves, Blue Springs, Mo., and Madel A. Bordelon, Cedar Rapids, Iowa, assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed June 1, 1970, Ser. No. 42,198
Int. Cl. A01d *41/02*
U.S. Cl. 56—10.2 **7 Claims**



A power driven feeder beater for a combine and wherein the feeder beater is pivotally mounted in slots in the header of the combine so that the feeder beater can be raised up in said slots by an excess of material being handled without interfering with the drive of the beater.

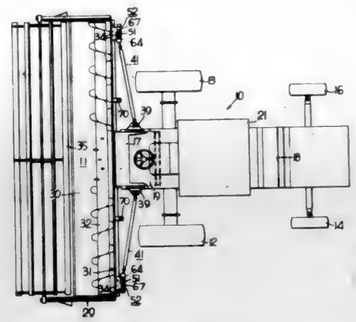
3,659,404
SUGAR CANE HARVESTERS
Roberto Henderson Kerhan, 309 10th Street, Marianao, Cuba
Filed Nov. 25, 1970, Ser. No. 92,794
Claims priority, application Cuba, Dec. 13, 1969, 210717
Int. Cl. A01d *45/02*
U.S. Cl. 56—13.9 **3 Claims**



A sugar cane harvester for mounting on a prime mover and for actuation thereby wherein a supporting frame has a forward structure to position the cane for cutting and has a vertically actuated side knife to demarcate a line of cut. Rotary horizontal blades sever the cane at its base, and drum mounted cross blades cut the severed cane into appropriate lengths and deposit the same on a conveyor system.

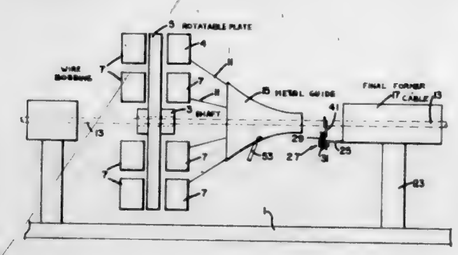
3,659,405
QUICK DETACHABLE BRACE RODS FOR COMBINE
Ronald D. Miller, Shawnee, Kans., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed July 31, 1970, Ser. No. 59,929
Int. Cl. A01d *41/02*
U.S. Cl. 56—15.6 **1 Claim**

This invention relates to quick detachable brace rods positionable between a header and a main body of a combine harvester and wherein the rods can be easily adjusted as to length and readily locked into position and when detached at



one end, such brace rods can be readily carried on the header parallel thereto.

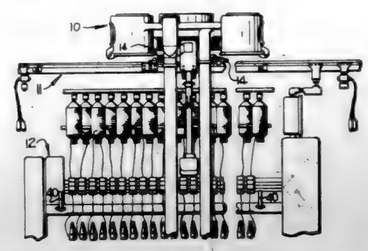
3,659,406
STRANDED CABLE OPEN STRAND DETECTOR
Palmer Kipperberg, c/o Wilson, King and Company, 390,444 Victoria Street, Prince George, British Columbia, Canada
Filed July 27, 1970, Ser. No. 58,633
Claims priority, application Canada, Aug. 1, 1969, 058,497
Int. Cl. G01r *31/08*
U.S. Cl. 57—19 **6 Claims**



Cable inspection means comprise a probe arranged to move along the periphery of the cable and, upon encountering a gap in the strands, to move inwardly and thus provide an indication of a fault in the cable. The inward movement of the probe can be used to stop the operation of an associated cable winding machine, and/or to illuminate a relevant point on a mimic diagram of an installation including the inspection means.

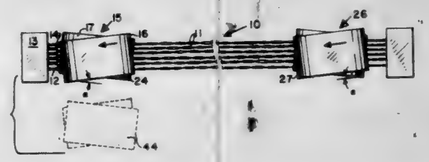
3,659,407
ENDS DOWN DETECTOR APPARATUS
David W. Saunders, Fitchburg, Mass., assignor to Parks-Cramer Company, Fitchburg, Mass.
Filed June 3, 1970, Ser. No. 43,036
Int. Cl. D01h *13/16*
U.S. Cl. 57—34 R **9 Claims**

An ends down detector apparatus for detecting the absence of any ends in a series of yarns on a textile machine, such as a spinning frame, and wherein the apparatus includes means for generating electrical pulse signals of varying magnitudes, the intact running ends of yarns cooperating with the generating means to effect electrical pulse signals of a predetermined magnitude denoting the presence of ends of yarns and wherein means are positioned in advance of the series of yarns to effect electrical pulse signals of a higher magnitude than effected by the intact ends of yarns for re-setting the electrical circuit and thereby controlling proper cyclic



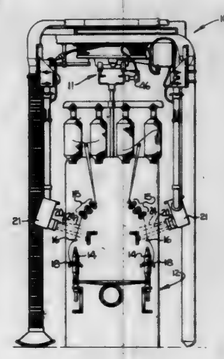
operation thereof as the ends down detector apparatus moves along the series of yarns.

3,659,408
STRANDING APPARATUS
Harvey Burr, Bronxville, N.Y., assignor to Anaconda Wire and Cable Company
Filed Mar. 13, 1970, Ser. No. 19,362
Int. Cl. D01h *7/92*; D02g *1/02*
U.S. Cl. 57—34 AT **19 Claims**



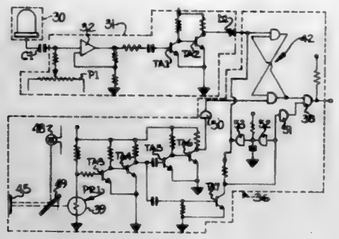
A strand is twisted by passing it between the facing surfaces of two or more pairs of parallel endless bands that are mounted at an acute angle to each other. The band mountings are pivoted periodically to reverse the direction of twist, the period being equal to the time it takes a point on the strand to pass through all the pairs of bands.

3,659,409
ELECTRIC CIRCUIT MEANS FOR TEXTILE STRAND ENDS DOWN DETECTING APPARATUS
David W. Saunders, Fitchburg, Mass., assignor to Parks-Cramer Company, Charlotte, N.C.
Continuation-in-part of application Ser. No. 866,265, Oct. 14, 1969, now abandoned. This application Oct. 1, 1970, Ser. No. 77,101
Int. Cl. D01h *13/26, 13/16, 13/32*
U.S. Cl. 57—34 R **18 Claims**



Improved electric circuitry for use in an apparatus which travels a detector along textile strand processing machines

such as spinning frames for determining the absence of ends of yarn from locations therealong at which such ends normally are present and for thereby locating ends down on the textile strand processing machines. The electrical circuitry disclosed herein incorporates detectors generally pulse elec-



trical signals, pulse shaping circuits receiving pulse signals from the detectors and shaping the characteristics thereof, and logic circuits receiving shaped pulse signals and generating an output pulse on a determination that an end is absent from a location at which the same normally is present.

3,659,410

SPINNING MACHINE AND METHOD

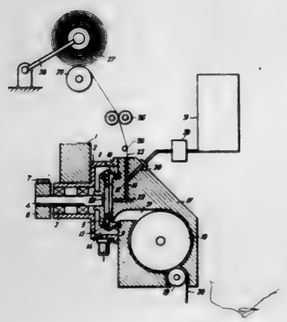
Antonin Barochovsky; Ladislav Horacek; Zdenek Krulik; Miloslav Saitily, all of Usti nad Orlici; Frantisek Stanci, Diouha Trebóva, and Milos Wilfert, Usti nad Orlici, all of Czechoslovakia, assignors to Vyzkumny Ustav Banlnarsky, Usti nad Orlici, Czechoslovakia

Filed Jan. 18, 1971, Ser. No. 107,361

Claims priority, application Czechoslovakia, Mar. 9, 1970, 1541/70

Int. Cl. D01h *1/12*

U.S. Cl. 57—58.89 **11 Claims**



A spinning machine has a rotary spinning chamber whose inner circumferential surface annularly surrounds its axis of rotation and diverges from an open side of the spinning chamber towards a transverse surface extending transversely to the axis and provided with an axial recess into which air-escape channels open. A liquid is admitted into the open side of the chamber so that it becomes deposited as a liquid layer on the inner surface of the chamber and the transverse surface is provided with a plurality of liquid-escape apertures for the escape of excess liquid, these apertures surrounding the axis of rotation. Fibers are admitted into the chamber for deposition on the inner circumferential surface of the chamber and in the liquid of the layer, to thereupon become converted into a yarn which is then withdrawn from the chamber. The liquid may be a dye, a yarn-treating agent, a yarn-sizing agent, an antistatic agent or the like, but serves primarily to exert drag on the fibers as the yarn is withdrawn, and may only secondarily be a treating agent.

3,659,411

RING ASSEMBLY FOR SPINNING AND TWISTING FRAMES

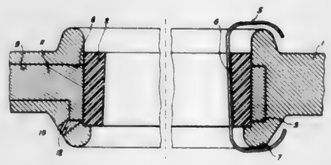
Karel Jager; Jaroslava Schlotzka, and Zdenek Kobr, all of Liberec, Czechoslovakia, assignors to Statni vyrkumny ustav textilni, Liberec, Czechoslovakia

Filed July 16, 1969, Ser. No. 842,323

Claims priority, application Czechoslovakia, Aug. 1, 1968, 5586-68

Int. Cl. D01h *7/62*

U.S. Cl. 57—120 **8 Claims**



A ring spinner in which a traveller slides along the inner periphery of a plastic ring. The ring is carried by a metallic body which has a lower annular surface portion also slidably engaged by the rotating traveller. The metallic body has an inner peripheral region where the plastic ring is located to be supported by the metallic body, and at this inner peripheral region the metallic body is formed with a circumferential cavity communicating with a source of lubrication. The metallic body is also formed with a plurality of ducts communicating with this circumferential cavity and leading therefrom to an exterior surface of the metallic body, so that part of the lubricant will discharge onto the latter exterior surface to form a film which will lubricate the contact between the traveller and the lower annular surface of the metallic body.

3,659,412

POSITIONER FOR CALENDAR DIAL IN TIMEPIECE

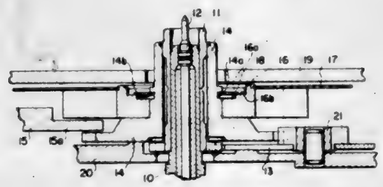
Kenji Miyasaka, and Yasuaki Nakayama, both of Tokyo, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed June 25, 1970, Ser. No. 49,722

Claims priority, application Japan, June 26, 1969, 44/60012; Feb. 6, 1970, 45/12288

Int. Cl. G04b *19/24*

U.S. Cl. 58—4 **1 Claim**



The positioner for the claendar dial fitted in a calendar timepiece is adapted to keep the dial in its working position in a highly stabilized manner. Since the idle distance between the dial plate and the star wheel of the timepiece varies on account of unfavorable deflections or deformations of the dial plate, the stabilizing positioner comprises a resilient ring made from a plate the inner periphery of which abutts upon a first mounting shoulder formed on the cannon wheel of the timepiece and the outer periphery of which abutts on a second mounting shoulder formed on the star wheel.

3,659,413

SINGLE POSITION DATE OR DAY CORRECTOR WITH GRAVITY CONTROLLED CLUTCH

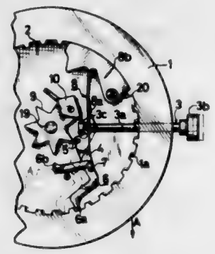
Kazuo Tanaka, 3-105, Seki-machi, Nerima-ku; Toshihiko Kanayama, 2-217, Higashi-ohkubo, Shinjuku-ku; Tetuya Yasuda, 5-16-4, Higashikebukuro, Toshima-ku; Hidetaka Tutiya, 1101, Fukushima-cho, Akishima-shi; Yoshio Kikuchi, 2-22-17, Higashiyotsugi, Katsushika-ku, and Takeo Muto, A-143, 4-13-20, Nakameguro, Meguro-ku, all of Japan, assignors to Citizen Match Company Limited, Tokyo, Japan

Filed Mar. 16, 1971, Ser. No. 124,695

Claims priority, application Japan, Mar. 16, 1970, 45/21490

Int. Cl. G04b *19/24*

U.S. Cl. 58—58 **1 Claim**



In a calendar correction mechanism for a timepiece a double pawl member is freely mounted on a movable pin for pivotal movement under the influence of gravity for selective engagement with a day star wheel or a date calendar dial. A mechanical motion transmitting train is arranged between an elongated operating stem and the movable pin to shift the pawl member for transmitting step motion to either the day star wheel or the date calendar dial.

ERRATUM

For Class 58—88 SC see:
Patent No. 3,659,383

3,659,414

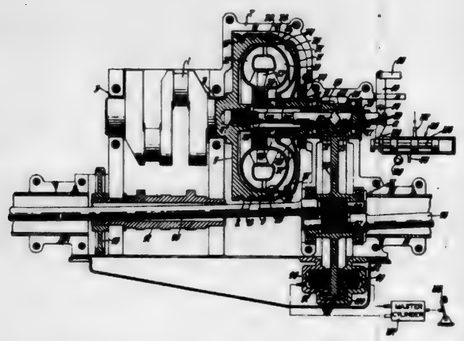
HYDRODYNAMIC UNIT FOR POWER TRANSMISSION

Gilbert K. Haase, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Original application Mar. 10, 1969, Ser. No. 805,745, now Patent No. 3,590,966. Divided and this application Nov. 23, 1970, Ser. No. 91,812

Int. Cl. F16d *31/06, 33/00*

U.S. Cl. 60—54 **7 Claims**



Power transmission in which the input rotor of a hydrodynamic torque-transmitting unit and a rotatable transmission input are selectively clutched and unclutched to control power flow through the unit. Controls associated with a gear selector mechanism for forward and reverse gearing effect the momentary disconnection of the input rotor and the transmission input when shifting gears. Disc brakes selectively engageable with the differential input provide vehicle service brakes. The housing of the torque-transmitting unit is rigidly connected to the transmission input by deforming a portion of the housing into appropriate openings formed in the transmission input.

3,659,415

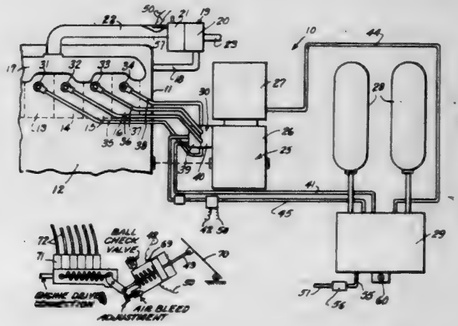
METHOD AND APPARATUS FOR REDUCING EXHAUST EMISSIONS DURING ACCELERATION

Arthur M. Breneke, New Castle, Ind., assignor to TRW Inc., Cleveland, Ohio

Filed Aug. 17, 1970, Ser. No. 64,403

Int. Cl. F02b *41/00*

U.S. Cl. 60—13 **1 Claim**



A device for increasing the performance of diesel engines and reducing exhaust emissions during acceleration by porting high-pressure air directly to the cylinders of the engine independently of the normal air supply during the compression stroke when accelerating the engine. The air is supplied to the cylinders until such a time as the normal air intake is sufficient to adequately combust the increased fuel flow.

3,659,416

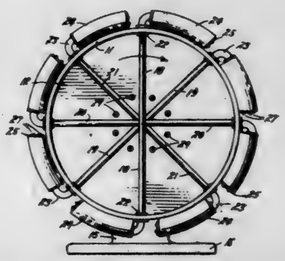
VAPOR DRIVEN MOTORS

Harold Brown, 2709 S. Jackson Street, Denver, Colo.

Filed July 14, 1970, Ser. No. 54,776

Int. Cl. F03g *7/06, 3/02*

U.S. Cl. 60—25 **7 Claims**



A rotatable wheel through which a plurality of similar, axially spaced, tubular fluid-containing spokes diametrically extend, each spoke terminating at each of its extremities in a fluid chamber, the fluid chambers of each spoke being directed in circumferential directions exteriorally of said wheel.

An individual electrical heating element positioned in each fluid chamber, the elements being electrically and individually connected to contacts arranged in a concentric se-

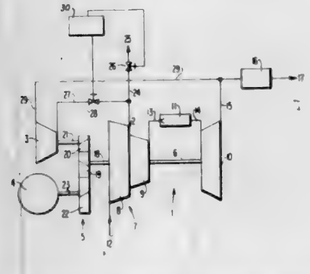
ries on said wheel so as to be individually, successively and electrically contacted to energize the elements on the rising side of said wheel to force the liquid through each spoke to the descending side of said wheel to gravitationally impart rotation to the latter.

3,659,417

GAS TURBINE UNIT FOR GENERATING MECHANICAL ENERGY AND COMPRESSED AIR

Hubert J. Grieb, Stuttgart-Botnang, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Aug. 8, 1969, Ser. No. 848,461
Claims priority, application Germany, Aug. 8, 1968, P 17 51 851.3
Int. Cl. F02c *7/02*; B64d *13/02*
U.S. Cl. 60—39.07 **11 Claims**



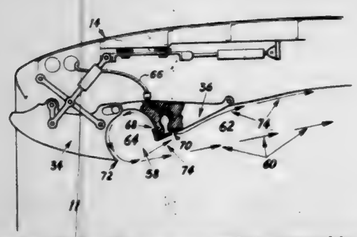
A gas turbine aggregate, especially an auxiliary unit for aircrafts which is intended to produce both mechanical energy and compressed air for loads, and in which a line branching off from the compressed air line that is supplied with compressed air from the compressor, leads to an air turbine which, in its turn, is connected with the output shaft of the gas turbine either directly or indirectly; the branch line from the compressed air line to the air turbine is provided with a valve to enable selective opening and closing of the branch line.

3,659,418

VARIABLE GAS TURBINE ENGINE AIR INTAKE

Michael Poucher, Duffield, and Michael Roy Williams, Filton, both of England, assignors to Rolls-Royce Limited, Derby, England

Filed July 13, 1970, Ser. No. 54,124
Claims priority, application Great Britain, July 30, 1969, 38,150/69
Int. Cl. F02c *7/04*
U.S. Cl. 60—39.29 **7 Claims**



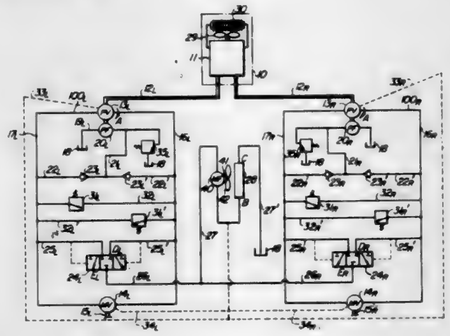
A vortex air flow is set up around the outer fringe of an air flow through a duct, the internal diameter of which increases in a downstream direction. The vortex picks up the outer fringe of the air flow in the duct and causes it to diffuse more rapidly onto the increased diameter portion of the duct, than would normally occur.

3,659,419

HYDRAULIC CIRCUIT OF HYDRAULICALLY DRIVEN VEHICLE

Toshimichi Ikeda, Ibaraki-ken, Japan, assignor to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1970, Ser. No. 79,865
Claims priority, application Japan, Oct. 13, 1969, 44/96729
Int. Cl. F15b *15/18*
U.S. Cl. 60—53 R **12 Claims**



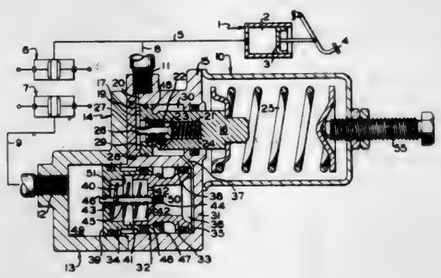
A hydraulic pump driven by an engine and a hydraulic motor to drive running wheels are connected with each other by a conduit to form a closed circuit for the circulation of hydraulic oil therethrough, and the hydraulic oil is supplied into said closed circuit from an oil tank through a hydraulic oil supply circuit including a booster pump and excess oil in said closed circuit is discharged through a hydraulic oil discharge circuit. An auxiliary hydraulic motor having a fan on the drive shaft thereof is provided at one point of either the hydraulic oil supply circuit or the hydraulic oil discharge circuit, so as to be driven by the hydraulic oil passing therethrough. Further, a hydraulic oil cooling radiator is provided in the hydraulic oil discharge circuit in opposed relation to said fan to be cooled by the latter. Therefore, the position of the hydraulic oil cooling radiator can be freely selected and a sufficient cooling capacity can be obtained.

3,659,420

BRAKE SYSTEM FOR VEHICLES

Erich Reinecke, Hannover, Germany, assignor to Westinghouse Bremsen-und Apparatebau G.m.b.H., Hannover, Germany

Filed Aug. 19, 1970, Ser. No. 65,030
Int. Cl. F15b *7/00*; B60t *13/00*; F04b *17/00, 35/00*
U.S. Cl. 60—54.5 HA **7 Claims**



A fluid pressure brake system having a common master cylinder for providing control braking pressure for brake

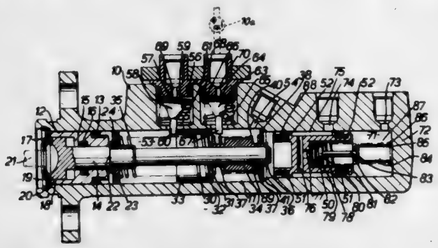
cylinders on both the front and rear axles of a vehicle, said brake system being characterized by a fluid pressure regulator effective, subsequently to initiation of supply thereto of control pressure from the master brake cylinder and during low range braking up to a certain degree of said control pressure, for effecting delivery of respective braking pressures to the front and rear axle cylinders at one proportion such that the braking pressure at the front axle cylinders increases responsively to increasing control pressure at a lesser rate than the rate of increase at the rear axle cylinders, said fluid pressure regulator being operative responsively to said control pressure in excess of said certain degree during high range braking for effecting delivery of braking pressures to the front and rear axle brake cylinders at a different proportion such that the increase in said delivered pressure to the front axle cylinders, during progressive increase in control pressure occurs at a rate greater than that at the rear axle cylinders to compensate for inertially induced axle load displacement as the vehicle retardation increases.

3,659,421

HYDRAULIC BRAKING SYSTEMS FOR VEHICLES

Alexander J. Wilson, and Stuart B. Dawson, both of Warwickshire, England, assignors to Girling Limited, Birmingham, England

Continuation of application Ser. No. 833,329, June 16, 1969, now abandoned. This application Oct. 2, 1970, Ser. No. 77,708
Claims priority, application Great Britain, June 14, 1968, 28,296/68; 28,299/68; Apr. 1, 1969, 16,888/69
Int. Cl. F15b *7/00*
U.S. Cl. 60—54.5 P **18 Claims**



A power-operated tandem master cylinder includes first and second pressure spaced located respectively between a main piston and a secondary piston, and between the secondary piston and a closed end of a cylinder bore in which the piston work. A pair of axially spaced spring loaded tilting valves are adapted to be actuated upon movement of a rod associated with the main piston to cut off communication between a reservoir and permit fluid under pressure to enter the first pressure space. The pressure fluid in the first pressure space is then delivered to the brakes of one brake circuit and acts on the secondary piston to pressurize fluid in the second pressure space for delivery to the brakes of another brake circuit.

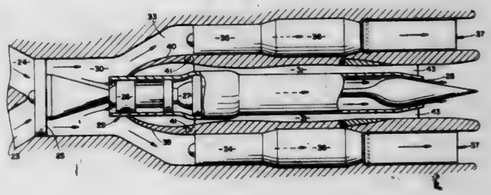
3,659,422

METHOD AND APPARATUS FOR AIRCRAFT PROPULSION

Jack I. Hope, Palos Verdes Peninsula, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Nov. 4, 1966, Ser. No. 592,086
Int. Cl. F02k *3/12*
U.S. Cl. 60—224 **18 Claims**

1. An aircraft propulsion system comprising a main gas generator, an air bypass duct associated with said main gas generator for passing air around said main gas generator; at least one auxiliary gas generator located adjacent to said main gas generator; means for compressing inlet air, said means being driven by said main gas generator; means for directing the output air of said compressor means to the inlet of said main gas generator, said air bypass duct and said auxiliary gas generator; said main gas generator, bypass duct and auxiliary engine each having a separate exhaust nozzle



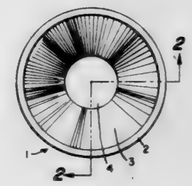
means; and means for selectively and alternatively governing the airflow in said bypass duct and said auxiliary engine, said last named means including means for varying the area of at least said bypass duct and auxiliary gas generator exhaust nozzle means.

3,659,423

MOVEABLE ROCKET

Robert C. Lair; Julia H. Pakurar, both of Akron, and Edward G. Stricker, North Canton, all of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Sept. 17, 1964, Ser. No. 397,136
Int. Cl. F02k *1/24*
U.S. Cl. 60—232 **9 Claims**



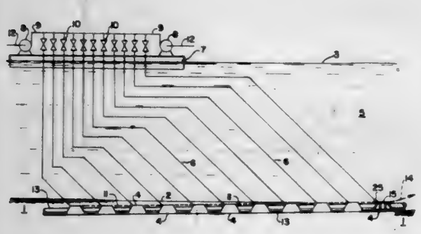
1. In a rocket motor exhaust nozzle the combination of
a nozzle body defining a venturi throat,
an insert wear ring to protect the venturi throat of the nozzle body,
a fixed annular mounting base removably receiving the nozzle body,
a flexible seal membrane effecting a sealed relationship between the mounting base and the nozzle body, and allowing controlled relative movement therebetween,
a concentric ring operatively mounted by said seal membrane between the nozzle body and the mounting base,
first means pivotally mounting said nozzle body to said concentric ring,
second means pivotally mounting said mounting base to said concentric ring at 90° relation to said first pivotal mounting means to achieve a gimbal effect between said nozzle body and said mounting base, and
means to controllably and selectively apply pressure to the nozzle body to effect pivoting thereof to a desired relation with respect to the mounting base.

3,659,424
STOWABLE AIR SCOOP
Albert S. Polk, Jr., Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Oct. 7, 1970, Ser. No. 78,771
Int. Cl. F02k 9/06
U.S. Cl. 60—269 10 Claims



A foldable ram air scoop for gathering and channeling external air into a secondary thrust chamber, or afterburner, of an air-augmented thrust propelled missile is provided. The scoop is deployable prior to launch, being foldable against the missile body while stowed within a volume restricted storage magazine. The present air scoop essentially comprises a two-stage folding mechanism which compactly holds the scoop body against the missile, controllably deploys the scoop to a desired configuration, and positively locks the scoop in the proper position.

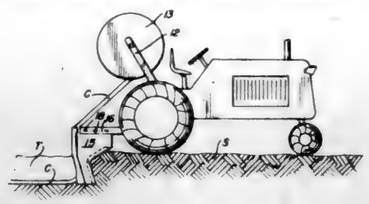
3,659,425
METHOD AND APPARATUS FOR BURYING PIPELINE
Pieter J. De Geeter, Rijswijk, Netherlands, assignor to Shell Oil Company, New York, N.Y.
Filed May 25, 1970, Ser. No. 40,407
Claims priority, application Great Britain, May 23, 1969, 26,392/69
Int. Cl. F16l 1/00; E02f 5/02
U.S. Cl. 61—72.4 3 Claims



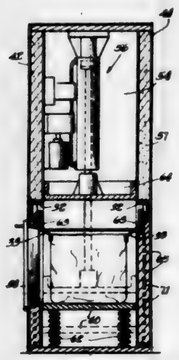
A pipeline is buried in the bottom of a body of water by fluidizing sediments which compose the bottom adjacent the pipeline so that the pipeline sinks by its own weight into the fluidized sediments.

3,659,426
CABLE LAYING PLOW
Robert H. Caldwell, P. O. Box 403, Jacksonville, Ill.
Filed Mar. 26, 1970, Ser. No. 29,337
Int. Cl. B63b 35/04; A01b 13/08
U.S. Cl. 61—72.6 2 Claims

A plow for laying service cable underground beneath a sodded surface. The plow includes a leading cutting edge which is contoured along its height so that the upper cutting portion edge for cutting sod is inclined at an obtuse angle relative to the sod as the plow slices therethrough. The lower edge portion for forming a trench is integral with and disposed rearwardly of the upper sod cutting edge portion and inclined in the opposite direction.

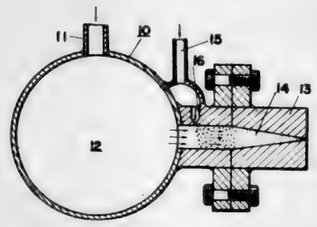


3,659,427
REFUSE DISPOSING UNIT
Richard D. Harza, 400 West Madison St., Chicago, Ill.
Continuation-in-part of application Ser. No. 677,206, Oct. 23, 1967, now Patent No. 3,514,969. This application Apr. 20, 1970, Ser. No. 29,805
Int. Cl. F25d 25/00
U.S. Cl. 62—63 51 Claims



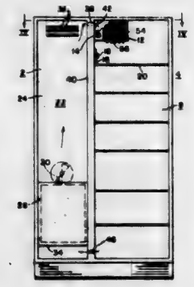
A garbage and refuse disposing unit is disclosed herein. The unit includes a housing for receiving refuse of all types, a compressor mechanism for compressing the refuse and freezing means for freezing the compressed refuse into dense or solid pellet-like units.

3,659,428
METHOD FOR COOLING STEEL MATERIALS
Kazuo Kunioka; Shigenari Shimizu, both of Kawasaki, and Masaru Hirata, Fukuoka Machi, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha
Filed Aug. 14, 1970, Ser. No. 63,836
Claims priority, application Japan, Dec. 1, 1969, 44/95896
Int. Cl. F25d 17/06
U.S. Cl. 62—64 3 Claims



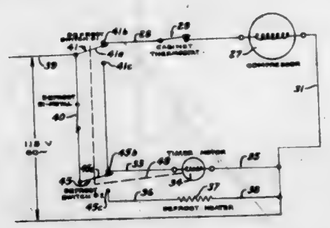
A method for spray cooling hot metal products in which a small amount of water is atomized in a large air flow passing through a throttling nozzle so that a two phase high speed jet is directed against the hot metal. The water is injected into the air stream between a compressed air reservoir and the throttling portion of the nozzle.

3,659,429
REFRIGERATOR-FREEZER WITH FAST CHILL ARRANGEMENT
John A. McLean, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 25, 1970, Ser. No. 22,499
Int. Cl. F25d 17/00
U.S. Cl. 62—157 7 Claims



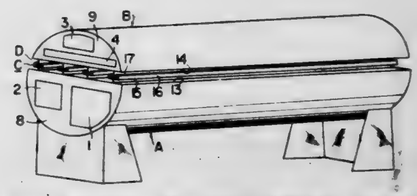
The titled apparatus in which a fast chill space is provided in the upper portion of the refrigerator compartment by providing an auxiliary fan in communication mainly with the refrigerator space and to a substantially lesser degree with the passage through which chilled air is received from the cooling means of the freezer compartment. The auxiliary fan is energized independently of the cooling means for a time period corresponding to the time typically required to chill the particular articles undergoing chilling.

3,659,430
DEFROST BIMETAL FOR INTERRUPTING TIME CYCLE ICE MAKER DURING DEFROST-SINGLE TIMER
Duane C. Nichols, and William J. Linstromberg, both of Evansville, Ind., assignors to Whirlpool Corporation
Filed June 18, 1970, Ser. No. 47,520
Int. Cl. F25c 1/10
U.S. Cl. 62—233 10 Claims



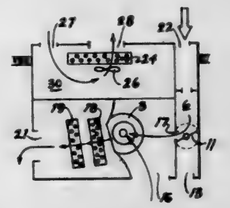
A refrigerator-freezer apparatus normally operating through freezing and defrosting portions of an operating cycle. The apparatus includes an ice maker and a timer motor that preferably also comprises the drive motor of the ice maker. A single temperature responsive switch in heat exchange relationship with the evaporator of the apparatus opens at an above freezing temperature condition of the evaporator so as to terminate operation of the defrost heater during the defrosting portion of the operation cycle and prevents cycling of the ice maker in the event of a high temperature condition, such as during start-up of the apparatus, to prevent the ice maker dumping unfrozen water into the freezer compartment of the apparatus.

3,659,431
DRUM SHAPED VESSEL ASSEMBLY
Seijiro Iwasawa, Yokohama; Masaburi Ishizuka, Kokubunji, and Kenshichiro Morishita, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, (a/k/a Tokyo Shibaura Electric Co., Ltd.), Kawasaki-shi, Japan
Filed Feb. 18, 1971, Ser. No. 116,577
Claims priority, application Japan, Feb. 27, 1970, 45/16846
Int. Cl. F25b 15/04; F28f 7/00
U.S. Cl. 62—476 4 Claims



A drum shaped vessel assembly suitable for use in an absorption refrigerator comprises two elongated vessels which when assembled provide a circular cross-sectional configuration and joints disposed in the air gap defined between confronting inner surfaces of the vessels, said joints rigidly interconnecting the vessels in a direction perpendicular to the inner surfaces of the vessels but permitting relative movement thereof in the longitudinal direction.

3,659,432
DAMPER ASSEMBLY FOR AIR CONDITIONING UNIT
Dale L. Selhost, Moline, Ill., assignor to American Air Filter Company, Inc., Louisville, Ky.
Filed July 23, 1970, Ser. No. 57,560
Int. Cl. F25d 17/06
U.S. Cl. 62—427 8 Claims

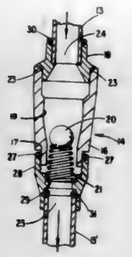


An air ventilating arrangement for conditioning air for a served space wherein a damper assembly is provided to regulate the flow of fresh air to a served space.

3,659,433
REFRIGERATION SYSTEM INCLUDING A FLOW METERING DEVICE
David N. Shaw, Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Jan. 2, 1970, Ser. No. 88
Int. Cl. F25b 41/06
U.S. Cl. 62—511 2 Claims

A refrigerant flow metering device for use in a refrigeration system comprising a housing having an inlet and an outlet and defining a bore disposed within its confines, the ends of which communicate with the inlet and outlet, said bore

being of a variable cross section to form a variable passage. A valve element positioned within the bore is capable of movement therein in response to changes in pressure in the



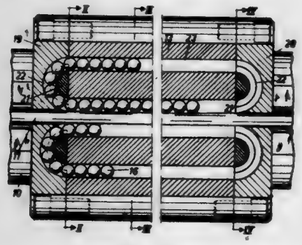
refrigeration system. A spring associated with the valve element provides a force to move the element toward the inlet of said housing.

3,659,434
METHOD FOR BALANCING TUBULAR SHAFTING
Robert A. Wolfe, Rochester, Pa., assignor to Pittsburgh Tubular Shafting, Inc., Rochester, Pa.
Filed Jan. 15, 1971, Ser. No. 106,656
Int. Cl. F16c *1/00*
U.S. Cl. 64—1 R **9 Claims**



Tubular shafting having a metallic outer tubular member and a cellular resinous core is both kinetically and dynamically balanced by drilling holes in the outer metallic tubular member at locations where additional weight is required to balance the shafting. A predetermined amount of molten metal is poured through the drilled holes into the internal portion of the tubular shafting. The molten metal flows through passageways in the cellular resin core and solidifies against the inner wall of the outer metallic tubular member. The passageways formed in the cellular resin are filled with a similar cellular resin and the holes in the outer metallic tubular member are suitably plugged.

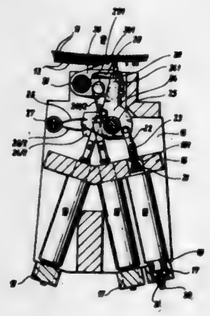
3,659,435
TORQUE TRANSFERRING DEVICE
Sven Walter Nilsson, Savedalen, Sweden, assignor to SKF Industrial Trading and Development Company N.V., Amsterdam, Netherlands
Filed May 7, 1970, Ser. No. 35,456
Claims priority, application Sweden, May 9, 1969, 6573/69
Int. Cl. F16d *3/06*
U.S. Cl. 64—23.7 **2 Claims**



A device for transferring a torque may comprise an outer tubular component enclosing a shaft, the diameter of which is only slightly less than the cylindrical, internal surface of the outer component. These two components cooperate through the intermediation of balls operating in parallel, matching grooves in the two components.

To ensure a recirculation of the balls in unloaded condition and to ensure a smooth running of the balls, the grooves are arranged in at least three pairs in which two grooves on opposite sides of a ridge in the inner component will cooperate with two grooves arranged at opposite sides of a groove in the outer member to form two runways, which are each connected to a return passage in the outer component.

3,659,436
PATTERN ATTACHMENT FOR CIRCULAR KNITTING MACHINES
Ernst-Dieter Plath, Tailfingen, Germany, assignor to Mayer & Cie, Tailfingen, Germany
Filed Nov. 21, 1969, Ser. No. 878,642
Claims priority, application Germany, Dec. 4, 1968, 18 12 611.9
Int. Cl. D04b *15/78*
U.S. Cl. 66—50 R **14 Claims**



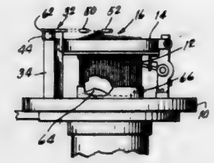
Pattern controlling mechanism for circular knitting machines having a rotating needle carrier and setting members which act upon control jacks for the needles, said control jacks being vertically displaceable and being swingable according to a desired pattern. The mechanism is provided with pattern levers which act upon the butts of the control jacks, the pattern levers, which control the positioning of butts, being selectively moved into terminal rest and working positions by electromagnetic driving means. The driving linkage between each driving means and its respective pattern lever is such that the levers are held stably in either of their terminal positions, with a consequent reduction of power required and heat generated by the driving means.

3,659,437
KNITTING MACHINE DEFECTIVE NEEDLE DETECTOR
Colin S. McArthur, and Benny L. Hester, both of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed July 25, 1969, Ser. No. 844,808
Int. Cl. D04b *35/18*
U.S. Cl. 66—157 **11 Claims**

A circular knitting machine, comprising a device for detecting defective needles by detecting the absence of a needle hook from its proper place. The device is placed at a locality adjacent the circular path of needle travel, and the needles are raised by a cam so that the hook of every good and properly positioned needle intercepts a collimated bead of radiant energy. The beam is not intercepted properly by a needle which has a broken, bent or otherwise defective hook or which, because of broken butt or other causes, has not been raised properly. The detector is connected to an alarm

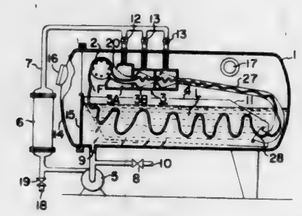
and may also be connected to a conventional stop motion device.

Alternatively, a small magnet mounted on a piezoelectric crystal or magnetic pickup is positioned in the proximity of



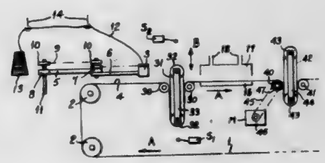
the hooks of the needles which have been raised by the cam referred to above. The magnet will be deflected by each passing needle of proper constitution and attitude in substantially the same manner, but will be deflected differently by a defective needle.

3,659,438
APPARATUS FOR TREATMENT OF A FABRIC
Matsubei Chiba; Kiyoharu Kito, both of Nagoya; Hiroshi Mizutani, Kuwana-gun, and Masayasu Kachi, Niwa-gun, all of Japan, assignors to Nihon Senshoku Kikai Kabushiki Kaisha, Ama-gun, Aichi Prefecture, Japan
Filed Oct. 2, 1970, Ser. No. 77,401
Claims priority, application Japan, Aug. 10, 1970, 45/69270
Int. Cl. B05c *3/02*
U.S. Cl. 68—177 **2 Claims**



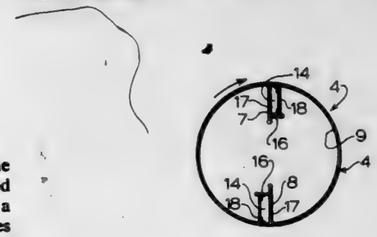
A method for liquid treatment of a fabric, in which the fabric to be treated in a rope form or web form is circulated in a predetermined direction within a treatment bath in a treatment tank, is disclosed. The subject method comprises the steps of providing outside of said treatment bath in said treatment tank, a treatment chamber consisting of a shower section provided with a fabric inlet, and a treatment section communicated with said shower section and having at least one constricted portion in the midway thereof, and surrounding said fabric so as to pass said fabric therethrough; providing a treatment conduit extended from said treatment chamber to within said treatment bath in said treatment tank; supplying a treatment liquid to within said chower section of said treatment chamber to seal said fabric inlet with said liquid during the circulating process of the fabric; then jetting said treatment liquid in the direction of travelling of the fabric within said treatment section to cause the treatment liquid to spout through the clearance between the fabric and said constricted portion when the fabric is passing through said constricted portion, and thereby to cause said fabric to carry out a shaking motion positively; and further leading said fabric from the outlet of said treatment chamber through said treatment conduit to within said treatment both while maintaining said fabric to be immersed in said treatment liquid. An apparatus for carrying out the above method is also disclosed.

3,659,439
YARN TREATMENT APPARATUS
John Raymond Tindall, Guiseley, England, assignor to Courtaulds Limited, London, England
Filed Nov. 16, 1970, Ser. No. 89,991
Claims priority, application Great Britain, Nov. 19, 1969, 56,628/69
Int. Cl. D06c *1/06*
U.S. Cl. 68—5 D **8 Claims**



Apparatus for treating a textile yarn comprises an endless flexible support member mounted for movement around a closed path, means for laying a textile yarn onto a surface of said support member, a treatment vessel to engage with and completely enclose successive yarn-receiving portions of said surface, means for moving said portions stepwise into and out of said treatment vessel, and a yarn take-off apparatus operable to withdraw treated yarn from said portions. The endless flexible support member may be mounted for intermittent stepwise movement or for continuous movement around a closed path.

3,659,440
LIQUID DRAIN STRUCTURE FOR HIDE PROCESSING APPARATUS
Lee R. Lyon, 800 North Atlantic St., Mission Hills, Kans.
Filed Feb. 16, 1971, Ser. No. 115,322
Int. Cl. C14c *15/00*
U.S. Cl. 69—30 **8 Claims**

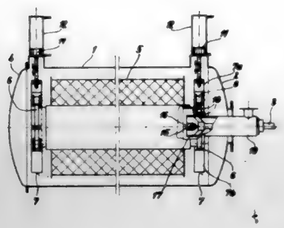


A liquid drain structure is disclosed for apparatus for processing animal hides and comprises an elongated conduit in a spiral within a treatment zone of a rotated inclined drum and a perforated wall defining a lower chamber within the drum for receiving liquid from the conduit and a pump for removing liquid from the lower chamber.

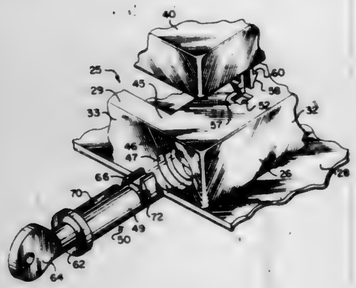
3,659,441
APPARATUS FOR BATCH DYEING
Manfred Schulerer, Erbach/Odenwald, Germany, assignor to Bruckner-Apparatebau Michelstadt GmbH, Erbach/Odenwald, Germany
Filed Dec. 15, 1970, Ser. No. 98,315
Claims priority, application Germany, Dec. 23, 1969, G 69 49 681.7; Oct. 21, 1970, G 70 38 866.8
Int. Cl. B05c *8/02*
U.S. Cl. 68—4 **11 Claims**

A dyeing chamber has a fluid-tight cover in its front wall, and has a drive shaft extending through a fluid-tight seal in its

rear wall. A fitting on the end of the drive shaft is adapted to be coupled selectively with any one of a variety of goods-carrying members, for rotating such member in the chamber.



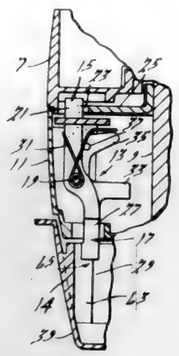
3,659,442
LOCKING DEVICE INCLUDING CAMMING KEY FOR RELEASING SPRING CATCH MEMBERS
Vito Cellini, and Ronald J. Casale, both of Bronx, N.Y., assignors to said Casale, by said Cellini
Filed Jan. 18, 1971, Ser. No. 106,983
Int. Cl. E05b *65/52*; E05c *19/06*
U.S. Cl. 70—63 **9 Claims**



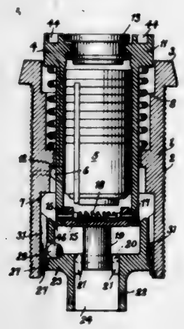
A locking device includes a lock base, hinged cover and key. The lock base has a key hole extending inwardly of one end parallel to the top of the lock base, and one or more holes in the top opening into the keyhole. The cover has one or more pairs of slightly spaced spring prongs insertable into the holes in the lock base. Shoulders on tips of the prongs engage underneath rims of the holes to keep the cover closed. The key has camming portions defining circumferential grooves with flaring faces for engaging the prongs, squeezing them together and lifting them clear of the bottom rims of the holes in the lock base when the key is rotated. The lock base may have recesses at the underside of its top for receiving and concealing the tips of the prongs. The camming portions may be radially extending camming members engageable with the tips of the prongs in the recesses when the key is turned in the keyhole.

3,659,443
STEERING COLUMN LOCK INHIBITOR
Jeremy T. Ball, Birmingham, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Sept. 30, 1970, Ser. No. 76,916
Int. Cl. B60r *25/02*
U.S. Cl. 70—186 **8 Claims**

Steering shaft lock inhibitor including a rotatable generally bowl-shaped member having a blocking section on the inside thereof. The blocking section prevents movement of a steering shaft locking lever assembly into a locking position. The blocking section can be manually rotated out of the path of the lever assembly to permit locking of the steering shaft.

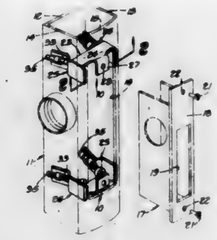


3,659,444
LOCKS
John F. Wellekens, 51 East 42nd St., New York, N.Y.
Filed Apr. 30, 1970, Ser. No. 33,228
Int. Cl. E05b *17/04*
U.S. Cl. 70—360 **7 Claims**



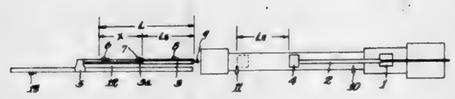
A lock having an outer tubular casing within which an inner housing or sleeve is axially and rotatably movable, the sleeve containing a lock mechanism provided with a latch projecting laterally through an opening in the wall of the sleeve. The sleeve is spring-biased in a manner to enable it to be partially projected or advanced out of the casing while the latch is in a retracted position. When the latch is extended it engages against a shoulder provided on the wall of the casing and this holds the sleeve retracted within the casing. The casing is closed at its rear end by a cup which can be connected to bolt-actuating means or to other closure controlling means. The sleeve has a projection for coupling it to the cup only when the sleeve is disposed partially out of the casing. When the sleeve is retracted or is wholly located within the casing and is held in that position by the engagement of the extended latch against the shoulder, the coupling projection will be detached from the cup whereby the sleeve can then be freely rotated without causing rotation of the cup. Locking means is provided for holding the cup against rotation while the sleeve is retracted into the casing.

3,659,445
LOCK MOUNTING CLIP AND PLACEMENT TOOL THEREFOR
Charles L. Eads, Palm Springs, and Billie G. Nail, La Crescenta, both of Calif., assignors to Adams Rite Manufacturing Company, Glendale, Calif.
Filed Aug. 14, 1970, Ser. No. 63,766
Int. Cl. E05b *9/08*
U.S. Cl. 70—451 **11 Claims**



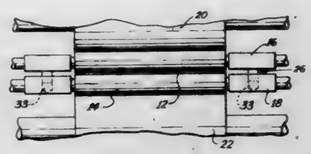
Lock mounting means for securing a lock frame structure edgewise in a receiving opening provided in a wall of a hollow narrow stile door frame by means of a clip assembly arranged to be positioned by means of a placement tool and thereafter secured in a mounted position by means of an appropriate tool, such as a screw-driver, at the opposite ends of the opening, each clip assembly having a rigid body of generally H-shape configuration constructed from a generally flat plate material to provide an integral bridging portion with side legs at its ends, in which a tongue extends from the bridging portion and has an opening for receiving a lock anchoring member such as a screw. The side legs have diverging end portions for supporting associated wedging screws thereon in angular diverging relation, and with their head portions in the mounting position of the clip assembly, being accessible for actuation by a screwdriver inserted through the lock receiving opening. The placement tool is releasably engageable with the clip assembly by means of a spring detent, and is easily detached from the clip assembly after it is anchored in its mounting position.

3,659,446
METHOD AND DEVICE FOR FEEDING OF COLD PILGER MILLS
Josef Gerretz, Suechtein; Willi Hagedorn, and Karl-Heinz Kemmerling, both of Moenchengladbach, all of Germany, assignors to Weaa Industries, Inc., Youngstown, Ohio
Filed Oct. 21, 1970, Ser. No. 82,739
Int. Cl. B21b *21/04*
U.S. Cl. 72—14 **6 Claims**



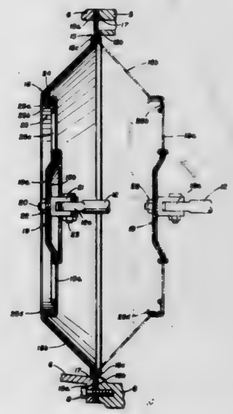
The invention refers to a method and apparatus for feeding shells of variable lengths in a pilger mill to effect optimum efficiency. When the entry pusher of the mill starts moving the length of newly fed shell is measured and this measurement is transmitted to a memory counter, and by means of a program control the distance travelled by the feed carriage is regulated to the length of the newly fed shell, whereby the feed carriage moves only far enough so that on its return to a starting position a space is left which is equal to the length of the newly fed shell.

3,659,447
PLUNGER AND ACCUMULATOR
Richard E. Naber, and William D. Hamilton, both of Middletown, Ohio, assignors to Armco Steel Corporation, Middletown, Ohio
Filed Aug. 25, 1970, Ser. No. 66,674
Int. Cl. B21b *31/20, 31/32*
U.S. Cl. 72—240 **5 Claims**



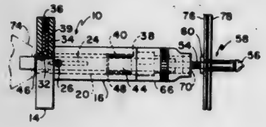
A work roll balance plunger and accumulator for the mill stands of a rolling mill which is positioned in at least two of the work roll chocks so as to support the upper work roll chocks to substantially reduce hydraulic shock pressure drops or peaks during the expansion or compression of the mill stand as rolling strip enters or leaves, respectively.

3,659,448
GAS METER DIAPHRAGM HAVING INTERMEDIATE STABILIZING AND TENSIONING RING
Karl L. Schaus, 224 East 6th Street, Tempe, Ariz.
Filed July 22, 1970, Ser. No. 57,141
Int. Cl. G01f *15/16*; F16l *3/00*
U.S. Cl. 73—279 **1 Claim**



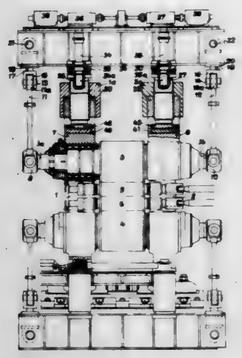
A gas meter diaphragm characterized by a rigid tensioning and stabilizing ring secured to the flexible diaphragm body intermediate a rigid, outer mounting rim and a centrally disposed rigid center pan for the purpose of eliminating wrinkles in the flexing portion of the diaphragm, and providing an intermediate, slightly yieldable, annular area of flexible material under tension around the center pan portion of the diaphragm assembly. The diaphragm being further characterized by a comparatively lighter weight, self-supporting central portion which eliminates the need for the usual carrier wire assembly employed to movably support the center pan portion of prior art diaphragms.

3,659,449
COMBINATION RIVET INSTALLATION APPARATUS AND SELF-DRILLING RIVET
Robert G. Abernathy, Richmond, Ind., assignor to Avco Corporation, Richmond, Ind.
Filed Mar. 13, 1970, Ser. No. 19,216
Int. Cl. B21d *9/05*
U.S. Cl. 72—391 7 Claims



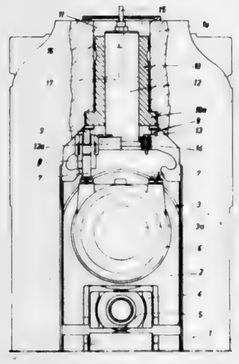
A rivet installation apparatus for use in cooperation with self-drilling rivets is disclosed. The disclosure provides for the installation of a rivet through two or more sheets of material, said installation being accomplished from one side. With this apparatus and rivet combination, an operator may place two or more sheets of material together, drill a hole through the sheets and upset the rivet while operating from one side of the material in one operation with a single tool.

3,659,450
ROLLING MILL OR CALENDAR WITH CROWN CONTROL OF THE ROLLS FOR ROLLING FLAT MATERIAL
Hans Siegfried Metzger, St. Ingbert-Saar, Germany, assignor to Moeller & Neumann GmbH, Ingbert/Saar, Germany
Filed Nov. 19, 1969, Ser. No. 878,034
Claims priority, application Germany, Nov. 20, 1968, P 18 09 975.7
Int. Cl. B21b *31/32*
U.S. Cl. 72—237 5 Claims



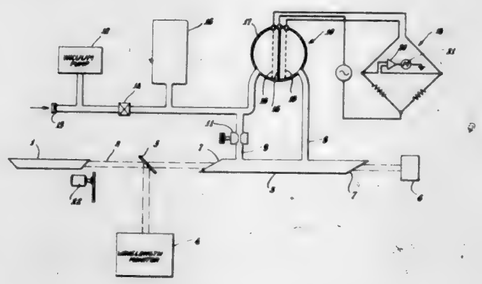
In a rolling mill or calender for flat material, such as sheets or strips, a bridge member is disposed transversely across the rolling mill frames and is supported by the upper end faces of the screwdown pressure screws and is secured thereto so as to follow the screwdown movement while hydraulic pressure units attached to the bridge member and neck extensions of one of the rolls exert roll bending pressure thereon for the purpose of crown control.

3,659,451
SCREWDOWN DEVICE FOR ROLLING MILL FRAMES AND CALENDERS
Hans Siegfried Metzger, St. Ingbert-Saar, and Fred Gilges, Gersweiler-Saar, both of Germany, assignors to Moeller & Newmann GmbH, Ingbert am Saar, Germany
Filed July 24, 1969, Ser. No. 844,369
Claims priority, application Germany, Aug. 1, 1968, P 17 52 900.9
Int. Cl. B21b *31/24*
U.S. Cl. 72—248 8 Claims



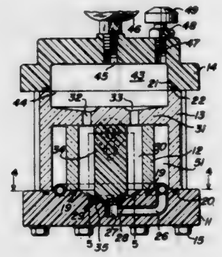
A shrink connection is used between a round pin and a bushing which may be moved relative to each other during screwdown movements of the rolls. The shrink connection permits a rigid and threadless transmission of the rolling force directly to the frame and not through the screwdown device of a rolling mill, said shrink connection may be hydraulically cancelled or released.

3,659,452
LASER EXCITED SPECTROPHONE
John G. Atwood, West Redding, and Edwin L. Kerr, Ridgefield, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed Apr. 22, 1969, Ser. No. 818,328
Int. Cl. G01n *21/00*
U.S. Cl. 73—23 5 Claims



A system for measuring the radiant energy absorptivity of gaseous samples. There is provided a laser source, a cell for containing the sample gas in the path of the radiation and a low frequency differential pressure transducer coupled to the sample cell. The laser beam is partially absorbed producing a pressure rise in the gas which is then measured.

3,659,453
FLUID SYSTEM LEAK DETECTOR
Dougall C. Martin, Jr., 313 Eller Avenue, Englewood, Ohio
Filed June 26, 1970, Ser. No. 50,111
Int. Cl. G01m *3/06, 3/26*
U.S. Cl. 73—40 6 Claims

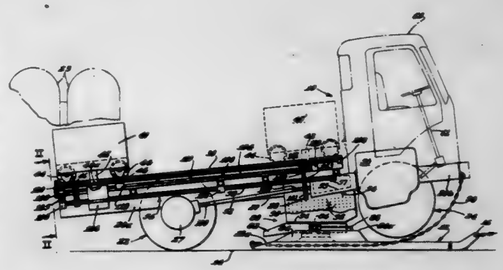


A fluid system leak detector comprising concentric inner and outer annular liquid chambers joined by an interconnecting conduit, the outer chamber being communicable with the fluid system to be checked and the inner chamber being in vented communication with an overlying test pressure chamber, a transparent tube horizontally disposed within said outer chamber and in fluid transmitting communication with the opening of said interconnecting conduit into said outer chamber and a liquid confined within said annular chambers movable in response to a pressure differential between the fluid system and the test pressure chamber wherein the quantity of the liquid is such that, when it is in either of said annular chambers it will not fill the same, either to the point of communication with the fluid system in the case of the outer chamber or to the vent to the test pressure chamber in the case of the inner chamber. Upon association of the detector with a fluid system having a pressure differential from ambient pressure the liquid will move from one annular chamber to the other and the transfer of all of the liquid to the chamber toward which it so moves is completed by temporarily opening the valve connecting the test pressure chamber with the atmosphere. Upon the closing of this valve, any loss of pressure in the fluid system will create a pressure differential between it and the test pressure chamber in response to which the liquid will move in the direction of the lower pressure indicating a leak in four distinct phases; viz., movement of the liquid through the horizontally disposed tube, a rising of the liquid in the annular chamber in the direction of the lower pressure, a further reading of the last of the liquid passing through the horizontally disposed tube, and finally bubbling of gas through the liquid after it is entirely transferred to the annular chamber in the direction of the lower pressure.

3,659,454
FABRIC STIFFNESS TESTING APPARATUS
Jack R. Stevenson, Winnsboro, S.C., assignor to Uniroyal, Inc., New York, N.Y.
Filed May 1, 1970, Ser. No. 33,600
Int. Cl. G01n *3/00*
U.S. Cl. 73—103 7 Claims

An apparatus for testing the stiffness of fabrics, comprising a testing machine fitted with a pair of linked, mutually orthogonal jaw members which support and load a fabric specimen therein, the machine providing a record of the force-deflection behavior of the specimen under test.
The foregoing abstract is neither intended to define the invention disclosed in the specification, nor is it intended to be limiting as to the scope of the invention in any way.

3,659,455
POWER STOPPER
Billy K. Watkins, RR #1, Lovington, Ill.
Continuation-in-part of application Ser. No. 723,772, Apr. 24, 1968, now Patent No. 3,491,590, dated Jan. 27, 1970.
This application Jan. 23, 1970, Ser. No. 5,322
Int. Cl. G01l *5/13*
U.S. Cl. 73—141 R 14 Claims

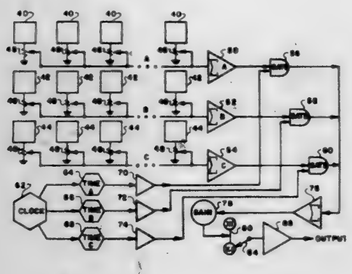


Increasing frictional resistance to forward movement is provided by a self-propelled power stopper weight transfer apparatus comprising a four-wheeled vehicle chassis on which there is positioned an elongated mass guide upon which a gear-driven mass of up to ten tons may be moved from a position over a rearward, relatively frictionless means to a forward position over a high friction sled means. A motor power means at the front end of the vehicle chassis not only allows the apparatus to be driven on a highway and acts as a return means during a contest, but also eliminates the need for a separate dead weight on the sled means. Movement of the mass on the mass guide is produced by a direct gear drive connected in the power transmission system. A cab which may be provided on the chassis also adds dead weight. A fifth wheel arrangement on the sled, the attachment of which to the chassis may be controlled from the cab, allows rapid coupling and uncoupling of the apparatus and the sled means for simple, quick and efficient operation.

3,659,456
SHOCK SPECTRUM ANALYSIS AND SYNTHESIS METHOD AND APPARATUS

Philip Marshall, Lexington, and William C. Stevens, Jr., Chelmsford, both of Mass., assignors to Marshall Research and Development Corporation, Burlington, Mass.

Filed Mar. 22, 1968, Ser. No. 715,399
Int. Cl. G01n *3/38*
U.S. Cl. 73—71.6 7 Claims

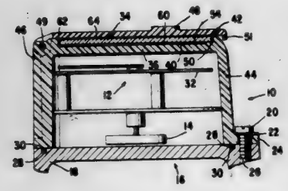


A shock spectrum analysis and synthesis method and apparatus which includes the use of a shock spectrum analyzer and a shock spectrum synthesizer. The analyzer is a special purpose analog computer which provides an automatic shock spectrum analysis of both the primary and residual spectrum by solving the equation of motion for a single degree of freedom, mass-spring-damping system and displaying the output signals on an oscilloscope or X-Y recorder. The synthesizer generates a variable transient electrical input to a vibration shaker system by generating a plurality of steady-state signals each having a different frequency and gating and summing the signals.

3,659,457
REGISTER BOX AND LID FOR METERS

Anthony C. Ostrowski, Feasterville, Pa., assignor to Hersey Products Inc., Dedham, Mass.

Filed Nov. 17, 1970, Ser. No. 90,351
Int. Cl. G01p *1/02*; G01f *15/14*; G04b *39/00*
U.S. Cl. 73—273 6 Claims



A register box for a meter formed of a clear plastic which has a recessed face portion into which a glass plate is placed upon seating means in said recess, and affixed therein by a resilient adhesive which provides a floating support for the glass plate, whereby the surface of the register box through which readings are taken is protected and rendered scratch resistant.

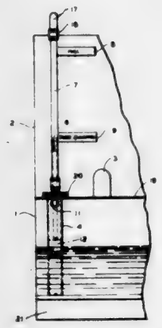
ERRATUM

For Class 73—279 see:
Patent No. 3,659,448

3,659,458
SIGHT GAUGE

William A. Bice, and Michael W. Riddle, both of Lubbock, Tex., assignors to Clark Equipment Company

Filed Oct. 28, 1970, Ser. No. 84,689
Int. Cl. G01f *23/02*, *23/06*
U.S. Cl. 73—306 5 Claims

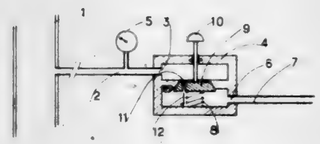


A sight gauge assembly for vertically superimposed tanks in communication with each other including a transparent sight tube communicating with the tanks and disposed alongside of the upper tank to indicate liquid level therein and a float member movable in the sight tube and extending into the lower tank for indicating the lever of liquid in the lower tank when observing the position of the float member in the sight tube.

3,659,459
DEVICE FOR MEASURING THE PRESSURE OF A FLUID FLOWING IN A PIPE

Bernard Moreau, Nantes, France, assignor to Creusot-Loire, Paris, France

Filed June 2, 1970, Ser. No. 42,673
Claims priority, application France, July 4, 1969, 6922716
Int. Cl. G01l *7/00*
U.S. Cl. 73—388 R 3 Claims

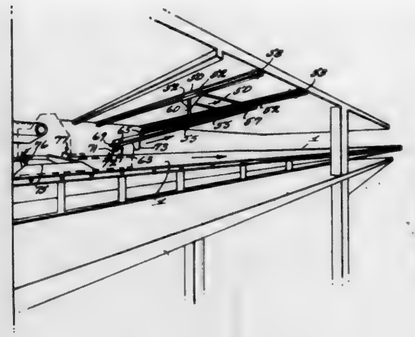


A measuring device comprising an auxiliary pipeline for coupling between a main pipe whose pressure is to be determined and a second pressure source, the auxiliary pipeline including a pressure gauge and a calibrated orifice, the former nearest the main pipe.

3,659,460
APPARATUS FOR SAMPLING ORE AND THE LIKE

John A. Cahill, CP2C 00 966, Rio De Janeiro, Brazil

Filed June 24, 1970, Ser. No. 49,424
Int. Cl. G01h *1/20*
U.S. Cl. 73—421 R 3 Claims

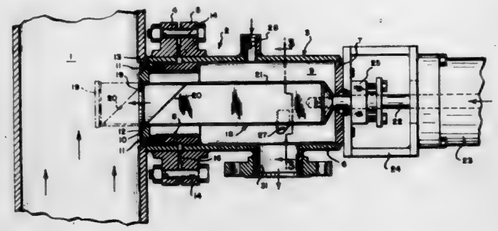


An elongate sample collector or container having a longitudinal dimension corresponding to the useable (between guides) width of the conveyor belt is moved while empty onto the conveyor belt in such manner as to extend across the same at a position where it receives, from above, that portion of the particulate material which otherwise would have fallen onto the conveyor belt; a carriage which is movable longitudinally of the conveyor belt removes the sample collector from the conveyor belt; and then another carriage moves the first mentioned carriage and the sample collector in an angular direction away from the conveyor belt preparatory to obtaining the desired analysis.

3,659,461
LINE SAMPLING DEVICE

Albion J. Thompson, Margate, Fla., assignor to Great Northern Nekoosa Corp.

Filed June 18, 1970, Ser. No. 47,375
Int. Cl. G01n *1/20*
U.S. Cl. 73—422 TC 5 Claims

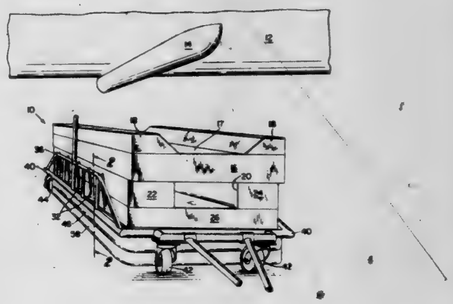


A line sampling device for obtaining product samples from a pressurized product line where the device has a chamber means having a valve seat on one end adapted to be inserted into the side of the supply line. A plunger having a poppet valve on one end is movable in the chamber and has a baffle means thereon whereby when the plunger is extended, the baffle means will be moved into the flow of product in the supply line to divert flow of product into the chamber, and when the plunger is retracted, the poppet valve will seat on the valve seat to seal the chamber from the interior of the supply line. Purge and flush lines are provided to clean the sampling chamber and to remove product therefrom and safety means are included to assure that the chamber is sealed from the purge and flush lines when open to the product line.

3,659,462
ARRESTING DEVICE FOR HEAVY OBJECTS THROWN WITH GREAT FORCE

Clyde C. Cole, 5298 Harvard, Ventura, Calif.

Filed Feb. 4, 1970, Ser. No. 8,567
Int. Cl. G01m *19/00*
U.S. Cl. 73—432 2 Claims

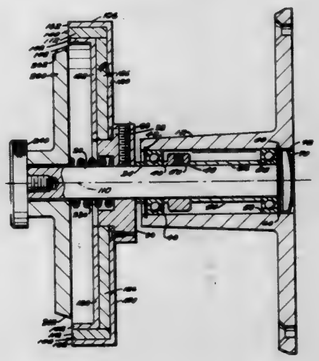


An energy absorbing arresting device for thrown objects of substantial weight, said device employing an assembly of spaced formed pads of deformable cushion material into which the object is forcefully ejected. Control of trapped air flow from and return of such air to the assembly, aids in preventing destructive rebound of the thrown object. In a mobile embodiment it includes a spring supported platform mounted on a vehicle whereby the entire device may be transported from place to place.

3,659,463
BALANCER

Alvin J. Karrels, Route 1, Port Washington, Wis.

Filed Dec. 26, 1967, Ser. No. 693,564
Int. Cl. G01m *1/12*
U.S. Cl. 73—480 1 Claim



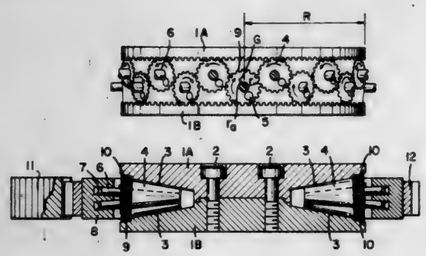
A balancer for balancing lawn mower blades having a frustro-conical blade receiver on which the opening in a blade is placed, magnetic means surrounding the receiver for holding the blade on the receiver.

An adjustable tracking device mounted on the base of the balancer with the tip disposable adjacent the position of a blade mounted on the balancer.

3,659,464
MECHANICAL VIBRATOR

Andre Jean-Marie Puyo, and Pierre Andre Habib, both of Paris, France, assignors to James L. Sherard, Berkeley, Calif.

Filed Apr. 21, 1970, Ser. No. 30,541
Int. Cl. F16h *33/00*
U.S. Cl. 74—61 10 Claims

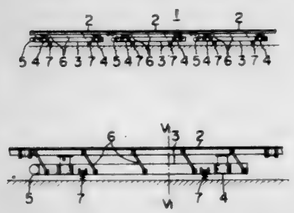


A vibrator apparatus with rotating components, comprising rolling elements in the shape of cones of revolution distributed around a construction axis with their vertices directed toward this axis and their own geometrical axes meeting this construction axis. The cones are in contact with at least one conical surface whose vertex coincides with the common point at which the vertices of the roller axes meets and centered around this construction axis. The roller cones are made to roll in contact with this conical surface to produce a rolling movement that engenders the planetary rotation of the cones and a periodic displacement of the mass of the cones parallel to the construction axis.

3,659,465
VIBRATING APPARATUS UTILIZING A PLURALITY OF VIBRATING SOURCES

Goro Oshima, and Shigeki Nishitake, both of Kitakyushu-shi, Japan, assignors to Kabushiki Kaisha Yaskawa Denki Seisakusho, Kitakyushu-shi, Japan

Filed Nov. 7, 1969, Ser. No. 874,914
Claims priority, application Japan, Nov. 9, 1968, 43/82198
Int. Cl. F16h *33/00*
U.S. Cl. 74—61 3 Claims

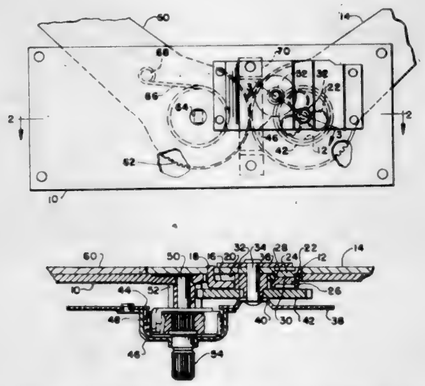


A vibrating apparatus utilizing a plurality of vibrating sources, in which confronting massive bodies each including a rotary-type vibration-applying machine are distributed, through respective resonant resilient members such as springs, onto such a vibrating body to be vibrated as a conveyer, and said machines are operated in synchronous and in phased relation, whereby an extremely long vibrating-type conveyer which has not been possible has become practical, power output capacity of the apparatus is increased, and manufacture of a vibrating-type conveyer having a desired length can be made possible by connecting a plurality of unit conveyers.

3,659,466
WINDOW REGULATOR MECHANISM

Joseph Pickles, Birmingham, Mich., assignor to Ferro Manufacturing Corporation, Detroit, Mich.

Filed May 4, 1970, Ser. No. 34,423
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.18 10 Claims

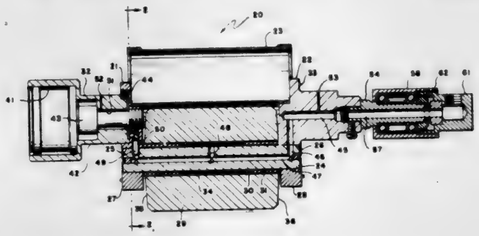


A window regulator particularly for the rear window of station wagons, comprising a mounting plate having an enlarged toothed opening forming the internal gear of a planetary gear set. A regulator arm has at one end a drive plate fixed to the arm in spaced relation. Planet gears are provided between the drive plate and arm and are rotatable thereon about fixed axes. The planet gears mesh with the internal gear and are driven by an input sun gear. Preferably, a second arm is pivoted to the mounting plate and the two arms have meshing gear sectors formed thereon.

3,659,467
ORBITING ROLLER MECHANICAL VIBRATION GENERATOR

Peter V. H. Serrell, Solana Beach, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Oct. 29, 1969, Ser. No. 872,127
Int. Cl. F01b *31/00*
U.S. Cl. 74—87 3 Claims



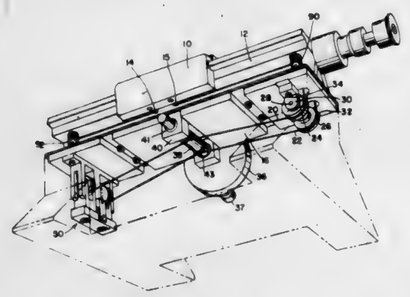
The roller of an orbiting roller vibration generator is radially retained within an internal raceway formed in the oscillator body member, and driven in rolling engagement with the raceway by a crank having four hydrodynamic bearings: two trunnion bearings concentric with the raceway and two crankpin bearings concentric with the roller; the clearances

in said bearings providing the radial compliance necessary to accommodate the radial motions, due to deflections and manufacturing imperfections of the roller relative to the trunnion bearing centerline, without transferring a significant part of the roller radial load from the race to the crank bearings.

3,659,468
SLOTTED WAVEGUIDE CARRIAGE MOVEMENT APPARATUS

Andrew Alford, Winchester, and Pasquale Barbagallo, Bedford, both of Mass., assignors to said Alford, by said Barbagallo

Filed Dec. 10, 1969, Ser. No. 883,822
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.22 10 Claims

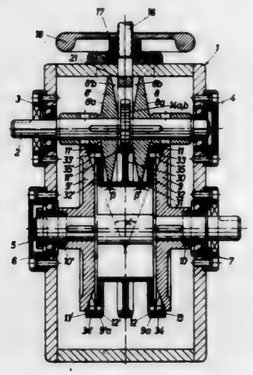


A high frequency slotted measuring waveguide has a probe carriage that is moved, by a dual-cable, pulley arrangement, along calibrated ways of the waveguide. The apparatus includes a supported lever-fulcrum arrangement adapted to equalize the tensions in both cables, thereby substantially eliminating any twisting of the carriage during its translational movement.

3,659,469
INFINITELY VARIABLE FRICTION GEARING

Karl Maichen, 12, Thalackerstrasse, Lauterach, Austria

Filed Nov. 30, 1970, Ser. No. 93,707
Claims priority, application Austria, Apr. 1, 1970, A 2988; Nov. 5, 1970, A 9961
Int. Cl. F16h *15/16*
U.S. Cl. 74—192 7 Claims

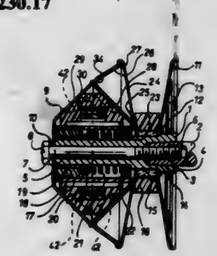


An input shaft and an output shaft carry each at least one bevel wheel. At least one of said bevel wheels is axially adjustable. A power-transmitting ring is disposed between the two bevel wheels and is in frictional contact on one side with the input-side bevel wheel and on the other side with the output-side bevel wheel.

3,659,470
VARIABLE DIAMETER CENTRIFUGAL PULLEY WITH MEANS TO VARY THE MASS OF CENTRIFUGAL WEIGHTS

Leon Beaudoin, 158 Marchand Street, Drummondville, Province of Quebec, Canada

Filed Sept. 29, 1970, Ser. No. 76,426
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 14 Claims



A variable diameter centrifugal pulley for use as a drive pulley in a variable speed belt and pulley transmission for snowmobiles and other vehicles, of for any machinery requiring a variable speed transmission, wherein the centrifugal weights consist of blocks provided with a cavity, closure means for said cavity, and calibrating elements removably inserted within said cavity, in order to vary the mass of the centrifugal weights, and thus adjust the rotation speed at which clutching takes place and the variation of the belt diameter on the pulley with change in the rotational speed of the pulley. The pulley also has a spring in which the increase of its resisting force is a non-linear function of the amount of its shortening so as to obtain belt declutching during engine deceleration at substantially the same rotational speed as during engine acceleration.

3,659,471
METAL PULLEY WITH DETACHABLE PLASTIC FAN

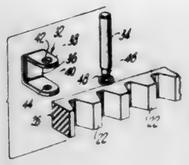
Karl Maruch, Burgermeister-Siegler-Strasse 9,6842, Bürstadt, Germany

Filed Dec. 3, 1970, Ser. No. 94,885
Claims priority, application Germany, Dec. 6, 1969, P 19 61 299.8
Int. Cl. F16h *55/36*; F01p *1/02, 7/10*
U.S. Cl. 74—230.3 9 Claims



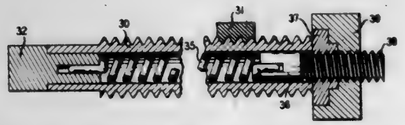
A belt pulley assembly comprises a metal pulley element which is detachably combined with a plastic fan that contains an embedded metal disk having an inner exposed rim that is slotted along with the hub of the pulley element to receive a drive key.

3,659,472
TIMING BELT ASSEMBLY
Walter Engels, New York, N.Y., assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed Sept. 14, 1970, Ser. No. 72,060
Int. Cl. F16g 1/28, 13/02
U.S. Cl. 74—231 C 9 Claims



This application sets forth a timing belt assembly having an attachment fitted to the timing belt to transmit the timing belt displacement to any piece of equipment coacting with the timing belt. The displacement transmitting attachment can be used to index, actuate switches, move slides or sleeves, or any of a wide variety of other operations, in accordance with the displacement of the timing belt. The pulleys on which the timing belt is mounted include special recesses which accommodate the displacement transmitting attachment of the timing belt to assure proper seating of the attachment when that portion of the timing belt, with the attachment thereon, engages the pulleys.

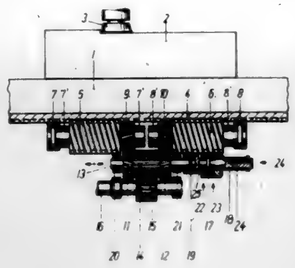
3,659,473
LEAD SCREW SHAFT WITH ADJUSTABLE PITCH
Leif Rongved, Summit, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed Dec. 29, 1970, Ser. No. 102,421
Int. Cl. F16h 1/18, 35/08, 55/18
U.S. Cl. 74—424.8 R 12 Claims



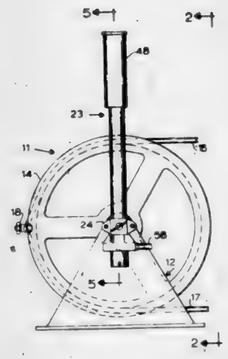
A lead screw apparatus is disclosed that permits fine adjustments to be made in the screw pitch. A lead screw shaft having N threads, an initial length L, and a spring constant K_1 is coaxially connecting to a spring having a spring constant K_2 substantially smaller than K_1. By deforming the spring by a distance δ_2, a force equal to $\delta_2 K_2$ is generated. This force is transmitted to the lead screw, producing a change in length of the screw of δ_1 where δ_1 is equal to $\delta_2 K_2/K_1$. Since K_2 is substantially smaller than K_1, δ_1 will be substantially smaller than δ_2 by the same order of magnitude. Thus a large change δ_2 in the length of the spring will change the pitch of the lead screw from N/L to $N/L \pm \delta_1$.

3,659,474
WORM GEAR FOR DRIVING MACHINE-TOOL SLIDES, IN PARTICULAR IN MILLING MACHINES
Heinz Neugebauer, Weidach, Germany, assignor to Werkzeugmaschinenfabrik Adolf Waldrich Coburg, Coburg Bagern, Germany
Filed July 6, 1970, Ser. No. 52,605
Claims priority, application Germany, July 11, 1969, P 19 35 428.0
Int. Cl. F16h 1/18, 55/18
U.S. Cl. 74—424.6 10 Claims

Worm gear for driving machine-tool slides, in particular in milling machines, and consisting of two coaxially arranged worms meshing with a worm rack and driven by a common shaft. Each worm is separately mounted so that is is radially and axially stationary and the worms are each driven by a common axially movable compensating shaft in each case through a like pair of helical-toothed gear wheels with an equal-sized, but oppositely directed, lead angle.



3,659,475
REMOTE THROTTLE AND STEERING CONTROL UNIT
Paul E. Nichols, Sunnyvale, Calif., assignor to Leisure Products Corporation, Menlo Park, Calif.
Filed May 28, 1970, Ser. No. 41,285
Int. Cl. G05g 13/00
U.S. Cl. 74—480 B 2 Claims

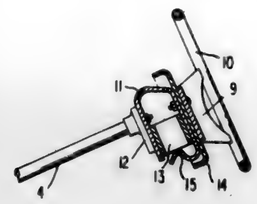


A remote control unit for an outboard motor or the like incorporating in a single control bar the combined functions of steering and throttle control.

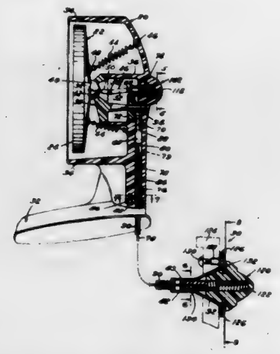
3,659,476
SAFETY STEERING WHEEL
Karl Wilfert, Gerlingen-Waldstadt, and Bela Barenyi, Stuttgart-Vaihingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Original application Sept. 18, 1968, Ser. No. 760,399, now Patent No. 3,567,246. Divided and this application Oct. 2, 1970, Ser. No. 77,520
Int. Cl. B62d 1/18
U.S. Cl. 74—492 13 Claims

A safety steering wheel for motor vehicles, particularly for passenger motor vehicles, in which the system "steering wheel-steering wheel spokes" is constructed relatively form-

rigid and is arranged at the upper end of a steering column by the interposition of a yielding intermediate structure which is constituted by an elastically yielding transmission member yielding in the direction of the steering column, and an energy-dissipating element is associated with this transmission member.



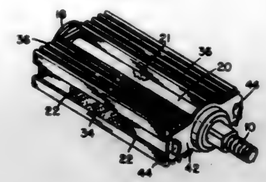
3,659,477
REMOTE CONTROL MIRROR AND CONTROL MECHANISM THEREFORE
William C. Wehner, 14891 Grandville, Detroit, Mich.
Filed Apr. 16, 1970, Ser. No. 29,195
Int. Cl. F16c 1/12
U.S. Cl. 74—501 M 12 Claims



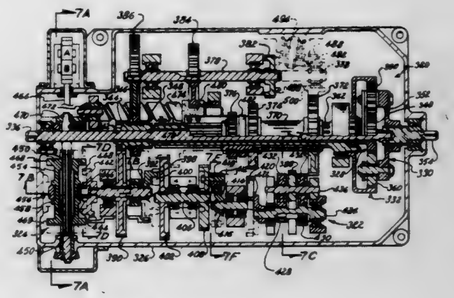
A remotely controlled mirror, such as a vehicle rear view mirror, including a pivotally supported mirror member, a rotatable linkage system and a drive mechanism. The linkage system includes at least two pivotally connected link members; the first link member operably connected to the mirror member at a fixed acute angle relative to the reflective surface, and the second link member drivably connected to the first link member at a variable angle. The drive mechanism is adapted to rotate the linkage system, adjusting the position of the mirror relative to the vertical and horizontal axes, and shift the distal end of the second link member toward the mirror, adjusting the angle of inclination of the mirror relative to the axis perpendicular to the mirror.

3,659,478
REFLECTOR PEDAL FOR CYCLES
Carlton P. Pawsat, and Robert F. Humlong, both of Maysville, Ky., assignors to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Mar. 23, 1970, Ser. No. 21,656
Int. Cl. G05g 1/14
U.S. Cl. 74—594.4 6 Claims

The pedal frame comprises a pair of spaced parallel legs onto each of which is telescoped an elongate extruded pedal block having formed therein an open-ended tubular passageway receptive of a frame leg, and an open-face open-ended channel slidingly receptive of a reflector element, said channel and said leg including simple detent means for obstructing shifting of the reflector element lengthwise of the channel.



3,659,479
POSITIVE CONTINUOUSLY CONSTANT GEAR-MESH SPEED CHANGE SYSTEM FOR PLANETARY DRIVE SYSTEMS AND THE LIKE
Laszlo J. Kiss, 7044 Paige, Warren, Mich.
Filed Jan. 9, 1970, Ser. No. 1,823
Int. Cl. F16h 37/04, 3/78
U.S. Cl. 74—681 47 Claims

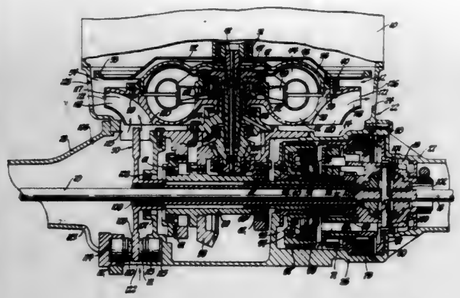


A planetary gear speed change system including a ratio alternater system and an automatic mechanical shifter system operable to shift ratio alternater elements into driving engagement with the planetary reaction member, vary its relative rotational value and then disengage, in automatic synchronous timed relation to the ratio alternater system functional cycles, with continuous drive during such shifting, to thereby vary the planetary driving ratios with continuous torque delivery throughout its operation, and including constant speed and/or fixed members synchronously engageable with the reaction member to maintain same at selected rotational values. Modifications include single, multiple and other combinations of planetary drive systems. Various novel synchronized shifter and ratio alternater systems are disclosed, as are novel combinations for effecting many varieties of driving conditions and speed change applications.

3,659,480
VEHICLE POWER TRAIN
Erkki A. Koivunen, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed July 6, 1970, Ser. No. 52,544
Int. Cl. F16h 37/08, 47/08, 57/04
U.S. Cl. 74—695 3 Claims

A vehicle power train having an engine, a transmission including a torque converter driven by the engine, differential

gearing connecting the transmission to the vehicle's drive axle shafts, a brake connected to brake the input to the differential gearing to brake the drive axle shafts and a fan driven by the input of the transmission circulating air to cool the brake, the torque converter and the engine.



A planetary hydraulic transmission is shifted between different stages by hydraulic operating means which receive pressure fluid whose pressure is adjusted by pressure regulating means which respond to control signals transmitted by an electronic control apparatus. The control signals represent a desired drive torque determined by the electronic control apparatus from signals received from means sensing various operational conditions of the drive motor of a car driven by the drive motor through the transmission. Since the regulated pressure is proportional to the drive torque, load peaks are prevented during shifting of the transmission.

3,659,481

ELECTRO-HYDRAULIC DRIVE WITH REGULATED PRESSURE

Helmut Espenschied, Ludwigsburg; Georg Rothfuss, Ditzingen, and Gerhard Will, Beutelsbach, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed June 25, 1970, Ser. No. 49,844

Claims priority, application Germany, June 28, 1969, P 19 32 986.3

Int. Cl. F16h *47/00*

U.S. Cl. 74—731 **10 Claims**

3,659,482

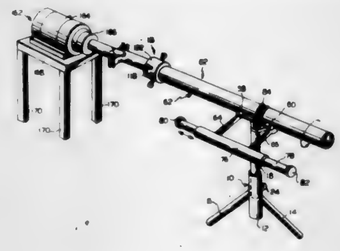
METHOD OF REAMING A ROTATING PIPE

Donald E. Blake, 761 Chestnut Ridge Road, Morgantown, W. Va.

Original application Sept. 3, 1967, Ser. No. 627,694, now Patent No. 3,445,871, dated May 27, 1969. Divided and this application Feb. 18, 1969, Ser. No. 840,550

Int. Cl. B26b *5/16*

U.S. Cl. 408—1 **1 Claim**



A method is provided for the reaming of pipes wherein a portable rotary power source such as a power vise may be employed to rotatably drive the pipe. The method involves establishing a universal driving connection between a pipe to be worked and a rotary power source, rotatably securing the pipe in a vise means supported for rotation about multiple axes, and then rotatably driving the pipe and applying a reaming tool to the portion thereof to be worked.

3,659,483

JACKET STRIPPING TOOL

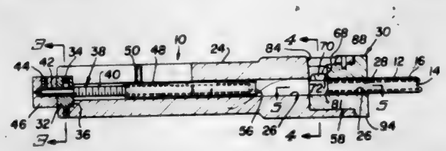
James J. Matthews, c/o Utility Tool Corp., P.O. Drawer B, Town Street (Rt. 82), East Haddam, Conn.

Filed May 25, 1970, Ser. No. 40,039

Claims priority, application Great Britain, Jan. 15, 1970, 2,081/70

Int. Cl. H02g *1/12*

U.S. Cl. 81—9.5 C **4 Claims**



A cable jacket stripping tool including a cutting member having a cutting edge and lifting ramp so arranged that, during a cutting interval, the cutting edge functions in a clearance position from the cable core to initiate cutting removal of the major portion of the jacket surrounding the core and the lifting ramp completes this removal by causing rupture of the remaining uncut jacket portion. Thus, complete jacket removal is achieved with a cutting edge sufficiently spaced from the cable core to obviate inadvertent nicking thereof.

3,659,484

REVERSIBLE RATCHET WRENCH WITH INTERLOCKED ASSEMBLY

Gino L. Scodeller, 5518 Vallego Street, Oakland, Calif.

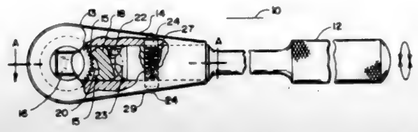
Filed June 18, 1970, Ser. No. 47,374

Int. Cl. B25b *13/46*

U.S. Cl. 81—63 **20 Claims**

A reversible wrench with a ratchet and pawl mounted in respective apertures of a one-piece head and held in the head by a common retaining member. In one form, the head has a

movable handle attached to it, the position of the handle relative to the head determining the ratchet drive direction,



the handle being provided with an extension which acts as the common retaining member and holds the ratchet and pawl within the head regardless of handle position.

3,659,485

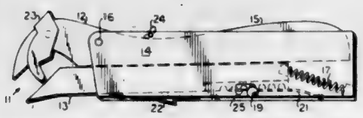
ADJUSTABLE OPEN END RATCHET WRENCH

Albert Roth, 6248 Rockhurst Drive, San Diego, Calif.

Filed Sept. 2, 1970, Ser. No. 69,021

Int. Cl. B25b *13/28, 13/12, 13/18*

U.S. Cl. 81—98 **9 Claims**



An adjustable open end ratchet wrench having one jaw member pivotally attached to a handle and a second jaw member slidably received by the handle juxtaposed the pivotal jaw member; the sliding jaw member being spring-biased out of the handle and into a closing relationship with the fixed jaw member; an incremental adjusting mechanism coupled between the handle and the sliding jaw whereby when the handle is rotated in one direction, the adjusting mechanism latches and locks the slidable jaw with respect to the fixed jaw and when rotated in another direction, releases allowing the slidable jaw to be forced inward against the spring biasing means for ratcheting around a nut being tightened or loosened.

3,659,486

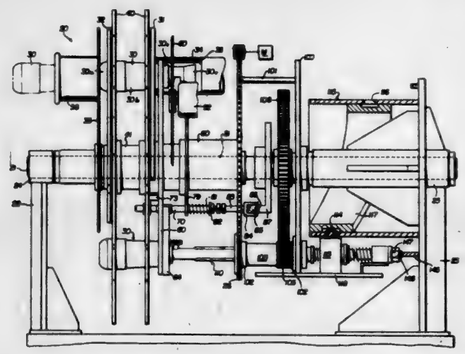
HIGH SPEED TRIM MACHINE FOR BLOWN PLASTIC ARTICLES

Donald H. Criss, and Robert F. Kontz, both of Toledo, Ohio, assignors to Owens-Illinois, Inc.

Filed Mar. 9, 1970, Ser. No. 17,824

Int. Cl. B23b *5/14, 1/00*

U.S. Cl. 82—82 **18 Claims**



This disclosure proposes a method and apparatus for removing integral flash from a blown plastic article. The articles are serially fed to and retained in pockets formed at the peripheries of continuously rotating, axially spaced plates, the article flash portions projecting laterally beyond the plates. The articles are cammed into and out of the retention pockets, and a cam actuated locking mechanism is utilized to retain the articles in the pockets against movement relative to the plates. An individual flash-severing mechanism advances into contact with the flash of each article and rotates relative to the flash to sever it from the article. In the event that the article is a bottle or the like having a flash which completely closes the neck or finish of the bottle, an initial flash severing is accomplished to open the end of the finish prior to advancement of the individual flash-severing mechanism. The mechanism is entirely mechanically actuated by cams and the like, and no limit switches or other sequence-controlling mechanism are necessary.

3,659,487

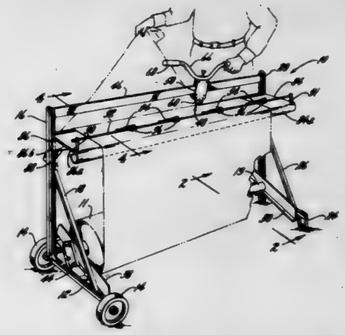
PORTABLE MANUALLY OPERABLE CUTTING MACHINE FOR ROLLED SHEET MATERIAL

Charles A. Henderson, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Mar. 30, 1970, Ser. No. 23,606

Int. Cl. B26d *1/20*

U.S. Cl. 83—447 **9 Claims**



A portable, manually operable, cutting machine for rolled sheet material includes a frame having a pair of horizontally spaced parallel inclined ramps which aid in loading a roll of material into the machine. Material is fed from the roll over a shelf having a cutter backing bar, and is held in position by friction brushes. A cutting carriage, with a rotatable disk cutter, is rocked downward into contact with the backing bar to cut the material when the carriage is moved across the shelf.

3,659,488

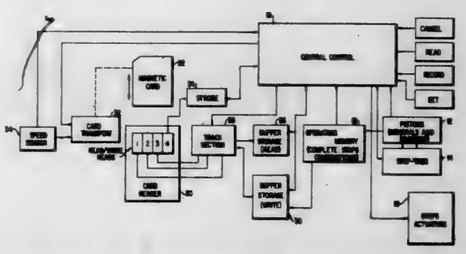
CAPTURE COMBINATION SYSTEM

Ralph Deutsch, Sherman Oaks, Calif., assignor to North American Rockwell Corporation, Anaheim, Calif.

Filed Oct. 9, 1970, Ser. No. 79,614

Int. Cl. G10b *3/10*

U.S. Cl. 84—345 **16 Claims**



A capture combination system for use in an electronic organ provides rapid reprogramming of the entire combina-

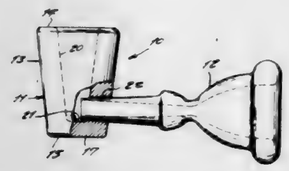
tion memory while permitting manual selection of desired stop combinations at any time. Desired stop combinations are selected for each piston and set into the working memory of the system. These combinations, upon command, are transferred from the working memory to a storage or external memory. A full combination of stop settings may be stored on the external memory by transfer from the internal memory, and a number of such external memories corresponding to a number of different full combinations of stop settings thus may be prepared and, subsequently, selectively presented to the system as desired. The combination settings from the external memory are transferred upon command into the internal working memory for establishing the desired combination of stop settings therein. Transfer into or out of the external memory requires but a few seconds. Whenever desired, the working memory may be altered to modify one or more stop combinations, whether set manually, or entered therein from the external memory and, in the latter case, while retaining the combinations recorded in the external memory.

3,659,489

BRASS-INSTRUMENT-PRACTICE DEVICE

Raymond J. Vale, 6006 Forest Ledge, San Antonio, Tex.

Filed Sept. 10, 1970, Ser. No. 71,157
Int. Cl. G09b *15/06*
U.S. Cl. 84—465 **1 Claim**



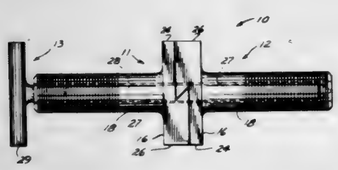
A resonator chamber attachable to a brass instrument mouthpiece so as to buffer the buzzing sound produced by the brass instrument mouthpiece, the device comprising a barrel which is a singular part of generally bowl-shape with a central chamber that opens out upon one end of the barrel, the inner end of the chamber communicating with the terminal end of the brass instrument mouthpiece.

3,659,490

FASTENING DEVICE

Harold G. Buck, 2302 Dawes St., Ashland, Nebr.

Filed Aug. 27, 1969, Ser. No. 853,391
Int. Cl. F16b *35/00*
U.S. Cl. 85—1 R **4 Claims**



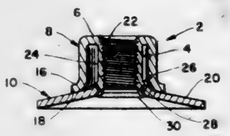
A fastening device for detachably securing two members together, the device comprising a pair of mateable sections, each section being secured to one or the other of the members, and a pin disposed in aligned bores formed in the sections to maintain the sections in the mated position. The sections having mateable faces which coact in a manner wherein when in a locked position they cannot be separated except by moving one of them away from the other in a plane normal to the plane in which the stresses or impacts under use occur, and the pin removably mounted in the aligned bore to prevent movement of one section relative to the other section.

3,659,491

ROTATABLE NUT AND WASHER ASSEMBLY

William B. Duffy, Berkeley Heights, and Charles K. Fisher, Belford, both of N.J., assignors to TRW Inc., Cleveland, Ohio

Filed Mar. 8, 1971, Ser. No. 121,636
Int. Cl. F16b *37/02, 43/00*
U.S. Cl. 85—32 **14 Claims**



A fastener assembly wherein a sheet metal nut is rotatably coupled to a frusto-conical washer. The nut has an inner threaded barrel portion for engaging a cooperating male fastener element and an outer barrel portion which is particularly shaped for engagement by a tool for rotating the nut. The inner barrel portion is spacedly nested within the outer barrel portion and the respective barrel portions are joined at the upper end of the nut. The lower end of the inner barrel portion extends through a central aperture in the washer and is loosely curled under the edge of the aperture to provide a retaining collar. Adjacent the lower end of the inner barrel portion and the retaining collar, the inner barrel portion carries a peripheral bearing ring having a smooth undersurface lying at a selected acute angle to the longitudinal axis of the nut. The bearing ring is formed from metal skived from the outer wall of the inner barrel portion and compacted into the said ring configuration. The washer embodies a cylindrical lip projecting from its upper surface adjacent the aperture therein, and said lip has a smooth inboard surface which is complementary to and confronts the undersurface of the bearing ring on the nut. The outer barrel portion of the nut also includes a peripheral skirt at its lower end which rotatably bears on the adjacent convex face of the washer. The nut and washer components are free spinning with respect to each other and the said fastener assembly provides for a markedly improved torque-tensile relationship when the nut is turned onto a male fastener element and the washer is tightened against the confronting surface of an apertured member through which the male element protrudes.

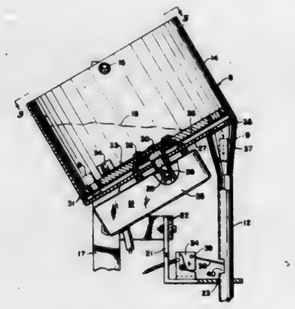
3,659,492

CASING OR SHELL FEEDER ATTACHMENT FOR LOADING MACHINES

Roger W. Fullmer, Rockford, Ill., assignor to Glen L. Dunahoo, Lindenwood, Ill.; Nathan Adler, Southfield, Mich. and Roger Fullmer, Rockford, Ill., part interest to each

Filed Feb. 9, 1970, Ser. No. 9,805
Int. Cl. F42b *33/14*; G07f *11/28*; B23g *7/02*
U.S. Cl. 86—46 **4 Claims**

An inclined stationary hopper of circular form has a large discharge opening in the bottom thereof at the high end through which bullet casings (or shotgun shells) are dropped one by one open end up from holes provided in circumferentially spaced relation in the marginal portion of a rotary plate disposed in parallel spaced relation to the hopper bottom. The casings or shells drop open end up into the holes in the plate from a supply piled on top of the rotary plate in the low end of the hopper and are carried around to the discharge opening to be dropped, the open end up disposition of the casings or shells in the holes being assured because their closed flanged ends are appreciably heavier. Stirring of the casings or shells in the pile by an upwardly projecting finger on the rotary plate helps to jostle and tumble the same so they drop more quickly into the holes in the rotary plate. A funnel, disposed under the hopper's discharge opening, guides the casings or shells open end up into a substantially vertical feeder tube that extends down to the loading machine. The electric motor that transmits drive to the



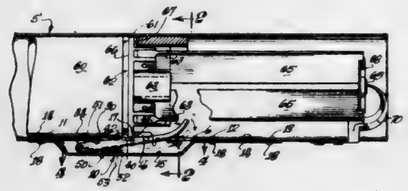
rotary plate through suitable reduction gearing is controlled by a switch operated by a feeler finger that extends through a slot in one side of the feeder tube near its upper end and is spring pressed normally upwardly to closed circuit position but arranged to be held down in open circuit position but arranged to be held down in open circuit position by one or more casings or shells to stop the motor when a pileup occurs in the tube due to the casings or shells not being processed as fast as they are being dropped into the feeder tube.

3,659,493

ROCKET RETAINING MECHANISM FOR LAUNCHER TUBES

Irving E. Wisner, Santa Monica, Calif., assignor to Hitco, Los Angeles, Calif.

Filed Jan. 16, 1970, Ser. No. 3,346
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.807 **8 Claims**



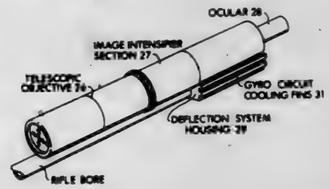
Rocket launcher-tube rocket retaining mechanism of the detent type for rockets with a latching rim having a circumferential groove and foldable stabilizing fins. A latching arm is rotatably mounted at one of its ends to a mounting plate secured over an opening in the tube sidewall, spring means urging the free end of the arm into the tube. The arm defines an inwardly extending latching tab spaced forward of a rear stop projection on the mounting plate, this space accommodating the rocket latching rim with the latching tab projecting into the rocket circumferential groove. The free end of the latching arm is oriented such that the blast issuing from an ignited rocket will impinge against it and rotate it radially outward to withdraw the latching tab from the rocket circumferential groove and free the rocket for forward flight. The shape of the latching tab provides positive latching, a forward movement tendency of the rocket causing an increase in the latching force due to an over-center action.

3,659,494

FIRE CONTROL SYSTEM FOR USE IN CONJUNCTION WITH ELECTRONIC IMAGE MOTION STABILIZATION SYSTEMS

Richard W. Philbrick, Concord, and Efraim R. Arazi, Cambridge, both of Mass., assignors to Itek Corporation, Lexington, Mass.

Original application June 8, 1965, Ser. No. 462,322, now Patent No. 3,515,881, dated June 2, 1970. Divided and this application July 31, 1969, Ser. No. 848,763
Int. Cl. F41c *19/12*; F41f *13/08*
U.S. Cl. 89—28 **12 Claims**



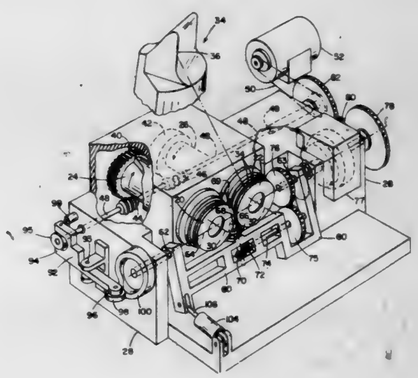
An image motion stabilization system for eliminating motion of an image being viewed from an unstable support. The image is viewed through an image converter tube. X and Y rate gyroscopes are mounted on the unstable support to sense motions of the support, and the outputs from the gyroscopes are applied to the deflection coils of the converter tube to compensate for movements of the support. Panning control means are provided to prevent image deflection in the converter tube to allow panning when the support is moved at a slow rate. Embodiments of the invention are disclosed wherein the image motion stabilization system is utilized with a camera or in a fire control system. In the fire control system embodiment a circuit is provided to sense when the weapon is correctly aimed, and to automatically fire the weapon in the correctly aimed position.

3,659,495

GEAR MAKING

Paul Maker, Marion, Mass., assignor to Bird Island, Inc., Boston, Mass.

Filed Aug. 25, 1970, Ser. No. 66,739
Int. Cl. B23f *5/20*
U.S. Cl. 90—3 **7 Claims**



Apparatus for making gears of hyperboloidal form, comprising a cutter having profile generating cutting edges mounted for movement about a common axis, and a support for a workpiece rotatable about a workpiece axis; the support and the cutter being mounted for relative pivotal movement

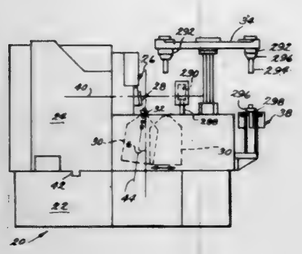
about a feed axis nonparallel to the workpiece axis; the support and the cutter having basic rates of simultaneous movement about the workpiece and cutter axes, respectively, in the absence of the pivotal movement, in ratio dependent upon the number of cutting edges to the number of teeth in the gear, to cause continuous indexing of the workpiece as the cutting edges make successive cuts adjacent the profiles; the support and the cutter being mounted so that one of the basic rates is increased or decreased, upon occurrence of the pivotal movement, by a differential rate dependent upon the angular rate of the pivotal movement, so that successive cuts adjacent each tooth profile will follow the desired contour thereof.

3,659,496

MACHINE FOR SHAPING GEARS

Werner E. Bergemann; Ernst J. Hunkeler, and Harry Pedersen, all of Rochester, N.Y., assignors to The Gleason Works, Rochester, N.Y.

Filed Mar. 13, 1970, Ser. No. 19,346
Int. Cl. B23f 5/14
U.S. Cl. 90—8 **20 Claims**



A gear shaping machine for cutting gears with generation effected by a rotatable work holder and a tool holder carrying a cutting tool adapted to be reciprocated. The tool holder is mounted to a translatable supporting structure, the rate or speed of such translational movement during generation being selectively variable to produce variable ratio gears. Separate and independent power sources are provided for the generating train, for actuating the cutting tool, and for a servo mechanism which controls the reversing operation of the generating train. The tool holder is slidably mounted in a cradle housing for movement in a direction along its own axis (and at right angles to said translational movement) to permit production of an oversized tooth or teeth in the gear or gear sector being cut. Means are also provided to effect insertion and withdrawal of the cutting tool relative to the work for each individual cutting stroke. A counterweight mechanism is provided in operative connection to the structure for reciprocating the cutting tool to provide a smoother and faster cutting stroke.

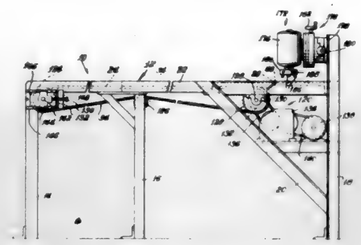
3,659,497

DRAINAGE FOIL RESURFACING MACHINE

Bruce W. Stevens, Appleton, Wis., assignor to Menasha Corporation, Neenah, Wis.

Filed May 14, 1970, Ser. No. 37,151
Int. Cl. B23c 1/12, 9/00, 3/00
U.S. Cl. 90—17 **11 Claims**

Apparatus for resurfacing upper surface portions of drainage foils which have lower longitudinally extending dovetail configurations or the like, including a support table having a guide fixture thereon adapted to cooperate with the lower dovetail portion of a foil in guiding relation therewith, an endless chain supported for cooperation with an end of a foil for effecting longitudinal movement thereof through the



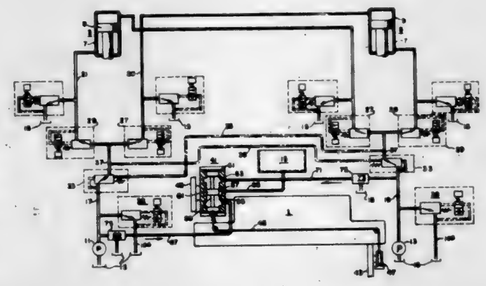
guide fixture, and a cutter head supported in overlying relation to the guide fixture and adjustable to selectively engage the upper surface of a foil during a resurfacing operation.

3,659,498

RAM ATTITUDE CONTROL SYSTEM AND VALVE ASSEMBLY THEREFOR

Rolland A. Richardson, Alameda, Calif., assignor to Pacific Press & Shear Corp.

Filed Aug. 13, 1970, Ser. No. 63,530
Int. Cl. F01b 25/04; F15b 11/22
U.S. Cl. 91—171 **5 Claims**



The ram attitude system of U.S. Pat. No. 3,349,669 of Oct. 31, 1967 is made less critical as to adjustments by incorporating a novel valve assembly for each of the two pumps, the valve assembly associated with the pump supplying the leading hydraulic motor, causing a continuously increasing by-pass of said hydraulic motor with deviation of the ram of a machine, to set up corresponding corrective forces in a non-proportional manner but with no sharp changes in such corrective forces.

3,659,499

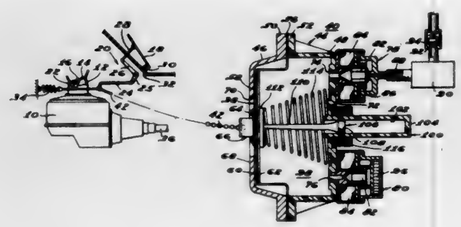
VACUUM MOTOR ADAPTED FOR USE IN A VEHICLE SPEED CONTROL MECHANISM

Gary F. Woodward, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Original application Dec. 4, 1968, Ser. No. 781,170, now Patent No. 3,572,214. Divided and this application Oct. 2, 1970, Ser. No. 77,501
Int. Cl. F15b 13/044, 13/16
U.S. Cl. 91—454 **2 Claims**

A vacuum motor which is especially adapted for use in a speed control mechanism for an automotive vehicle in which

a flexible diaphragm is positioned in the housing of the motor and cooperates with the housing to form a chamber. Means are provided communicating with the chamber and the flexible diaphragm for applying a varying pressure to the chamber and hence the diaphragm so that the diaphragm is moved as a function of the pressure applied thereto. The diaphragm is adapted to be connected to a movable controller means for



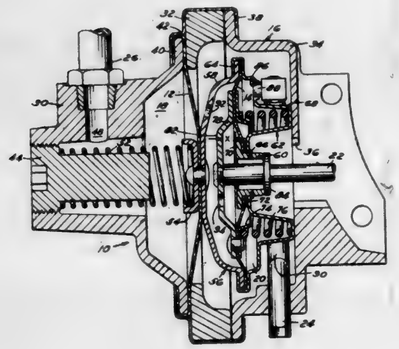
controlling the speed of the vehicle in accordance with the position of the diaphragm. Movable means are coupled to the diaphragm and are positioned within the chamber. The vacuum motor includes electrical circuit means and said movable means cooperates with the electrical circuit means for varying the value of a parameter of the electrical circuit means as a function of the position of the diaphragm and the movable means.

3,659,500

DUAL DIAPHRAGM VACUUM SERVO

Ahmet Reisi Akman, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Feb. 2, 1970, Ser. No. 7,491
Int. Cl. F01b 19/02
U.S. Cl. 92—49 **2 Claims**



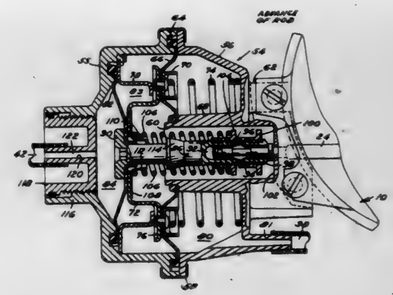
A vacuum servo construction having two flexible diaphragms in a single housing, with one connected to the other for a limited relative movement between the two, and the movement of one being modulated by changes in the vacuum levels. One of the diaphragms supports a carrier which houses the second diaphragm and, of which the following is a specification.

3,659,501

MULTI-DIAPHRAGM VACUUM SERVO

Garry E. Beard, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 3, 1970, Ser. No. 16,163
Int. Cl. F01b 19/00; F02p 5/04
U.S. Cl. 92—49 **9 Claims**



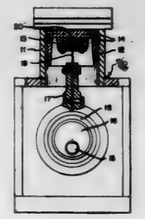
A vacuum controlled servo has two axially spaced flexible diaphragms each defining separate vacuum chambers, one diaphragm being connected to an actuator; the diaphragms are spring biased with the springs in parallel arrangement and one operatively located between the two; a number of adjustable stops permit varying actions of the diaphragms to vary and modulate the movement of the actuator as a function of the changes in pressure in the separate chambers.

3,659,502

RECIPROCATING ENGINES

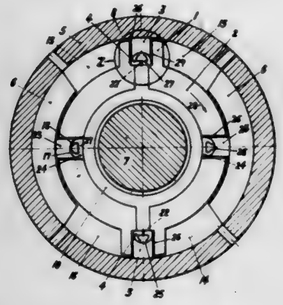
Milton I. Friedman, 2120 Hillholm St., and Theodore Kordell, RD. 4, Box 180-D, both of Johnstown, Pa.

Filed Aug. 28, 1970, Ser. No. 67,952
Int. Cl. F16j 1/14
U.S. Cl. 92—84 **8 Claims**



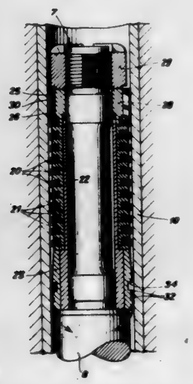
A reciprocating engine is provided having a hollow cylinder and spaced crankshaft with an eccentric cam, a piston slidable in said cylinder with radial clearance, a plurality of spaced annular grooves around the piston circumference, a ring of resin having a low coefficient of friction in each said groove between the piston and cylinder, a connecting rod connected at one end to said crankshaft through a prelubricated anti-friction bearing and at the other end to the piston by a deflectable member capable of angular deflection.

3,659,503
HYDRAULIC ROTARY-BLADE PIVOT DRIVE FOR HYDRO-STABILIZERS AND RUDDER SYSTEMS
Heinz-Gunter Ehlers, Tornesch, and Erich Wessel, Hamburg, both of Germany, assignors to Howaldtswerke-Deutsche Werft Aktiengesellschaft Hamburg und Kell, Hamburg, Germany
Filed May 8, 1970, Ser. No. 35,709
Claims priority, application Germany, July 4, 1969, P 19 33 963.0
Int. Cl. F01c 9/00; F16j 15/38
U.S. Cl. 92—125 4 Claims



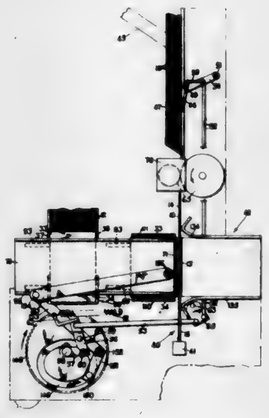
A hydraulic rotary-blade pivot drive for hydro-stabilizers and rudder systems, particularly on ships, with receiving grooves on the external sides of the rotor blades and/or the inside of the stator blades, and with sealing strips and elastic elements which are radially displaceable in said receiving grooves. Slave blades are provided between the sealing strips and the elastic elements over the entire length of the rotor. The slave blades are held in the receiving grooves with clearance so as to be radially displaceable and project beyond the outsides of the rotor blades and the insides of the stator blades and are designed to ensure hermeticity on all sides. The sealing strips together with the slave blades and the elastic element form one single sealing unit.

3,659,504
MEANS FOR SPACING A PISTON FROM A CYLINDER DURING OPERATION
Alfred Zarcher, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland
Filed Apr. 21, 1970, Ser. No. 30,416
Claims priority, application Switzerland, Apr. 24, 1969, 6228/69
Int. Cl. F16h 33/10
U.S. Cl. 92—162 6 Claims



The piston is provided with helical grooves in a surface facing the cylinder wall so as to impart a swirl to the heated gas escaping between the piston and cylinder from the compression chamber. The grooves are formed near the piston rod so as to obtain a uniform heating of the piston rod rather than an unbalanced heating which could cause the piston to scrape against the cylinder wall during reciprocation.

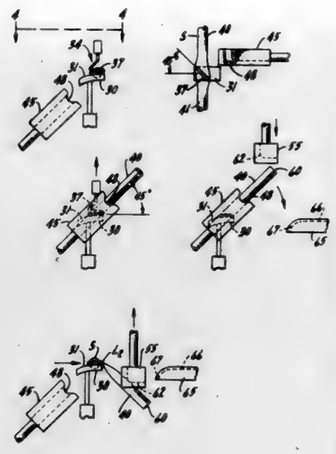
3,659,505
APPARATUS AND METHOD FOR ERECTING CONTAINERS
Paul Wasyluka, and Clinton E. Zolman, both of St. Louis, Mo., assignors to Crown Zellerbach Corporation, San Francisco, Calif.
Filed Mar. 30, 1970, Ser. No. 23,654
Int. Cl. B31b 1/30, 1/44, 49/02
U.S. Cl. 93—51 M 10 Claims



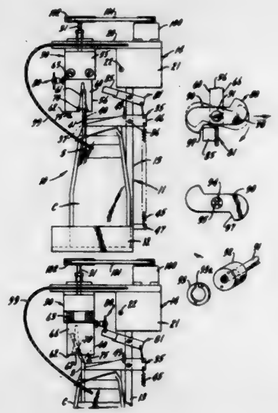
Apparatus and method wherein a three-piece container is erected by carrying separate end panels with a mandrel into contact with a main body blank and moving the blank and end panels with the mandrel through a container-erecting station where end panel-engaging flaps along opposite end edges of the bottom and side walls of the blank are brought into contact with the outer surface of the end panels. Corner-strengthening flaps are also provided along opposite side edges of the end panels, and means are provided adjacent the path of mandrel travel to fold the latter flaps simultaneously inwardly prior to contact of the end panels with the body blank to permit such end panel flaps to engage the inner surface of the side walls of the container. Means are provided to permit the end panels to be moved in two stages by the mandrel from their initial positioning station first to an initial rest position, then to their finally erected position in the container.

3,659,506
MACHINE FOR FORMING STRAWS
Justin M. Schmitt, Pompano Beach, Fla., assignor to Jeno's, Inc., Duluth, Minn.
Filed Nov. 27, 1970, Ser. No. 93,081
Int. Cl. B31d 5/04; B31c 11/02; B31b 45/00
U.S. Cl. 93—84 TW 9 Claims

A machine for folding straws to temporarily alter a straw's configuration, shorten it and form a liquid-tight seal in the straw. The straw is positioned against an anvil and a hammer creases it on a crease line oblique to the straw's axis. A pair of die elements moving transversely of the straw folds an upper section about this crease line and a second crease line into perpendicular relationship with a lower straw section while forming a liquid-tight seal at the folds.

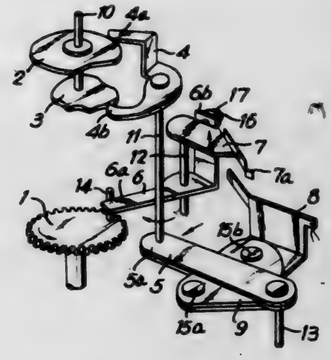


3,659,507
MACHINE FOR FORMING STRAWS
Robert D. Cushman, Fort Lauderdale, Fla., assignor to Jeno's, Inc., Duluth, Minn.
Filed Nov. 27, 1970, Ser. No. 93,082
Int. Cl. B31d 5/04; B31c 11/02; B31b 45/00
U.S. Cl. 93—84 TW 13 Claims



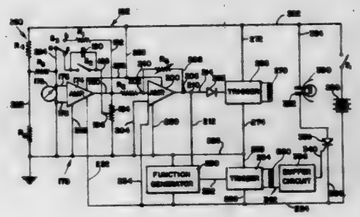
A machine for folding straws to temporarily alter a straw's configuration, shorten it and form a liquid-tight seal in the straw. A rotating chuck folds the straw over anvil surfaces to form two crease lines in the straw. The chuck folds an upper straw section on these crease lines into perpendicular relationship with a lower straw section while forming a liquid tight seal at the folds.

3,659,508
FLASH-SYNCHRONIZING ASSEMBLY FOR CAMERAS
Fumio Urano, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed May 13, 1970, Ser. No.
Claims priority, application Japan, June 10, 1969, 44/53769
Int. Cl. G03b 9/70
U.S. Cl. 95—11.5 R 2 Claims



A flash-synchronizing assembly for cameras, enabling the instant of flash ignition to be selected according to the type of flash and the shutter speed. A pair of coaxial cams are provided to be selectively positioned angularly respectively according to positions corresponding to the type of flash and to the shutter speed. A cam follower is swingable on a rod carried by a swing-lever which turns about a given axis. This cam follower engages both of the cams to determine from the latter the angular position of the swing-lever, so that this latter position will be in accordance with the selected combination of flash type and shutter speed. A normally stationary contact of a flash circuit is carried by the swing-lever to be positioned as a location determined by the combined positions of the cams. A movable contact is released, upon initiation of an exposure, for movement into engagment with the normally stationary contact so as to bring about closing of the flash circuit at an instant which will be best for the particular type of flash and shutter speed which have been selected.

3,659,509
EXPOSURE CONTROL SYSTEM WITH AUTOMATIC ADJUSTMENT FOR FLASH SYNCHRONIZATION
John P. Burgarella, Sudbury, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed July 24, 1969, Ser. No. 844,501
Int. Cl. G03b 9/70
U.S. Cl. 95—11.5 R 14 Claims



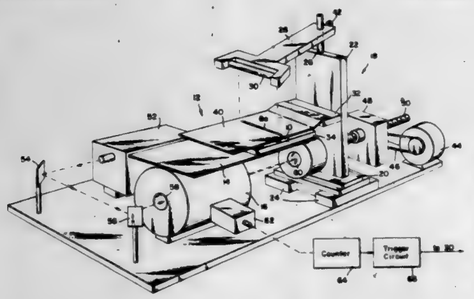
An exposure control system incorporating an improved flash synchronization arrangement. The timing of the initiation of flash illumination relative to an exposure interval is

controlled to substantially equate the quantity of scene light entering the aperture of a photographic apparatus during an exposure interval initiating period with the quantity of light entering the aperture during the corresponding period required for terminating an exposure interval. In a preferred embodiment the dynamic characteristics of a flash lamp are adjusted by follow-focus means to normalize the amount of light reaching the film plane of a camera.

3,659,510
APPARATUS AND METHOD UTILIZABLE IN FORMING METAL GRIDS

Hugh L. Garvin, Malibu; Elvin E. Herman; Russell R. Law, both of Pacific Palisades, and Roger R. Turk, Woodland Hills, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 1, 1969, Ser. No. 820,737
Int. Cl. G03b *29/00*
U.S. Cl. 95—12 **6 Claims**



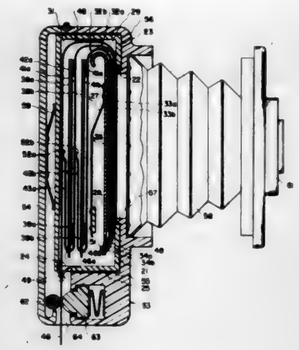
Apparatus and method for forming metal grids. The apparatus includes a support, carriage, photomask, photolamp, and interferometer. A photographic plate is positioned on the support and the photomask is attached to the carriage which is translated to thereby carry the photomask across the photographic plate. The interferometer allows repetitive exposure of the plate by the photolamp via the photomask by measuring the position of the carriage and by controlling a photolamp trigger circuit for flashing the photolamp when predetermined carriage positions are sensed by the interferometer. The photomask contains a single slit through which light rays from the photolamp pass whereby the successive flashing of the photolamp is operative to form a pattern of parallel, closely spaced image patterns in the photographic plate. The thus exposed photographic plate is developed and the resultant photographic master is replicated in a sequence of steps resulting in the formation of a metal grid on a target substrate. Salient features of the apparatus and method contribute to the successful provision of metal grids characterized by substantially uniform spacing between parallel adjacent grid lines which increases the range of applications in which the grids can be utilized.

3,659,511
ASSEMBLAGE AND PACK OF SELF-PROCESSING PHOTOGRAPHIC FILM UNITS

Hubert Nerwin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 2, 1970, Ser. No. 52,026
Int. Cl. G03b *17/50*
U.S. Cl. 95—13 **11 Claims**

A film-assemblage and pack containing a plurality of self-processing film units adapted to be exposed and processed in sequence. Each film unit includes a first or photosensitive sheet and a second or process sheet, which sheets are separated during exposure and are brought into superposition for removal from the camera and for processing. The film units are connected within the assemblage or pack by an arrangement of leaders, only one of which is accessible from the camera exterior after each exposure. Superpositioning, processing and withdrawal of the sheets is effected through a

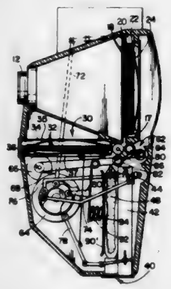


"lost-motion" type of connector that first permits and then prevents relative movement between the sheets as a respective leader is withdrawn from the camera. Simultaneously with such withdrawal, the leader associated with the next successive film unit automatically is brought into the position where it will be accessible from the camera exterior for the next exposure and processing sequence.

3,659,512
PHOTOGRAPHIC APPARATUS AND PROCESS EMPLOYING POROUS FILTER

Milton S. Dietz, Lexington, and Walter G. Lehamann, Somerville, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 5, 1971, Ser. No. 104,062
Int. Cl. G03b *17/50*
U.S. Cl. 95—13 **29 Claims**



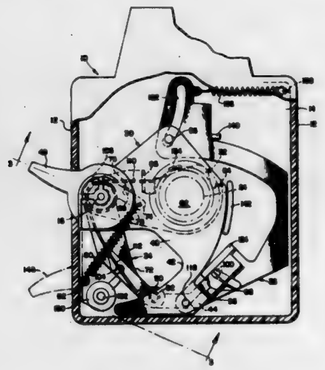
Photographic apparatus employing a gas-excluding filter interposed between a source of processing liquid and a processing chamber for providing a flow of gas-free processing liquid to exposed photographic material disposed within the processing chamber. Preferably, the source of liquid is provided within a disposable, variable-volume container or container-filter combination adapted for coupling to a processing chamber of a camera which includes a force supplying member for varying the volume of the reservoir-container so as to selectively vary the pressure differential across the filter and thereby direct gas-free processing liquid

to or from the processing chamber. A transport element is included in the camera for positioning the exposed photographic material in the processing chamber pripr to dispensing of the liquid thereto and for removal of the liquid-treated photographic material subsequent to extraction of excess liquid from the chamber.

3,659,513
SELF-COCKING PHOTOGRAPHIC SHUTTER

Bruce K. Johnson, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed June 29, 1970, Ser. No. 50,378
Int. Cl. G03b *9/10*
U.S. Cl. 95—59 **29 Claims**

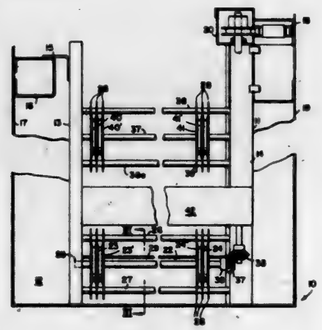


An exposure mechanism which is formed having a singular spring loaded shutter blade. This blade has a rest position normally wholly blocking the passage of light through an associated aperture. An actuator assembly mounted copivotally with the shutter blade is operative to engage and displace the blade from its blocking rest position to a wholly unblocking spring loaded position. Following an appropriate interval of exposure, the actuator assembly releases the shutter blade for return movement to its blocking rest position to terminate an exposure.

3,659,514
FILM TRANSPORT RACK

Ralph E. Steblay, Redlands, Calif., assignor to Photetron Co., Rialto, Calif.

Filed Oct. 23, 1970, Ser. No. 83,464
Int. Cl. G03d *3/12*
U.S. Cl. 95—94 R **10 Claims**

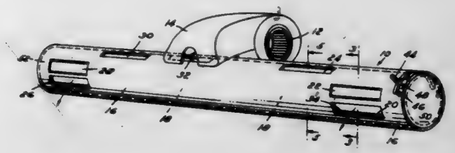


Apparatus for developing film including a shaft rotatably mounted in a film transport rack. The rack includes a film reel loosely mounted on the shaft for rotation therewith when the reel is held against the shaft by film disposed therearound under tension. A stationary brake is associated with the rack for braking the film reel into a stationary position with respect to the shaft independent of the rotation of the shaft when film tension is released from the film reel.

3,659,515
APPARATUS FOR DELIVERING MOVING AIR

Alexander H. Golaniuk, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sept. 8, 1970, Ser. No. 70,253
Int. Cl. B60h *1/24*
U.S. Cl. 98—2 **4 Claims**

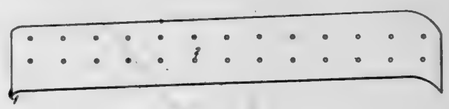


An apparatus for delivering moving air from a supply system to one of a plurality of spaced positions within a vehicle includes a stationary tube and a rotatable tube mounted within the stationary tube. The stationary tube has a plurality of apertures therethrough which are angularly spaced about the circumference of the tube for delivering moving air to the various positions. The movable tube has a limited number of apertures and depending upon its position within the stationary tube, the moving air is delivered from the assembled tubes through selected apertures of the stationary tube.

3,659,516
WINDOW VENTILATORS

Alastair Rigg MacDonald, 39 Cleuch Gardens, Clarkston, Renfrewshire, Scotland

Filed Oct. 8, 1969, Ser. No. 864,753
Int. Cl. B60h *1/24*
U.S. Cl. 98—2.12 **1 Claim**



A window ventilator for a vehicle such as an automobile, comprises a sheet of transparent material such as glass or a plastics material, said sheet having formed therein a plurality of ventilation holes preferably by a moulding operation. The axes of the holes rise from the outside to the inside of the sheet relative to the fitment of the sheet in a window frame, the angle of inclination of said axes preferably being of the order of 45° to 55°.

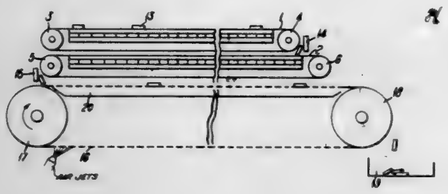
3,659,517
FRYING APPARATUS FOR FOODSTUFFS WHICH ARE TO BE FRIED ON BOTH SIDES

Kolbein Holen, Gausdl 5, 6000 Alesund, Norway

Filed Oct. 22, 1970, Ser. No. 83,107
Int. Cl. A47j *37/00*
U.S. Cl. 99—355 **2 Claims**

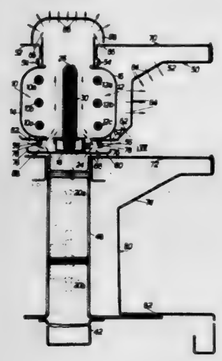
Frying apparatus for foodstuffs which are to be fried on both sides, comprising a plurality of endless frying bands

disposed one above the other and passing over rollers, wherein the bands consist of a webbing which is coated on both sides with polytetrafluoroethylene (Teflon) or other substance having similar properties, and the underside of the



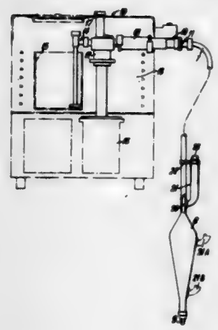
bands are in direct contact with a heated base having a plane central portion and upwardly curved edge portions in the longitudinal direction of the band, and wherein the foodstuffs are turned at the transition from one band to the band lying therebeneath.

3,659,518
HEATING APPARATUS
Ernest Henry Roberts Porter, Scottsville, Natal Province, Republic of South Africa, assignor to Ernest Henry Roberts Porter and Doris Lydia May Porter Porter, Scottsville, Pietermaritzburg, Natal Province, Republic of South Africa
Filed Jan. 13, 1970, Ser. No. 2,511
Claims priority, application South Africa, Jan. 22, 1969, 69/0505
Int. Cl. A47j *37/08*
U.S. Cl. 99—386 **2 Claims**



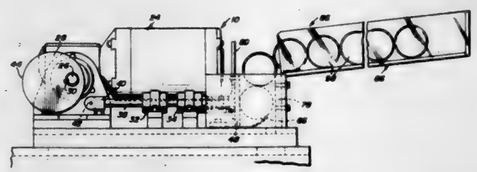
This invention relates to a heating apparatus for the heat-treatment of individual items, particularly for toasting slices of bread, cooking portions of meat such as chicken, hamburger, steak and sausages, and for curing individual items. The apparatus comprises a pair of spaced-apart elongated sources of heat energy, displacement means adapted to be displaced past the sources of heat energy and maintaining means provided on the displacement means for mounting a plurality of individual items.

3,659,519
APPARATUS FOR DEPOSITING AERATED FOOD PRODUCTS
John MacManus, 143-16-Twenty-second Road, Whitestone, N.Y.
Filed Feb. 9, 1970, Ser. No. 9,666
Claims priority, application Great Britain, Feb. 13, 1969, 7,981/69; Sept. 5, 1969, 44,031/69
Int. Cl. A21b *5/00;* **A21d** *15/00*
U.S. Cl. 99—450.1 **12 Claims**



A machine, utilizing static whipping discs, aerates a whippable food product. The aerated product is fed through a hose to a forcing bag. Venting apparatus is provided at the junction of the hose and bag to eliminate air voids. The method includes pumping the aerated product through a hose to a forcing bag, alternately compressing the bag to extrude the product and releasing the compression to interrupt the extrusion without interrupting the supply to the bag, and venting any air voids from the bag before the product reaches the tip of the bag.

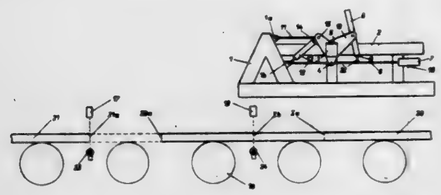
3,659,520
BEVERAGE CAN COMPRESSOR
Jimmy D. Garrett, and Charles E. Brown, both of 215 Ellis Ave., Maryville, Tenn.
Filed Mar. 19, 1970, Ser. No. 21,066
Int. Cl. B30b *15/30*
U.S. Cl. 100—216 **6 Claims**



An upstanding abutment wall outwardly from a first side of which a horizontal support extends. A vertical slot extends along the wall and projects at least slightly outwardly from the first side thereof for downwardly receiving therethrough a can extending lengthwise along the first side of the wall and flattened thereagainst. A pressure plate generally paralleling and opposing the first side of the wall is provided and guidingly supported for reciprocation toward and away from the wall for flattening a can thereagainst and the horizontal support includes a pair of bowed leaf springs disposed

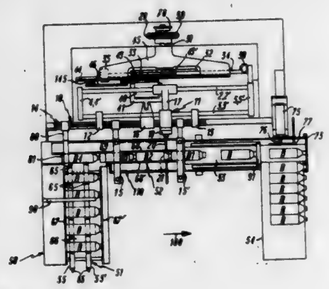
generally normal to and outwardly of the first side of the wall, supported at their ends remote from the wall and curving upwardly at their ends adjacent the wall for support of an unflattened can therefrom in elevated position relative to the slot, outwardly of which slot the ends of the springs adjacent the slot terminate.

3,659,521
APPARATUS FOR MARKING MOVING OBJECTS
Jan Lany, Ostrava, Czechoslovakia, assignor to Vitkovicke zelezarny Klementa Gottwalda, narodni podnik, Ostrava, Czechoslovakia
Filed July 16, 1969, Ser. No. 842,406
Int. Cl. B41f *17/20*
U.S. Cl. 101—4 **8 Claims**



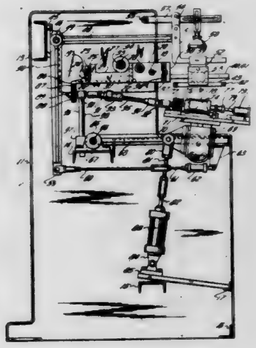
Apparatus for marking a succession of objects moving past a marking station along a conveyor. A pendulum mounted marking head which when not in use is suspended in a first, horizontal position out of the path of the objects, is provided. A sensor is energized when an object begins to approach the marking station move the marking head into a second, vertical, position spaced from but closer to the path of the object. As the object more closely approaches the marking station the marking head, still in vertical position, is moved into the path of the object to mark it, following which the marking head is retracted into its first position.

3,659,522
AUTOMATIC MACHINE FOR SILK-SCREEN PRINTING ON FILLED BOTTLES OF FLEXIBLE MATERIAL WITH FLAT FACES
Louis Gilbert Dubuit, 60 Rue Vitruve, Paris 20e, France
Filed Sept. 19, 1969, Ser. No. 859,444
Claims priority, application France, Oct. 31, 1968, 172134
Int. Cl. B41f *17/24*
U.S. Cl. 101—35 **9 Claims**



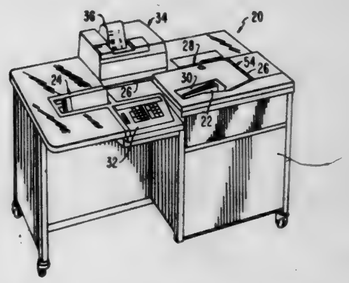
Improvements in machines for silk-screen printing on filled bottles of flexible material with flat faces, in which the bottle is compressed transversely during the printing operation in order to stiffen the face to be printed.

3,659,523
SCREEN PRINTING MACHINE FOR ROUND AND FLAT ARTICLES
Thomas W. Olsen, Wayne, N.J., assignor to Modern Decorating Company, Passaic County, N.J.
Substitute for application Ser. No. 700,856, Jan. 26, 1968, now abandoned. This application Nov. 16, 1970, Ser. No. 90,000
Int. Cl. B41f *17/18, 17/24, 17/28*
U.S. Cl. 101—38 R **11 Claims**



A screen printing machine for decorating bottles or like articles of various shapes which has interchangeable parts for component mechanisms such as screen, squeegee and article holder. It facilitates the decorating of articles of substantially round section by the use of a reciprocatingly moving screen and a stationary squeegee and the decorating of articles with at least one flat surface by the use of a stationary screen and a reciprocatingly moving squeegee.

3,659,524
PRINTER CONTROL SYSTEM
Jack Beery, Farmington, and William B. Templeton, Howell, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.
Filed Oct. 15, 1970, Ser. No. 80,959
Int. Cl. B41j *9/10;* **B41f** *13/24*
U.S. Cl. 101—93 MN **11 Claims**

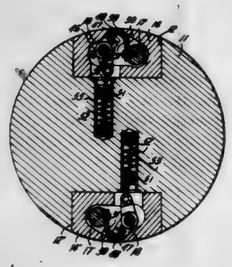


In a document printing machine comprising a plurality of interconnected modular sections, there is disclosed herein a printer module having a self container control system. Documents, to be printed upon, are sequentially passed through

the printer module under the control and drive of either one of two different speed drive units. The second drive unit initially functions as a control gate to control the feeding of documents into the printer module. When the printing operation is to begin, the second drive unit moves the documents through the printer module at a positively controlled printing speed. After the printing operation, the first drive unit moves the documents out of the printer module at a high speed.

In order to maintain the correct character pitch between adjacent serially printed characters, a timing unit is operatively connected to the first drive unit. This timing unit is responsive to drive variations and accurately divides each character pitch into a plurality of intervals. Each interval controls one or more printer operation functions including the actual print operation. In order to maintain the synchronism between the movement of the documents and the character pitch, the second drive unit is clutched from the first drive unit.

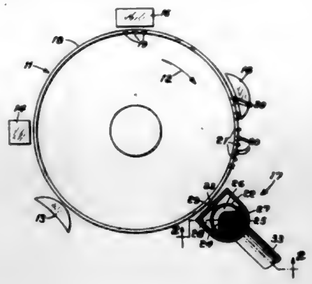
3,659,525
FLEXIBLE PRINTING PLATE CLAMPING DEVICE
Richard Woessner, Fairlawn; Jack Bryer, Paramus, both of N.J., and Dominic Mascio, Bellerose, N.Y., assignors to Wood Industries, Inc., Plainfield, N.J.
Filed Oct. 28, 1969, Ser. No. 870,027
Int. Cl. B41f 1/30, 13/16, 27/06
U.S. Cl. 101—415.1 **4 Claims**



A plate cylinder of a printing machine has two separate fastening devices for thin flexible printing plates for various page sizes. One of the fastening devices is constructed for adjusting of both the circumferential and the lateral register of plates for various page arrangements in such a manner that the registering fastening device has a shaft comprises several individual parts which can be coupled and uncoupled for various page combinations whereby the shaft portions can be separately adjusted for circumferential and lateral register.

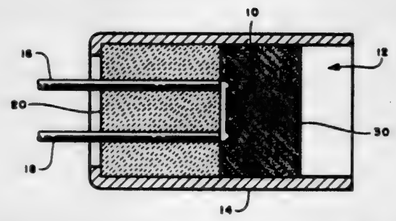
3,659,526
MAGNETIC AND VACUUM CLEANING DEVICE FOR PRINTER
Karel J. Staller, Rutherford, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Dec. 8, 1969, Ser. No. 882,983
Int. Cl. B41f 35/02
U.S. Cl. 101—425 **1 Claim**

Means are provided to remove particles from unwanted portions of a recorded surface which has been powdered for printing. The means include a slotted tube which is selectively magnetizable to form a weak magnetic field and attract the



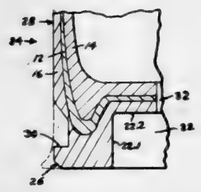
unwanted magnetic particles. The attract particles are then removed by the air pressure and exhaust means.

3,659,527
HIGH TEMPERATURE DETONATOR
Merenl Taylor Abegg, and William B. Leslie, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Oct. 29, 1970, Ser. No. 85,072
Int. Cl. F42c 19/12; F42b 3/12
U.S. Cl. 102—28 EB **3 Claims**



A high temperature or radiation resistant exploding bridge wire detonator having an azo-bishexanitrobiphenyl explosive charge positioned adjacent the exploding bridge wire.

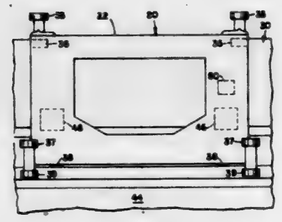
3,659,528
COMPOSITE METAL CARTRIDGE CASE
Teuvo Santala, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 24, 1969, Ser. No. 887,956
Int. Cl. F42b 5/28, 9/28
U.S. Cl. 102—43 F **9 Claims**



An ammunition cartridge cause is shown to comprise a deep, open-ended cup having a base of substantial thickness,

having a relatively thin, generally cylindrical wall upstanding from the base and having an annular, peripheral, extraction groove formed in the base, the base having a recess which opens oppositely of the open cup end for receiving a primer cup therein. The cartridge case if formed of a composite metal laminate material having a core metal layer sandwiched between and metallurgically bonded to outer layers of other metal materials. The core metal layer of the laminate material extends as a core throughout the wall of the cup and the base of the cup and is disposed within the cup base to surround the bottom and lateral walls of the primer cup recess to provide adequate case strength in the primer cup area. The core material is arranged within the cup base so that the core material is completely covered by the outer layer material of the laminate at the location of the cartridge extraction groove.

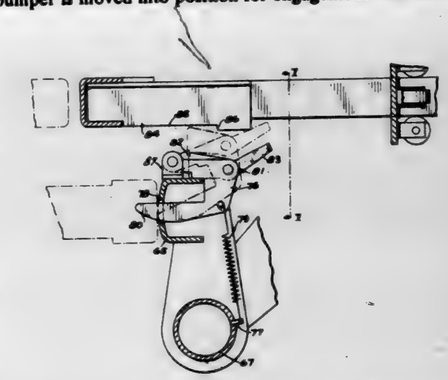
3,659,529
IMPROVED TRANSPORTATION SYSTEM
Justin M. Jacobs, Jr., 500 Sansome St., Suite 501, San Francisco, Calif., and Neil S. Stafford, Route 3, Box 355, San Jose, Calif.
Filed Sept. 29, 1969, Ser. No. 861,843
Int. Cl. B61b 3/02
U.S. Cl. 104—88 **44 Claims**



The disclosure is of a transportation system which includes an elongated guidebeam having three spaced apart running surfaces. Two of the running surfaces are substantially vertical to accommodate wheels rotating about vertical axes and the third running surface is substantially horizontal to accommodate wheels rotating on horizontal axes. Wheels which rotate on a vertical axis and wheels which rotate on a horizontal axis are connected to a rack which is adapted to move along the running surfaces of the guide-beam. The wheels connect the rack on the side of the guidebeam in cantilever fashion. Connecting switch sections are provided at desired locations on the elongated guidebeam to connect two or more guidebeams. The switch sections have no moving parts and cooperate with movable means, such as extendable and retractable wheels, of the rack to provide for selective high speed switching both in horizontal and vertical modes of a rack between an upline guidebeam and one or more spaced apart downline guidebeams and between two or more spaced apart upline guidebeams and a single downline guidegeam.

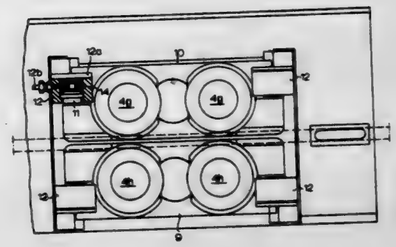
3,659,530
TOW TRUCK CONVEYOR SYSTEM
Paul Klamp, St. Clair Shores, Mich., assignor to American Chain & Cable Company, Inc., New York, N.Y.
Filed Sept. 21, 1965, Ser. No. 488,922
Int. Cl. B65g 17/42
U.S. Cl. 104—172 BT **12 Claims**

The tow truck conveyor system disclosed herein comprises a conveyor mounted for movement along a slot and a plurality of trucks. Each truck has a truck body and means thereon movable through the slot into and out of engagement with the conveyor. A front bumper is movably mounted on the truck body and operatively connected with the conveyor engaging means so that when the front bumper is moved rearwardly by contact with an obstacle, the conveyor engaging means is moved out of engagement with the conveyor. A rear bumper is movably mounted on the truck body and operatively connected with the front bumper so that the rear bumper is moved into position for engagement with the front



bumper of a successive truck when the front bumper of the truck engages an obstacle. Each truck further includes means operable by engagement of the truck with a preceding truck that has encountered an obstacle to engage the front bumper of the truck and prevent forward movement of the front bumper when the rear bumper of a preceding truck in advance of said truck moves forwardly due to the removal of the obstacle in the path of the front bumper of the preceding truck.

3,659,531
DRAWING MACHINE FOR RODS AND TUBING
Alfons Goeke, Solingen, Germany, assignor to Th. Kloserling & Albrecht, Solingen, Germany
Filed Sept. 4, 1969, Ser. No. 855,135
Claims priority, application Germany, Sept. 7, 1968, P 17 77 110.7
Int. Cl. B23q 5/22
U.S. Cl. 105—30 **10 Claims**

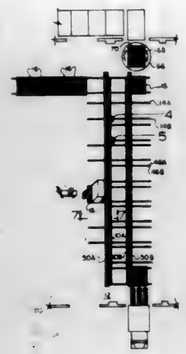


An arrangement by which elongated articles are drawn through a carriage rolling on guide tracks extending along the drawing path. Rollers mounted on the carriage are pressed against the guide tracks through hydraulic cylinders to develop the friction required to move the carriage along the guide tracks. Hydraulic motors on the carriage are mechanically linked to the rollers for the purpose of supplying the necessary driving power of the carriage. The traction or driving force required to move the carriage for the drawing operation is developed entirely through friction between the rollers and the guide tracks.

3,659,532
PALLET AND RAIL MATERIAL HANDLING APPARATUS

Necati Kanatsiz, Spring Valley, and Floyd E. Davis, San Diego, both of Calif.

Continuation of application Ser. No. 783,021, Dec. 11, 1968, now abandoned. This application Apr. 12, 1971, Ser. No. 133,408
Int. Cl. B61f *11/00*; B61j *1/10*
U.S. Cl. 105—177 5 Claims

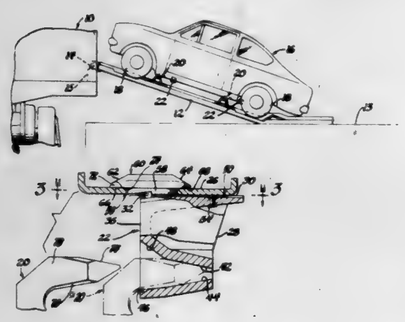


Conveying apparatus comprising tracks which form a main line, a plurality of spur tracks which intersect the main line tracks and extend laterally therefrom, and one or more pallets provided with rotatable ball supports which roll on said main line and spur tracks and which permit pallets to be transferred therebetween. The pallets are provided with rotatable support members at their upper surfaces to facilitate loading and unloading of materials thereon and to enable the apparatus to be used as a conventional conveyor when a plurality of the pallets are placed in end-to-end relation along the aforesaid tracks.

3,659,533
DEVICE FOR SECURING VEHICLE TO TRANSPORTER DOOR

Anthony Venditty, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 16, 1970, Ser. No. 89,711
Int. Cl. B60p *7/08*; B61d *45/00*; B65j *1/22*
U.S. Cl. 105—368 R 3 Claims

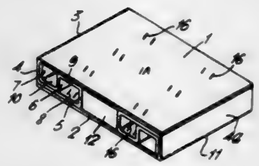


A securement device for maintaining a vehicle in a secured position on an upright transporter door and having a first section adapted to be located in an oblong slot formed in the underbody of the vehicle and a second section for automatic locking engagement with a projecting member rigidly mounted on the transporter door when the vehicle is driven onto the door.

3,659,534
FORK LIFT TRUCK PALLET

Mark Glendower Hyde Childs, Corringham, Essex, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Sept. 17, 1969, Ser. No. 858,834
Int. Cl. B65d *19/18*
U.S. Cl. 108—56 3 Claims

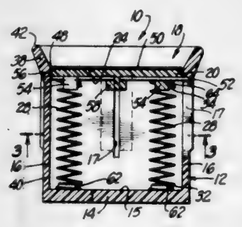


A fork lift truck pallet folded from blanks of board material and having identical top and bottom wall panels each with box-like structures folded from opposite marginal edge portions. Wall members of the box-like structures normal to the top and bottom wall panels provide compressive strength, and resistance to lateral collapse is provided by spacing members of rectangular tube-like section disposed at right angles between the box-like structures. The spacing members also provide a measure of compressive strength.

3,659,535
CARD HOLDER AND DISPENSER

Florian B. Cerney, and Tina M. Cerney, both of 1405 1/4 North Havenhurst Drive, Los Angeles, Calif.

Filed Dec. 4, 1969, Ser. No. 881,958
Int. Cl. A47b *9/02*
U.S. Cl. 108—136 2 Claims



A device for holding and dispensing playing cards one at a time and providing ready access to the top card of the stack, which includes a container having a base, four walls, and an open top; a movable platform for supporting the card stack which is mounted within the container; biasing means urging the movable platform and the cards stacked thereon in an upward direction whereby the top card will be in proper position relative to the open top; and means for restricting and guiding the vertical movement of the movable platform within the container.

3,659,536
ROOT FEEDER DEVICE

Robert B. White, 13 County Club Drive, Larchmont, N.Y.

Filed Oct. 1, 1970, Ser. No. 77,144
Int. Cl. A01c *23/02*
U.S. Cl. 111—7.1 6 Claims

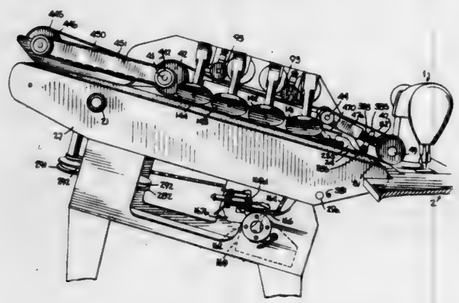


A root feeding device is disclosed, the device comprising a hollow pipe adapted to be connected to a liquid source and having a generally pointed central rod suspended past the lower end thereof. A valve core is slidably disposed in the pipe concentrically about the central rod, the valve core extending beyond the pipe and defining a leading tip therefor. The central rod and the valve core provide axial fluid flow when the valve core is retracted into the pipe, thus aiding immersion of the pipe into the ground. When the pipe is immersed, the valve core is partially slidably retracted therefrom to thus provide radial fluid flow. Importantly, the construction is such as to obviate clogging of the apparatus by soil, pebbles and the like.

3,659,537
SEAM FINISHING APPARATUS

Victor J. Sigoda, Great Neck, N.Y., assignor to Man-Sew Corporation, New York, N.Y.

Original application June 5, 1967, Ser. No. 643,458, now Patent No. 3,478,451, Continuation-in-part of application Ser. No. 481,522, Aug. 23, 1965, now Patent No. 3,372,497.
Divided and this application July 18, 1969, Ser. No. 853,575
Int. Cl. D05b *27/00*, *27/10*, *27/06*
U.S. Cl. 112—217 10 Claims

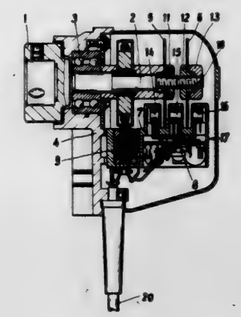


Tandem arrangement of sewing machine and ironing mechanism in which the latter has a positively driven, thin, heat transfer belt heated by retractable heat pod(s) brought into engagement with belt only when belt speed exceeds predetermined rate, and conveying members for which drive is derived from sewing machine transmitter in an arrangement in which the ironing mechanism operates only during sewing. Includes an adjustable speed transmission and additional mechanism by which operator can reduce speed or suspend operation of conveying members while continuing sewing to provide slack in fabric between sewing machine and ironing mechanism to permit negotiation of certain curved portions of garments. Ironing mechanism includes a floating buck with fabric pressing taking place between floating buck and moving heat transfer belt. Two layered bridging member connects outlet of sewing machine with inlet of ironing mechanism which permits longitudinal movement of sandwiched leadon portions of the buck and a fabric plies separator without disrupting connection. Ironing mechanism includes prepuller using feed discs magnetically coupled to drive members but mounted for vertical displacement. Feed discs have partially tapered perimeters which produce lateral skewing of rearwardly moving fabric for spreading free ply edges of fabric during ironing.

3,659,538
SEWING MACHINE HAVING CONTACTLESS POSITION CONTROL MEANS

Hugo F. Bosken, and Alfred K. Heidt, both of Schwetzingen, Germany, assignors to Firma Frankl & Kirchner Fabrik Fur Elektromotoren Und Elektrische Apparate, Schwetzingen Baden, Germany

Filed May 15, 1970, Ser. No. 37,542
Claims priority, application Germany, May 17, 1969, P 19 25 301.1
Int. Cl. D05b *69/22*
U.S. Cl. 112—219 A 7 Claims



Sewing machine having contactless position control means operating with one or more rotating shield blades where the control means for operating a thread cutter has an additional displaced phase shield blade sector that is effective to determine the stopping of the sewing machine in relation to the position determined by the control means.

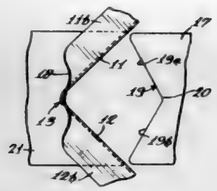
3,659,539
MECHANISM FOR FORMING A CORNER JOINT FLANGE

Russel F. Schaepper, Boonville, Ind., assignor to Whirlpool Corporation

Original application July 30, 1969, Ser. No. 846,194, now Patent No. 3,584,371. Divided and this application Feb. 16, 1971, Ser. No. 115,272
Int. Cl. B21d *51/02*
U.S. Cl. 113—1 G 6 Claims

A method of forming a reinforced sheet metal corner joint wherein a flange is formed across a welded joint in such a way as to gather the metal toward the joint and effectively

preclude splitting of the joint in the formation of the reinforcing flange. The metal is gathered toward the welded joint by means of a V-shaped concave die whereby the edge of the metal sheets is progressively turned as the die surfaces move

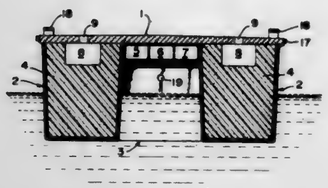


along the metal edge progressively toward the apex of die. The sheet metal is firmly held adjacent the edge by suitable clamp means permitting the edge to be turned by the die into accurate perpendicular relationship to the corner joint.

3,659,540
MONOLITHIC FLOATING WHARVES

Kenneth L. Toby, 1551 Mount Douglas X Road, and Rodney W. S. Wells, 1329 Stanley Street, both of Victoria, British Columbia, Canada

Filed Mar. 17, 1970, Ser. No. 20,198
Int. Cl. B63b *35/00*
U.S. Cl. 114—0.5 F 8 Claims



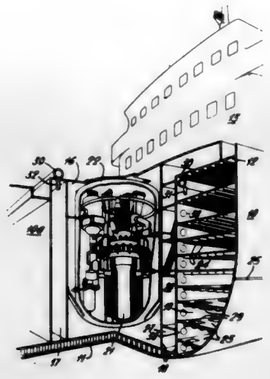
Monolithic reinforced concrete flotation units constructed to be assembled as single or multiple wharves with provision for the safe carriage of power, fuel and communication services and with provision for storage lockers. Such units are designed specifically for boat moorage but with modification in arrangement and assembly of the units or modification in size or shape, the units may be used for a variety of other purposes such as floating walkways or causeways, diving platforms, breakwaters, flotation units for boat moorage sheds and marine refueling stations.

3,659,541
NUCLEAR POWERED SHIPS

Shephard Rigg, Warrington, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Aug. 18, 1969, Ser. No. 850,898
Claims priority, application Great Britain, Aug. 26, 1968, 40,789/68
Int. Cl. B63b *35/00*
U.S. Cl. 114—05 5 Claims

A nuclear powered ship has its collision barriers made water tight and means are provided for filling the barriers with water to act as a shield against radiation in the event of, or as a precaution against, a "maximum credible accident," thus avoiding the need for a permanent shield outside the reactor containment vessel. Coffer dams in the ship can be

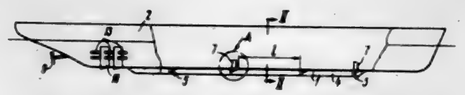


similarly treated to give protection to the ship's crew. The means for filling the barriers may be a ring main pipe with access fore and aft of the ship or the ship's ballast system may be adapted to provide the filling water for the barriers.

3,659,542
AIR-CUSHION MARITIME CRAFT

Vitaly Ivanovich Petrov, ulitsa Frunze, 6a, kv. 147; Alexandr Nikolaevich Ivanov, Basseinaya ulitsa, 31, kv. 29; Jury Leonidovich Olenin, Moskovskoe shosse, 20, korpus 5, kv. 5; Arnold Oskarovich Eller, V.O., 6 Linia, 49, kv. 19; Anatoly Akimovich Butunov, Krasnoputilovskaya ulitsa, 19, kv. 22; Abram Moiseevich Basin, ulitsa Lenina, 48, kv. 7; Vladimir Borisovich Starobinsky, ulitsa Professora Kochalova, 6, kv. 3; Efim Rafailovich Ratner, Prospekt Stachek 132 kv. 78, and Oleg Fedorovich Potapov, Nevsky prospekt, 23, kv. 10, all of Leningrad, U.S.S.R.

Filed Aug. 14, 1969, Ser. No. 850,038
Int. Cl. B63b *1/34*
U.S. Cl. 114—67 A 2 Claims



A craft in which the bottom between the board keels is provided with steps located at a definite distance one from another and forming a stable air-cushion under the bottom of the craft.

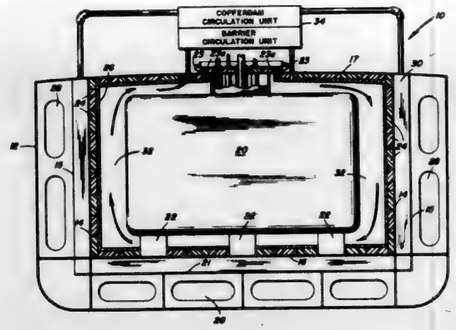
3,659,543
SHIP FOR TRANSPORTING CRYOGENIC MATERIAL

Norman K. Basile, Hauppauge, L. I., and Joseph J. Cuneo, Scarsdale, both of N.Y., assignors to John J. McMullen Associates, Inc., New York, N.Y.

Filed Apr. 4, 1969, Ser. No. 813,669
Int. Cl. B63b *25/08*; B65d *25/00*
U.S. Cl. 114—74 11 Claims

A ship of simplified construction is adapted for the marine transportation of cryogenic material. At least one single barrier containment tank is located within the hull of the ship. On the inboard side of the inner hull and transverse bulk-

heads of the ship is provided a thermal insulating system, and covering the inner surface of this insulating system is a gas and liquid impervious liner. A space is provided between the liner and the wall of each containment tank and a cofferdam is provided outboard of the inner

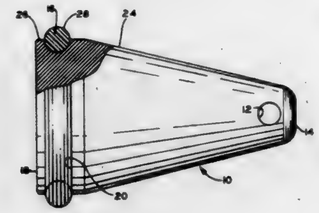


bottom and between the transverse bulkheads. Two circulation systems are provided, the first being provided in the space intermediate the liner and the tank, and the second being provided in the space defined by the cofferdam. Means for the detection of leaks in the containment system are also provided.

3,659,544
BOAT ANCHOR

Rudolph A. Goepfrich, 1109 North Cleveland Avenue, South Bend, Ind.

Filed Dec. 12, 1969, Ser. No. 884,496
Int. Cl. B63b *21/24*
U.S. Cl. 114—206 R 2 Claims



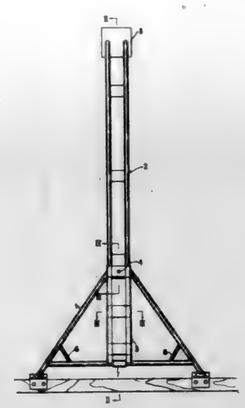
An improved anchor is of conical construction, and has at its larger diameter end a groove which is adapted to receive therein an annular "O" ring which protrudes beyond the outer surface of the anchor to provide a bumper which protects the sides of the boat against damage as the anchor swings against the sides of the boat.

3,659,545
OUTRIGGER FOR MOORING A WATER VEHICLE

John Gunnar Hedman, Piteå, Sweden, assignor to Klas O. Tellberg AB, Saltsjö-Duvnäs, Sweden

Filed Feb. 12, 1970, Ser. No. 10,862
Claims priority, application Sweden, Nov. 27, 1969, 16306/69
Int. Cl. B63b *21/00*
U.S. Cl. 114—230 6 Claims

An outrigger for mooring water vehicles consisting of a device being pivotable or turnable in a vertical plane and connected to a quay, bridge or similar, and a boom

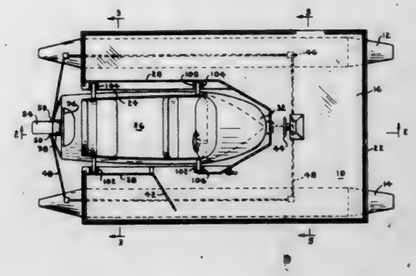


detachably secured to said device and possibly also to the quay.

3,659,546
MOTOR BOAT PROPELLED PONTOON BOAT

Louis F. Miklos, 6151 Delaware Street, Lake County, Ind.

Filed Apr. 6, 1970, Ser. No. 25,738
Int. Cl. B63b *21/00*, *35/44*
U.S. Cl. 114—235 R 8 Claims



This invention relates to pontoon boats which normally carries a dingy for transporting the passengers to and from the pontoon boat. The stern end of the pontoon boat is provided with a novel structure for incapsulating a motor boat which provides the motive means to propel the pontoon boat. This invention combines the motor boat and pontoon boat to form an integral structure for purposes of propulsion of both crafts. Both crafts are separable when it is desired to use the motor boat as a tender craft.

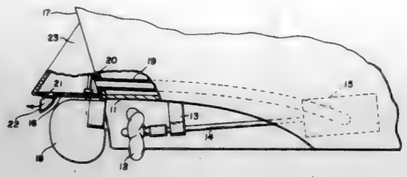
3,659,547
EXHAUST SYSTEM FOR TUNNEL STERN BOAT

Robert B. Stuart, Penn Yan, N.Y., assignor to Penn Yan Boats Incorporated, Penn Yan, N.Y.

Filed June 1, 1970, Ser. No. 42,134
Int. Cl. B63h *21/32*
U.S. Cl. 115—34 R 12 Claims

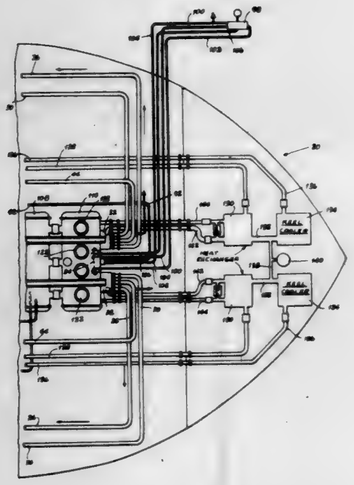
In a tunnel stern boat having a propeller in the tunnel and a spray plate and rudder aft of the tunnel, the exhaust from

an inboard engine is piped to a transom opening from which



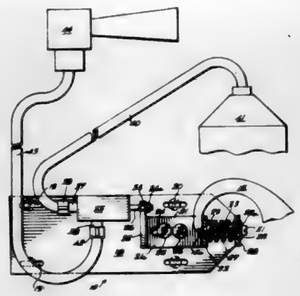
it is guided downward and directed under the spray plate into the high speed stream of water thrust aft from the propeller.

3,659,548
HYDRAULIC PADDLE WHEEL BOAT
John Fabick, Fenton, Mo., assignor to John Fabick Tractor Company, St. Louis, Mo.
Filed Aug. 19, 1970, Ser. No. 65,178
Int. Cl. B63h *1/04*
U.S. Cl. 115—49 3 Claims



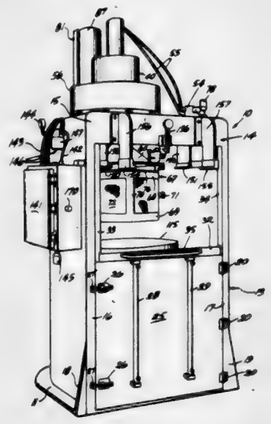
A paddle wheel boat, hydraulically operated by oil under pressure supplied to a reciprocatory drive cylinder, driving the paddle wheel by a Pitman connection. The boat is powered by a diesel engine driving a hydraulic pump, which supplies oil under pressure on alternate sides of a piston in the drive cylinder. A thrust rod is connected to the piston and also at an opposite end to the paddle wheel, and by reciprocatory action of the drive cylinder controlled by a sequencing rod to control the alternate admission of oil to one side or the other side of the piston, the paddle wheel is driven. Provision is made for reversing the paddle wheel operation by means of a reversing or directional control valve which reverses the flow of oil. By means of surge chambers and accumulators, shock in the system is easily controlled. A pilot system for operating the directional control valve is provided through a pilot pump also driven by the diesel engine.

3,659,549
LOCK ALARM DEVICE
William Wagner, 1800 West 4th Avenue, Hialeah, Fla.
Filed Oct. 5, 1970, Ser. No. 78,048
Int. Cl. E05b *45/00*
U.S. Cl. 116—8 9 Claims



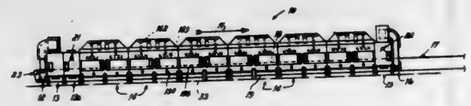
A lock alarm mechanism for vending machines and the like is described, including a key-operated latch member secureable to a hinged housing door or panel member and lockingly interengageable with a latch bar member resiliently supported with respect to the associated housing member and operative, only during intervals of attempted forcing of the lock such as by prying between the door or panel member and the housing member, to yieldingly move the latch bar member and thereby actuate a self-contained alarm in the housing structure protected.

3,659,550
FLUID OPERATED COATING AND DRYING MACHINE
Wayne F. Fulton, Moorepark, Mich., assignor to Spring Tools Corporation, Schoolcraft, Mich.
Filed Nov. 9, 1970, Ser. No. 87,926
Int. Cl. B05c *11/12*
U.S. Cl. 118—6 6 Claims



An apparatus is provided for painting or otherwise treating solid articles or parts with a liquid and subsequently removing excess liquid, comprising a container for the articles or parts, a tank for containing the liquid, means for dipping the container and articles to immerse the articles in the liquid, and means for retracting the container from the liquid and spinning the container to remove excess liquid and drying while the container and articles are within the confines of the tank. All functions are accomplished by air-operated or other fluid means and controlled by valves actuated by an air-operated fluidic circuit, and in the complete absence of any electrical circuits, thereby avoiding any danger of explosion by ignition of the liquid which might be caused by an electrical spark.

3,659,551
GLASS TREATING TUNNEL
Richard G. McKinstry, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Aug. 10, 1970, Ser. No. 62,489
Int. Cl. C23c *11/00*
U.S. Cl. 118—48 7 Claims



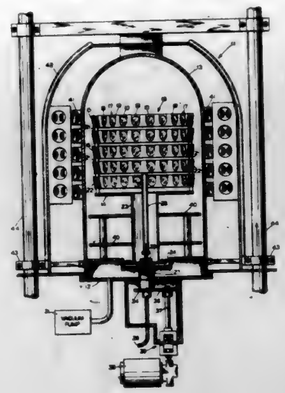
A glass treating tunnel or furnace particularly adapted to expose glass articles to treating vapors. The tunnel comprises, in order from inlet end to outlet end, an inlet air door, an inlet dead zone, a treating chamber, an outlet dead zone, and an outlet air door. Preferably, an open mesh belt traverses the glass treating tunnel from one end to the other, the belt being adapted to carry thereon the glass articles to be treated.

The inlet and outlet dead zones are not provided with atmosphere circulation means, and the atmosphere within them is quiescent. The treating chamber is provided with apparatus for supplying the vapor with which the glass articles are to be treated, and apparatus for circulating the vapor containing atmosphere within the treating chamber. Heating elements control the temperature of each air door's airstream of the circulating atmosphere to a desired level. This structural combination unexpectedly promotes maintenance of the treating vapors within the treating chamber.

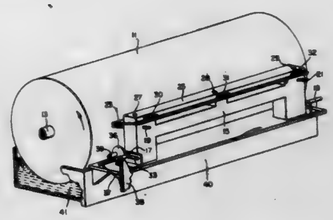
Vapor drift may tend to occur toward one end or the other of the treating chamber through one or the other of the inlet and outlet air doors, the direction of the drift being mainly dependent on atmospheric conditions outside the glass treating tunnel. Drift controlling means are provided in the inlet and/or outlet dead zones, which counteract such vapor drift, thereby promoting maintenance of treating vapors within the treating chamber.

3,659,552
VAPOR DEPOSITION APPARATUS
Thomas F. Briody, Bethlehem, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed Dec. 15, 1966, Ser. No. 601,885
Int. Cl. C23c *13/08*
U.S. Cl. 118—49.5 8 Claims

A vapor deposition apparatus includes a susceptor formed as an annulus about a vertical axis and having pockets on the inner, vertical wall adapted to support substrates therein. Means rotate the annulus at speeds to effect a centrifugal retaining force on substrates so supported. Inductive heating means is provided.

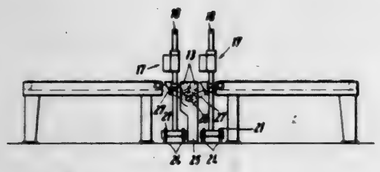


3,659,553
ADJUSTING DOCTOR BLADE ARRANGEMENT FOR USE WITH A DRUM APPLICATOR
Philip E. Tobias, 1872 Watson Rd., Abington, Pa.
Filed Oct. 8, 1970, Ser. No. 79,087
Int. Cl. B05c *1/08*
U.S. Cl. 118—261 7 Claims



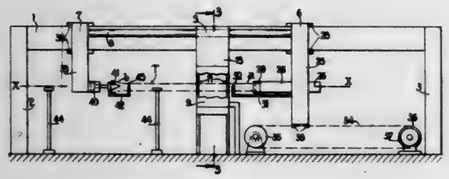
The present device includes a doctor blade mounted on a holder, which holder is further mounted on a pair of slideable rods. In addition, mounted on the holder are two threaded pivot members made of material which will not score nor scratch the drum, with which the doctor blade is used. The pivot members are adjustably disposed to come to rest against the drum. Further in addition, there is an eccentric cam disposed to abut one of said slideable rods and said last mentioned slideable rod is spring loaded to be held against said cam. Accordingly, as said cam is rotated it determines the "at rest" location of said engaged slideable rod and thus said holder. This last mentioned action causes the doctor blade to pivot or be partially rotated around the ends of said pivot members. In response to this action the doctor blade is located at a chosen distance from the drum (thereby determining the thickness of the material transported by the drum for application to a sheet of paper or the like). Because the holder is "floating" on the slideable rods, the holder will be moved toward and away from said drum, in response to any eccentricities or irregular surfaces of the drum, so that the layer of material that is being transported by the drum for application will have a constant thickness.

3,659,554
POURING PLANT, ESPECIALLY FOR LACQUERS, VARNISHES, ENAMELS, AND THE LIKE
Helmut A. Friz, Stuttgart, and Alfred Dettelbach, Stuttgart-Sommerrain, both of Germany, assignors to Adolf Friz Gesellschaft mit beschrankter Haftung, Stuttgart-Bad Cannstatt, Germany
Filed Sept. 11, 1969, Ser. No. 856,987
Claims priority, application Germany, Sept. 11, 1968, P 17 77 132.3
Int. Cl. B05c *5/00*
U.S. Cl. 118—314 2 Claims



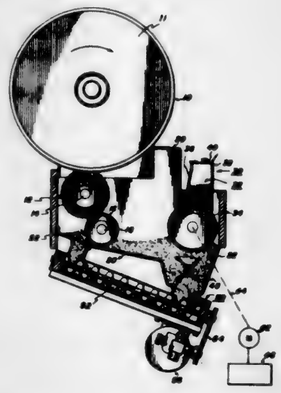
A pouring installation with at least one pouring station for pouring liquids, in which work pieces to be processed are conveyed by conveying means past a pouring head and a collecting trough which latter together with said pouring head is movable selectively from a first position in the path of said conveying means into a second position out of said path and vice versa, while storage means for storing the liquid to be conveyed to the pouring head are provided from which the liquid is pumped to the pouring head and while said pump and said storage means and said collecting trough form a closed circuit in the first as well as in the second position of the pouring head and the pertaining collecting trough.

3,659,555
MACHINE FOR COATING CYLINDRICAL OBJECTS
Roger Marcel Malivoir, Pont-A-Mousson, France, assignor to Centre De Recherches De Pont-A-Mousson, Pont-A-Mousson, France
Filed Sept. 15, 1970, Ser. No. 72,436
Claims priority, application France, Oct. 2, 1969, 6933671
Int. Cl. B09b *13/04*
U.S. Cl. 118—320 5 Claims



A machine for externally coating a pipe. The pipe is made to rotate and travel lengthwise through a coating cabin having openings allowing the passage of the pipe. At least one coating gun extends into the cabin for coating the pipe as it moves through the cabin. A duct communicates with the interior of the cabin for discharging harmful gases and particles produced in the course of coating.

3,659,556
PROGRAMMABLE TONER DISPENSER
Edward Charles Mutschler, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Aug. 19, 1970, Ser. No. 65,052
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 6 Claims



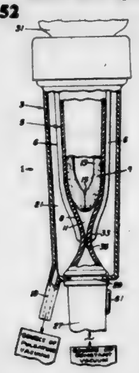
A dispenser for replenishing the toner portion of a mixture of toner and carrier, the mixture developing a latent image formed on an image-bearing surface. A container including spaced-apart side walls is positioned adjacent a rotatable member, the bottom of the side walls being shaped to fit the curvature of the member. The toner is introduced into the container and is dispensed as the member is rotated and at a rate proportional to its speed. In a specific embodiment, the amount of toner dispensed is dependent on the density of the developed image and/or the image printing rate.

3,659,557
TEAT CUP INFLATION
Daniel O. Noorlander, 5707 North Bond, Fresno, Calif.
Filed Mar. 23, 1970, Ser. No. 21,812
Int. Cl. A01j *05/04*
U.S. Cl. 119—14.36 10 Claims



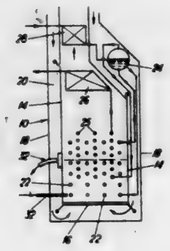
A teat cup assembly for an automatic milking machine including an inflation assembly having a retaining diaphragm integrally formed with the cup liner for engaging the teat of a cow to retain the cup against falling off while venting the space between the teat and liner at the end point of milking. The inflation is formed by initially molding the liner and diaphragm from a single mass of resilient elastic material, with the diaphragm having vent means integrally formed thereon to permit the egress of air into the liner at the end point of the milking operation. The configuration of the vent means facilitates molding the liner and diaphragm as a unitary structure.

3,659,558
TEAT CUP INFLATION
Daniel O. Noorlander, 5707 North Bond, Fresno, Calif.
Filed Mar. 23, 1970, Ser. No. 21,813
Int. Cl. A01j *05/04*
U.S. Cl. 119—14.52 9 Claims



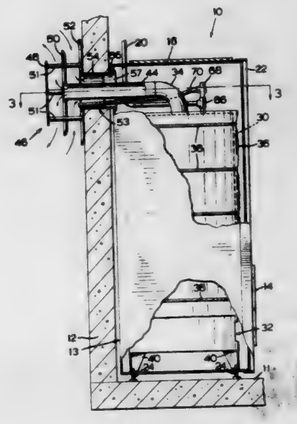
Provided is a teat cup inflation which prevents mastitis by eliminating contaminated milk forced backwash which usually occurs during the rest cycle of automatic milking operations and at the same time provides for uniform and adequate massage of the teat. This is accomplished by providing in combination (1) a rigid air-vent plug in the wall of the inflation located just below the pulsating vacuum chamber shell and (2) an inflation having a cross-sectional area of longitudinally reinforced portions and longitudinal unreinforced portions along that section of the inflation which is enclosed within the shell, such that when the inflation collapses, there is effected along the entire length of the teat a massaging action and at the same time there is insured, upon maximum collapse and even as the inflation begins to wear out, a remaining orifice of from about 0.012 square inches to about 0.028 square inches connecting the milking vacuum to the inflation cavity immediately below the end of the teat.

3,659,559
FLUIDISED BED BURNER CONTROL
Gabriel F. Foldes, Banstead; Peter W. Neve, Biggin Hill, and Peter J. Corbridge, London, all of England, assignors to Foster Wheeler Corporation
Filed June 22, 1970, Ser. No. 48,221
Int. Cl. F22b *1/02*
U.S. Cl. 122—4 D 11 Claims



There is described herein a fluidised bed burner for a steam boiler. It has been found to be difficult to control the operation of such burners in response to varying heat outputs so as to meet steam load demands. According to the invention this control is achieved by providing an overflow take-off for the bed particles which is adjustable in relation to the height to the bed so that the height and accordingly volume of the bed can be adjusted. According to a preferred feature of the invention the cross-sectional area of the bed increases with increasing bed height. This provides the advantages that a relatively fine adjustment of the output of the bed is possible a low load, and the velocity of the fluidising gases at the top of the bed are relatively slow and so relatively fed particles are entrained and removed from the bed.

3,659,560
WATER HEATER
Wilfred G. Carter, 37 Romfield Circuit, Thornhill, Ontario, Canada
Filed Mar. 23, 1970, Ser. No. 21,617
Int. Cl. F22b *37/36*
U.S. Cl. 122—494 2 Claims

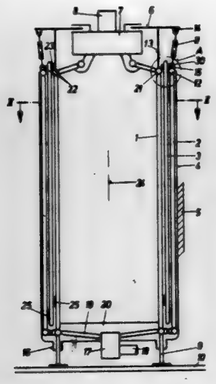


A water heater comprising a cylindrical water tank having a gas burner below it and a flue pipe passing through the tank for heating the water. The tank is enclosed in a square sectioned housing having an air inlet to which air from outside the building can be fed. An air intake duct (which leads to the outside of the building) is connected to the air inlet of the heater and is of sufficiently large diameter to allow the flue pipe to pass coaxially through it with sufficient space between the flue pipe and the air intake duct for the supply of combustion air to the burner.

3,659,561
FRAMELESS WATER PIPE BOILER
Willibald Kraus, Grebenstein, Germany, assignor to Rheinstahl Henschel Aktiengesellschaft, Kassel, Germany
Filed June 22, 1970, Ser. No. 48,312
Claims priority, application Germany, June 23, 1969, P 19 31 717.0
Int. Cl. F22b *37/24*
U.S. Cl. 122—510 10 Claims

Self-supporting water pipe boiler with two or more co-axially arranged cage heating surfaces each of which comprises vertical pipes and upper and lower headers or reversing bends while the individual cage heating surfaces are differently designed as evaporator, superheater, or feed water preheater or hot water generator or one and the same cage

comprises different heating surfaces, in which the inner cage defining the fire box and, if provided, other cages of the same temperature have their lower end resting on a foundation while to the upper end of said cage or cages there are con-



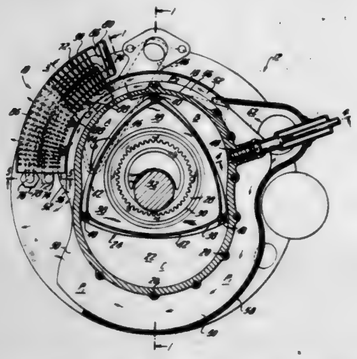
nectable the remaining cage heating surfaces of said boiler as well as the flue chamber mantle with insulation, the water-steam separating vessel and a walk-on platform with accessories thereon including the burner system.

3,659,562

AIR COOLING SYSTEM FOR ROTARY INTERNAL COMBUSTION ENGINE

Charles Jones, Hillsdale, N.J., assignor to Curtiss-Wright Corporation

Filed Jan. 27, 1971, Ser. No. 110,104
Int. Cl. F01p 7/10, 1/00
U.S. Cl. 123—8.01 **10 Claims**



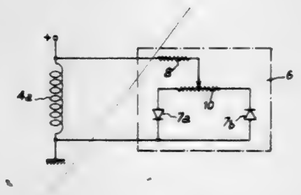
The air cooling system for a rotary piston, internal combustion engine, having a liquid cooled rotor and means defining a divided circumferential external cooling air flow path for flowing air in a first path adjacent the combustion and expansion sectors of the engine and cooling air in the second path adjacent the intake sector of the engine, comprises a liquid heat exchanger secured adjacent the intake sector of the engine and in the second external cooling air flow path so that heated liquid from the engine rotor is passed in indirect heat exchange relation to cooling air flowing through the second path. The heat exchanger is constructed and arranged to provide a pressure drop in the cooling air flow, downstream from the point of divergence of the cooling air flow, to automatically meter a smaller quantity of the cooling air flow in the second flow path than through the first flow path.

3,659,563

INDIVIDUAL CORRECTING SYSTEM FOR THE ELECTRONICALLY CONTROLLED ELECTROMAGNETIC INJECTORS IN INTERNAL COMBUSTION ENGINES

Louis A. Monpetit, L'Etang-La-Ville, France, assignor to Societe des Procedes Modernes d'Injection Sopromi

Filed July 9, 1970, Ser. No. 53,342
Claims priority, application France, Aug. 1, 1969, 6926492
Int. Cl. F02m 52/00
U.S. Cl. 123—32 EA **2 Claims**



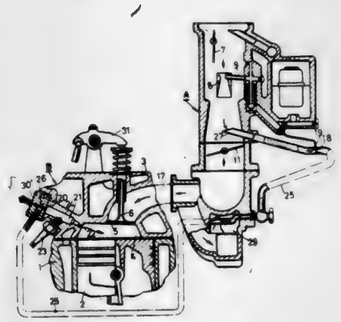
The invention provides an individual correction of the duration of the injection of fuel into any one of the injectors of an internal combustion engine. To this end the signals generated by electronic control means and fed into the solenoid controlling injectors are diverted into a circuit connected across the terminals of the solenoid and including in series an adjustable impedance such as a resistance which may be in parallel with an adjustable capacitance and at least one diode the direction of which defines whether the lag is obtained for the opening or for the closing of the injector. A preferred embodiment of said circuit includes a resistance connected with the slider of a potentiometer the ends of which are connected with diodes connected in opposite directions and in parallel in the circuit so that according to the position of the slider the lag-producing action is predominantly that of one or the other diode.

3,659,564

INTERNAL COMBUSTION ENGINE WITH SUB-COMBUSTION CHAMBER

Toshio Suzuki, Nagoya; Yujiro Oshima, Ichinomiya, and Masao Katsoka, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Hinakata, Showa-ku, Nagoya-shi, Aichi-ken, Japan

Original application Nov. 1, 1968, Ser. No. 772,732, now Patent No. 3,543,736. Divided and this application Mar. 20, 1970, Ser. No. 21,357
Int. Cl. F02b 3/00; F02m 13/04, 23/04
U.S. Cl. 123—32 SP **2 Claims**



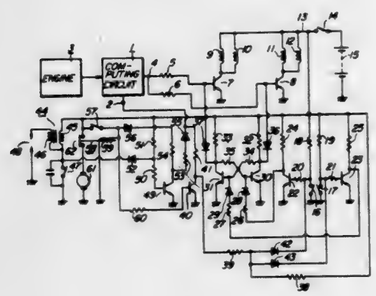
An internal combustion engine having a cylinder, including a main combustion chamber, in combination with a sub-combustion chamber provided with an ignition plug and communicating with the main combustion chamber through a small hole in a cylinder wall for jetting out the flame of air-fuel mixture ignited in the sub-combustion chamber to the main combustion chamber, the air-fuel mixture being supplied to the sub-combustion chamber through a suction tube from the same carburetor which feeds the main combustion chamber. The carburetor inlet of said suction tube is positioned upstream of a throttle valve and downstream of a venturi portion of the carburetor. A valve is placed at the outlet of the suction tube to the sub-combustion chamber and this valve may be interconnected with a main valve in the suction manifold leading from the carburetor to the main combustion chamber to move in synchronism therewith and with a piston in the cylinder, or it may be arranged to operate automatically in response to the difference of pressure within the sub-combustion chamber and the suction tube.

3,659,565

FUEL INJECTION CONTROLLING SYSTEM FOR INTERNAL COMBUSTION ENGINE

Ryoji Kasama, and Seiji Suda, both of Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 2, 1969, Ser. No. 821,180
Claims priority, application Japan, May 6, 1968, 43/29671
Int. Cl. F02d 5/00
U.S. Cl. 123—32 EA **4 Claims**



A fuel injection controlling system wherein fuel injectors each thereof associated with each one of cylinders are grouped in correspondence with each two of the cylinders, each group of the fuel injection controlling valves are opened only when it is desired that fuel be injected with respect to one of each corresponding group of cylinders, and at the starting point of the engine all the valves belonging to one group are opened when it is desired that fuel injection be effected with respect to any one of the two cylinders belonging to the corresponding group.

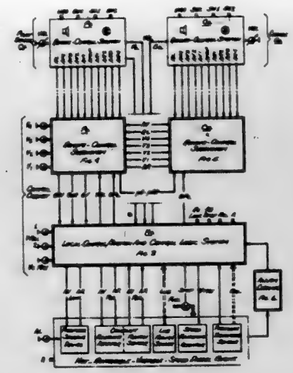
3,659,566

PNEUMATIC DEVICE FOR REMOTE CONTROL AND MONITORING OF A VARIABLE-SPEED, REVERSIBLE DIESEL ENGINE

Marc Edouard Zucca, La Ciotat, France, assignor to Chantiers Navals de la Ciotat, La Ciotat (Bouches-du-Rhone), France, a part interest.

Filed Sept. 10, 1969, Ser. No. 856,598
Claims priority, application France, Sept. 10, 1968, 165629
Int. Cl. F01l 13/02
U.S. Cl. 123—41 R **24 Claims**

A reversible, variable-speed engine for the propulsion of a ship is controlled by a pneumatic logic system providing selective transmission to the actuators of the engine control members of a running direction order and of a speed order issued from one of a plurality of remote-control stations. Said system provides for proper positioning of the engine cam-



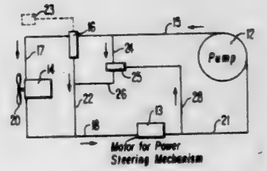
shaft, for successive attempts to pneumatically start the motor and for control of idling and running speed of the engine. Alarm circuits are also provided.

3,659,567

DRIVE MEANS FOR THE COOLING FAN OF AN INTERNAL COMBUSTION ENGINE

Frederick R. Murray, Nantwich, England, assignor to Rolls Royce Limited, Derby, England

Filed July 13, 1970, Ser. No. 54,123
Claims priority, application Great Britain, July 15, 1969, 35,551/69
Int. Cl. F01p 7/02, 7/14, 7/16
U.S. Cl. 123—41.12 **2 Claims**



A hydraulic drive for the fan of an internal combustion engine in which an existing constant flow supply of hydraulic fluid is used to actuate a hydraulic motor to drive the fan. A system of valves is provided to safeguard the operation of the primary location of use of the hydraulic fluid

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3,659,568

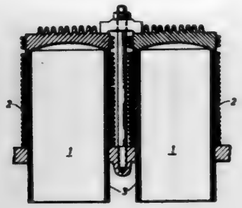
CYLINDERS FOR AIR-COOLED RECIPROCABLE PISTON INTERNAL COMBUSTION ENGINES

Hans-Ulrich Howe, Bensberg-Frankenforst, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne-Deutz, Germany

Filed Dec. 8, 1970, Ser. No. 96,212
Claims priority, application Germany, Dec. 10, 1969, P 19 61 803.2
Int. Cl. F02f 1/06; F02f 1/30
U.S. Cl. 123—41.69 **3 Claims**

In an air-cooled reciprocable piston engine having at least two adjacent cylinders with parallel longitudinal axes and transverse fins, in which adjacent fin portions of two adjacent

cylinders are provided with straight substantially parallel edges defining therebetween a narrow gap while the ends of said straight edges merge by curved portions curved in the



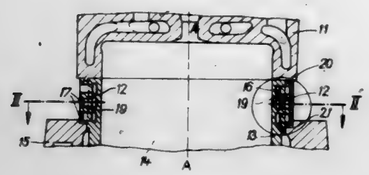
direction toward the axis of the pertaining cylinder with the segment-shaped remainder of the pertaining fins, tie rod means being located between adjacent curved portions of respectively pertaining fins of two adjacent cylinders.

3,659,569

LIQUID COOLED CYLINDER SLEEVE, PARTICULARLY FOR INTERNAL COMBUSTION ENGINES

Stephan Mayer, and Rolf Engel, both of Augsburg, Germany, assignors to Maschinenfabrik Augsburg-Nurnberg AG, Augsburg, Germany

Filed Nov. 2, 1970, Ser. No. 86,179
Claims priority, application Germany, Nov. 3, 1969, P 19 55 140.7
Int. Cl. F02f *1/10, 1/14*
U.S. Cl. 123—41.79 11 Claims



Cooling tubes, preferably semicircular, and matching in the aggregate approximately the contour of the cylinder sleeve (13), are cast into the sleeve; the tubes (16) are formed with radially extending connecting stubs and with locating means to place them close to the inner wall surface of the liner, and in a region free from axial stresses imposed on the complete cylinder liner-tube casting. Preferably, a group of superimposed tubes are used, interconnected by short riser tubelets. The semi-circular tube sections can have connecting stubs, plugged during casting and, if desired, remaining plugged, extend at the diametrical region of the separation of mold sections used to cast the cylinder sleeve.

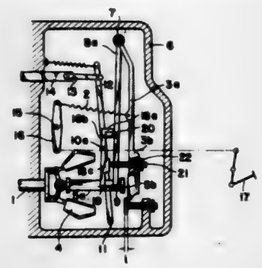
3,659,570

CENTRIFUGAL GOVERNOR FOR INJECTION INTERNAL COMBUSTION ENGINES

Masao Yoshino, Higashi-Matsuyama, Japan, assignor to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 3, 1970, Ser. No. 60,222
Int. Cl. F02d *1/04*
U.S. Cl. 123—98 2 Claims

A centrifugal governor for an injection internal combustion engines of the supercharging type. A lever is connected to an interlocking rod to be axially thrusted by the centrifugal force of governor weights, and an oscillating lever opposes the thrust of the interlocking rod and is subjected to the force of a spring. An auxiliary lever has as a supporting point an engaging point with a stopper bolt disposed in the oscillating lever and as acting points first and second pins pivotally connecting the oscillating lever to said interlocking



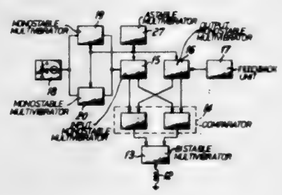
rod. A follower lever displaces a control rod and a spring stretched between the first mentioned lever and the auxiliary lever so that in the supercharged rotation limits of an engine, the control rod is displaceable through the follower lever by means of the thrust of the interlocking rod and the oscillation of the auxiliary lever with respect to the force of the spring acting on the second pin.

3,659,571

ELECTRONIC SPEED REGULATING ARRANGEMENT FOR INTERNAL COMBUSTION ENGINES

Herbert Lang, Bissingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 9, 1970, Ser. No. 22,743
Claims priority, application Germany, Mar. 8, 1969, P 19 11 826.6
Int. Cl. F02d *11/10*
U.S. Cl. 123—102 13 Claims



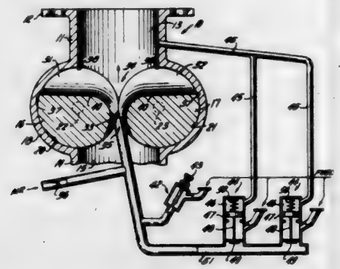
An electronic arrangement for regulating the speed of internal combustion engines, particularly diesel engines. A valve is controlled for regulating the quantity of fuel to be injected into the engine. A bistable multivibrator has its output connected to the valve for controlling the opening thereof. A comparator is connected to the input of the bistable multivibrator and receives output pulses from a first monostable multivibrator. These pulses from the first monostable multivibrator have a duration which is a function of the state or position of the valve. A second monostable multivibrator applies input pulses to the other input of the comparator. These input pulses from the second monostable multivibrator have a duration which is a function of the speed of the engine. The input pulses have a duration which is made variable corresponding to a predetermined speed-load characteristics of the engine.

3,659,572

VARIABLE VENTURI CARBURETORS

Winton J. Pelizzoni, Hagerstown, Md., assignor to Mack Trucks, Inc., Allentown, Pa.

Filed Jan. 29, 1970, Ser. No. 6,773
Int. Cl. F02d *11/02*; F02m *9/08*
U.S. Cl. 123—119 4 Claims



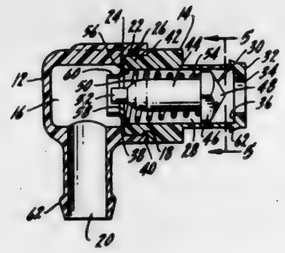
A carburetor having a venturi formed between intake and outlet passages by a pair of rotatable cylinders with aligned, cooperating channels of varying cross section. At the outlet passage, the channels terminate in channel ends conforming to the adjacent passage end. The channels slope gradually to meet the outlet passage when the venturi opening is greatest. The channel bottoms slope toward the central venturi opening, returning deposited fuel to the flow path. The venturi's variable opening serves as a throttle, eliminating the conventional throttle plate. A single jet opens into the venturi and supplies fuel mixture for all throttle conditions, including idle. Idle mixture is controlled either by adjustment of the fuel supply rate or by adjustment of air bled from a premixing vent. Several fuel supply control systems are employable alternatively to vary the fuel supply rate with the venturi opening. A mixture enriching valve is opened for cold starting to enrich the air-fuel mixture without choking. An engine speed controlled governor may limit the venturi opening to set the venturi for its optimum opening according to the engine speed and load.

3,659,573

CRANKCASE VENTILATING VALVE

Raymond G. Bennett, Olympia Fields, Ill., assignor to United Filtration Corporation, Chicago, Ill.

Filed Mar. 19, 1970, Ser. No. 21,081
Int. Cl. F02f *9/02*; F16k *15/02*
U.S. Cl. 123—119 B 5 Claims



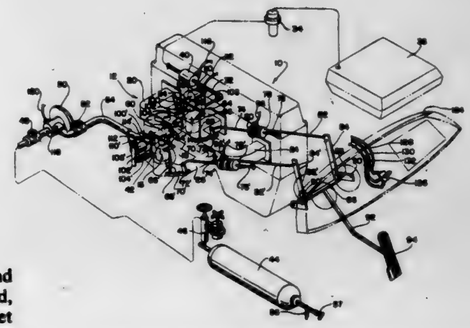
A valve for controlling the crankcase ventilation for an internal combustion engine constructed to be much less expensive than prior valves but to have better performance characteristics due to a unique flow control.

3,659,574

NATURAL GAS POWERED ENGINE

Albert H. Reschke, Chagrin Falls; James E. Dick, Hudson, and Orrin E. Bose, North Canton, all of Ohio, assignors to The East Ohio Gas Company, Cleveland, Ohio

Filed Apr. 13, 1970, Ser. No. 27,781
Int. Cl. F02m *13/08*
U.S. Cl. 123—121 12 Claims



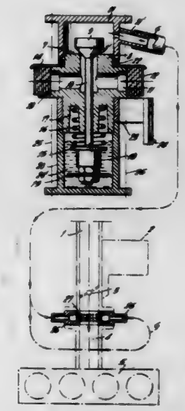
A dual fuel feed apparatus and control for an internal combustion engine adapted to be powered by both natural gas and gasoline. A pair of carburetors are mounted in parallel at the intake manifold. A single throttle control is provided with a switch such that operation of the engine on either natural gas or gasoline may be selected by the operator at his option.

3,659,575

VACUUM BREAKER FOR AUTOMOBILE ENGINES

Leif Lokka, Haerland, Mysen, Norway

Continuation-in-part of application Ser. No. 792,971, Jan. 22, 1969, now abandoned. This application Nov. 9, 1970, Ser. No. 87,686
Claims priority, application Norway, Aug. 3, 1968, 3060/68
Int. Cl. F02m *23/04*
U.S. Cl. 123—124 R 10 Claims



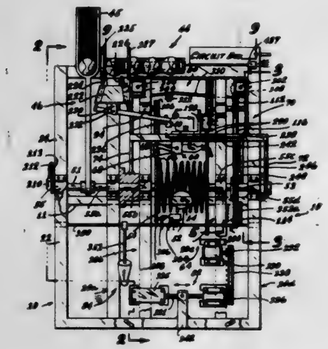
A device for reducing the vacuum in the induction manifold of an engine and supplying additional air to said engine, having a spring-loaded, normally closed, one-way valve adapted to be controlled by the vacuum in the manifold, and a tubing leading from said valve to the manifold of the en-

gine, said valve being substantially loaded by a constant counterforce means and to a smaller extent by spring force, said valve and tubing being arranged to pass air through the valve and tubing to the manifold when the valve is open. In a preferred embodiment, the valve is damped against vibrations.

3,659,576
CENTRIFUGAL SPRING TYPE PROJECTILE THROWING DEVICE

Glen G. Eade, 2329 El Segundo Blvd., Willowbrook, Calif., and Ronald E. Eade, 10414 Washington Ave., South Gate, Calif.

Filed July 11, 1969, Ser. No. 841,031
Int. Cl. F41b *3/02, 7/00*
U.S. Cl. 124—7 **17 Claims**



A projectile throwing machine exemplified herein as a baseball pitching machine. A throwing arm is driven by a torsion spring which is wound up by a motor and which is automatically triggered for releasing the throwing arm. The trigger is automatically released by actuating levers which are remotely controllable to control the amount of power, that is, torsion in the spring at the time of release to thereby control the speed of pitch. The balls are fed automatically. The machine is adjustable in elevation and azimuth to control the height and lateral position of the pitch and all adjustments are remotely controllable from a console and subject to programming. The machine after being started will repeatedly cycle automatically under remote control. Means are provided to indicate to a batter when a pitch is about to be made and also there are indicator means to indicate the position of the pitched ball relative to the plate.

3,659,577
LAMINATED ARCHERY BOW

James R. Richardson, and Robert E. Richardson, both of R. R. 3, Reeds Spring, Mo.

Filed June 15, 1970, Ser. No. 46,387
Claims priority, application Great Britain, July 21, 1969, 36,549/69
Int. Cl. F41b *5/00*
U.S. Cl. 124—24 **5 Claims**

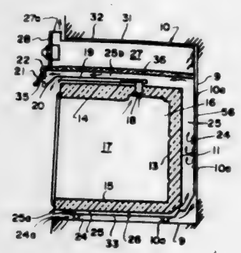
A composite bow having a metallic central handle portion for increased accuracy and strength, and laminated wood and fiber glass limb portions. The two laminated limbs are joined to the handle by a transition member which absorbs the difference in the modulus of elasticity between the relative rigid handle and the flexible limb portions.



3,659,578
VENT FOR A SELF-CLEANING OVEN

James E. Davis, and Harold L. Frick, both of Marion, Ohio, assignors to Whirlpool Corporation

Filed Dec. 15, 1970, Ser. No. 98,290
Int. Cl. F24c *15/32*
U.S. Cl. 126—21 R **10 Claims**



A vent structure for venting an air space around the cavity of a self-cleaning oven in which food is cooked with the vent structure including a movable damper movable between a relatively closed first position for restricting air flow through the air space during the cooking and an open second position to facilitate flow of cooling air through the space during the high temperature self-cleaning burn off of the food soil deposits.

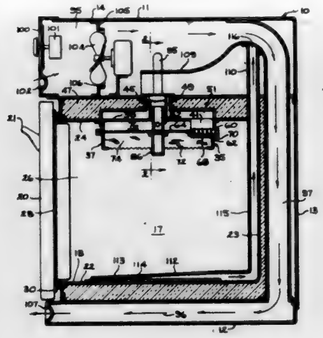
3,659,579
COMBINED BAKING AND BROILING GAS OVEN

Wayne L. Henderson, and Raymond L. Dills, both of Louisville, Ky., assignors to General Electric Company

Filed Dec. 23, 1970, Ser. No. 100,952
Int. Cl. F23d *13/14*; **F24c** *3/04, 15/32*
U.S. Cl. 126—21 A **14 Claims**

A single cavity gas cooking oven with a combined baking and broiling gas burner mounted adjacent the top wall of the oven liner. The burner has a top baking zone and a bottom broiling zone and an adjustable valve for supplying gas either

to the top zone or the bottom zone. Air channels are formed above the oven liner, down the back of the oven liner as well as beneath the oven liner. A fan in the air channels draws air in the top front and discharges it out the bottom front of the oven. An air inlet opening is formed in the top wall of the oven liner to communicate with the top air channel and

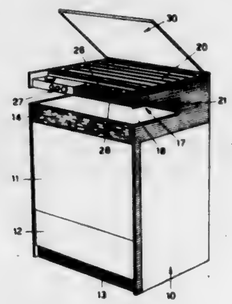


supply a flow of secondary air over the burner. An oven exhaust vent is formed adjacent the bottom wall of the oven liner. A duct connects with the exhaust vent and extends across the floor of the oven liner, up the back wall and through the top wall to discharge the oven gases into the top air channel due to a venturi effect where they mix and are eventually discharged from the oven.

3,659,580
COOKING STOVE

Lamberto Mazza, Pordenone, Italy, assignor to Becchi S.p.A., Forli, Italy

Filed Nov. 25, 1969, Ser. No. 879,819
Claims priority, application Italy, Nov. 28, 1969, 24318 A/68
Int. Cl. F24c *15/00*
U.S. Cl. 126—37 R **4 Claims**

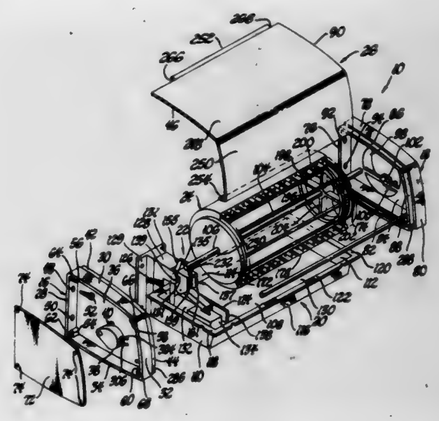


A cooking stove with an oven is provided wherein an upper working plane of the stove, to which the control taps and/or switches are affixed, is separated, at least in the front part, from an oven below, so as to leave cooking space therebetween open at least on three sides and communicating with the outside and wherein a free air circulation can taken place. The provision of the cooling space provides a very effective and economical method of heat dissipation from the oven top and insulating the oven top from the cooking range or the working top where the ovens are of self-cleaning type in which very high operating temperatures and associated high heat occur in the self-cleaning cycle.

3,659,581
HUMIDIFIER ASSEMBLY

Russell W. Geisler, Bloomfield Hills, and John W. Wheaton, Birmingham, both of Mich., assignors to G & W Products Company, Madison Heights, Mich.

Filed June 18, 1970, Ser. No. 47,344
Int. Cl. F24f *3/14*
U.S. Cl. 126—113 **11 Claims**

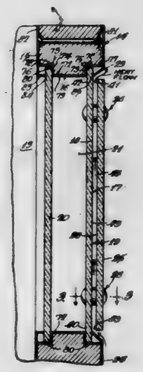


A humidifier assembly for use with a related hot air heating system has separate end support members individually mountable, in spaced relation, to a portion of the heating system; the end supports in turn support a separate lower water pan, a water carrying rotatable drum assembly which is also removable as a subassembly and a detachable cover assembly for enclosing the operating components of the humidifier including a water inlet assembly which, in one form of the invention is separately secured to the related heating system and in another form of the invention is detachably secured to the separate lower water pan.

3,659,582
OVEN CABINET CONSTRUCTION

Harold R. Morgan, Dolton, Ill., assignor to Dearborn Glass Company

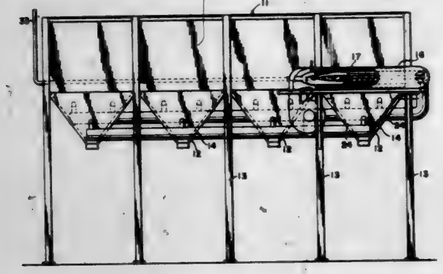
Filed June 10, 1970, Ser. No. 45,094
Int. Cl. F23m *7/00*
U.S. Cl. 126—198 **19 Claims**



An oven cabinet construction having a door provided with a window structure having a front light. An auxiliary light is

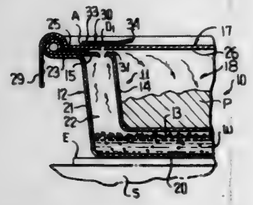
mounted on the front light of the window structure and is spaced forwardly thereof to provide an air flow passage therebetween thereby maintaining the auxiliary light at a low temperature notwithstanding the existence of a high temperature within the oven to prevent injury to a person accidentally engaging the same. The auxiliary light may be attached or mounted to the oven window structure by a number of different mounting means. The oven window structure is secured in the door by an improved mounting frame wherein the glass is retained by a combination sealing and adhesive means.

3,659,583
BIN HEATER SYSTEM
Charles K. Martin, Boonton, N.J., assignor to Infern-O-Therm Corporation, Keyport, N.J.
Filed Feb. 25, 1970, Ser. No. 13,995
Int. Cl. E01c *19/45*
U.S. Cl. 126—343.5 A 5 Claims



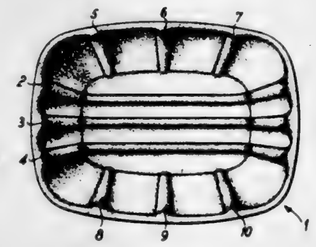
A bin heater system for aggregate bins and the like having inclined wall hoppers comprising a closed, recirculating hot air system for passage through jackets on the hoppers in which the heated, working air is maintained separate from flue gas eminating from an oil burning primary fire tube, the primary fire tube having a plurality of axially extending, radial fins projecting into a concentric, working air heating tube connected to the hopper jackets through manifolds; and a flue gas conduit passing through each bin discharging flue gases to the atmosphere outside of the bins.

3,659,584
STOVE TOP HEATING CONTAINERS
Diane J. Doyle, Western Springs, and Harry A. Peyser, Olympia, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed Feb. 11, 1970, Ser. No. 10,340
Int. Cl. F24d *1/00*
U.S. Cl. 126—369 13 Claims



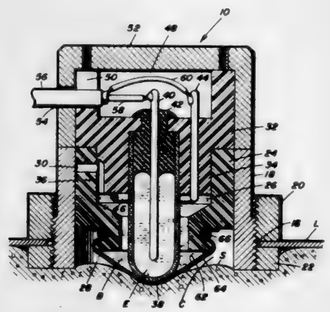
This disclosure relates to a container of the "double-boiler" type in which an edible product is packaged within an inner chamber and water is packaged within an outer chamber with the chambers initially not being in fluid communication. A lid and a portion of the inner chamber are pierced after the removal of an adhesive tape from the lid which is reapplied to cover the pierced opening of the lid. Upon application of heat to the container steam emitted from the water enters the interior chamber but is precluded from exiting to atmosphere by the reapplied adhesive tape which, however, will release to perform a valving function upon pressure build-up in the product and/or liquid chamber.

3,659,585
TWO-PART ROASTING PAN
Eduard Bay, Hohlstrasse 26, Ransbach, Baumbach, Germany
Filed May 4, 1970, Ser. No. 34,241
Claims priority, application Germany, Jan. 17, 1970, G 70 01 434.5
Int. Cl. A47j *37/00*
U.S. Cl. 126—390 2 Claims



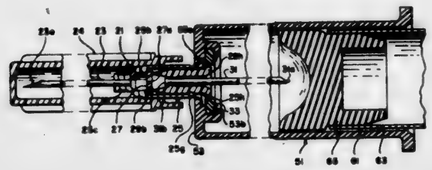
A two-part roasting pan made of unglazed porous earthenware has the inner surface of its lower part, namely the bottom and the side walls thereof, provided with integral spaced parallel ribs which engage and support a roast placed in the roasting pan.

3,659,586
PERCUTANEOUS CARBON DIOXIDE SENSOR AND PROCESS FOR MEASURING PULMONARY EFFICIENCY
Richard J. Johns; Richard H. Shepard, both of Baltimore, and Wardell J. Lindsay, Columbia, all of Md., assignors to The Johns Hopkins University
Filed May 20, 1969, Ser. No. 826,189
Int. Cl. A61b *5/00*
U.S. Cl. 128—2 E 8 Claims



A sensing device including a receiving and measuring vessel for determining tissue carbon dioxide of a living body is disclosed. The skin-permeating CO_2 gas is directly introduced to a liquid filled cup. A gas-permeable, membrane-faced, pH sensing electrode is in communication with this liquid and indicates continuously the concentration of CO_2 on a meter to give a function of effective alveolar ventilation. A lead plate mount adapts to body member contour and functions as a thermal filter mass to reduce fluctuations in the readings. Also, a process is disclosed for measuring pulmonary efficiency through ionic measurement proximate the human skin.

3,659,587
VALVED CONNECTOR ARRANGEMENT
Brian E. Baldwin, Wilmette, Ill., assignor to Affiliated Hospital Products, Inc., St. Louis, Mo.
Filed June 30, 1970, Ser. No. 51,047
Int. Cl. A61m *05/00*; A61b *05/10*
U.S. Cl. 128—2 F 13 Claims



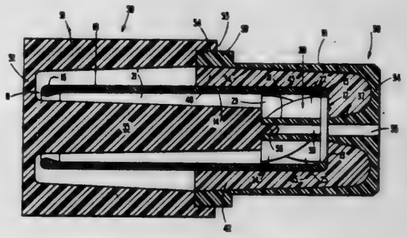
A valved connector arrangement having a pair of tubes and a slitted transverse elastic disk partition normally separating and disconnecting the interior of the two tubes, one of the two tubes being slidable toward and away from the slitted disk partition to effect mechanical opening and permit self-reclosing of the slitted partition. In the embodiment, the other tube is fixed, and the two tubes are pointed at their outer ends to enable their use in a multiple sample blood collecting needle arrangement, including a removable vacuum collecting container with a rubber stopper engageable by one of the pointed tubes.

3,659,588
CATHETER APPARATUS
Alan R. Kahn, Morristown, and Florence A. Stroebel, Maple Shade, both of N.J., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Apr. 8, 1970, Ser. No. 26,697
Int. Cl. A61b *05/02*; A61m *25/00*
U.S. Cl. 128—2 R 7 Claims



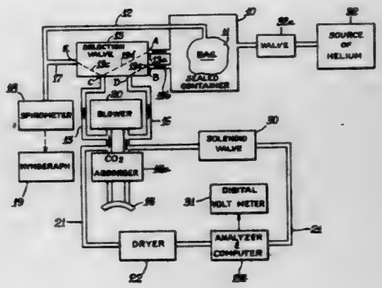
A catheter having walls of which at least a portion is electrically conductive and has an electrical resistivity approximately equal to the electrical resistivity of blood.

3,659,589
SPIROGRAPH MOUTHPIECE
Jack R. Lambert, 42 The Great Road, Bedford, Mass.
Continuation-in-part of application Ser. No. 861,539, Aug. 21, 1969. This application Sept. 15, 1969, Ser. No. 857,876
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.08 10 Claims



A disposable mouthpiece for use with a spirometer and like instruments having an air conduit containing an impeller, which is supported within the conduit by a cap that also functions to antiseptically seal one end of the air conduit. The air conduit is adapted to be inserted into a spirometer for engagement of a drive shaft of the spirometer with the impeller. The impeller is designed to rotate the shaft when the cap is removed and air is blown through the conduit.

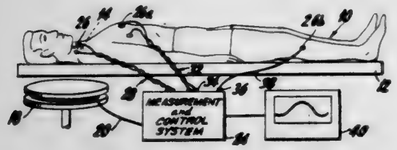
3,659,590
RESPIRATION TESTING SYSTEM
William C. Jones, Elmhurst, Ill., and Joseph Mallen Kootsey, Durham, N.C., assignors to Jones Medical Instrument Company, Oakbrook, Del.
Filed Oct. 13, 1969, Ser. No. 865,754
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.08 8 Claims



In a system for measuring the various desired parameters of a person's respiratory system, the person breathes into a closed volume of gas having a known concentration of helium until the concentration of helium in the enclosure and his lungs reaches an equilibrium. A helium analyzer is included in the system; and when the subject's breathing reaches the end of a resting expiration, a valve is turned to switch his breathing out of the closed system. A solenoid is also energized to maintain the volume of gas in the analyzer at a constant value; and computation circuitry receives the analyzer signal which is representative of the new helium concentration in the closed system to compute the various desired respiratory parameters of the subject's respiratory system in-

cluding Functional Residual Capacity, Total Lung Capacity, or Residual Volume as called for by the operator. Further, the circuitry will compute the percentage of any of these parameters relative to a norm value for that parameter; and all computation results are preferably displayed on a digital voltmeter for facility of reading and recording.

3,659,591
ELECTROMAGNETIC FLOWMETER
Henri Georges Doll, New york, and Hans J. Broner, Glendale, both of N.Y., assignors to Doll Research Incorporated, New York, N.Y.
Filed Aug. 24, 1970, Ser. No. 66,240
Int. Cl. A61b 5/02
U.S. Cl. 128—2.05 F 15 Claims

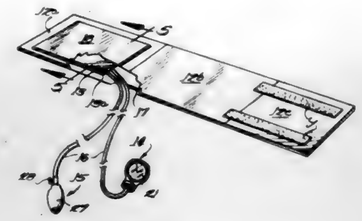


A noninvasive electromagnetic flowmeter particularly adapted to measure arterial blood flow in human beings is provided. A homogenous magnetic field is produced in the region of the artery under measurement by means of at least one large coil remote from the skin. Blood flow induced signals are sensed by electrodes placed on the skin adjacent the artery and fed to a measurement and control circuit. Electrocardiogram signals sensed by a second pair of electrodes placed on the body near the heart synchronize the operation of this system.

A preferred embodiment of control and measurement system comprises a pair of auxiliary electrodes located where a strong and sharp cardiogram pulse can be repeatedly obtained to be used as a synchronizing signal and as a clock, at least one coil of large enough size having enough turns of wire to be adequate for the production of a strong and homogeneous magnetic field in the region of the artery under study, a source of DC current to feed that coil, means to reverse that DC current after a given number of heart cycles in accordance with a program controlled by the synchronizing signal, a pair of measuring electrodes placed on the skin adjacent the artery, an amplifier to amplify the signal appearing between said measuring electrodes, with filtering means to eliminate the DC unbalance of the electrodes and the high frequency noise, means to paralyze the amplifier and to reverse its output during each current reversal, and means synchronized by the synchronizing signal to average the pulsatile signal measured between the measuring electrodes during successive heart cycles so as to extract the repetitive wave shape of the blood flow pulses from the large random noise in which it is otherwise buried.

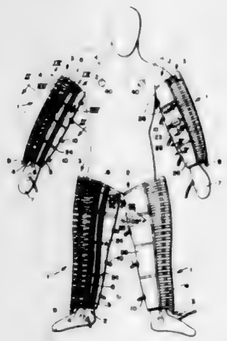
3,659,592
BLOOD PRESSURE MEASURING DEVICE
Zygmunt Natkanski, 6609 W. Melrose Street, Chicago, Ill.
Filed Sept. 4, 1970, Ser. No. 69,627
Int. Cl. A61b 5/02
U.S. Cl. 128—2.05 C 8 Claims

A blood pressure measuring device is provided which is self-contained and includes an arm-wrapping member having a pouch formed therein for storage of various components of the device without requiring disconnection of said components. When not in use the device may be formed into a



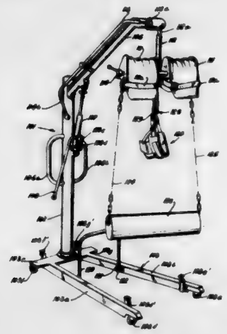
compact roll. Complemental fastening means are provided on the arm-wrapping member for securing the latter in either an arm-wrapping position or in the compact roll position.

3,659,593
CARDIOVASCULAR ASSIST DEVICE
Edwin G. Vail, 20 Whitcomb Drive, Simsbury, Conn.
Filed Apr. 20, 1970, Ser. No. 30,136
Int. Cl. A61h 7/00
U.S. Cl. 128—64 23 Claims



A cardiovascular assist device for producing an inwardly orienting pulsating pressure circumferentially to the entire length of each extremity of a patient, including a main body portion surrounding the extremity and a lateral body portion being inflatable to tightly constrict the main body portion about the extremity before pulsation. The lateral body portion includes a single inflatable tube having connecting tapes extending substantially entirely circumferentially therearound and oppositely circumferentially at least partially around said main body portion to terminal ends secured to the main body portion. The main body portion includes an outer restraint material reinforced by a plurality of circumferentially extending and a plurality of longitudinally extending restraint tapes, two sheets of resilient material circumferentially bonded together at longitudinal intervals and longitudinally along seams to produce a plurality of overlapping circumferentially extending inflatable bladders, which are longitudinally spaced from each other, an inner pouch material and a plurality of fluid couplings communicating with each bladder and inflatable tube. Mittens are provided to close one end of each main body portion and similarly constructed to provide an inwardly pulsating pressure to the respective hand or foot of the patient. The main body portions and mittens may be donned and doffed by means of respective longitudinally extending fasteners, and thereafter manually circumferentially constricted by means of longitudinally extending lacings prior to the pressure constriction caused by inflating the lateral body portion.

3,659,594
APPARATUS FOR MANIPULATING THE VERTEBRAL COLUMN OF HUMAN PATIENTS
Raymond Schwab, Freiherrnweg 13, 43 Essen, Germany
Filed June 15, 1970, Ser. No. 45,978
Claims priority, application Germany, Feb. 4, 1970, P 20 04 932.5
Int. Cl. A61f 5/00
U.S. Cl. 128—69 7 Claims



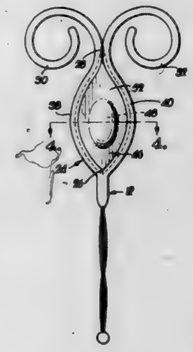
An apparatus for facilitating manipulation of the body of a human patient for the treatment of vertebral disorders comprises an upright support from which a pivotal arm is cantilevered and has at its ends a suspended traverse. The traverse is provided with knee-supporting shells or saddles from which the patient may be suspended head downward to permit manipulation. The traverse may also carry a roll or drum adapted to carry the patient in a bent-over condition to permit manipulation of the spine.

3,659,595
COMPENSATING PLATES FOR BONE FRACTURES
Edward J. Haboush, 238 Hilton Avenue, Hempstead, N.Y.
Filed Oct. 22, 1969, Ser. No. 868,451
Int. Cl. A61f 5/04
U.S. Cl. 128—92 D 3 Claims



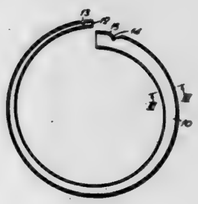
Single or double plates are provided for application across the fracture site of fractured bones and wherein the single or double plates are constructed to allow for compressional and tensional forces acting on the fractured bone. When a single plate is used it is rigidly secured at one end on one side of the fracture site and at the other end by means of elongated apertures for fastening the plate on the other side of the fracture site while allowing for relative movement of the bone pieces and fragments and providing for locking the bone fragments in increasingly closer relationship as healing occurs. When two plates are used they operate in the same general functional manner, but the lower plate is provided with elongated openings on one side of the fracture site and the upper plate is provided with elongated openings on the other side of the fracture site and one plate, preferably the lower plate, is provided with a serrated jaw for the reception of a serrated tongue of the other plate which is bent into the same plane. The double plate arrangement may have one of the plates channelled for the slidable reception of the other plate. Use of the plates aids and promotes knitting of the bone fragments and enables the patients to be rapidly ambulatory.

3,659,596
INTRAUTERINE ELEMENT
Ralph R. Robinson, P.O. Box 668, Middlesboro, Ky.
Filed Nov. 6, 1969, Ser. No. 874,511
Int. Cl. A61f 5/46; A61m 31/00
U.S. Cl. 128—130 4 Claims



An intrauterine contraceptive device has a continuous loop as a part thereof which is closed by a membrane of thin, pliable material. By use of a double layer and by selection of a permeable material for the membrane, it serves also to support a capsule containing a biological agent and a substance for slowly releasing the agent into the uterus.

3,659,597
INTRA-UTERINE CONTRACEPTIVE
David Wolfers, London, England, assignor to National Research Development Corporation, London, England
Filed Dec. 9, 1969, Ser. No. 883,449
Claims priority, application Great Britain, Dec. 11, 1968, 58,969/68
Int. Cl. A61f 5/46
U.S. Cl. 128—130 13 Claims



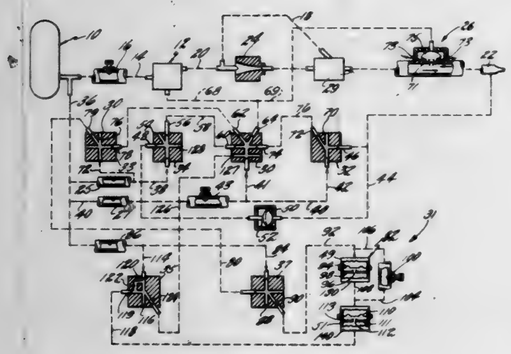
An intra-uterine contraceptive device is provided to fit the parturient uterus and gradually accommodate the involutionary process in a predetermined manner. The device is

contractable in self-tracking manner by longitudinally progressive sliding engagement of one end of an elongate flexible member in the other end thereof. More particularly such a device is formed by a suitably dimensioned tapered tube.

3,659,598
RESPIRATOR WITH FLUID AMPLIFIERS WITH FLUID TIMER

Joseph C. Peters, East Hartford, and Hermann Ziermann, Cheshire, both of Conn., assignors to General Medical Corporation

Filed June 17, 1969, Ser. No. 834,004
Int. Cl. A62b 7/04
U.S. Cl. 128—145.8 8 Claims

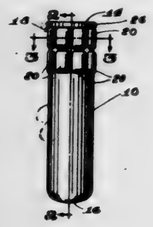


An on-off inhalation valve of a respirator for admitting fluid to the lungs of a patient is controlled by a flip-flop fluid amplifier driven by a fluid amplifier during the exhalation cycle and by another fluid amplifier during the inhalation cycle and including a fluid timer for controlling the length of time of the pause between exhalation and inhalation.

3,659,599
OCCLUSIVE DRESSING

Gladys M. McLaughlin, 8 Westerly Street, Jamaica Plain, Mass.

Filed Sept. 30, 1969, Ser. No. 862,395
Int. Cl. A61f 13/10
U.S. Cl. 128—157 3 Claims

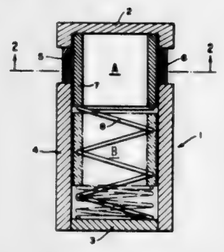


The present occlusive dressing is particularly adapted to provide an airtight waterproof dressing for use in covering so-called "wet soak" bandages and other dressings which include salves and ointments used in the treatment of various skin diseases wherein it is important that air be excluded from the dressed area and moisture and heat retained. The dressing comprises a relatively thin, one-piece latex tube closed at one end and open at the other end and provided with an integral novel retaining band at the open end thereof. The band comprises a plurality of ribs intersecting to form a series of pockets or suction cups. The dressing is rolled or drawn over the dressed wound, for example an injured finger, and is held in position by the suctionlike effect of the pockets against the finger. The ribs provide in effect a series of damlike ridges which aid in rendering the dressing airtight. No additional tape or other means is required to hold the dressing in position covering the infected area.

3,659,600
MAGNETICALLY OPERATED CAPSULE FOR ADMINISTERING DRUGS

Edward W. Merrill, Cambridge, Mass., assignor to Hans H. Estin, Leonard W. Cronkhite, Jr. and William W. Wolbach, Trustees of the Charles River Foundation, Boston, Mass.

Filed Feb. 24, 1970, Ser. No. 13,278
Int. Cl. A61m 31/00
U.S. Cl. 128—172 3 Claims

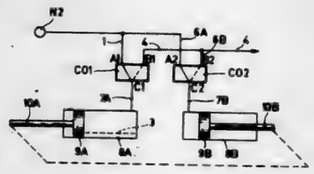


An implantable capsule for delivering drugs when subjected to a magnetic force outside the body and controlled by the patient. The capsule has a means movable under a magnetic force to effect contact of the medicament in the capsule with a drug-permeable wall. When contacted, the drug diffuses through the wall into the body. When it is desired to cease drug administration, the capsule is subjected to an opposite magnetic force to seal the permeable wall from contact with the drug.

3,659,601
VAPORIZERS FOR MEDICAL RESPIRATORS

John Andrew Bushman, Cambridge, England, assignor to Pye Limited, Cambridge, England

Filed Jan. 27, 1970, Ser. No. 6,195
Claims priority, application Great Britain, Feb. 5, 1969, 6,171/69
Int. Cl. A61m 15/00
U.S. Cl. 128—188 9 Claims



A vaporizer for use in a medical respirator for supplying a mixture of patient gas and vapor to a patient during an inspiratory period of the respirator. The vaporizer has a source of patient gas connected thereto and a pair of sealed vessels, each having a connection to the source of gas. When the gas is fed to the vessel containing the liquid, the gas therein becomes saturated. A changeover switch is provided in the connection to the vessels so that alternately the supply of gas is fed to the vessels and to a patient via a patient supply connection. Each vessel is provided with means for adjusting the volume therein so as to control the percentage of saturation of the gas which is passed to the patient from the vessels and so as to control the total volume of gas passed to the patient during each inspiratory period.

3,659,602
TWO COMPONENT SYRINGE

Harold S. Cloyd, Erie, Pa., assignor to Nosco Plastics, Incorporated, Erie, Pa.

Continuation of application Ser. No. 848,446, Aug. 8, 1969, now abandoned. This application Dec. 30, 1970, Ser. No. 94,942
Int. Cl. A61m 05/18
U.S. Cl. 128—220 6 Claims

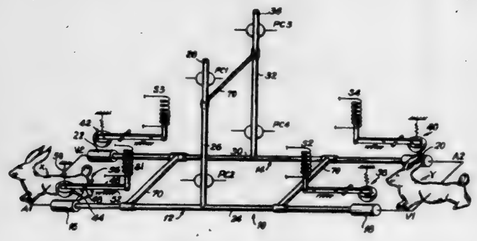


A two component syringe having two vials each containing a single component. A needle is mounted in the syringe and is arranged to interconnect the vials prior to mixing the contents thereof. One vial is mounted on a holder having a needle hub. The other vial is mounted on an adapter sleeve removably mounted on the needle hub. The adapter sleeve and the other vial are removed after the ingredients have been mixed, leaving the first vial with the associated needle in readiness for injection.

3,659,603
PARABIOSIS ASSEMBLY

Placido R. Oses, Fahey Medical Center, 581 Golf Road, Des Plaines, Ill.

Continuation-in-part of application Ser. No. 608,190, Jan. 9, 1967, now abandoned. This application July 16, 1969, Ser. No. 842,155
Int. Cl. A61m 05/00
U.S. Cl. 128—214 B 5 Claims

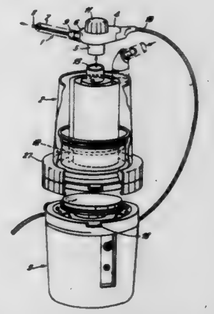


A parabiosis assembly for bringing about exchange of blood between a pair of beings. The arterial system of one being is interconnected with the venous system of the other being while the arterial system of this other being is interconnected with the venous system of the one being. The interconnecting structure provides for flow of a given quantity of blood from the arterial system to the venous system whereupon the cycle is repeated. The only force relied upon to move the blood between the beings is the pressure of the blood itself in the arterial systems, so that the use of pumps or other flow-producing devices is not required.

3,659,604
HUMIDIFYING MEANS

Alfred W. Melville; David H. O'Hare, and Christopher G. Brickell, all of Auckland, New Zealand, assignors to Fisher & Paykel Limited, Auckland, New Zealand

Filed Mar. 30, 1970, Ser. No. 23,770
Int. Cl. A61m 15/00
U.S. Cl. 128—212 9 Claims

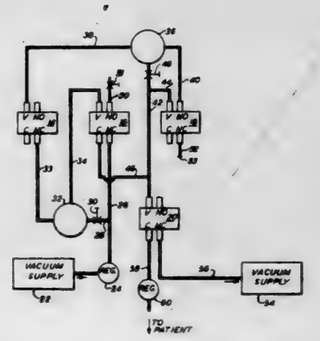


A humidifying means has a container for water which is removable from a source of heat, with the container being provided with a cover defining an air space with an inlet for gases and an outlet for gases and water vapor, the whole being removable for sterilization or other purposes. Temperature control means are provided externally of the container to control the temperature of the water in the container. A hose connects the outlet for gases and water vapor to a patient undergoing assisted or artificial respiration and this hose has a heating element therein arranged longitudinally to reduce or obviate condensation in the hose.

3,659,605
PNEUMATIC SUCTION SYSTEM

Ulrich Sieloff, McFarland, Wis., assignor to Airco, Inc., New York, N.Y.

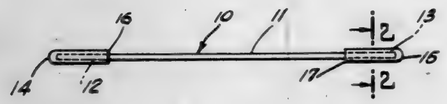
Filed Apr. 8, 1970, Ser. No. 26,480
Int. Cl. A61m 1/00
U.S. Cl. 128—276 6 Claims



A pneumatic suction system having extreme reliability comprising a plurality of interconnected, vacuum actuated

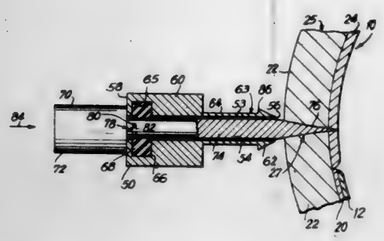
modular switches adapted to be connected to a vacuum source to provide an intermittent vacuum source having controllable timed intervals for withdrawing fluids from a patient.

3,659,606
VEIN STRIPPING INSTRUMENT
Harry G. Reimels, Braintree, Mass., assignor to Codman & Shurtleff, Inc., Randolph, Mass.
Filed Feb. 19, 1970, Ser. No. 12,795
Int. Cl. A61b 17/00
U.S. Cl. 128—303 R 1 Claim



A surgical vein stripping instrument is made by providing a length of cable formed from a monofilament of axially oriented synthetic thermoplastic material and ultrasonically welding a tubular plastic cap to each end of the cable. Each cap is smoothly rounded on its end to permit free passage of the cable through a vein and each cap is adapted to be secured to both an auxiliary bullet-shaped tip and a handle for aiding the doctor in the removal of the vein.

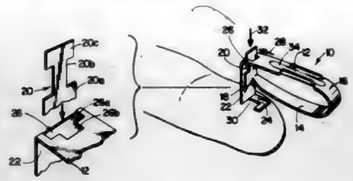
3,659,607
METHOD FOR PERFORMING SURGICAL PROCEDURES ON THE EYE
Anton Banko, Brooklyn, N.Y., assignor to Surgical Design Corporation, Long Island, N.Y.
Original application Sept. 16, 1968, Ser. No. 762,286, now Patent No. 3,528,425. Divided and this application Apr. 6, 1970, Ser. No. 25,669
Int. Cl. A61b 17/32
U.S. Cl. 128—305 16 Claims



The method relates to performing surgical procedures on the eye in vivo, including forming of an opening therein to permit the insertion of instrumentation within the eye for various procedures.

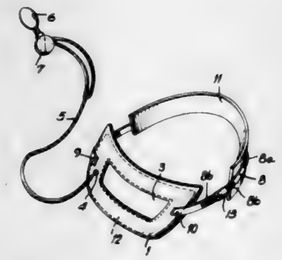
3,659,608
SNAP-ACTING SURGICAL LANCET
Wesley G. Perry, Wayland, Mass., assignor to Damon Corporation, Needham Heights, Mass.
Filed Dec. 15, 1969, Ser. No. 884,861
Int. Cl. A61b 17/32, 17/34
U.S. Cl. 128—314 15 Claims

A new snap-acting surgical lancet has a spring urging the forward ends of two opposed arms apart. A lower of the two arms carries a downwardly protruding lancing blade. Latching elements on the two arms hold them cocked with their front ends close together, and are releasable to allow the spring to snap the end of the lower arm downward, carrying the blade downward to lance the skin. A stop carried on



one arm engages the other arm to limit this snap-apart travel of the arm ends. A single piece of spring material is readily formed to provide all of the foregoing structure, thereby providing a one-piece lancet.

3,659,609
HEMOSTATIC APPARATUS FOR OPERATIONS ON THE HEAD OF HUMAN BEINGS
Jean Arouete, 67 Building Lanes, Paris 160, France
Filed June 4, 1970, Ser. No. 43,544
Claims priority, application France, July 29, 1969, 6925939
Int. Cl. A61b 17/12
U.S. Cl. 128—325 13 Claims



Hemostatic apparatus is disclosed for operations on the head of a human being, more particularly for scalp grafts. The apparatus includes a frame of plate form provided with a strap fastener for attachment on the head of a patient, the plate being rectangular with an opening therein. Mounted on the plate is a flexible tube of loop form encircling the opening and adapted for being pressurized to exert the necessary pressure on the patient's head to render it free of blood in the region of the opening in the plate whereby scalp grafts or the like can be performed within the field of the opening in the plate without bleeding.

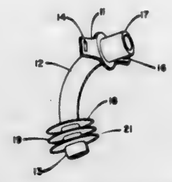
3,659,610
ASPIRATOR NEEDLE INJECTOR
Hugo S. Cimber, 22 Seven Gables Road, Staten Island, N.Y.
Filed Apr. 14, 1970, Ser. No. 28,335
Int. Cl. A61b 17/34
U.S. Cl. 128—347 5 Claims



A disposable sterilizable aspirator needle and operating mechanism therefor in which a hollow disposable needle is

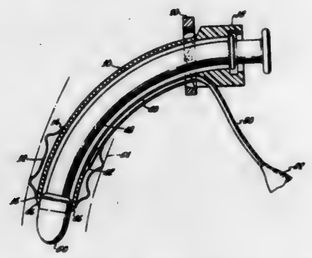
supported in a hollow barrel for controlled spring loaded injection into the body for a predetermined distance. The barrel is secured to a pistol grip and the hollow needle is secured to a plunger in the pistol grip which is spring biased toward the injecting position and retained against movement under the spring bias by a latch mechanism which may be manually released. The needle is fully recessed in the barrel so that the barrel end may be placed against the body at the appropriate location and is extruded under the spring bias from the barrel end on release of the latch. The hollow needle may, as required, receive a catheter and a catheter stiffening wire. More specifically, the needle barrel and the pistol grip operating mechanism including the latch mechanism are separable.

3,659,611
TRACHEAL TUBE SEAL
Don R. Miller, Kansas City, Kans., assignor to Dow Corning Corporation, Midland, Mich.
Filed Dec. 15, 1969, Ser. No. 884,869
Int. Cl. A61m 25/02, 3/00
U.S. Cl. 128—351 5 Claims



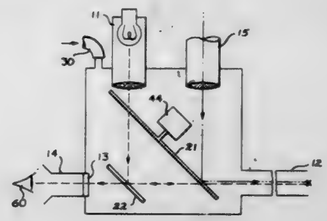
Improvement in tracheostomy and endotracheal tubes for effecting a substantial air seal between the tube and the trachea. There is provided on the periphery of the indwelling portion of the device a series of thin resilient, circular flanges, of silicone rubber, for example. The flanges bend for insertion and withdrawal and engage the wall of the trachea to form an air seal therewith.

3,659,612
TRACHEOSTOMY TUBE
Donald P. Shiley, Santa Ana, and Bruce E. Fettel, Diamond Bar, both of Calif., assignors to Donald P. Shiley, Santa Ana, Calif.
Continuation-in-part of application Ser. No. 863,229, Oct. 2, 1969. This application Nov. 12, 1970, Ser. No. 88,591
Int. Cl. A61m 25/02; A61b 17/24
U.S. Cl. 128—351 15 Claims



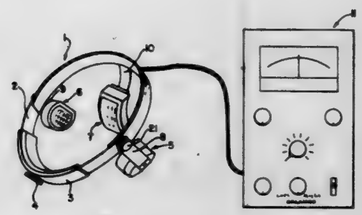
A tracheostomy tube for insertion into the trachea to support breathing having a concave sealing balloon which, when inflated, assumes a cylindrical shape and therefore forms a seal between the cannula and the trachea over an extended axial length, the tracheostomy tube also incorporating an inner cannula which is disposed within and throughout the entire length of the outer cannula and is connected to the outer cannula by a removable fitting which assures a pneumatic seal between the two cannulas, the tracheostomy tube also including a rotatable connector which allows attachment to respiration support equipment in a variety of angular positions. The portion of the tracheostomy tube which extends outside of the patient is hinged to a swivel neck flange which makes the tube adaptable to various anatomies. The tube leading to the sealing balloon is controlled by an isolation valve outside of the patient which allows quick sealing and releasing of the pressure within the sealing balloon.

3,659,613
LASER ACCESSORY FOR SURGICAL APPLICATION
Herbert C. Bredemeier, Sherborn, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed June 30, 1969, Ser. No. 837,690
Int. Cl. A61n 5/00
U.S. Cl. 128—395 5 Claims



A surgical laser accessory construction comprising an elongated tubular member defining an unobstructed path for conducting optical energy to a relatively inaccessible location within a body cavity and optical means for directing the infra-red radiation of a CO_2 pulsed laser to a location within said body cavity while providing visible light to be directed to said body cavity location and for allowing an operator of the device at such times to continuously monitor said location within the body cavity during treatment by the laser radiation, said optical means including a rotatable disc for enabling the laser energy at substantially full strength to be directed to said body location and said location simultaneously viewed in visible light by the operator of the device. The construction also includes means for changing the body cavity location being treated as well as pressurized housing means for enabling air to be directed under pressure into said body cavity.

3,659,614
ADJUSTABLE HEADBAND CARRYING ELECTRODES FOR ELECTRICALLY STIMULATING THE FACIAL AND MANDIBULAR NERVES
Bernard Jankelson, Medical-Dental Building, Seattle, Wash.
Filed Dec. 29, 1969, Ser. No. 888,272
Int. Cl. A61n 1/18, 1/04
U.S. Cl. 128—410 4 Claims



Electrodes capable of conforming to irregular surfaces include a cup-shaped housing having an open end, a pad of electrically conductive coiled metallic wire in the housing, a

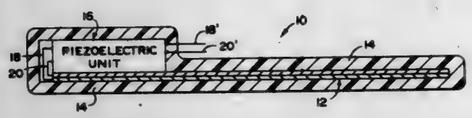
felt of porous material over the metallic wire pad, and a mounting ring contacting the wire pad and felt around their circumference to hold the pad and felt in place in the housing. Three electrodes, two input electrodes and a dispersal electrode, of the type described are attached through electrically conductive support members to an adjustable headband. The two input electrodes are pivotally attached to the headband. Lead wires from the output of a pulse generator connect with the electrodes. The lead wires to the input electrodes are run along the surface of the headband and covered with an insulating material.

3,659,615

ENCAPSULATED NON-PERMEABLE PIEZOELECTRIC POWERED PACESETTER

Carl C. Enger, 12700 Lake Avenue, Lakewood, Ohio

Filed June 8, 1970, Ser. No. 44,406
Int. Cl. A61n 1/36
U.S. Cl. 128—419 P 5 Claims



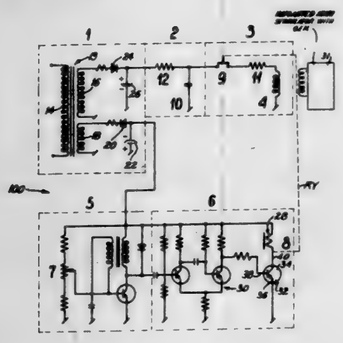
An encapsulated non-permeable piezoelectric self-powered pacesetter for implantation in an in vivo, or living, system in which the pacesetter is sealed and enclosed in an envelope formed of medical grade silicone rubber and preferably natural or synthetic animal, plant or insect wax, in which a piezoelectric polyncrystalline ceramic is completely embedded, enclosed or housed to function as a mechanical to electrical energy converter, when implanted near moving muscle in a living system, and without connection with a separate source of electrical energy either within or without the living system.

3,659,616

METHOD OF SYNCHRONIZATION AND STIMULATION BY MEANS OF PULSE PAIRS AT IMPLANTED HEART STIMULATORS WITH CONSTANT RHYTHM AND THE CIRCUIT FOR IMPLEMENTATION OF THIS METHOD

Bohdan A. Bukowiecki, ul. L. Staffa 12/14 M 23, and Mariusz Stepczyk, ul. J. Dabrowskiegv 86 m 71, both of Warsaw, Poland

Filed Aug. 28, 1969, Ser. No. 853,883
Claims priority, application Poland, Aug. 31, 1968, 128848
Int. Cl. A61n 1/36
U.S. Cl. 128—419 P 8 Claims



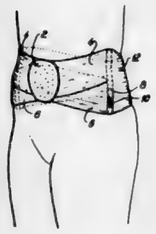
An external rhythm frequency generator is magnetically coupled to a constant rhythm frequency generator of an implanted heart stimulator through an induction coil to provide either externally synchronized pulse pair stimulation or acceleration of the stimulator dependent on the frequency of a signal from the external generator. A relay is provided to control the flow of energy through the coil. A capacitive charging network is provided which discharges through the coil to create an electromagnetic field when the relay is operated. The relay is operated by a triggering circuit, which, in turn, operates the relay in synchronization with the emission of the signal from the external generator.

3,659,617

CORSELET BELTS

Johannes Reabo, Havnen, Bogense, Denmark

Filed June 19, 1969, Ser. No. 834,773
Claims priority, application Denmark, June 21, 1968, 2950
Int. Cl. A41c 1/00
U.S. Cl. 128—546 5 Claims



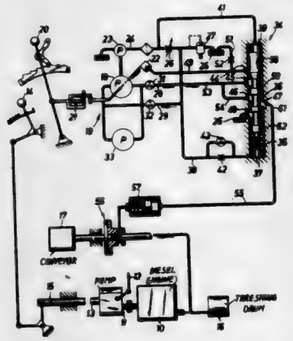
A stomach flattening abdominal belt for ladies comprising a vertical steel in either side, interconnected by a resilient rear belt piece having an upwardly curved lower edge and a resilient front piece constituted by two intercrossing resilient bands to the middle portions of which there is fastened a substantially non-stretchable circular or elliptic fabric pie piece.

3,659,618

CONTROL SYSTEM FOR LIMITING THE LOADING OF BRANCHED DRIVES

Walter Kobald, Stuttgart-Feuerbach, and Paul Bosch, Ludwigsburg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 29, 1969, Ser. No. 872,280
Claims priority, application Germany, Nov. 2, 1968, P 18 06 677.8
Int. Cl. A01f 12/28
U.S. Cl. 130—27 R 15 Claims



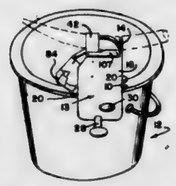
A control system for the main drive and auxiliary drives of a combine in which the main drive propels the vehicle, and the auxiliary drive operates a threshing drum and its conveyor. An engine drives the threshing drum directly, and the conveyor through a coupling, and also drives the pump of a hydrostatic transmission whose hydraulic motor propels the vehicle. A transducer pump, driven from the engine, and a throttle provide hydraulic signals controlling a valve to effect regulation of the transmission pump of the main drive, and to disengage the coupling to reduce the load on the engine. Setting means are provided for limiting the drive torque of the engine to a selected desired value, causing speed reduction and actuation of the control valve.

3,659,619

GREEN PEA SHELLER

Charles L. Westbrook, 715 Washington Avenue, Ayden, N.C.

Continuation-in-part of application Ser. No. 836,759, June 26, 1969, now abandoned. This application Jan. 28, 1971, Ser. No. 110,737
Int. Cl. A01d
U.S. Cl. 130—30 R 10 Claims



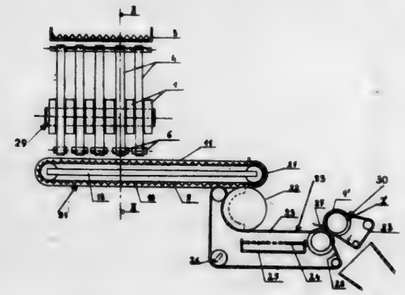
A pair of opposing pea pod aligning members supported for relative movement toward and away from each other and biased toward minimum spaced positions. One of the aligning members includes an adjustably retained cutter blade projecting outwardly therefrom toward the opposing member for slitting a pea pod advanced longitudinally between the members, and a curved tapered tongue is supported in position for spreading the split pod and raking the peas from within the pod.

3,659,620

PROCESS AND DEVICE FOR CUTTING TOBACCO LEAVES

Andre Pietrucci, and Pierre Imbert, both of Fleury-Les-Aubrais, France, assignors to Service D'Exploitation Industrielle Des Tabacs Et Des Allumettes, Paris, France

Filed Dec. 31, 1969, Ser. No. 889,668
Claims priority, application France, Dec. 31, 1968, 182372
Int. Cl. A24b 03/16, 07/06, 07/12
U.S. Cl. 131—146 9 Claims



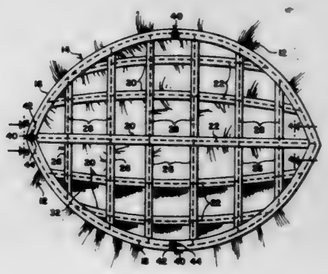
In a process for obtaining from tobacco leaves fragments of substantially constant shape and more particularly the shape of a quadrilateral having parallel opposite sides, wherein the leaves are subjected to a cutting operation along parallel and equidistant cutting lines, the fragments obtained are subjected to an orientation operation so that the cutting lines should assume a first given direction and the fragments which are thus oriented are caused to undergo a recutting operation along equidistant recutting lines which are parallel to a second given direction, the step of separating from all the oriented fragments which are caused to undergo the recutting operation all those fragments whose projection on a line at right angles to said second direction is smaller in length than the distance between said recutting lines.

3,659,621

AIR-FLO HAIR TEMPLET

Joseph Tucciarone, 382 West Street, Harrison, N.Y., and Martin Genuth, 119 Irma Drive, Oceanside, N.Y.

Filed June 18, 1970, Ser. No. 47,212
Int. Cl. A41g 15/00
U.S. Cl. 132—53 4 Claims



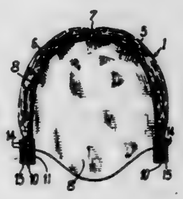
A hair templet is constructed of a plurality of wefts of hair strands sewn to a base. The base is releasably anchored to the wearer's scalp by a plurality of snap fasteners. The sockets of the snap fasteners are secured in place to the user's natural hair. The base includes an oval band of fabric. A first plurality of parallel straps of fabric extend between discrete areas of the band and a second plurality of parallel straps perpendicularly intersecting the first straps extend between further discrete areas of the band. A portion of the base includes a layer of netting encompassing the area of the wearer's part. The wefts are sewn to the netting to prevent detection of the hair piece at the part line.

3,659,622

ORNAMENTAL HEADDRESS

Harry O. Meerson, 11 route de la Celle Saint-Cloud, Bougival (Yvelines), France

Continuation-in-part of application Ser. No. 801,967, Feb. 25, 1969, now abandoned. This application Nov. 12, 1970, Ser. No. 88,697
Int. Cl. A41g 3/00
U.S. Cl. 132—53 6 Claims



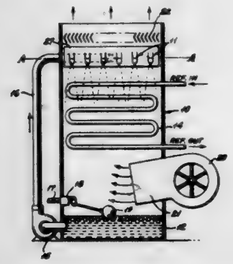
An ornamental headdress comprises a framework in the form of a fitted skull cap and at least one fringe including a

plurality of thread-like or filamentary elements secured to the framework. The free ends of the filamentary elements are gathered to at least one region and secured one another to form a solid mass secured in turn to said framework. Ornaments may be provided with elements for securing the same to the gathered portion of the filamentary elements. The ornaments may carry hooking elements engageable with hooking elements on a fastener on the headdress, so that the ornaments may be readily interchanged.

3,659,623
WATER SUPPLY SYSTEM

Thomas F. Facius, Baltimore, Md., assignor to Baltimore Aircoil Company, Inc., Baltimore, Md.

Continuation of application Ser. No. 425,783, Jan. 15, 1965, now abandoned. This application Dec. 2, 1969, Ser. No. 881,619
Int. Cl. F16k *51/00*
U.S. Cl. 137—255 **4 Claims**

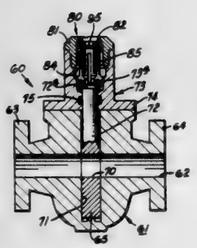


This invention relates to evaporative heat exchangers and in particular to improved apparatus for the distribution of water over a heat exchange surface.

3,659,624
FIRE SAFETY VALVE

Warner M. Kelly, Houston, and John V. Fredd, Dallas, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Apr. 6, 1970, Ser. No. 25,976
Int. Cl. F16k *17/38*
U.S. Cl. 137—75 **2 Claims**

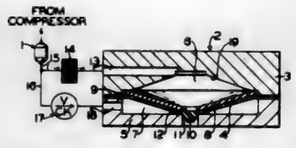


A heat responsive safety valve having a fusible material holding the valve at an open position. In one form the fusible material mechanically locks the valve open. In another form, the fusible material holds fluid pressure within a closed cylinder biasing a valve to its open position. In each form of the valve, the fusible material melts or otherwise weakens at a predetermined temperature releasing the valve to close shutting off flow through the conductor controlled by the valve as a fire-preventing measure.

3,659,625
DRAIN VALVE DEVICE

Ronald W. Colner, Irwin, and Norman Vutz, Verona, both of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Feb. 16, 1970, Ser. No. 11,728
Int. Cl. F16t *1/14*
U.S. Cl. 137—204 **1 Claim**

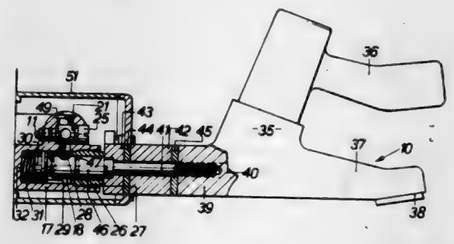


A drain valve in which a diaphragm separates a supply chamber from an exhaust chamber, both chambers being connected in common with a reservoir, and including a Belleville spring normally biasing the diaphragm in a preselected one of an open or closed position relative to an exhaust port. In one embodiment the diaphragm is biased to the closed position and the exhaust chamber is connected with the reservoir by way of a check valve for passing fluid from the reservoir to the exhaust chamber. In another embodiment the diaphragm is biased to the open position and the exhaust chamber is connected with the reservoir by way of a choke and a check valve connected in series, and a reservoir is connected with the outlet of the check valve.

3,659,626
FLUID CONTROL ASSEMBLIES

Dennis Charles Arbon, Cheltenham, England, assignor to Walker, Crosweller & Company Limited, Cheltenham, England

Filed July 13, 1970, Ser. No. 54,341
Int. Cl. F16k *19/00*
U.S. Cl. 137—329.1 **7 Claims**



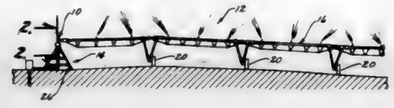
A fluid flow control assembly comprising a tap and a mounting block for connection to the fluid supply. The mounting block includes a valve means which is closed to prevent fluid flow from the block when the tap is removed from, or not mounted on the block, and which is opened when the tap is connected to the block.

3,659,627
COLLECTOR RING FOR IRRIGATION PIPE SYSTEMS

Arthur L. Zimmerer; Bernard J. Zimmerer, and Paul B. Zimmerer, all of Lindsay, Nebr., assignors to Lindsay Manufacturing Co., Lindsay, Nebr.

Filed Dec. 21, 1970, Ser. No. 100,157
Int. Cl. B05b *9/02*; E01h *3/02*
U.S. Cl. 137—344 **10 Claims**

A collector ring assembly for irrigation pipe systems which permits electrical power to be supplied from the center pivot assembly to the electrical motors on the self-propelled towers which support the pipe and propel the pipe around the pivot assembly in a predetermined path. The collector ring assembly comprises a plurality of horizontally disposed, vertically spaced electrical contacts which are fixed against rotation and which are electrically connected to a source of elec-

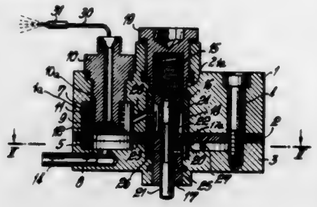


trical energy. A brush or wiper assembly is rotatably mounted with respect to the electrical contacts and wipe upon the contacts as the irrigation pipe is moved around the center pivot assembly. The brushes are electrically connected to the electrical motors on the towers to provide electrical energy thereto.

3,659,628
DISTRIBUTOR FOR CONTINUOUSLY OPERATING FUEL INJECTION SYSTEMS

Walter Bosch, Rommelshausen; Reinhard Schwartz, Stuttgart-Sillenbuch, and Gerhard Stumpp, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 1, 1969, Ser. No. 862,875
Claims priority, application Germany, Oct. 15, 1968, P 18 03 066.5
Int. Cl. F16k *21/00*
U.S. Cl. 137—501 **8 Claims**



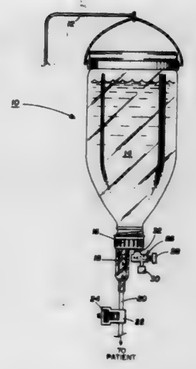
In a fuel distributor - in which the fuel to be delivered to a cylinder of an internal combustion engine is dosed by a metering valve - in order to maintain at a constant value the difference between the fuel pressure upstream of and downstream of the metering valve, there is provided a plurality of control valves (one for each cylinder) having a flat seat whose flow passage section is directly variable by a movable membrane. One side of said membrane is exposed to the downstream fuel pressure urging said membrane into a control valve opening direction, the other side of said membrane is exposed to the upstream fuel pressure urging said membrane into a control valve closing direction.

3,659,629
LIQUID FLOW REGULATOR AND MONITOR FOR CORPOREAL INFUSION SYSTEM AND METHOD OF USING THE SAME

David W. Deaton, Dallas, Tex., assignor to Ahlden Corporation, Dallas, Tex.

Filed May 4, 1970, Ser. No. 34,121
Int. Cl. F16k *37/00*
U.S. Cl. 137—551 **12 Claims**

The specification is directed to a device for regulating and visually indicating the rate of fluid flow from a corporeal infusion system such as an intravenous infusion system. One embodiment of the disclosed invention includes the detection of the rate of flow of air into the container of sterile liquid to be infused into the patient. The flow rate of the liquid to the patient is then visually indicated in response to the detected rate of flow of air into the container. In another embodiment of the invention, a housing is attachable to the air inlet of a conventional corporeal infusion system and includes a valve therein for regulation of the flow of air into the liquid container of the infusion system. Regulation of the amount of air

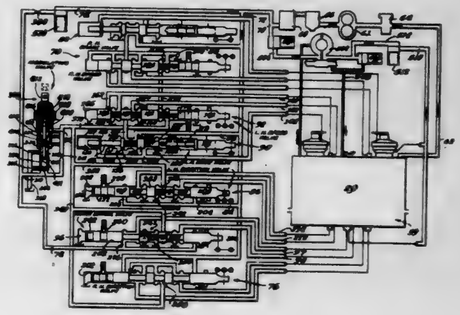


into the container directly regulates the flow rate of liquid from the container to the patient. An indicator scale on the housing visually indicates the flow rate of the liquid from the container in response to the measurement of the flow rate of air into the container. Other embodiments of the invention include utilizing a timer to control the length of infusion and utilizing an alarm system in order to maintain the liquid infusion to the patient at a predetermined level.

3,659,630
TRANSMISSION CONTROL SYSTEM

Robert G. Honeyager, Oak Creek, and James C. Rigney, Racine, both of Wis., assignors to J. I. Case Company

Original application June 30, 1969, Ser. No. 837,547, now Patent No. 3,608,397. Divided and this application July 20, 1970, Ser. No. 63,969
Int. Cl. F16k *11/10*
U.S. Cl. 137—596 **19 Claims**



A hydraulic control system for controlling actuation of a plurality of fluid operated friction devices forming part of a transmission for a vehicle with the system including speed and direction valves and a range valve engaged at all speeds. The system further includes a modulator valve which reduces the pressure of fluid supplied to the range valve to selectively control engagement of fluid couplings associated therewith. The modulating valve is designed for automatic operation

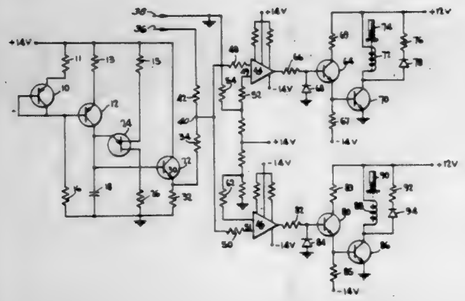
during normal shifting of the speed and direction valves between neutral and engaged positions and alternatively manually operable at the discretion of the operator.

3,659,631

CONTROLLER FOR A PULSED SERVOVALVE

John Peter Rakeske, Dover, N.H., assignor to Moore Business Forms, Inc., Niagara Falls, N.Y.

Filed Aug. 5, 1970, Ser. No. 61,386
Int. Cl. F16k 31/06, 11/10
U.S. Cl. 137—596.17 7 Claims



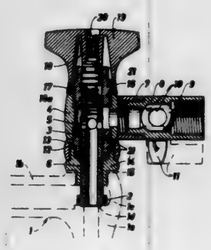
An exhaust and pressure solenoid is operated by a circuit which generates a repetitive sawtooth signal waveform upon which is superimposed an input representing a desired control signal for regulating the flow of an operating fluid to a device such as a tension controller or brake. The orifices of the exhaust and pressure solenoids are duty cycle modulated at the repetitive frequency of the sawtooth signal and their respective orifice sizes are varied in accordance with the input signal.

3,659,632

FAUCET CONTROL HAVING AN AUXILIARY OUTLET

Bengt Harald Jonsson, Schloesslihalde 33, CH-6000 Luzern, Switzerland

Filed Mar. 20, 1970, Ser. No. 21,299
Claims priority, application Sweden, Mar. 20, 1970, 3880/69
Int. Cl. F16k 1/04, 5/06, 11/10
U.S. Cl. 137—610 2 Claims



A faucet control mountable on a faucet duct housing, capable of controlling the flow through said duct and also providing an auxiliary outlet from said control even when said faucet duct is closed by said control.

3,659,633

METHOD OF MAKING PARALLEL WIRE STRAND

Jackson L. Durkee, Bethlehem; Arthur F. Beighley, Williamsport, both of Pa., and Donald E. Dunlap, deceased, late of Montoursville, Pa. (by Mary E. Dunlap, administratrix), assignors to Bethlehem Steel Corporation

Division of application Ser. No. 575,038, Aug. 25, 1966, now Patent No. 3,526,570. This application June 4, 1970, Ser. No. 43,463
Int. Cl. B21f 15/06
U.S. Cl. 140—111 5 Claims



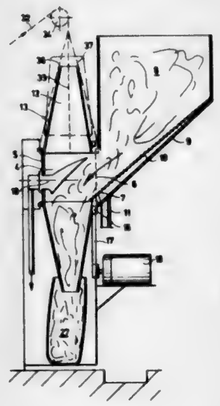
A stabilized parallel wire strand is made by drawing a plurality of wires through a forming die from a plurality of rotatable pay-offs each of which is arranged to rotate in a direction opposite to at least one other pay-off while clamping the wires at their leading ends to prevent rotation of the wires about their axes and finally binding the wires together with a resilient binding at intervals along the length of the strand. After binding the strand can be immediately reeled by actively or passively rotating the strand periodically about its longitudinal axis in alternate clockwise and counterclockwise directions as it passes onto a reel.

3,659,634

DEVICE FOR FILLING INDIVIDUAL RECEPTACLES WITH A METERED QUANTITY OF A FLOWABLE MATERIAL

Lothar Ohring, Pfarrgasse 6, Schweinfurt, Germany

Filed Jan. 30, 1970, Ser. No. 7,158
Claims priority, application Germany, Jan. 30, 1969, P 19 04 514.8
Int. Cl. B65b 43/50
U.S. Cl. 141—163 12 Claims



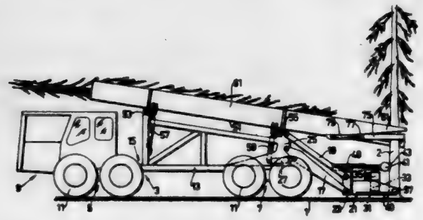
A device for filling individual receptacles with a metered quantity of a flowable material which may be of viscous or granular consistency from a supply of such material comprises a metering wheel including a rotatable hollow hub on which are radially mounted a plurality of metering containers, open at both ends. The containers are successively filled with the material by feeding the material into the hollow hub from which it passes by gravity into the containers as the wheel turns. Each filled container discharges its contents into a bag or other receptacle fitted upon the open outer end of the container. The thus filled bags are successively removed from the wheel for transfer to a point of utilization.

3,659,635

APPARATUS FOR FELLING AND BUNDLING TREES

Per Gustaf Mellgren, Soderhamn, Sweden, assignor to Kockum Soderhamn Aktiebolag, Soderhamn, Sweden

Filed Apr. 24, 1970, Ser. No. 31,493
Claims priority, application Sweden, Apr. 24, 1969, 5843/69
Int. Cl. A01g 23/02
U.S. Cl. 143—43 N 8 Claims



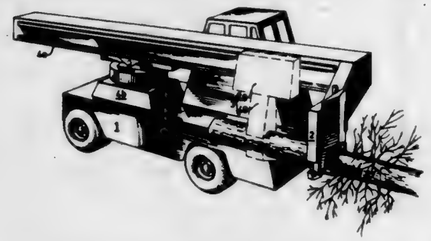
A feller buncher apparatus including in combination a cutter device, an elongated collected trough for severed trees, means to support the weight of a tree, and means to apply a force against the lower end of a severed tree so that it will topple into said elongated collecting trough.

3,659,636

METHOD AND APPARATUS FOR GRIPPING AND DEBRANCHING FELLED TREES

Erik Helmer Erikkssen, Soderhamn; Olof Edvin Frisk, Ornskoldsvik; Lars-Gunnar Hogberg, Ornskoldsvik; Stig-Gunnar Lofgren, Ornskoldsvik, and Sven Paul Jarnstrom, Jarved, all of Sweden, assignors to Mo Och Domajo Aktiebolag, Ornskoldsvik, Sweden

Filed Oct. 8, 1969, Ser. No. 864,712
Claims priority, application Sweden, Oct. 11, 1968, 13777/68
Int. Cl. A01g 23/02
U.S. Cl. 144—2 Z 15 Claims



A method is provided for gripping and debranching felled trees, in which the tree is gripped by a gripping member and lifted thereby from the surface of the ground to a higher plane, in which it is moved in its longitudinal direction through or beyond a debranching means, the gripping member and the debranching member being brought simultaneously into contact with the felled tree in the plane of the ground, and the branches and knots of the tree are then severed from the tree trunk by the debranching member.

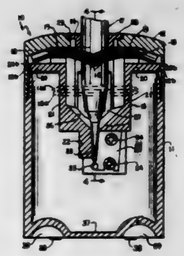
An apparatus is provided including a frame structure for horizontal and vertical movement on a support structure, a feed means capable of being moved along the frame and a gripping member and a debranching member which are securely attached to the frame. The debranching member comprises an upper and a lower tool, which are separated from each other, and comprise an elongated chain of members provided with cutting edges, and are pivotally connected to each other and with respect to the longitudinal extension of the tool. The members are rotatable in relation to each other between a position in which the tool is substantially straight and a second position in which the tool is curved at a certain radius, and form a continuous edge facing the conveying direction, irrespective of their mutual position.

3,659,637

PENCIL LEAD POINTER

Robert S. Condon, 112 Cindy Lane, Berlin, Conn.

Continuation-in-part of application Ser. No. 806,512, Mar. 12, 1969, now abandoned. This application Jan. 11, 1971, Ser. No. 105,155
Int. Cl. B43l 23/08
U.S. Cl. 145—3.31 2 Claims



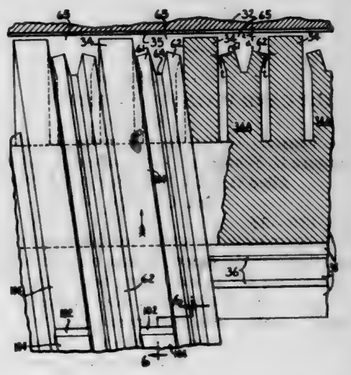
A pocket size lead pointer has a hollow housing bottom and a telescoping cap having a central pencil entering hole in its top. Finger tip depressions at either end of the housing bottom are offset laterally from the pencil hole so that the pointer may be rotated about a finger tip as pivot by manually moving the pencil in a circular path. A pencil guide bushing in the top hole secures a blade and its support to the cap interiorly of the housing. A lead guide passage axially aligned with the entrance and contiguous to the blade is spaced from the pencil guide more than half the heighth of the housing.

3,659,638

HEAVY DUTY MACHINE FOR PRODUCTION OF COMMINUTED MEAT AND OTHER FOODS

Stephen A. Paoli, 520 Sixth Street, Rockford, Ill.

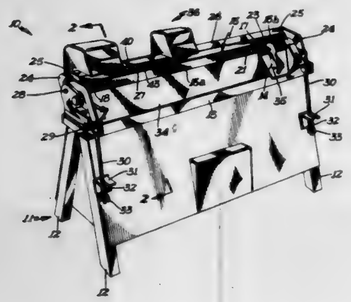
Continuation-in-part of application Ser. No. 859,717, Sept. 22, 1969, now abandoned. This application Mar. 24, 1970, Ser. No. 22,151
Int. Cl. A22c 17/00, 25/16; B02c 18/00
U.S. Cl. 146—76 R 15 Claims



An improved separator machine for producing boneless comminuted meat and other smooth comminuted food

products from a coarse agglomeration of fragmented hard and soft tissues which are separated automatically and continuously and discharged separately. The machine incorporates an improved mechanical separator utilizing a revolvable separator member reinforced structurally by cutting elements. The latter may also have external teeth. The machine is adapted to process raw material in a frozen, partially frozen or unfrozen state and is particularly suitable for processing red meat as well as poultry and fish.

3,659,639
SKINNING MACHINE HAVING A RECIPROCATING FAT REMOVING KNIFE MECHANISM THEREOF
Oscar H. Lindstrom, and Nathan A. Fischer, both of Austin, Minn., assignors to Geo. A. Hormel & Co., Austin, Minn.
Filed May 20, 1970, Ser. No. 39,110
Int. Cl. A22c *17/12*
U.S. Cl. 146—130 3 Claims



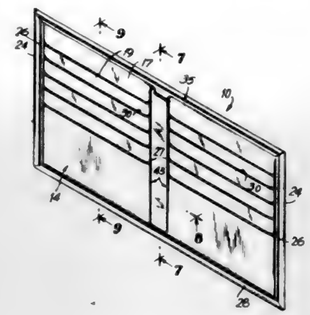
A skinning machine for removing skin from hams includes a frame having a driven roll mounted thereon, the roll including a plurality of axially spaced apart serrated blades thereon which revolve in close proximity to a pressure shoe. The pressure shoe has an elongate skinning blade fixedly mounted thereon which is positioned closely adjacent the driven roll. An elongate fat removing blade is mounted closely adjacent the pressure shoe and is longitudinally reciprocable relative to the pressure shoe and is operable during its reciprocating movement to facilitate removal of excess fat from the ham prior to the skin removing operation.

ERRATUM

For Class 146—222 see:
Patent No. 3,659,315

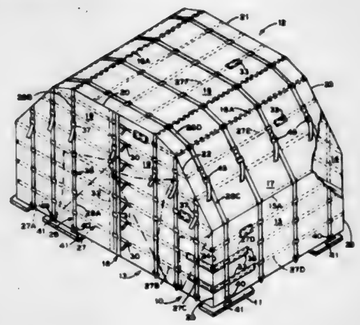
3,659,640
CREDIT CARD WALLET AND METHOD OF MAKING SAME
Nathan Fenster, 1709 Ocean Avenue, Brooklyn, N.Y., and Theodore H. Schiffman, 124 Broadway, Lawrence, N.Y.
Filed Oct. 24, 1969, Ser. No. 869,139
Int. Cl. A45c *1/00*
U.S. Cl. 150—35 9 Claims

A multicompartment wallet includes a pair of transversely spaced first panels superimposed on and integrally formed with a backing panel and having depending medial tongues. A set of longitudinally offset superimposed second panels having transverse slits, proximate their lower edges is superimposed on each first panel with the corresponding tongue engaging each slit. The panels have overlapping side tabs heat-sealed to each other. A rear panel underlies the backing panel and is provided with integrally formed front panels overlying the lowermost of the second panels, and side flaps overlying and heat-sealed to the outer side edges of the first, second and front panels. The wallet is produced by jig-positioning a first blank including the front and rear panels, a plurality of preformed scond blanks including the second



panels, and a preformed third blank including said first and backing panels, and simultaneously heat-sealing and severing the blanks to form and join the various panels.

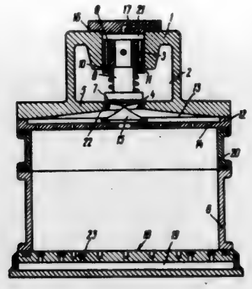
3,659,641
CARGO CONTAINER
Frank J. Marino, 8802 Foster Avenue, Brooklyn, N.Y.
Filed Oct. 3, 1969, Ser. No. 863,500
Int. Cl. B65b *65/02*
U.S. Cl. 150—52 6 Claims



Cargo containers including a rigid pallet and a flexible covering detachably connected to the pallet for enclosing cargo carried by the pallet; the covering closely conforming to the contours of the cargo.

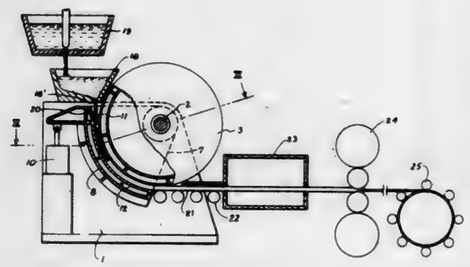
3,659,642
APPARATUS FOR COMPACTING A MOULDING MIXTURE
Lev Fedorovich Vasilkovsky, Donetskoi oblasti, ulitsa Koroleva, 25, kv. 52, Slavyansk; Vladimir Efimovich Sjujuk, ulitsa Shkadinova, 29, kv. 23, Kramatorsk; Nikolai Nikitovich Abrosimov, ulitsa Voznesenskogo, 19, kv. 60, Kramatorsk; Georgy Andreevich Geldebrekhov, ulitsa Sotsialisticheskaya, 72, kv. 9, Kramatorsk; Vsevolod Andreevich Lyashenko, ulitsa Bogdana Khmelnitskogo, 16, kv. 9, Kramatorsk, and Vladimir Ivanovich Podmogilny, poselok Krasnogorka, ulitsa Deputatskaya, 120, Kramatorsk, all of U.S.S.R.
Filed Dec. 22, 1969, Ser. No. 887,223
Int. Cl. B22c *15/00*
U.S. Cl. 164—169 4 Claims

A device for compacting a moulding mixture in which the latter is subjected to the action of compressed air by supplying the air into a reservoir under a pressure exceeding 20 kg/cm² in such an amount that 3 to 40 volumes of air under a normal pressure are provided per unit or volume of the mixture being densified. Then the reservoir is discharged during a time interval not exceeding 0.15 sec. by directing the flow of air into the mixture in a moulding box. The reservoir is



formed by a chamber of a housing and at the external side of this housing under a discharge opening closed by a valve there is mounted a plate forming an additional chamber. The plate has holes for a uniform distribution of the air over the surface of the mixture being compacted.

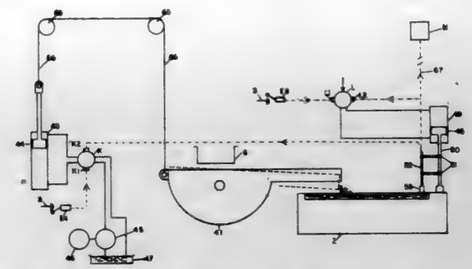
3,659,643
APPARATUS FOR THE CONTINUOUS CASTING OF METAL STRIP
Heinrich Pauels, Duesseldorf-Lohausen, Germany, assignor to Schloemann Aktiengesellschaft, Duesseldorf, Germany
Filed Aug. 5, 1970, Ser. No. 61,118
Claims priority, application Germany, Aug. 16, 1969, P 19 41 729.9
Int. Cl. B22d *27/08*
U.S. Cl. 164—260 5 Claims



In an apparatus for the continuous casting of metal strip a casting cavity is formed between a rotating casting drum and an oscillating casting shoe, both of which are supported on a common shaft.

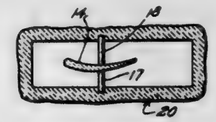
3,659,644
APPARATUS FOR THE CASTING OF METAL ANODES
Edouard De Bie, Antwerp, Belgium, assignor to Metallurgie Hoboken, Brussels, Belgium
Filed May 5, 1969, Ser. No. 821,866
Claims priority, application Belgium, May 15, 1968, 58412
Int. Cl. B22d *5/02*
U.S. Cl. 164—326 5 Claims

An apparatus and process for casting of metal, such as copper anodes. The apparatus includes an oven for melting the metal and a rotatable casting wheel which carries a series of molds. A tiltable ladle pours the molten metal into a mold, and sensing means inside the mold produces a signal in response to the level of the molten metal in the mold for ending the pouring operation from the ladle. When the pouring



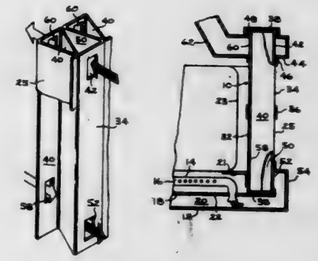
operation for a particular mold has terminated, the casting wheel is automatically rotated to bring the next mold into proper position for receiving the molten metal.

3,659,645
MEANS FOR SUPPORTING CORE IN OPEN ENDED SHELL MOLD
John A. Rose, Cleveland Heights, Ohio, assignor to TRW Inc., Cleveland, Ohio
Filed Aug. 9, 1965, Ser. No. 478,080
Int. Cl. B22c *9/10*
U.S. Cl. 164—353 6 Claims



An open ended refractory shell mold having a casting cavity therein, a chill block positioned to close off the open end of said mold and a ceramic core having one end received within said mold and having a free end extending into said molding cavity. The free end of said core is restrained from lateral movement within said molding cavity by engaged pin means having opposed ends anchored in the mold walls.

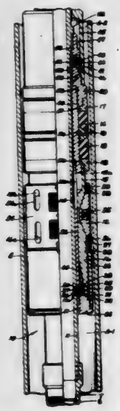
3,659,646
HEAT EXCHANGER CONSTRUCTION
Bohdan Hurko, and Raymond L. Dills, both of Louisville, Ky., assignors to General Electric Company
Filed June 15, 1970, Ser. No. 46,114
Int. Cl. F28d *9/00*
U.S. Cl. 165—164 9 Claims



A heat exchanger for use in the flue gas exhaust system of a self-cleaning gas cooking oven in the form of a large

square-cornered corrugated panel that is collapsed from the sides in the plane of the panel to create two intermeshed series of triangular shaped pipes where one series of alternate pipes carry hot flue gases while the opposite series of alternate pipes carry inlet air for transferring some of the heat of the flue gases to the ambient air. The front face of the heat exchanger that is turned toward the oven operates hot, while the back face of the heat exchanger operates relatively cool to reduce heat losses to the outside. Sealing means close both the top and bottom ends of the pipes. Inlet and outlet openings are formed in the front and back faces of the unit near the top and bottom.

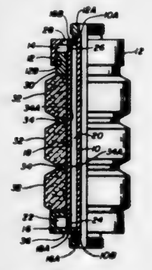
3,659,647
WELL PACKER
Joe R. Brown, P. O. Box 19236, Houston, Tex.
Filed Mar. 4, 1970, Ser. No. 16,327
Int. Cl. E21b *23/06, 33/129*
U.S. Cl. 166—120 12 Claims



A single piece, tubular mandrel extends centrally through a closely surrounding composite outer body. The outer body includes metal anchoring slips and resilient packers to respectively anchor the outer body and supporting central mandrel to a surrounding well pipe and to seal the annular space formed between the mandrel and the surrounding well pipe. The outer body includes setting components which are moved axially by hydraulic setting pressure introduced through the mandrel into expandable chamber means formed in the outer body. The setting components wedge under the anchoring slips and axially foreshorten the packer, forcing the slips and packer radially outwardly into engagement with the surrounding well conduit. Reverse axial movement of the setting components is prevented by a one-way acting friction lock which retains the anchoring slips and packer in engagement with the well conduit even after reduction of the hydraulic setting pressure. The anchoring slips and packers are released from their set position by moving the mandrel axially with respect to the expanded slips and packer in the outer body. Undesired relative movement of the mandrel is prevented by a pressure expanded, normally retracted mechanical hold-down linkage extending between the mandrel and the set outer body. In the absence of a pressure differential across the set packer, the mechanical linkage returns to a normally retracted position which provides no obstacle to relative movement between the mandrel and outer body.

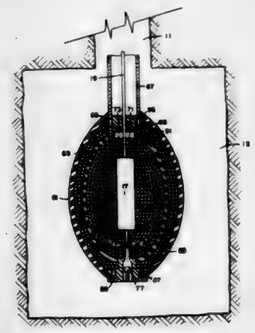
In the preferred form of the invention, the hold-down linkage includes a series of radially movable pistons acting against a resilient snap ring to retain the snap ring in engagement with a groove in the outer body. In a modified form, the hold-down linkage is an outwardly biased annular ring having internal grooves adapted to mate with external grooves formed on the mandrel. The ring is moved toward the mandrel by axially movable, tapered wedging means driven by hydraulic pressure.

3,659,648
MULTI-ELEMENT PACKER
James H. Cobbs, 5144 South New Haven, Tulsa, Okla.
Filed Dec. 10, 1970, Ser. No. 96,786
Int. Cl. E21b *23/00*
U.S. Cl. 166—120 5 Claims



A multi-element packer for closing a borehole including a tubular inner mandrel, a cylindrical member at one end of the mandrel and a coupling plate at the other end, an outer mandrel coaxially positioned over the inner mandrel providing an annular passageway between the two, an annular piston positioned in the cylinder member displaced by fluid pressure applied to the cylinder member, and a plurality of tubular elastomer elements positioned on the outer mandrel between the piston and the coupling plate, the elastomer elements being expanded by force of the piston.

3,659,649
METHOD OF STIMULATING OIL OR GAS RESERVOIRS BY A SUBSURFACE NUCLEAR EXPLOSION
Henry F. Dunlap, Dallas, Tex., assignor to Atlantic Richfield Company, Philadelphia, Pa.
Filed May 27, 1968, Ser. No. 732,401
Int. Cl. E21b *43/00*
U.S. Cl. 166—247 12 Claims

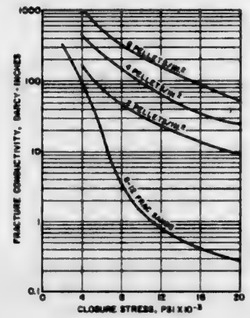


A nuclear explosive device for subsurface use is assembled and detonated through a small diameter borehole by enlarging a section of the borehole to a sufficient size, lowering a triggering device into the enlarged section and placing nuclear explosive fuel material around the trigger. The nuclear fuel material is surrounded by a second material which may be of higher density and may also be a fuel material. Heavy water may be injected into or with the nuclear fuel material. The nuclear fuel material may contain the deuteride of an active metal substance and be slurried with an anhydrous liquid; or it may contain the heavy hydrogen isotope of the hydroxide of the active metal substance and be slurried with heavy water. Concentric collapsible, expansible containers are used to form the nuclear explosive.

3,659,650
OIL RECOVERY PROCESS
Charles A. Stratton, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed June 15, 1970, Ser. No. 46,552
Int. Cl. E21b *43/22*
U.S. Cl. 166—275 8 Claims

An oil recovery process which employs, as an additive to the aqueous material used for waterflooding, at least one of the reaction product of sulfamic acid and a polyethoxy alcohol or, the ammonium sulfate slat of a polyethoxylated alkylphenol is disclosed.

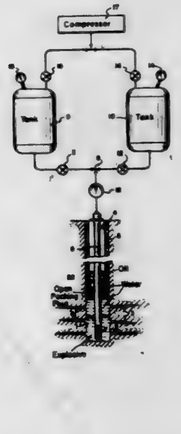
3,659,651
HYDRAULIC FRACTURING USING REINFORCED RESIN PELLETS
John W. Graham, Houston, Tex., assignor to Esso Production Research Company, Houston, Tex.
Filed Aug. 17, 1970, Ser. No. 64,339
Int. Cl. E21b *43/26*
U.S. Cl. 166—280 12 Claims



Fractures in a subterranean formation are propped with propping agent particles composed of a synthetic resin substantially inert to formation fluids and containing reinforcing materials dispersed therein.

3,659,652
LIQUID EXPLOSIVE FOR WELL FRACTURING
Leonard N. Roberts, Scottsdale, Ariz., assignor to Talley-Frac Corporation, Pryor, Okla.
Continuation of application Ser. No. 765,113, Oct. 4, 1968, now abandoned. This application Jan. 27, 1971, Ser. No. 110,315
Int. Cl. E21b *43/26*
U.S. Cl. 166—299 10 Claims

A cap insensitive liquid explosive is described which is particularly useful for fracturing a formation containing a network of narrow fissures adjacent a well bore in order to bring in a well or to increase its productivity, which includes a nitroparaffin compound, preferably nitromethane, capable of dissolving substantial amounts of high explosive compounds, and one or more of certain high explosive compounds dissolved therein. The high explosive compounds are of a kind and are present in an amount capable of rendering the liquid explosive sufficiently diameter insensitive to permit propagation of an explosion throughout a substantial portion of such network of narrow fissures when the liquid explosive is placed therein or in such other environment as it is to be used. Preferred high explosives are RDX, HMX and mixtures thereof. TNT, PETN or any other high explosive organic nitro compound may be included in an amount sufficient to render the liquid explosive less sensitive to detonation, such that it is not cap detonable, at the same time enhancing its explosive power and reliability. For certain applications, ammonium nitrate may be added to achieve desired explosive effects, as well as finely divided reactive metal to increase the brisance of the explosive. A gelling agent such as nitrocellulose is included to maintain the resulting uniform dispersion

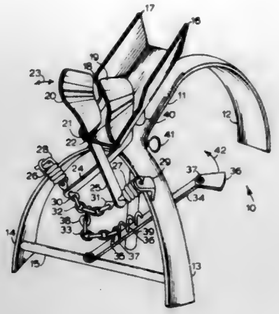


for long periods of time. A method of pressure-transferring a liquid explosive into the well bore and pressuring it back into the productive formation is described in which the explosive is injected through a tube into the well bore directly adjacent the formation to be fractured, the tube having first been cleared of air, by placing the liquid explosive in one or more tanks connected to the injection tube at the well surface and which are subjected to air pressure to force the explosive into the well. Further, a well fracturing method which is self cleaning, rendering unnecessary the usual cleaning step which follows fracturing, is disclosed in which the well bore is restricted above the level of the explosion and is closed above the restriction with sand or the like such that sufficient back pressure is maintained in the well for satisfactory fracturing, while the resultant gases are subsequently vented through the restriction, blowing the sand or other ballast as well as the rubble generated by the explosion out of the well bore.

3,659,653
STOCK FOR SHOEING ANIMALS
Oliver L. Allsup, P. O. Box 274, High Rolls, N. Mex.
Filed Oct. 7, 1970, Ser. No. 78,823
Int. Cl. A01l *07/00*
U.S. Cl. 168—44 14 Claims

A stock for shoeing animals including on a tripod base a channel for receiving a leg of the animal, the channel having adjacent thereto means for adjustably constraining the hoof.

A foot lever is provided to control the constraining means against a normally applied bias away from the constraining

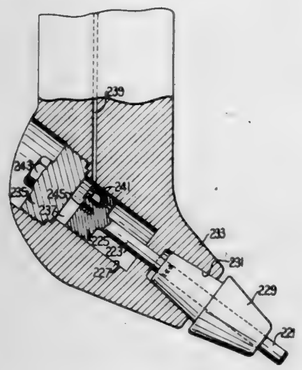


position to rapidly release the animal from the constraining means when the foot lever is released so as not to endanger the animal if it bolts.

3,659,654
ADJUSTABLE RIPPER TIP

James M. Davies,, Orinda, Calif.; Larry G. Hackmann, Peoria, Ill.; Robert A. Peterson, San Leandro, Calif.; Roger M. Smith, and Leon A. Wirt, both of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Original application Nov. 29, 1967, Ser. No. 686,501, now Patent No. 3,550,691. Divided and this application Apr. 10, 1970, Ser. No. 31,449
Int. Cl. A01b *13/08, 35/20*
U.S. Cl. 172—699 **3 Claims**



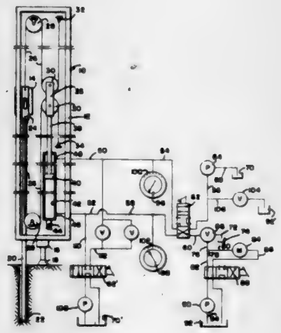
A ripper in which the ground engaging tip can be advanced in its holder to accommodate for wear of the ripper tip. The tip may be advanced manually or hydraulically depending on the mechanism used and is held in place by friction and/or a pinning means.

3,659,655
FEED CONTROLLING METHOD AND SYSTEM

Laszlo Gyongyosi, Clarksburg, W. Va., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed June 2, 1970, Ser. No. 42,627
Int. Cl. E21c *5/10*
U.S. Cl. 173—1 **14 Claims**

A drilling head and drill string is fed, or the feed is restrained, by a hydraulic-fluid-actuated piston. Hydraulic lines supplying and evacuating hydraulic fluid to and from the piston have gauges connected thereto to signal pressure conditions, in psi, at the piston. Scales calibrated in pounds are mounted adjacent to the gauges to signal, per machine and drill string and their characteristics, as well as the characteristics of the material being drilled, a proper correspondence between actual bit weight and an optimum feed pressure of fluid pressure assistance or restraint. A valve controls the hydraulic fluid supply and evacuation, selectively, to effect a holding back of the drill string, when its dead weight less the system's internal resistance would produce excessive bit weight, a pulling down of the drill string when its dead weight less the system's internal resistance would yield inadequate bit weight or pressure monitoring on a level just to

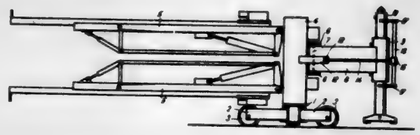


offset the system's internal resistance when the drill string weight alone would produce the optimum bit weight (i.e., zero hold-back). The gauges and scale advise the operator of the operational feed status that he might determine the requirements for holding back or pulling down the drill string. Valving at a fluid reservoir insures maintenance of a constant compensating pressure to one side of the piston at all times. This constant pressure, when minimum hold-back pressure is applied, provides a low pressure pull-down force to counteract the system's internal resistance so zero hold-back can exist. (The system's internal resistance is the sum of various stationary mechanical frictions and the minimum obtainable hold-back pressure all acting against the development of a down motion of the drill string.) The compensating pressure also prevents possible cavitation.

3,659,656
ARRANGEMENT FOR SLIDE-TRACKING OF A BORING MACHINE IN MINES WITH A LIMITED PROFILE

Vladimir Mares, Pribram, Czechoslovakia, assignor to Ceskoslovensky uranovy prumysl, oborovy podnik, Pribram, Czechoslovakia

Filed Nov. 16, 1970, Ser. No. 89,595
Claims priority, application Czechoslovakia, Nov. 18, 1969, 7601-69
Int. Cl. E21c *11/02*
U.S. Cl. 173—23 **4 Claims**



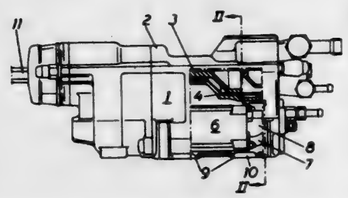
A truck adapted to move on tracks in mine galleries supporting at least one boring set is provided with a vertical

frame rotatably mounted on the truck frame around its vertical axis, which vertical frame supports on one side at least one boring set, on the other side a horizontal beam pivotably around a vertical axis, the other end of said beam fixed to the jacket of an extensible prop, with hydraulic cylinders controlling mutual position between the vertical frame and the horizontal beam, between the truck frame and the vertical frame and the position of the arms with wheels supporting the truck.

3,659,657
INDEPENDENTLY ROTATED PNEUMATIC ROCK DRILL

Erik Johan Victor Ahlberg; Gosta Bernard Ekwall, both of Nacka, and Rolf Arthur Ronald Lindqvist, Tumba, all of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Oct. 1, 1970, Ser. No. 77,233
Int. Cl. B25d *9/00*
U.S. Cl. 173—105 **4 Claims**

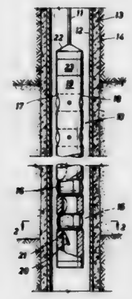


An independently rotated, muffled pneumatic rock drill comprising an impact mechanism housing in which an impact mechanism and a rotation motor are located and in which housing also is enclosed an air volume into which the exhaust air from both the impact mechanism and the rotation motor is discharged. The rotation motor has an exhaust pipe of a tuned length.

3,659,658
WELL PERFORATING APPARATUS

Emmet F. Brieger, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Sept. 28, 1970, Ser. No. 75,857
Int. Cl. E21b *43/117*
U.S. Cl. 175—4.6 **13 Claims**

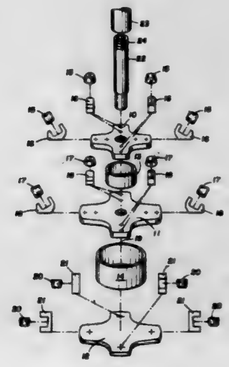


As an illustrative embodiment of the present invention, an elongated thick-wall tubular perforating carrier is provided with one or more pairs of aligned openings formed at spaced intervals along the opposed walls of the carrier. Typical shaped explosive charges are respectively enclosed within fluid-tight thick-wall containers which are complementally shaped for reception in the openings and adapted to be supported therein by the opposed carrier walls. A container is secured in each pair of the openings and a detonating cord is passed through the interior of the carrier and successively looped outwardly around the rear of each container within detonating proximity of each shaped charge. In this manner, the new and improved apparatus can be employed for perforating operations without leaving debris in the well bore or damaging the casing.

3,659,659
LARGE DIAMETER BIT WITH A REPLACEABLE STEM

Carl L. Lichte, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 4, 1970, Ser. No. 8,582
Int. Cl. E21c *23/00*
U.S. Cl. 175—53 **8 Claims**

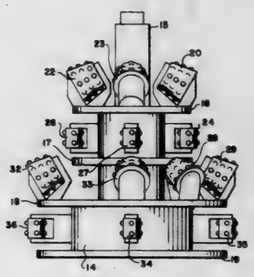


A bit for drilling a large diameter hole has a replaceable stem. The body of the bit includes a multiplicity of stages around a central axis. The bit is attached to the drill column by a replaceable stem connected to the main body of the bit and the body of the bit includes a series of plates separated by a series of hollow support elements.

3,659,660
LARGE DIAMETER BIT FOR SHALLOW ANGLE HOLES

William M. Conn, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 10, 1970, Ser. No. 27,281
Int. Cl. E21c *23/00*; E21d *3/00*
U.S. Cl. 175—53 **6 Claims**

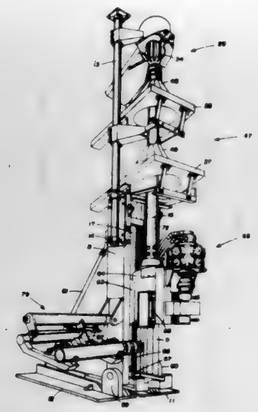


A bit for enlarging a pilot hole into a large diameter hole includes a plurality of drilling stages surrounding a central shaft. Integral stabilization sections are included after each drilling stage.

3,659,661
EARTH BORING MACHINE

James W. Young, Irving; George A. Cason, Dallas, both of Tex., and Ernest O. Kunkel, Nevada, Mo., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 2, 1970, Ser. No. 7,923
Int. Cl. E21b 7/00, 19/00
U.S. Cl. 175—85 3 Claims

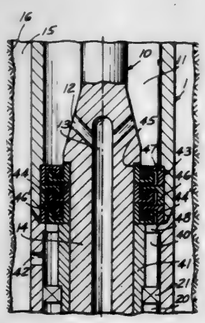


An apparatus for boring large diameter holes. A drilling mechanism is pivotally mounted on a base and arranged so that it may drill at any angle from the horizontal, either up or down. Means are provided to divert the drilling residue and loose rock and a drill pipe positioning system installs and removes sections of the drill pipe.

3,659,662
THRUST BEARINGS FOR UNDERGROUND DRILLING ENGINES

Leonide Dicky, Grenoble, France, assignor to Societe Generale de Constructions Electriques et Mecaniques (ALSTHOM), Grenoble, France

Filed Apr. 22, 1970, Ser. No. 30,803
Claims priority, application France, Apr. 25, 1969, 6911838
Int. Cl. E21b 3/12
U.S. Cl. 175—107 5 Claims

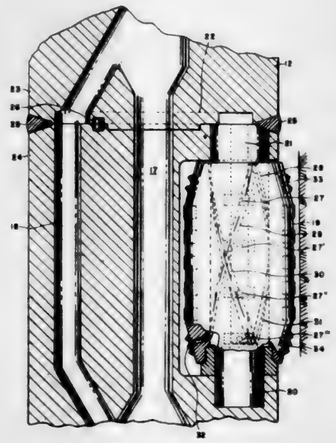


The oil bath layout for the lower thrust bearing in an underground drilling machine comprises an upper sealing joint below which means are provided for maintaining the oil pressure at a level which is at least equal to that of the surrounding pressure of the mud in the borehole. Such means may include a cylinder fitted with a piston and having one of its chambers in communication with the oil bath and the other of its chambers in communication with the borehole. An oil pressure control spring is located in the chamber in communication with the borehole and acts on the piston. The upper sealing joint forms the lower end of a second chamber in communication with the borehole and closed at its upper end by a leak limiting joint, such as one of the labyrinth type.

3,659,663
BOREHOLE REAMER-STABILIZER WITH IMPROVED FLUID CIRCULATION

Theodore R. Dysart, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 28, 1970, Ser. No. 101,696
Int. Cl. E21b 9/08, 9/24; E21c 23/00
U.S. Cl. 175—325 11 Claims



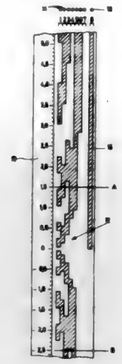
A plurality of passages transmit fluid end to end in the reamer-stabilizer body. Individual cutters are mounted on hollow shafts affixed to the reamer-stabilizer body. A circular passage transmits fluid to the center of the hollow shafts. Holes connect the outside of each shaft with the hollow central portion. Spiral grooves are located longitudinally on the inside diameter of the cutter.

3,659,664
WEIGHING APPARATUS

Erich Emil Karl Knothe, Gottingen-Grismar, and Eckhard Otto Walter Billin, Gottingen-Nikolausberg, both of Germany, assignors to Sartorius-Werke GmbH (und vormals Gottinger Prazisionswaagen GmbH), Gottingen, Germany

Filed June 8, 1971, Ser. No. 151,102
Claims priority, application Germany, June 16, 1970, P 20 29 735.2
Int. Cl. G06f 15/20; G01g 23/37, 23/42
U.S. Cl. 177—25 11 Claims

A weighing apparatus has a scale with code tracks which can be read by reading means. The scale is a tolerance scale and gives the possibility of achieving a predetermined or a selectable percentage accuracy of the tolerance part values which are covered by one code each. This is achieved by giving the codes in different ranges of the tolerance scale different lengths. The weighing apparatus may have several tolerance scales with different tolerance part values, the tolerance scales being centered at different weights, e.g., 5 or 10 or 20 g. In order to weigh a load with a certain desired percentage accuracy, the weighing apparatus is brought, f.i.

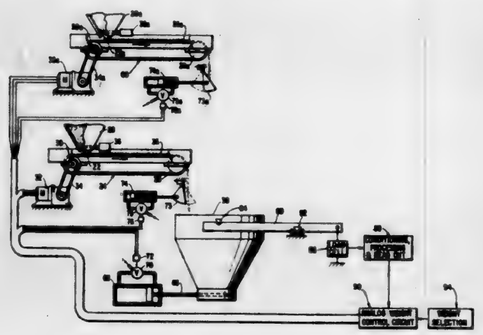


by an additional load, to the range of the selected tolerance scale.

3,659,665
ELECTRICAL WEIGHING SYSTEMS WITH MULTIPLE INCREMENTAL READOUTS

Gilbert Allan Godwin, Oakland, N.J., and Chapin A. Pratt, Rutland, Vt., assignors to Howe Richardson Scale Company

Filed July 27, 1970, Ser. No. 58,259
Int. Cl. G01g 3/14
U.S. Cl. 177—1 26 Claims

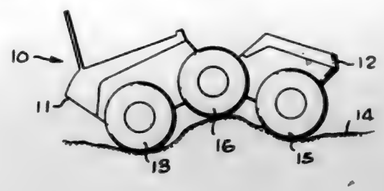


A weighing apparatus and method wherein an electrical analog signal, having a level representative of the weight of a load, is converted into a digital pulse train by an analog-to-digital converter. A counter for counting the converter-produced pulses is connected to one or more devices that provide a readout of the weight in visual and/or printed form. A program circuit is operatively connected to the converter and the counter, and selected circuit connections are made in the program for providing a selected one or more of the following conditions: (1) the division of the pulse train by a pre-selected divisor to count in only the quotient at the counter (2) the transfer of selected information from the counter to the readout devices to cause the weight to be read out by counting in any of a plurality of different increments such as ones, twos, or fives. Additional features pertain to tare circuits for taring the weight-representing signal.

3,659,666
ARTICULATED VEHICLE

John P. Forsyth, and Robert W. Forsyth, both of 1517 North 3rd Avenue, San Bernardino, Calif.

Filed Oct. 2, 1969, Ser. No. 870,438
Int. Cl. B62d 11/02
U.S. Cl. 180—6.2 7 Claims

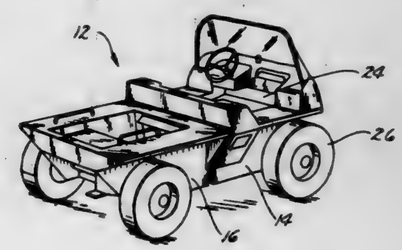


An articulated wheeled vehicle is disclosed herein having a front and a rear body portion pivotally joined together by a central axle rotatably mounted on opposing projections carried on the body portions. Axles are rotatably carried on each of the front and rear body portions so that a six-wheeled, three-axle vehicle is produced. Each axle comprises a pair of coextensive segments mounted in suitable bearings and each segment is separately powered via a drive train and transmission by a power plant so that directional control and speed of the vehicle can be attained since the axle segments may be rotated individually at different speeds and directions.

3,659,667
VEHICLE FRONT WHEEL DRIVE ASSEMBLY

John A. Rogers, and Fredrick R. Bossard, both of Fort Dodge, Iowa, assignors to Standard Engineering Co., Inc., Fort Dodge, Iowa

Filed Dec. 19, 1969, Ser. No. 886,472
Int. Cl. B62d 11/08
U.S. Cl. 180—6.2 4 Claims

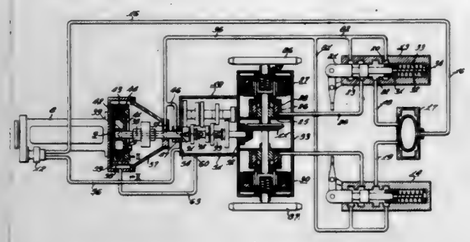


A drive assembly for a front wheel drive vehicle wherein a gear box is connected by a drive shaft and in turn provides driven shafts extending in opposite directions for connection with separate clutches which in turn are connected to the respective front wheels. Each of the clutches includes a pair of jaw portions semicylindrical in shape when in engagement with each other form a cylindrical drive member. Each of the jaw members are keyed to separate shafts for rotation therewith and an actuating lever is connected to a yoke in turn connected to one of the jaw members for sliding it along its shaft into and out of engagement with the other axially stationary jaw.

3,659,668
STEERING CLUTCH AND ENGINE CLUTCH HYDRAULIC CIRCUIT

Roy C. Ross, and Larry L. Bandy, both of Springfield, Ill., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Nov. 9, 1970, Ser. No. 88,007
Int. Cl. B62d 11/08
U.S. Cl. 180—6.7 6 Claims

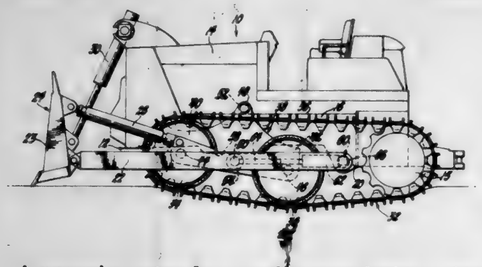


A hydraulic system in a crawler tractor having a single pump which supplies high pressure fluid for operating the steering clutches and low pressure fluid for lubricating the engine clutch and change-speed transmission. The engine clutch flywheel acts as an impositive displacement centrifugal pump for conveying fluid from the engine clutch housing to the low pressure side of the hydraulic system.

3,659,669
SUSPENSION SYSTEM FOR CRAWLER TRACTOR

Janis Mazzarins, Macedonia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 16, 1970, Ser. No. 81,473
Int. Cl. B62d 55/14
U.S. Cl. 180—9.5 6 Claims



A suspension system for a crawler tractor having a wheel carrier located on each side of the tractor. Each wheel carrier is supported by the tractor frame for independent oscillation about an axis extending transversely to the longitudinal axis of the tractor and carries a pair of large diameter wheels.

3,659,670
EQUALIZER BAR FOR USE IN TRACKED VEHICLES

Clady J. Royer, P.O. Box 75181, Oklahoma City, Okla.

Filed Dec. 11, 1969, Ser. No. 884,192
Int. Cl. B62d 55/08
U.S. Cl. 180—9.5 2 Claims

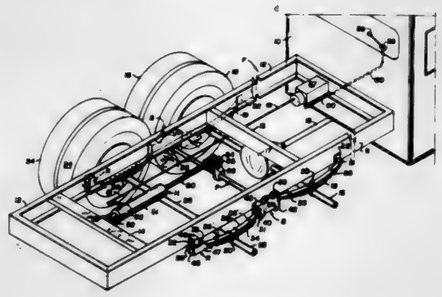


An equalizer bar for supporting the body and engine structure of tracked vehicles on a pair of horizontally spaced, longitudinally extending trucks. The bar is an elongated element having a central web portion and a pair of flanges secured to the opposed longitudinal edges of the web portions to form an I-shaped cross-section for the equalizer bar over a major portion of its length. The flanges converge towards the ends of the bat and merge in end portions, and the web portion is flared in a horizontal direction adjacent the opposite end portions of the bar to provide further reinforcement. A strengthening column is provided at the central portion of the bar for further strengthening the bar. Wear plates are secured on the under side of the opposite end portions of the bar for forming the surfaces of the bar in contact with the opposed, track carrying trucks of the vehicle.

3,659,671
TAG WHEEL LIFT

Alvin L. Heinze, Weld County, Colo., assignor to H & L Tag Lift Corporation, Denver, Colo.

Filed Jan. 23, 1970, Ser. No. 5,263
Int. Cl. B62d 61/12; B60g 5/00
U.S. Cl. 180—24.02 11 Claims



A spring seat is mounted on each end of a pivot shaft which is mounted transversely of the truck frame between the drive wheels and tag wheels and is pivoted by a rocker arm pivotally connected to the piston rod of a hydraulic cylinder. A roller for engaging the rear end of the corresponding drive wheel leaf spring is mounted at the front upper corner of the spring seat, while a pivot pin for the front end of the corresponding tag wheel leaf spring is mounted at the lower rear corner of the spring seat. The rear end of each tag wheel leaf spring extends into a rear seat attached to the frame, engaging a roller in the rear seat. Lift of the tag wheels is produced when the spring seat is pivoted hydraulically, while the spring seats permit equalization of the load between the drive wheels and the tag wheels. The hydraulic cylinder may be single acting or double acting, but if the latter, a lost motion link is pivoted between the piston rod and the rocker arm.

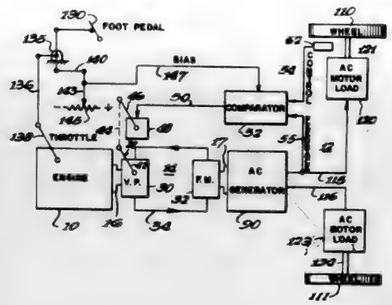
3,659,672
CONTROL SYSTEM

Charles J. Jacobus, C/O Charles Equipment Co. 17W601 North Avenue, Villa Park, Ill.

Original application July 3, 1969, Ser. No. 839,037, which is a continuation-in-part of application Ser. No. 801,644, Feb. 24, 1969, now Patent No. 3,558,901, dated Jan. 26, 1971.
Divided and this application Jan. 11, 1971, Ser. No. 105,306
Int. Cl. B60l 11/08
U.S. Cl. 180—65 R 3 Claims

A control system using a motive source and connected hydrostatic transmission to drive a load at a speed determined by the volume of fluid flowing in the transmission. A comparator and actuator change the volume of fluid flow in proportion to the deviation between a feedback signal and a

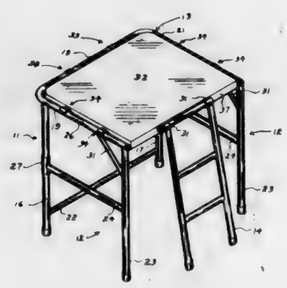
control signal. The feedback signal is generated by a sensor responsive to the output of the transmission. The control signal has a value dependent upon the type of load connected to the transmission.



3,659,673
PORTABLE REFEREE STAND

Harold J. Enneking, P. O. Box 789, Hastings, Nebr.

Filed Dec. 31, 1970, Ser. No. 103,207
Int. Cl. E04g 1/34
U.S. Cl. 182—115 6 Claims



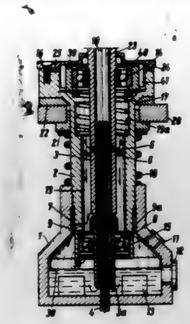
A portable platform apparatus adapted for the vertical support of a volleyball referee, the apparatus having a vertical front frame; a pair of vertical end frames, a top horizontal frame; and a ladder; the combination providing an elevated horizontal support platform which is hingedly collapsible into a compact unit that is easily carried.

3,659,674
ATOMIZED OIL LUBRICATING DEVICE FOR BEARINGS AND/OR JOURNALS OF VERTICAL SHAFTS ROTATING AT HIGH SPEEDS

Luigi Ferrario, Mandello del Lario, Como, Italy, assignor to Ferrario Andrea A Figli Di Ferrario, Evangelista e Figli, Como, Italy

Filed Dec. 16, 1969, Ser. No. 885,655
Claims priority, application Italy, Sept. 10, 1969, 21835 A/69
Int. Cl. F16n 7/32
U.S. Cl. 184—6.16 10 Claims

A vertical shaft rotatable at high speeds and provided with bearings and/or journals has an axial bore at its lower end immersable into lubricating oil in a tank. Openings in said shaft communicate the bore with a housing defined between the shaft and a tubular casing therefor. Oil sucked up said bore is atomized by passing through said openings. Atomized oil lubricates the journals and/or bearings and condensed oil flows back to the tank.



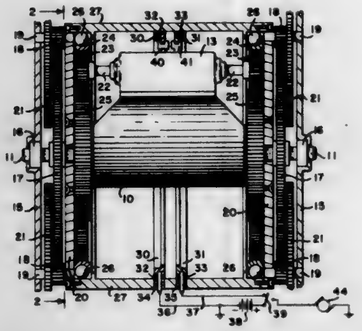
3,659,675
LUBRICATION SYSTEM AND RESERVOIR THEREFOR

Harold P. Edelstein, Bexley, and Roy B. Smith, Washington Court House, both of Ohio, assignors to Transportation Specialists, Inc., Columbus, Ohio

Filed July 7, 1969, Ser. No. 839,572
Int. Cl. F16n 11/00
U.S. Cl. 184—39 8 Claims

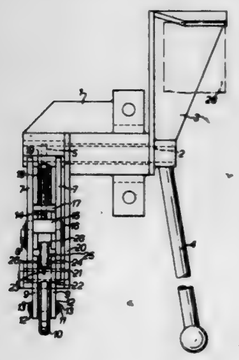
A lubrication system consisting of a metering valve for providing a measured quantity of lubricant to parts to be lubricated, a pump for moving lubricant to the metering valve through distribution lines, and a reservoir dispenser of novel design from which the pump draws lubricant. The reservoir dispenser is formed of (1) a bag of flexible impermeable plastic, and (2) a rigid flat bottom plate to which the open end of the bag is fastened and sealed. The top of the bag is opposite to the open end, is relatively rigid, and is provided with a check valve which allows egress of fluid from the bag but not ingress. A pair of crossed ribs are formed on the underside of the top to prevent undesired sealing of openings in the flat bottom plate. The side walls of the bag are relatively thick for the lower approximately one half portion and are relatively rigid throughout such portion. The upper slightly more than one half portion of the side walls is thinner, relatively flexible, and tapers to the portion adjacent the top. The portion adjacent the top is thinnest so that under atmospheric or higher pressure the upper portion of the side walls folds down into the interior of the bag as the top descends into the bag. The flat bottom plate is provided with two automatic valves, one being an outlet check valve allowing egress from the bag but not ingress. This outlet valve is connected to the pump for supplying lubricant to the meter valves. Lubricant is supplied to the reservoir as needed through an inlet valve in the bottom plate, but except when lubricant is being supplied to the reservoir, the inlet valve is sealed. A quick-connect lubricant fitting is secured to the inlet valve.

3,659,676
SPRING MOTOR MECHANISM
Fenwick L. Witt, 630 Virginia Avenue, Boulder Creek, Calif.
Filed Jan. 25, 1971, Ser. No. 109,131
Int. Cl. F03g 1/00
U.S. Cl. 185—40 R 6 Claims



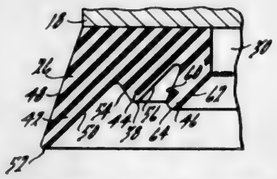
A spring motor mechanism which is provided with a coil spring having one end attached to a power shaft and having the other end attached to an electric motor that is supported so as to describe an orbit around the spring during the winding of the spring when the motor is energized.

3,659,677
CAGE GATE LOCK MECHANISMS
Alan John Shalders, Tolworth, England, assignor to A.C.E. Machinery Limited, London, England
Filed Nov. 26, 1969, Ser. No. 880,124
Claims priority, application Great Britain, Dec. 9, 1968, 58,406/68
Int. Cl. B66b 13/00
U.S. Cl. 187—61 4 Claims



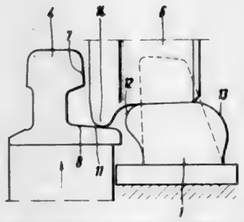
A gate lock mechanism for the cage of a hoist, said mechanism comprising a latch member arranged to normally engage a gate of the cage to prevent opening of said gate and pivotally mounted on a fixed axis, an operating member also mounted on said axis and arranged to move said latch member into and out of engagement with the gate and means for preventing the latch member from being moved out of engagement with the gate when a cage on which said mechanism is mounted is not opposite a landing of the hoist, said preventing means comprising a first lever pivotally mounted at one end on said fixed axis and a second lever pivotally mounted at the other end of the first lever, the arrangement being such that when the cage is not opposite a landing and the operating member is actuated, the second lever is engageable with a stop to prevent further movement of said operating member and ensure that the latch member remains in a position in which it prevents the gate from being opened.

3,659,678
PORTABLE FLOOR ANCHOR
Bertie Forrest Hall, Jr., Berkley, Mich., assignor to Raymond P. Wolgast, Clawson, Mich.
Filed Nov. 4, 1970, Ser. No. 86,776
Int. Cl. B60t 1/14
U.S. Cl. 188—5 7 Claims



A portable floor anchor which is designed for use in automobile body repair shops. The anchor can be moved about a garage floor on retractable wheels to a job where it is to be used. When the wheels are retracted, a special seal is brought into contact with the floor to create a vacuum chamber. This chamber is evacuated to hold the anchor in place by differential air pressure. A clevis, a pivoted pulling post or other pulling or attaching means are mounted on the anchor.

3,659,679
RUBBER TRACK BRAKE
Franz H. Preinfalk, Langenfeld, Germany, assignor to August Thyssen-Hutte AG, Duisburg-Hamborn, Germany
Filed Oct. 16, 1970, Ser. No. 81,233
Int. Cl. B61k 7/02
U.S. Cl. 188—62 2 Claims

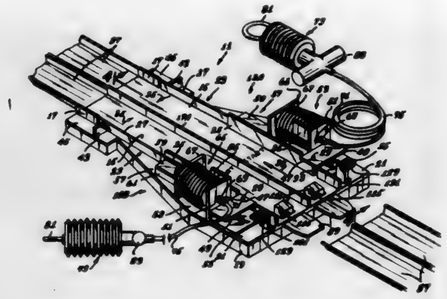


A rubber track brake for braking rolling rail vehicles such as freight cars and the like, having parallel rails of a rubber material laid in longitudinal section of track in place of the normal rails, guiding rails are disposed alone side the rubber rails and have a contact surface for the flanges of car wheels. The rubber rails are securely fixed to a foundation and the guiding rails are capable of being vertically displaced to engage and disengage the track brake of the invention.

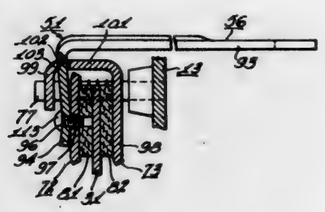
3,659,680
BRAKE MECHANISM FOR MINIATURE TOY VEHICLES
George Soulakis, Los Angeles, and William A. Staats, Torrance, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Oct. 30, 1969, Ser. No. 872,496
Int. Cl. B61k 7/08
U.S. Cl. 188—62 11 Claims

A brake mechanism toy for use with powered or unpowered miniature toy vehicles that travel along a track or roadway whereby a braking or decelerating action is externally applied to these vehicles. The mechanism includes a controlled braking portion which causes the engagement of selected ones of these vehicles between itself and one side wall of the roadway. The extent of the engagement and therefore the degree of deceleration action provided is controlled by the user.

In conjunction with the braking mechanism, or used separately, a starting mechanism may be provided which includes a starting post which movably extends above the roadway surface to raise the rear end of the toy vehicle until it is desired that the vehicle accelerate along the roadway.



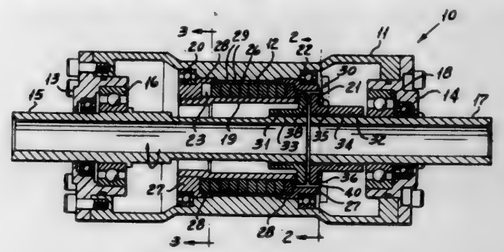
3,659,681
LEVER ACTUATED DISK BRAKE
Dennis G. Harvey, Ancaster, Ontario, Canada, assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Apr. 16, 1970, Ser. No. 29,140
Int. Cl. F16d 55/224
U.S. Cl. 188—72.9 7 Claims



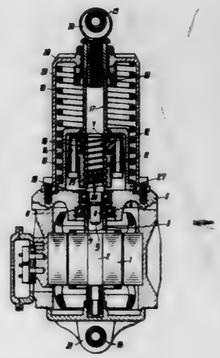
A compact disk brake having a pair of brake shoes floatingly mounted on a pair of pins and a brake operating lever which is operative to move the shoes into engagement with opposite sides of a brake disk. One of the shoes is U-shaped and presents two pairs of openings through which the pins extend.

3,659,682
BI-DIRECTIONAL TORQUE LIMITING BRAKE MECHANISM
Marvin Meyer, West Caldwell; Salvatore Avena, Newark, and Robert L. Leiner, Pompton Lakes, all of N.J., assignors to Curtiss-Wright Corporation
Filed Nov. 13, 1970, Ser. No. 89,168
Int. Cl. B60t 7/12
U.S. Cl. 188—134 16 Claims

The bi-directional torque limiting brake mechanism comprises two coupling members coaxially supported for relative rotation within a housing and in closed spaced relationship to a braking surface formed on the housing. A coil spring is disposed in the space adjacent the braking surface and in constant drivable connection at its ends with the coupling members. A switching means is connected to an input shaft to be rotated by the latter and to an output shaft to rotate the latter. The switching means is in rotative engagement with each of the coupling members to transmit rotation in one direction to one coupling member and in the opposite direction to the other coupling member so that rotation is transmitted through the spring in a direction tending to uncoil the spring in both directions of rotation of the input shaft. The coil spring is preloaded to a predetermined torque load value so that the coils expand at the predetermined torque value and engage the housing braking surface and thereby cease transmission of rotation from the input shaft to the output shaft.



3,659,683
ELECTROMECHANICAL SHIFTING DEVICE
Rudolf Betzing, Altendorfer Strasse 166a, 427o Altendorf-Uhlkotte, Germany
Filed Apr. 20, 1970, Ser. No. 30,110
Claims priority, application Germany, Apr. 25, 1969, P 19 21 252.3
Int. Cl. F16d 65/34
U.S. Cl. 188—162 8 Claims



A plunger is adapted to transmit external work to a shifting member. A transmission comprises a screw having male screw threads, a nut which is formed with female screw threads which surround said male screw threads and define a helical guide path therewith, revolving elements disposed in said guide path between and guided by and coupling said male and female screw threads, means for continuously moving said revolving elements in and along said guide path and through the same and back into said guide path, and means holding said nut against rotation. Said transmission is adapted to transform a rotational drive movement of a motor shaft of an electric stop motor into a linear working movement of said plunger. A freewheel clutch is disposed between said

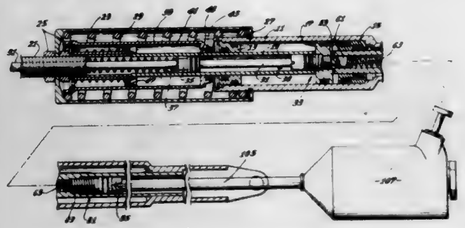
motor shaft and said screw and adapted to rigidly couple said motor shaft and screw for rotation in one direction and to uncouple said motor shaft and screw for relative rotation in the opposite direction. Shock-absorbing means are disposed between a holder for the device and the shifting member. The periphery of the freewheel clutch substantially coincides with the periphery of an imaginary cylinder which is contiguous with said crests of said male screw threads.

3,659,684

HYDRAULIC LOCK REFILL VALVE

Percy L. Porter, Los Angeles, Calif., assignor to P. L. Porter Co., Los Angeles, Calif.

Filed Nov. 25, 1969, Ser. No. 879,806
Int. Cl. F16f 9/43
U.S. Cl. 188—322 **6 Claims**



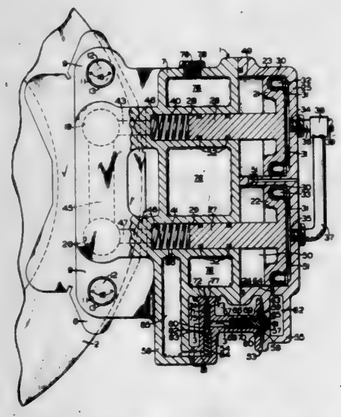
A refill valve for use in an hydraulic locking device such as that utilized in a chair to control the angle between the backrest and the seat. The refill valve comprises a fluid passageway for refilling the hydraulic locking device, a check valve being mounted within the passageway, having an extension thereon for cooperation with an oil can or other delivery means to open the check valve during refilling and also to allow relief of any over-pressure which may occur during the refilling. Additionally, the refill valve is adjustable within the hydraulic locking device so as to control the override function of the locking valve in the device.

3,659,685

SLACK ADJUSTER FOR DISC BRAKE

Joseph G. Stipanovic, McKeesport, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Oct. 28, 1970, Ser. No. 84,725
Int. Cl. F16d 55/228, 65/74
U.S. Cl. 188—72.5 **12 Claims**



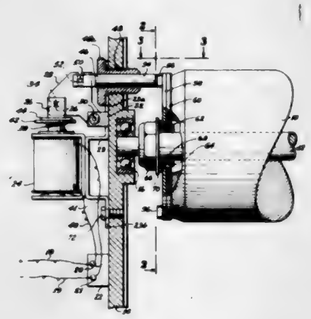
A pneumatically controlled hydraulically actuated disc-type brake mechanism for use on a wheel and axle assembly of a railway vehicle truck includes a hydraulic-type slack adjuster mechanism automatically operative to compensate for wear of a braking element. The hydraulic-type slack adjuster mechanism comprises a variable volume accumulator into which a hydraulic medium or fluid is forced upon the occurrence of wear of a braking element while a brake application is in effect and from which hydraulic fluid subsequently flows to two pair of hydraulic brake applying cylinders upon initiating a brake release to increase the volume thereof thereby to compensate for brake element wear. Prior to completion of the brake release, hydraulic fluid flows from a storage reservoir to the accumulator to replace that previously supplied from the accumulator to the hydraulic brake applying cylinders.

3,659,686

BRAKE MEANS FOR ELECTRIC MOTORS

Joseph M. Markley, Southington, Conn., assignor to Robbins & Myers, Inc., Springfield, Ohio

Filed Jan. 19, 1970, Ser. No. 3,676
Int. Cl. F16d 67/00
U.S. Cl. 192—2 **3 Claims**



A brake means for electric motors to stop rotation of the drive shaft immediately when the motor is de-energized. The motor shaft frictionally carries a brake plate and the brake plate bears frictionally against a surface of the rotor. The brake plate carries a stop-lug which is engageable by means of a solenoid operated plunger to stop the brake plate abruptly whereupon the rotor assembly is stopped frictionally. The plunger is actuated when the motor is de-energized and is retracted when the motor is energized.

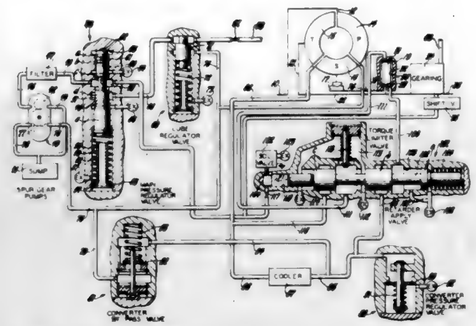
3,659,687

FLUID DRIVE TRANSMISSION WITH RETARDER AND CONTROLS

John O. Edmunds, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 21, 1970, Ser. No. 73,782
Int. Cl. F16d 67/00, 33/00
U.S. Cl. 192—4 B **3 Claims**

A transmission having a torque converter and a hydrodynamic retarder and a three gear dual pump feed system. One pump supplies fluid through a filter to the main line and the main line regulator valve which regulates main line pressure at a high value and supplies the excess fluid to the lubrication line. The lubrication regulator valve regulates lubrication line pressure at a lower value and supplies the excess fluid to the converter line, supplementing the fluid supply from the other pump to the converter inlet. The converter inlet pressure is regulated at a further lower value by a converter bypass valve and the excess fluid supplied to a bypass line. The converter outlet line and the retarder outlet line regulated at a still lower pressure is connected through the cooler to the bypass line which is connected by a retarder valve in the retarder on position to the retarder inlet. A converter regulator valve limits the pressure in the bypass line to a low value so that the retarder is supplied by all available



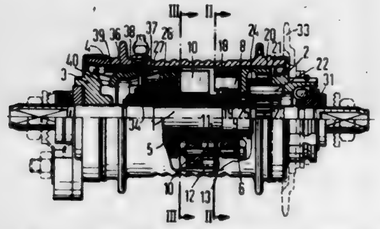
fluid, both the full flow of the converter and retarder outlet and any excess flow from the main line and lubrication system.

3,659,688

CENTRIFUGALLY OPERATED CLUTCH IN A TWO-SPEED BICYCLE HUB

Horst Schulz, Schweinfurt, Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Aug. 27, 1970, Ser. No. 67,306
Claims priority, application Germany, Sept. 11, 1969, P 19 45 972.4
Int. Cl. F16d 43/24
U.S. Cl. 192—105 CE **14 Claims**



One of the two pawl-and-ratchet clutches which connect the hub shell with the planet carrier and the ring gear in a two-speed bicycle hub is controlled by a centrifugal governor whose two flyweights are pivotally mounted on a common carrier with the pawl of the controlled clutch. A coupling disc is mounted on the carrier by means of a bearing pin whose axis is spacedly parallel to the hub axis. The disc is tilted by engagement with connecting pins on the flyweights, thereby coupling the flyweights for joint swinging movement about the respective pivot axes in the same direction, and preventing malfunctioning of the clutch by movement of the flyweights under the influence of forces other than centrifugal forces. A cam on the coupling disc holds the controlled pawl disengaged when the flyweights are near the axis of rotation.

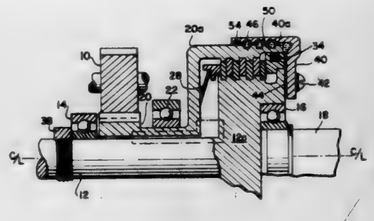
3,659,689

SEAL DEVICE

Arnold Schindel, Fairlawn, N.J., assignor to The Singer Company, New York, N.Y.

Filed Oct. 8, 1970, Ser. No. 79,025
Int. Cl. F16d 13/74
U.S. Cl. 192—112 **9 Claims**

A seal device for restricting flow of a fluid, such as a mixture of air and vapor, between two pressure areas established with respect to a rotary member, wherein the rotary member and its drive member form a channel therebetween and each has a plurality of spaced annular grooves formed on a surface thereof, with the grooves on the rotary member adapted to register with the grooves on the drive member to form axially



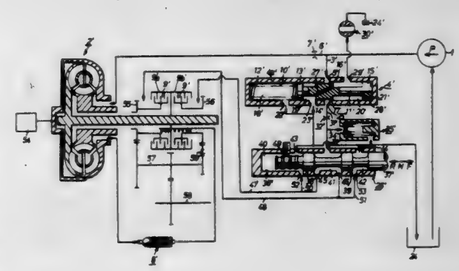
spaced annular chambers extending between the pressure areas. A sealing fluid is disposed in the grooves and in the channel to provide the seal. The device may be incorporated in a clutch assembly whereby actuation of the clutch pressurizes the sealing fluid.

3,659,690

TRANSMISSION CONTROL SYSTEM FOR VEHICLES

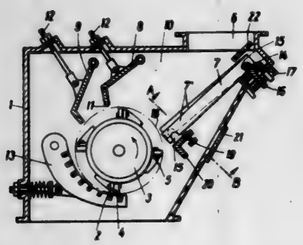
Shin Kitano, and Yutaka Momose, both of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya-shi, Japan

Filed Sept. 1, 1970, Ser. No. 68,607
Claims priority, application Japan, Sept. 3, 1969, 44/83844; Nov. 12, 1969, 44/90701
Int. Cl. F16d 25/12, 33/12, 33/02
U.S. Cl. 192—3.33 **10 Claims**



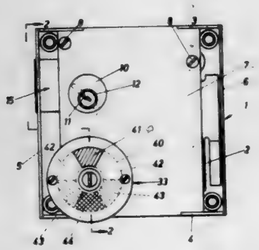
A transmission control system for vehicle having a transmission fluid actuated clutch means connected to a torque converter and a hydraulic brake means for arresting movement of the vehicle, comprising a source of pressurized fluid, first fluid passageway means connecting said fluid source with said clutch means, a regulator valve means disposed within said first passageway means and automatically controlling hydraulic pressure for said clutch means in response to the prime engine revolution rate, manual means to selectively regulate the passage of pressurized fluid to said clutch means, a second passageway means communicatively connecting said pressure fluid source with said torque converter disposed therein, a relief valve means interposed within said second passageway means and regulating output hydraulic pressure from said torque converter, and a control valve means to make said regulator valve means inoperative in response to activation of the brake pedal of the vehicle.

3,659,691
MATERIAL SUPPLY CHUTE
Helmut Leutelt, Innsbruck, Austria, assignor to Hazemag Hartzerkleinerungs-Und Zement-Maschinenbau-Gesellschaft m.b.H., Muenster, Germany
Filed Dec. 31, 1969, Ser. No. 889,590
Claims priority, application Austria, Jan. 3, 1969, A 41/69
Int. Cl. B65g *11/80*
U.S. Cl. 193—2 C 20 Claims



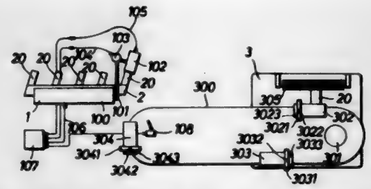
A plurality of discrete bar elements are arranged in side-by-side relationship and together constitute a material supply chute having a general plane. Means are provided for individually displacing the bar elements with reference to this general plane so that individual bar elements can be disposed upwardly or downwardly with reference to the others.

3,659,692
COIN LOCK HAVING DISC TO INDICATE READINESS OF LOCK
Heinz Ten Eicken, Velbert, Germany, assignor to Firma Schlossfabrik Schulteschlagbaum A.G., Tonisheide, Germany
Filed Mar. 30, 1970, Ser. No. 23,799
Claims priority, application Germany, Apr. 5, 1969, P 19 17 516.7
Int. Cl. G07f *17/14*
U.S. Cl. 194—59 4 Claims



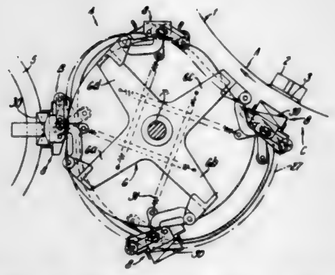
A coin lock, particularly for baggage storing boxes, including means for controlling the time period of use of said box, which comprises a lock box having a lock bottom and a lock cover, and a cylinder lock is secured to the lock cover. The cylinder lock includes a key-operated cylinder core and a locking bolt has a driving slot receiving a driving pin controlled by the cylinder core. A stepwise operated switching work, operable from the outside and controlled by an indicating disc, is coupled with the locking bolt. The stepwise operated switching work has a locking cam movable from a locking-readiness position from the outside into a position blocking the return closing movement of the bolt, and is displaceable by the return closing movement of the bolt into its original, starting position.

3,659,693
LOADING DEVICE FOR PROCESSING MACHINES
Karl Muller, Theodorenstr. 6-8, 6200 Wiesbaden, Germany
Filed Nov. 3, 1969, Ser. No. 873,364
Claims priority, application Germany, Mar. 13, 1969, P 19 12 659.1
Int. Cl. B65g *47/00*
U.S. Cl. 198—20 8 Claims



A mechanism for feeding workpieces to a machine includes a conveyor system for moving workpiece receptacle to a machine at a constant speed and reciprocating loading means for transferring workpieces to the receptacles from a fixed station, the loading means being synchronized with the movement of the receptacles when moving in the direction to feed a workpiece.

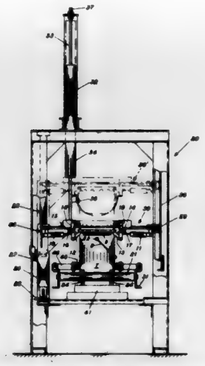
3,659,694
PACKING OR WRAPPING MACHINE OF THE MOULD WHEEL TYPE
Richard William Harris, London, England, assignor to Molins Machine Company Limited, London, England
Filed Aug. 28, 1970, Ser. No. 67,880
Claims priority, application Great Britain, Sept. 5, 1969, 44,089/69
Int. Cl. B65g *29/00, 47/04*
U.S. Cl. 198—25 4 Claims



Apparatus for transferring unwrapped cigarette packets from a wheel conveyor into the pockets of a mould wheel wrapping machine. The apparatus comprises a rotary four-armed spider between the two wheels with a carrier pivoted from the end of each arm of the spider. Each carrier has a cam follower to move it radially, a cam follower to pivot it bodily, and a cam follower to open and close grippers pivotally mounted on the carrier. Each cam follower coacts with a stationary cam.

3,659,695
PAIL STACKER
Donald H. Reese, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Jan. 11, 1971, Ser. No. 105,200
Int. Cl. B65g *57/30*
U.S. Cl. 198—35 13 Claims

Pail engaging means are mounted on opposing sides of a vertical frame means which straddles a moving conveyor. A first gate means stops pail from proceeding through the vertical frame means until a stack of pails is formed and then releases the completed stack to the conveyor. A lift means enables pails engaged by the pail engaging means to be raised off the conveyor upwardly within the vertical frame means, permitting additional pails to be added to the bottom of an uncompleted stack when the pails engaged by the pail engaging means are lowered to rest on an incoming pail. A second gate means permits additional pails to pass into the vertical frame means when the conveyor pathway is not obstructed and prevents pails from passing into the vertical frame means when a pail is stopped on the conveyor by said first gate means.



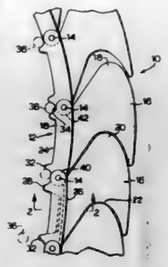
3,659,696
LIVE ROLLER CONVEYOR
Cecil S. Denton, Louisville, Ky., and Frank D. Deuzler, Jeffersonville, Ind., assignors to General Electric Company
Filed Sept. 9, 1970, Ser. No. 70,683
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 5 Claims



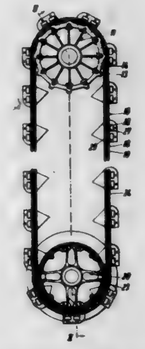
A belt-driven live roller conveyor in which the drive area is separated from the conveyor area by a longitudinally extending guide member. A drive belt is disposed above the rollers with its lower drive pass engaging the upper surface of the rollers in the drive area. Spaced pressure members are removably positioned on the belt in the drive area, these members comprising a pair of spaced rolls riding on the drive belt pass and a frame supporting the rolls in spaced relationship so that they bridge at least one conveyor roller. Means are also provided for preventing the pressure members from traveling with the belt.

3,659,697
CONVEYOR LINK
Warren A. Brackmann, Cooksville, Ontario, and Daniel Dilanni, Toronto, Ontario, both of Canada, assignors to Rothmans of Pall Mall Canada Limited, Toronto, Ontario, Canada
Filed Apr. 14, 1970, Ser. No. 28,303
Claims priority, application Great Britain, Sept. 30, 1969, 48,090/69
Int. Cl. B65g *15/00*
U.S. Cl. 198—136 9 Claims

A rigid link for a conveyor chain includes a rigid platform to support a load and means to pivotally connect links to each other to form a chain and for pivotal movement about an axis substantially perpendicular to the plane of the platform. Means is provided to one side of the platform to coact with other like parts of like links when the links are joined together to form a chain to space the platforms of the links apart from each other when the chain is formed into a helix. A conveyor chain capable of formation into a self-supporting helix is provided from a plurality of such links articulated together.



3,659,698
CHAIN CONVEYOR
Werner Helmut Rieger, 7084 Unterkochen/Wuerttemberg, Hans Haeselbach, Germany
Filed Aug. 12, 1969, Ser. No. 849,390
Int. Cl. B65g *17/12*
U.S. Cl. 198—140 7 Claims

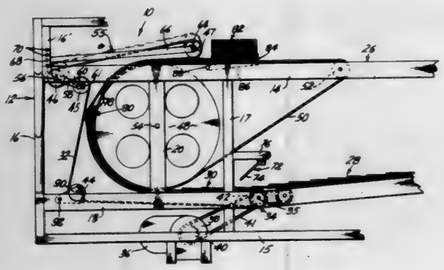


A round-steel chain having links in parallel planes and connected by crosspins, the pins having rings which support the chain in the region of driving or supporting sprocket wheels, there being at least four links between every two intermediate rings on crosspins connected to preceding and following crosspins.

3,659,699
CONVEYOR MECHANISM
Leo O. Donahue, and Roy E. Behrens, both of Highland, Calif., assignors to Graphic Engineers, Inc., San Bernardino, Calif.
Filed July 17, 1970, Ser. No. 55,722
Int. Cl. B65g *15/14*
U.S. Cl. 198—165 5 Claims

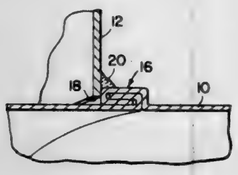
Overlapping signatures are transported between upper and lower belts, wherein the upper belt passes around three pulleys, the first of which is supported at the free end of a vertically swingable first arm extending generally horizontally from its pivot. The second pulley is carried on a second, ver-

tically swingable arm. Springs pull downwardly on the free end of the second arm to tension the belts. The third pulley is journaled on the pivot axis of the second arm. The belts pass over the third pulley, under the second and over the first. The line of pull of the belts extends from the top of the second pulley to the top of the first pulley at an angle to the horizontal such that a downward component of force is exerted on the first pulley, urging it downwardly against the



signatures. The first pulley rises and falls with the first arm to accommodate variations in thickness of the line of signatures. The second pulley rises and falls approximately the same distance as the first to accommodate the length of the upper belt to the increased bulk of bunched-up signatures traveling on the conveyor, while maintaining the same angle of pull on the first pulley, with respect to the horizontal, so that the downward component of force remains the same.

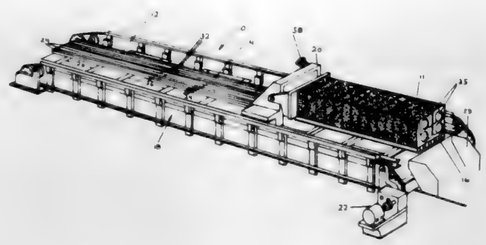
3,659,700
AUGER CONVEYOR
William Tunderman, Barstow, Ill., assignor to Deere & Company, Moline, Ill.
Filed Sept. 24, 1970, Ser. No. 75,122
Int. Cl. B65g 33/24
U.S. Cl. 198—213 **15 Claims**



An auger conveyor including a cylindrical core tube composed of a spiral-wound strip and having a raised spiral seam on its external surface, and spiral flighting connecting externally to the core tube, the flighting having a spiral inner edge parallel with and abutting the seam of the tube. The core tube and flighting assembly is rotatable relative to a housing to advance material therealong, the housing consisting of a spiral-wound cylindrical tube having an internal raised seam extending in close proximity to the outer edge of the flighting and acting as a stripper therefor.

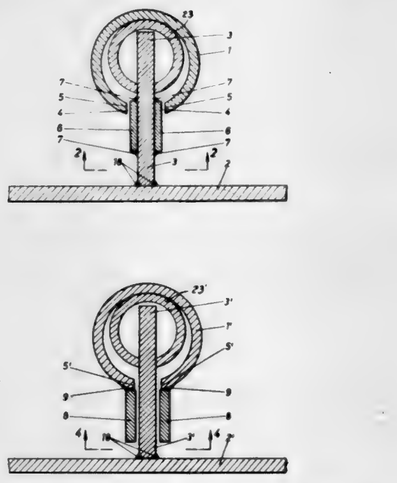
3,659,701
COOLING CONVEYOR
Russell W. Taccone, 1960 Lakeside Drive, Erie, Pa.
Filed May 4, 1970, Ser. No. 34,470
Int. Cl. B65g 25/08
U.S. Cl. 198—221 **18 Claims**

A cooling conveyor is disclosed for receiving a line of molds from a mold forming machine. The conveyor includes a plurality of conveyor sections having adjacent end portions which interfit so the conveyor sections together define a continuous conveyor surface. One or more individual sections may be moved to make the overall length of the conveyor shorter than the length of a line of molds on the conveyor so that a mold may be dropped from the end of the shortened



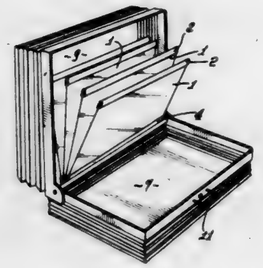
conveyor. The movable section or sections may be moved to lengthen the conveyor so that a newly formed mold may be added to the line of molds by pushing the line of molds along the conveyor and by moving the movable conveyor section or sections together with molds located thereon.

3,659,702
CONVEYOR, PARTICULARLY FOR CHIPS
Helmuth Assauer, Wuppertal-Elberfeld, Germany, assignor to Firma Kobo Kohler & Bovenkamp G.m.b.H., Wuppertal-Barmen, Germany
Filed June 19, 1970, Ser. No. 47,652
Claims priority, application Germany, June 21, 1969, P 19 31 549.2
Int. Cl. B65g 25/08
U.S. Cl. 198—221 **2 Claims**



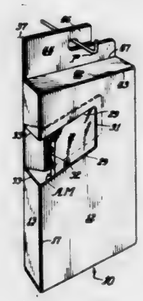
Improvement in a conveyor, particularly for chips, comprising hollow conveyor rods movable back and forth adjacent the bottom of a conveyor trough, said conveyor rods being guided on posts extending from the bottom of the conveyor trough through openings into the inside of the conveyor rods, said conveyor rods having conveying elements including barb-shaped pushing blades which occupy only a fractional portion of the cross section of the conveyor trough, the improvement comprising slide bars associated with the lateral edges of the conveyor rod opening for minimizing wear of the post.

3,659,703
COMPACT FILE FOR STORING PAPERS
Louise Inez Oliver, 538 W. 79th Street, Los Angeles, Calif.
Filed Jan. 16, 1970, Ser. No. 3,456
Int. Cl. A45c 3/02
U.S. Cl. 206—1 A **1 Claim**



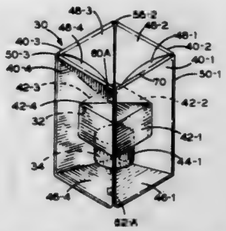
The compact file includes an outside case with an accordion back portion pivoted by sockets to an accordion front portion for movement between open and closed positions; a releasable catch mechanism which selectively holds the portions in the closed position; a plurality of separators, each separator having upper and lower flexible pockets on both sides for receiving papers, a rod means with a spring therein fixed to the separators and extending between the sockets of the portions to removably locate the separators and any papers in the separator pockets in the outside case to be protected thereby.

3,659,704
DISPLAY CARTON HAVING STRUCTURE FOR PRODUCT SUPPORT THEREIN
Peter C. Collura, Stamford, Conn., and William P. Pintsak, Ossining, N.Y., assignors to Container Corporation of America, Chicago, Ill.
Filed Oct. 2, 1969, Ser. No. 863,065
Int. Cl. B65d 5/50, 25/00
U.S. Cl. 206—45.14 **1 Claim**



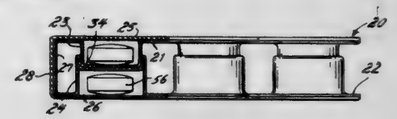
A carton for display of merchandise and having structure for support therein of soft goods such as hosiery or the like. The carton is formed from a cut and scored blank and a support arm is cut out from a front panel thereof, or from a front and side panel thereof, such support arm being folded inward to provide support for an article of merchandise. An aperture is thereby formed for viewing of such merchandise. The container blank is integrally formed with a hanger to suspend the completed carton for display.

3,659,705
TRANSPARENT PACKAGE
Abraham J. Falkin, 33 Remsen Street, Valley Stream, N.Y.
Continuation-in-part of application Ser. No. 826,573, May 21, 1969, now abandoned. This application June 29, 1970, Ser. No. 50,486
Int. Cl. B65d 5/58, 85/30
U.S. Cl. 206—45.34 **18 Claims**



A package device is vacuum formed from a thermoplastic sheet and includes at least three self-hinged outwardly open sector shaped sections closed to form a polyhedral body with the section side walls in juxtaposition and the end sections being joined by fastening means. Cavity delineating inner walls are formed in the inner parts of the sections and join the side walls. The sections may include end walls which delineate the cavity end walls or the inner walls may include cavity end walls joined to the section side and end walls which latter may be curved. Vertical ribs or protuberances may be formed on the end walls or on intermediate shoulders on the cavity walls and outwardly projecting ribs may be formed on vertically extending cavity walls.

3,659,706
PHARMACAL PACKAGE CONSTRUCTION
John J. Serrell, Haverford, Pa., assignor to Parke, Davis & Company, Detroit, Mich.
Continuation-in-part of application Ser. No. 831,557, June 9, 1969, now Patent No. 3,603,453, Continuation-in-part of application Ser. No. 877,075, Nov. 17, 1969. This application Apr. 24, 1970, Ser. No. 31,534
Int. Cl. B65d 21/02, 75/36, 83/04, 85/56
U.S. Cl. 206—56 AB **6 Claims**

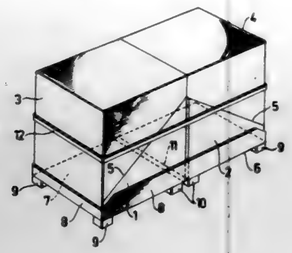


A pharmacal package construction wherein a pair of blister sheets are closed by respective backing sheets and arranged with the blisters in proximate relation so that the backing sheets are outermost, the blister sheets being provided with detachably interfitting formations, to releasably retain the blister sheets and their backing sheets in position defining a package effectively protected by the backing sheets.

3,659,707
DIVISIBLE TRANSPORT PACKAGE
Lars Olov Nilsson, Farsta; Nils Leo Liljegren, Ekero, and Robert Victorin, Stocksund, all of Sweden, assignors to Sikob AB Svensk Industris Konstruktions Och Beraknigskontor, Selna, Sweden
Filed Dec. 4, 1969, Ser. No. 882,079
Claims priority, application Sweden, Dec. 4, 1968, 16396/68
Int. Cl. B65d 17/00, 71/00
U.S. Cl. 206—65 B **6 Claims**

A divisible transport package comprising at least two containers supported by and retaining side-by-side on opposite

sides of a vertical partition plane upon a tray having a bottom portion, suitably supported by feet and having a slot in the plane, and upwardly projecting rims around the periphery of



the bottom portion, which tray is adapted to be divided, for instance by cutting, into two parts along the lines of intersection between the tray and the vertical plane.

3,659,708

SEPARATION OF DISCOLORANTS FROM CLAY

Horton H. Morris; James P. Olivier, both of Macon, Ga., and Sydney Ross, Troy, N.Y., assignors to Freeport Sulphur Company, New York, N.Y.

Filed Nov. 4, 1968, Ser. No. 773,335
Int. Cl. B03b *1/04*; C01b *35/00*
U.S. Cl. 209—5 6 Claims

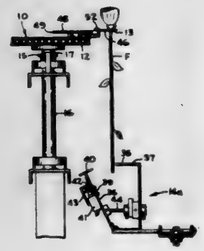
A process for beneficiating a dispersed kaolin clay mass by removing from a dispersed clay mass the contaminant which causes the formation of a thin, dull layer of yellow or brownish-yellow material, commonly referred to as "scum," on surfaces of dried material containing the dispersed clay. The process comprises raising the pH of an aqueous dispersion of the clay to at least 12 and at that pH separating the insoluble clay from the solubilized discoloring contaminant.

3,659,709

METHOD AND APPARATUS FOR SORTING FLOWERS

David S. Bartlett, Jr.; Rupert M. Purcell; David W. Osborne, and Troy F. Smith, Jr., all of San Jose, Calif., assignors to Floral Grading Inc., Sunnyvale, Calif.

Filed Mar. 23, 1970, Ser. No. 21,771
Int. Cl. B07c *1/14*
U.S. Cl. 209—82 21 Claims



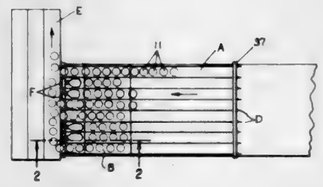
The invention is a method and apparatus for sorting flowers on the basis of stem length. Flowers of random stem lengths are arranged on a first conveyor with their stems aligned in substantially vertical parallel relation. A series of stem length detectors sense various stem lengths whereupon all flowers of similar length are transferred to a corresponding one of a series of storage conveyors. When a desired quantity of similar sized flowers are stored in the storage conveyor, they are transferred by a transfer conveyor to a terminal conveyor where they are grouped for tying and wrapping. Any number of preselected lengths may be grouped but the extremes in stem length are selected first, e.g. the longest, proceeding to the opposite extreme so that the stem length detectors operate like a sieve.

3,659,710

ARTICLE EXTRACTING DEVICE

Joseph Tice, 210 Yorkshire Drive, Greenville, S.C.

Filed Aug. 6, 1970, Ser. No. 61,609
Int. Cl. B07c *7/00*
U.S. Cl. 209—125 2 Claims



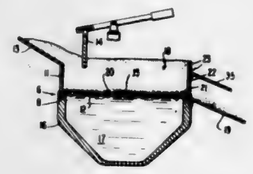
An apparatus for extracting defective articles from a row of articles moving on a conveyor. The apparatus includes a vibrating plate which transfers the articles from the conveyor to a trap door. When the trap door is open the articles are allowed to drop therethrough. When the trap door is closed the articles move thereover to a receiving station. Divider plates are provided for maintaining the articles in rows.

3,659,711

DEVICE FOR GRAVIMETRIC SEPARATION OF GRANULAR OR PULVERULENT MATERIALS

Richard Cohen-Alloro, Orleans, and Jean Grassaud, Boulogne-Billancourt, both of France, assignors to Bureau de Recherches Geologiques et Minieres, Paris, France

Continuation of application Ser. No. 784,158, Dec. 16, 1968, abandoned, which is a continuation-in-part of Ser. No. 621,300, Mar. 7, 1967, abandoned.
This application Mar. 23, 1970, Ser. No. 20,445
Claims priority, application France, Mar. 26, 1966, 55139
Int. Cl. B03b *3/22*
U.S. Cl. 209—457 4 Claims



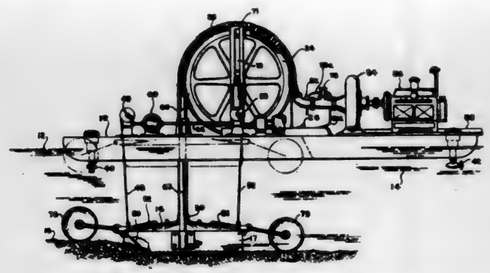
A device for gravimetric separation of granular or pulverulent materials includes a means for creating a series of reciprocating pulsations in a fluid, either air, water or a dense liquid. This pulsating fluid passes through a porous bottom which has pores sufficiently small to retain the dense particles, and means allowing the retention of the dense products. The porous bottom includes a regulatable flow aperture system for the continuous evacuation of the dense products. The products to be treated are poured into a feed channel loading to the porous bottom. A regulatable feed plate above the porous bottom allows regularizing flow of the raw materials. A pouring sill for the light materials is replacable by others which vary in height. The amplitude of the pulsations are system regulatable. A trap is situated in the lower part of the tank.

3,659,712

REMOVING DEEP SILT AND MUCK DEPOSITS

Merle P. Chaplin, 609 Drive Avenue, Winter Park, Fla.

Continuation of application Ser. No. 832,125, June 11, 1969, now abandoned. This application Oct. 16, 1970, Ser. No. 82,818
Int. Cl. B01d *21/00*
U.S. Cl. 210—73 17 Claims



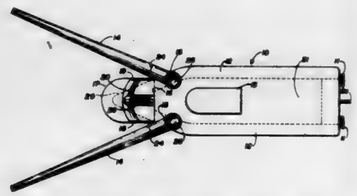
A method and apparatus for removing silt, muck and other deposits from a water covered basin whose bottom has been covered with a relatively thick deposit, involving the use of a submerged housing unit supported from the surface in a controlled relationship to the deposits on the bottom of the basin. The submerged unit is provided with a gate at its forward end so as only to permit the entry of silt into the housing at the forward end as it is moved along the bottom, with the arrangement being such that a pressurized jet can be injected into the entering material to enable a workable mixture of water and silt to be achieved. Means are provided for then drawing the mixture to the surface so that the silt can be disposed of at a location outside the basin. Other facets of the invention include the use of automatic means for maintaining the submerged housing unit in a desirable relationship to the silt deposits; the use of a selectively operable gate at each end of the device so as to enable operation in either direction; and automatic means for injecting additional jets of water as needed to maintain proper consistency of the material being discharged.

3,659,713

METHOD AND APPARATUS FOR RECOVERING IMPURITIES FROM THE SURFACE OF A LIQUID

Frederick N. Mueller, Dallas, Tex., assignor to Tetradyne Corporation, Dallas, Tex.

Filed Jan. 16, 1970, Ser. No. 3,351
Int. Cl. E02b *15/04*
U.S. Cl. 210—83 10 Claims



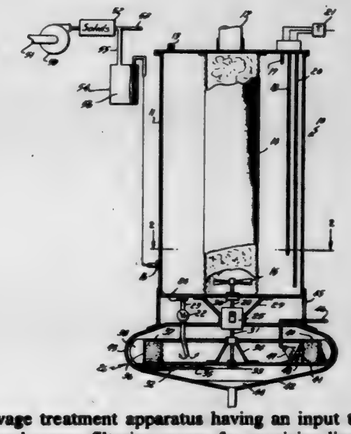
Impurities are removed from the surface of a liquid by impinging an elongated fluid stream, preferably a gaseous stream, along a length of the surface and moving the impinging stream relative to the surface causing the impurities to move and concentrate in advance of the impinging action of the stream, and thereafter isolating the concentrated mass of impurities. An apparatus is also provided suitable for traversing a body of water and recovering impurities, such as oil and the like from its surface. A preferred apparatus includes a vessel having a pair of elongated booms which are adapted to extend forwardly and outwardly of the motion of the vessel. Each boom extends above the water and carries nozzles which are adapted for form a substantially continuous elongated gaseous stream for impinging upon the water between the booms to thereby concentrate floating impurities between the booms. In addition, the vessel is provided with impurity inlet means between the booms for collecting the concentrated impurities from the water.

3,659,714

LIQUID WASTE TREATMENT APPARATUS

Joseph M. Valdespino, Suite E 3609 Old Winter Garden Road, Orange County, Fla.

Filed May 1, 1970, Ser. No. 33,622
Int. Cl. B01d *33/02*
U.S. Cl. 210—107 11 Claims



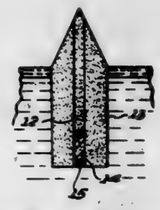
A sewage treatment apparatus having an input tank with mixing and screen filtering means for receiving liquid waste such as raw sewage. The level of liquid waste in the input tank controls a timer which activates a valve to release the screened sewage into a filter centrifuge for rapidly separating liquids and solids in the liquid waste. The solids separated are burned and vacuumed from the filter centrifuge following filtering of the liquid through a filter medium located in the centrifuge. A high speed perforated drum centrifuge is lined with a filter material such as sand and the drum may have vanes on its periphery to form an impeller to act in conjunction with a diffuser casing to form a centrifugal pump integral with the filter.

3,659,715

APPARATUS FOR REMOVING OIL FLOATING ON WATER

Amos J. Shaler, State College, and William E. Clancy, St. Marys, both of Pa., assignors to Stackpole Carbon Company, St. Marys, Pa.

Filed July 22, 1969, Ser. No. 843,713
Int. Cl. C02b *9/02*
U.S. Cl. 210—242 11 Claims



An elongated porous member is impregnated with a com-

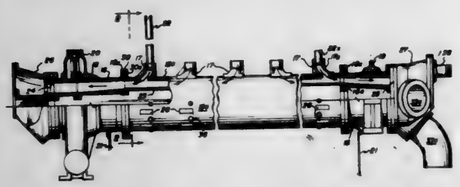
bustible fluid and then floated in a generally upright position in a layer of combustible fluid on a body of water, with the lower portion of the porous member extending down in the water and with its upper portion projecting above the fluid layer. The fluid carried by the upper end of the porous member is ignited to produce a flame that is thereafter fed by combustible fluid moving up through that member by capillary action from the fluid layer, whereby to remove the fluid from the water and burn it.

3,659,716

FILTER ASSEMBLY WITH FILTRATE FLOW CONTROL AND CONTROL COMPONENTS

C. Lynn Peterson, and Clarence John Peterson, both of Salt Lake City, Utah, assignors to Peterson Filters & Engineering Company, Salt Lake City, Utah

Filed Oct. 6, 1969, Ser. No. 863,947
Int. Cl. B01d *33/40, 33/26*
U.S. Cl. 210—247 **12 Claims**



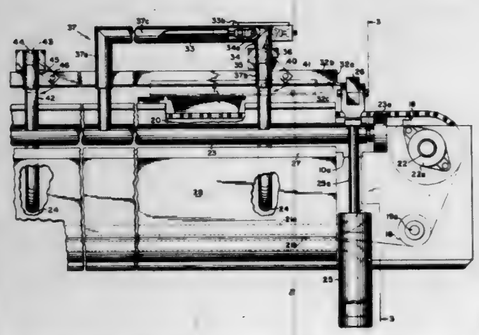
Disc filter assembly in which a plurality of filter discs are mounted on common shaft for rotation to selectively dispose disc surfaces under vacuum in a confined body of slurry through a portion of said rotation and to discharge formed cake from said surfaces by "blow" action through another portion of rotation. Each disc has plurality of sectors in sequential arrangement circumferentially of shaft mounted on a hollow center shaft fabricated from standard industrial components, inclusive of steel pipe forming shaft exterior and plurality of tubular members of oblong section in welded circumferentially spaced arrangement interiorly of pipe providing a conductive passage in communicating relation to at least one sector for applying vacuum and blow thereto under control of filter valve.

3,659,717

APPARATUS FOR REMOVING FLUID FROM A FOOD CONTAINER

Gerald W. Bourbina, Saginaw, Mich., assignor to Baker Perkins Inc., Saginaw, Mich.

Filed June 9, 1969, Ser. No. 831,443
Int. Cl. B01d *35/08*
U.S. Cl. 210—329 **14 Claims**



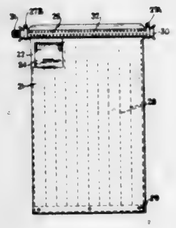
Apparatus for removing fluid, such as grease, from a food container in which food is cooked including mechanism for tilting the container to an inclined position so that the fluid will drain from the container in the inclined position, and a food restraining device which moves therewith. Apparatus is provided for initially lowering the food restraining device to a position adjacent the food so that the device will retain the food in the container during the tilting operation.

3,659,718

FILTER ELEMENTS

Ronald Eric Brociner; William Moon, and Raymond Collins, all of Cornwall, England, assignors to English Clays Lovering Pochin and Company Limited, Cornwall, England

Filed Sept. 23, 1969, Ser. No. 860,366
Claims priority, application Great Britain, Sept. 27, 1968, 46,159/68
Int. Cl. B01d *29/14*
U.S. Cl. 210—333 **3 Claims**



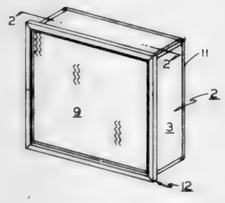
A filter thickener incorporating a filter element which is formed from a bag of filter material substantially filled with a packing material through which liquid can permeate. The filter element is advantageously in the form of a filter leaf which comprises a flat bag of filter material containing packing material in the form of a flexible mat or mesh made from a natural or synthetic polymeric material, and opposing sides of the flat bag of filter material are preferably joined together in a manner which divides the bag of filter material into a plurality of strips or annuli.

3,659,719

FILTER FRAME CONSTRUCTION

Karl L. Westlin, and Wilson A. Welch, both of Louisville, Ky., assignors to American Air Filter Company, Inc., Louisville, Ky.

Filed Dec. 7, 1970, Ser. No. 95,508
Int. Cl. B01d *46/52*
U.S. Cl. 210—483 **4 Claims**



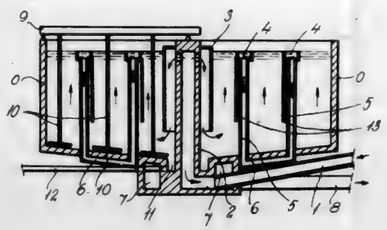
A filter assembly including a filter frame with filter medium disposed therein and a border flange arranged to engage the edge of the filter frame, the border flange being clamped to the frame by resilient means inserted between the filter frame and the flange.

3,659,720

SEDIMENTATION SYSTEM

Lars G. Malm, Lindvagen, Sweden, assignor to AB Purac, Lund, Sweden

Filed Oct. 27, 1970, Ser. No. 84,388
Claims priority, application Sweden, Oct. 31, 1969, 14985/69
Int. Cl. B01d *21/14*
U.S. Cl. 210—525 **6 Claims**



A system for purifying water and sewage by forcing a liquid that is to be sedimented flow from the lower portion of a basin and upwards while sedimented matter in the liquid sinks downwardly in the basin. Concentrically positioned elements are located at the surface of the liquid for draining off purified liquid through fall pipes that interconnect the elements with discharge pipes at the bottom of the basin.

3,659,721

LOCK RACK

Vincent Parillo, Highland Park, N.J., assignor to Bond Stores, Incorporated, New York, N.Y.

Filed Aug. 7, 1970, Ser. No. 62,101
Int. Cl. E05b *73/00*
U.S. Cl. 211—7 **2 Claims**



The application discloses a clothes rack which provides means for locking clothes hangers onto the hanger rod of the rack. These means include a spring pressed channel bar mounted over the hanger rod and adapted to partially embrace the rod and the hangers supported thereon when in its lowermost position. The channel bar has pivoted thereon a rocket arm which provides a cam surface and a shoulder underneath at one end which causes a spring bolt of a lock mounted atop the bar to withdraw so that the arm can pass the bolt whereupon the bolt springs outwardly against the shoulder of the arm to securely lock the channel bar against the hanger rod. A key is then required to withdraw the spring bolt to permit the channel bar to spring into open position.

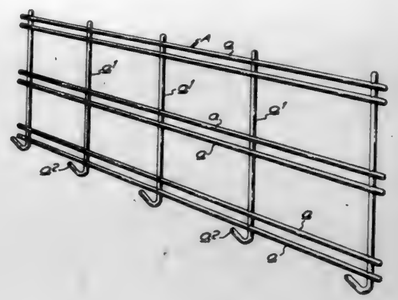
3,659,722

SHELVES AND HOOKS FOR SUPPORTING ARTICLES

Aubrey G. Carroll, Farnham, England, assignor to Auriol (Guildford) Limited, Farnham, England

Filed Dec. 4, 1969, Ser. No. 882,214
Claims priority, application Great Britain, Dec. 8, 1968, 60,070/68
Int. Cl. A47f *5/08*
U.S. Cl. 211—106 **7 Claims**

A substantially vertical rectangular frame formed of a plurality of pairs of parallel horizontal plastic coated rails or wires welded to a plurality of vertical plastic coated wires to support a plurality of suspension members projecting forwardly of the frame each suspension member comprising a substantially U-shaped member with hooked ends to engage



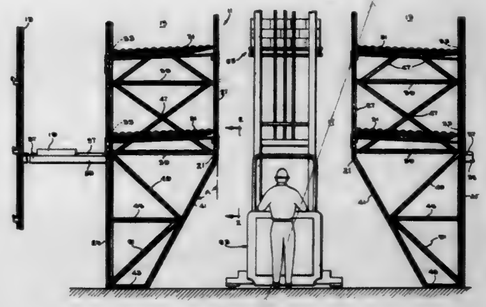
over the upper rail of a pair and with a member welded to the base of the U-shaped member to engage under the second rail of a pair to extend at right angles to the frame to support articles suspended thereon or to support a wire shelf welded to the suspension members.

3,659,723

STORAGE RACKS

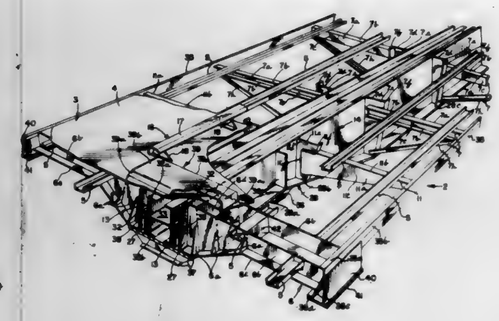
Anthony N. Konstant, Mt. Prospect, Ill., assignor to Speedrack Inc., Skokie, Ill.

Filed Aug. 26, 1970, Ser. No. 67,124
Int. Cl. A47f *5/00*
U.S. Cl. 211—151 **7 Claims**



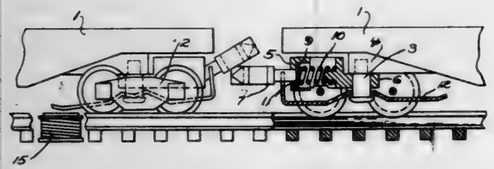
Storage racks which include fore-and-aft aligned upright trusses extending upward from the floor, having a pair of parallel vertical members and a plurality of spacers extending therebetween. The rear vertical truss member extends to the floor and a bottom member located adjacent the floor extends forward from the lower end of the rear vertical member. The front vertical truss member terminates short of the floor and a diagonal member extends between the lower end of the front vertical member and the bottom member. Parallel vertical columns spaced laterally of the truss define a storage bay therebetween. The recessing at the front of the truss provides maneuvering room for lift trucks and thereby reduces the width requirements for service aisles.

3,659,724
RAILROAD FLAT CAR
Roy W. Miller, Highland; Marvin Stark, Michigan City, and William R. Shaver, Munster, all of Ind., assignors to Pullman Incorporated, Chicago, Ill.
Filed May 20, 1970, Ser. No. 39,683
Int. Cl. B61g 9/12; B61d 17/00
U.S. Cl. 213—8 12 Claims



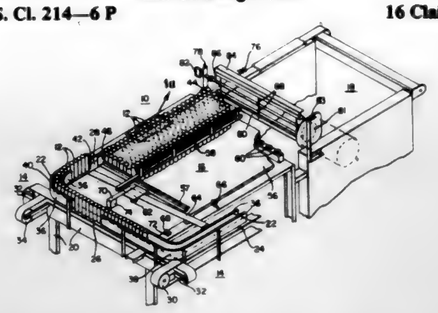
In a cushioned underframe railroad flat deck car, a bolster and crossbearer construction of cross elements extending between each side sill and the fixed center sill and having vertical truss means on the sides of the fixed sill tying the cross elements to the fixed sill, a center plate under the fixed sill tying the bolster cross elements together and a transverse transfer channel member forming a shear box with the deck and tying the bolster cross elements together, sub-cross means under the fixed sill tying the outboard bolster cross elements together, reinforcement about the fixed sill at the fish belly transition section of the fixed sill, and fixed longitudinally vertical cushion key stops on the top and bottom inside portions of the fixed sill and sliding key stop means in the form of horizontal crosshead means on the sliding insert sill acting as cushion stop means at the cushion pocket.

3,659,725
ELECTROMAGNETIC UNCOUPLER FOR MODEL TRAINS
Peter J. Passalacqua, 2808 E. Lewis Drive, Flagstaff, Ariz.
Filed Aug. 20, 1970, Ser. No. 65,408
Int. Cl. B61g 5/00
U.S. Cl. 213—75 TC 5 Claims



An uncoupler lever is pivotally attached to the truck of a model railroad car, with one end so attached to the resiliently mounted coupler bar of the car that upon movement of the opposite end of the lever, as by an electromagnet, the coupler bar will be deflected to an uncoupled position.

3,659,726
PALLETIZING APPARATUS
John T. Anderson, Churchville, Pa., assignor to Crown Cork & Seal Company, Inc., Philadelphia, Pa.
Filed Apr. 29, 1970, Ser. No. 32,908
Int. Cl. B65g 57/24
U.S. Cl. 214—6 P 16 Claims



A palletizer for accumulating layers of cans in patterns of staggered rows. Initially, the rows of cans are individually and sequentially accumulated on an infeed conveyor at two alternate positions along the conveyor. The rows of cans are then individually and sequentially moved to a layer pattern makeup plate where a layer of cans in a pattern of staggered rows accumulates. The makeup plate is then returned to the position adjacent the conveyor while the layer of cans is stripped from the makeup plate and dropped to a pallet or another layer of cans on the plate.

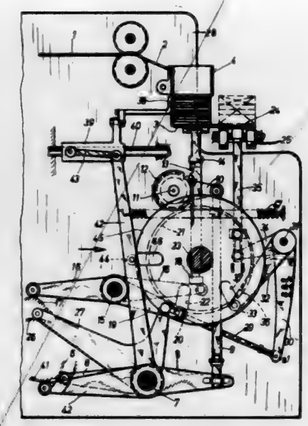
3,659,727
TABLES FOR STACKING FLEXIBLE WORK
Ralph E. Pearsall, Gloucester, Mass., assignor to USM Corporation, Boston, Mass.
Filed Aug. 13, 1970, Ser. No. 63,518
Int. Cl. B65g 57/03
U.S. Cl. 214—6 H 9 Claims



A table has its top fitted with two pivotal work supporting members arranged to be tilted into steeper V-relation in response to the accumulation of flexible work pieces thereon. The table is especially adapted to enable fabric pieces of non-uniform mass, for instance hemmed sleeves, to tend to be self-leveling during stacking.

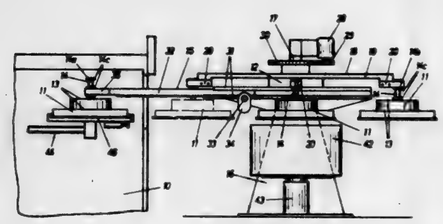
3,659,728
APPARATUS FOR COLLECTING AND PILING OF DISC-SHAPED OBJECTS
Gunter Reinecke, Wuppertal-Elberfeld, Germany, assignor to Benz & Hilgers GmbH, Duesseldorf, Germany
Filed Nov. 20, 1970, Ser. No. 91,246
Claims priority, application Germany, Nov. 29, 1969, P 19 60 118.4
Int. Cl. B65g 57/03
U.S. Cl. 214—6 H 7 Claims

An apparatus for collecting and piling of disc-shaped objects, as sausage slices and cheese slices, chocolate bars, baking goods and the like comprising a conveyor device, and a collecting plate and a runway slide. The conveyor device feeds objects to the collecting plate by means of a run slide, means for stepwise lowering the collecting plate are provided in dependency upon the cutting thickness of the objects. A stripping device removing the piled objects, and a receiving plate is arranged for receiving the objects from the collecting plate. The collecting plate, the stripping device and the receiving plate the latter capable of being lifted and lowered,



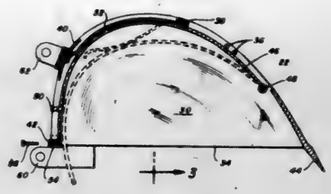
are connected with cam controlled driving units disposed independently from each other. Locking discs capable of being driven by a joint switching drive and alternately moving, are coordinated to the driving units, and the locking discs make possible a freeing of the driving units for lifting the collecting plate and receiving plate and operation of the stripping device only upon termination of a predetermined number of switching steps identical with the number of disc shaped objects of a disc package.

3,659,729
DEVICE FOR CHARGING FURNACES WITH MOULDS
Klaus Lamkemeyer, 70 Huelsbrockerstrasse, D4830, Guetersloh, Germany
Filed Mar. 31, 1970, Ser. No. 24,243
Int. Cl. F27b 9/38
U.S. Cl. 214—25 7 Claims



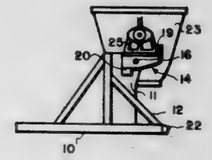
A device for charging furnaces with moulds comprising a plurality of frames, each frame provided with a support axle for supporting an individual mould, forwarding means for sequentially transporting each said frame in a timed sequence and feed means sequentially collecting said frames from said forwarding means and further transporting said frames into and out of said furnace.

3,659,730
SELF-DUMPING BACKHOE BUCKET
Delbert M. Butler, P. O. Box 314, Warner, Okla.
Filed June 8, 1970, Ser. No. 44,328
Int. Cl. E02f 3/60
U.S. Cl. 214—146 E 5 Claims



A small width for backhoe type tractors is adaptable for digging small trenches in relatively moist clay or compact materials. The rear closure portion of the bucket is pivotal and spring biased so as to normally force the material from between the tapered sides of the bucket by the combination of the spring force and gravity. Provision is made to latch the pivotal rear portion in a fixed position when digging loose or drier material.

3,659,731
SLAG POT TIPPING STAND
Robert C. Carson, West Sunbury, Pa., assignor to Harsco Corporation, Harrisburg, Pa.
Filed Nov. 6, 1969, Ser. No. 874,573
Int. Cl. B65b 69/00
U.S. Cl. 214—314 2 Claims

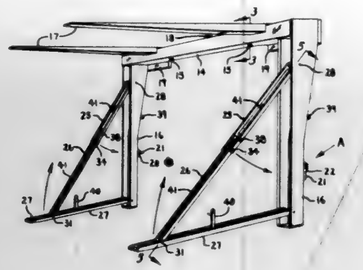


A stand for supporting and tipping a slag pot. The stand has a pair of arms normally disposed in a horizontal direction and rotatable about a horizontal axis. A slag pot is lowered onto the arms with its center of gravity offset from the axis of rotation of the arms. The arms are provided at their outer ends with hook-like projections which engage the side portions of the slag pot supporting lugs to prevent the pot from sliding as the arms rotate downwardly from the horizontal position. Counterbalances are provided to return the arms to a horizontal position when the ladle is lifted off the stand.

3,659,732
FORK FRAME FOR AN INDUSTRIAL TRUCK
William P. Downey, Portland, Oreg., assignor to Hyster Company, Portland, Oreg.
Filed Sept. 18, 1969, Ser. No. 859,104
Int. Cl. B66f 9/12
U.S. Cl. 214—621 8 Claims

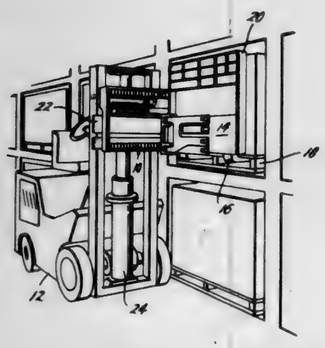
A detachable fork frame for an industrial lift truck is dis-

closed. The fork frame has two legs, each with a folding foot structure which allows it to stand freely when detached from



the truck. The structure is designed for rapid mounting and demounting and is self storing.

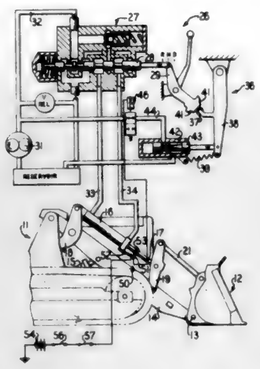
3,659,733
NARROW AISLE ATTACHMENT
Stuart W. Sinclair, and Monroe J. Dennis, both of Houston, Tex., assignors to Anderson Clayton & Co., Houston, Tex.
Filed Dec. 11, 1970, Ser. No. 97,225
Int. Cl. B66f 9/14
U.S. Cl. 214—730 7 Claims



An attachment for conventional industrial lift trucks to enable the truck to work in narrow aisles and manipulate pallets in front of and to both sides of the truck, utilizing a crossed six-bar linkage and side shifter mechanism.

3,659,734
BUCKET POSITIONING DEVICE UTILIZING A BIASED PROXIMITY SWITCH
Joe E. Fuzzell, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Original application Apr. 2, 1969, Ser. No. 812,829, now abandoned. Divided and this application June 9, 1971, Ser. No. 151,591
Int. Cl. E02f 5/14, 3/70, 3/28
U.S. Cl. 214—764 5 Claims

In a loader having a bucket pivotably supported upon a lift frame, tilt jacks interconnected between the lift arms and bucket by tilt linkage and a detented control valve by which the tilt jack is operated. A biased proximity switch and actuating magnet are positioned respectively upon the cylinder



and rod of the tilt jack for disengaging the control value from a detented position as the bucket approaches its load position.

3,659,735
SAFETY CLOSURE
William James Landen, Cheshire, Conn., assignor to Eyelet Specialty Company, Wallingford, Conn.
Filed May 25, 1970, Ser. No. 40,947
Int. Cl. B65d 55/02
U.S. Cl. 215—9 10 Claims



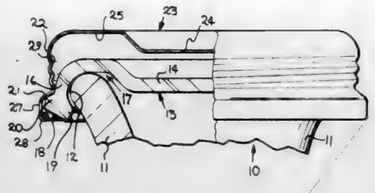
The invention contemplates selectively openable closure means that is tamper-proof, in the sense that a correct sequence of two deliberate and independent movements of lockable closure elements is necessary in order to achieve access to the contents of the bottle or the like which is protected by the closure.

The specific construction that is described involves a necked bottled member and a closure-cap member. The latter has axial and angular bayonet-type engagement with the neck. A resilient skirt carried by one of the members is in resilient axially interfering relation with the other member, to normally deny access to the bottle merely by attempted unthreading or other purely rotary actuation of the cap. The cap must be axially shifted to deform the skirt in order to free the parts for limited angular motion, before freeing the cap for axial removal from the neck.

3,659,736
CONVENIENCE OPENING BOTTLE CLOSURE
Darius Orley Riggs, Ottawa Lake, Mich., assignor to Owens-Illinois, Inc.
Filed Nov. 20, 1970, Ser. No. 91,292
Int. Cl. B65d 23/00
U.S. Cl. 215—40 11 Claims

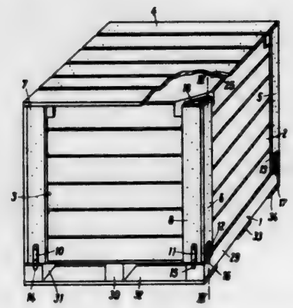
The invention disclosed is a convenience opening closure for a glass bottle having an outwardly flared neck and bead at

the finish of the bottle. This is often called a "cruet" finish. A plastic inner closure snaps over the finish and has an outwardly and downwardly tapering circular skirt. A metal cap fits over the plastic closure and the skirt of the cap has a lesser taper to force the plastic skirt to seal the finish of the bottle. The inner skirt wall of the outer cap has threads or projections which cooperate with the skirt of the plastic clo-



sure. The plastic skirt may have pre-formed threads engaging the threads of the metal cap. In another form, the plastic skirt has a plain outer surface and the interference fit of the threaded metal cap skirt compresses the plastic skirt sealing the inner cap on the bottle and pressing threads in the plastic. Cap removal is by unscrewing the outer cap from the plastic cap and unsnapping the plastic cap from the bottle finish.

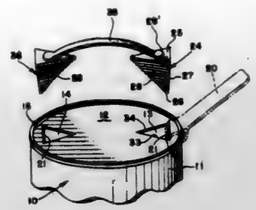
3,659,737
COLLAPSIBLE CONTAINERS
Hermann K. Garbe, 115 d Hohnerkamp, c/o 200 Hamburg, Germany
Filed Jan. 8, 1970, Ser. No. 1,357
Int. Cl. B65d 9/12
U.S. Cl. 217—12 R 13 Claims



An improved collapsible or dismantlable container with a pallet-shaped base, edgewise insertable, overlapping, side walls and a cover, which is easier to assemble and to dismantle than hitherto known containers, without thereby impairing its stability, wherein the improvement comprises cooperating fixing elements of which one part is arranged on the edges of the base and a second part on the lower edges of the side walls, and locking elements are provided on the top corners, comprising clamping means overlaying these corners. Additionally or alternatively, clamping means may be provided in the form of plug-in connections.

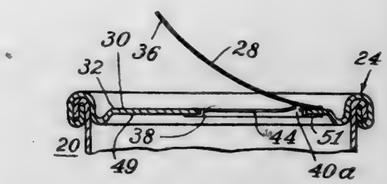
3,659,738
CAN CLOSURE STRUCTURE
David A. Friedmann, 10777 Sprucehill Drive, Springfield Township, Hamilton County, Ohio, and Marvin L. Eisenpresser, 245 E. 63rd Street, New York, N.Y.
Filed June 15, 1970, Ser. No. 46,398
Int. Cl. B65d 41/00
U.S. Cl. 220—42 B 7 Claims

A device is provided which sealingly preserves the contents of a container of liquid after a portion of such contents are withdrawn, such device being insertable into a hole formed in the top of the container and there pressed into place whereu-



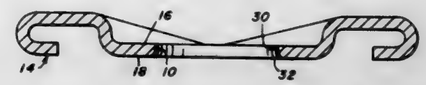
pon ribs formed in appropriate tapering surfaces of the device will engage with the edges about the hole to retain the device within the hole.

3,659,739
EASY-OPEN PULL-TAB CONSTRUCTION FOR A CONTAINER
John Joseph Luviano, Rydal, Pa., and Vinson S. Potts, Cherry Hill, N.J., assignors to Crown Cork & Seal Company, Inc., Philadelphia, Pa.
Filed Nov. 19, 1969, Ser. No. 878,074
Int. Cl. B65d 17/24
U.S. Cl. 220—53 17 Claims



A container end of the easy-opening type including a pull-tab construction comprising a first strip of adhesive tape adhering to and disposed over an opening in the outer surface of the end, and a second strip of adhesive tape adhering to the inner surface of the end and having an at least partially preformed aperture in substantial alignment with the opening.

3,659,740
TAB ELEMENT
Hans H. Diekhoff, Greensburg, and Howard D. Schrecker, Hyde Park, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Mar. 18, 1970, Ser. No. 20,705
Int. Cl. B15d 17/24
U.S. Cl. 220—54 4 Claims



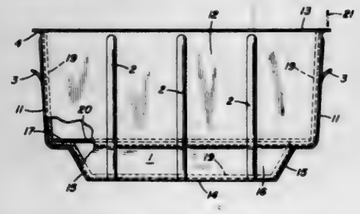
Apparatus for fabricating a tab element having an opening for joinder to a container wall including a female die having an elongated recess and an outwardly disposed annular tab engaging surface. A male die having an upwardly directed boss and a surrounding annular tab supporting surface. The male die having a concave transverse wall connecting the die boss with the annular tab supporting surface. Aligning the tab opening with the die elements and establishing relative clos-

ing movement between the dies produces compressive reforming of the opening defining portion of the tab element to provide a convexly curved portion corresponding in curvature to the male die concave transverse wall.

A method of reforming an opening defining wall in a tab element to provide a continuous wall which diverges from the upper tab surface to the lower tab surface by compressively reforming the continuous wall.

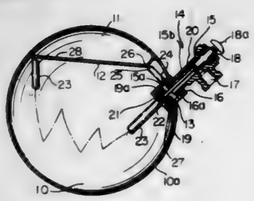
A container wall having a removable sector with a tab element secured thereto by means of an integral rivet including a wall panel having a hollow integral rivet provided with a transverse end wall and a peripheral wall. A tab element having an attachment opening defined by a continuous wall and the rivet extending through the tab element with the continuous opening defining wall in contact with the peripheral rivet wall. The opening defining wall having a lower inwardly convexly curved portion in surface to surface contact with a portion of the peripheral rivet wall having an outwardly concave configuration.

3,659,741
CONTAINERS
Armand Dudley Corelli, 306 Jarvis Street, Toronto, Ontario, Canada
Filed Feb. 20, 1970, Ser. No. 12,991
Int. Cl. B65d 25/14
U.S. Cl. 220—63 R 10 Claims



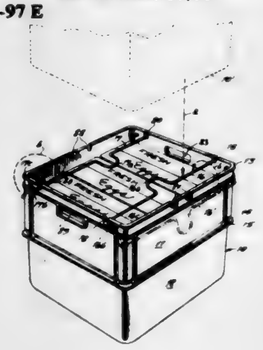
A leak-proof stackable container for shipping ice cooled foodstuff has a bottom provided with a centrally located well. Between the upstanding walls of the container and the upstanding walls of the well there is a peripheral bottom portion uniting these walls and providing support for wooden fillet boxes or perforated plates on which perishable food mixed with ice is deposited. The container is covered with a lid having a centrally located recess of a size to receive the well of a second container stacked thereon. The lid is provided with flanges engaging the upper lip of the container to seal the contents in the container. The lid and container may be insulated with a foamed plastic. Fore greater strength the walls are strengthened with ribs.

3,659,742
LIQUEFIED FUEL GAS CONTAINER
Katuhiro Tagawa, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan
Filed Dec. 22, 1970, Ser. No. 100,601
Claims priority, application Japan, Dec. 30, 1969, 44/105501
Int. Cl. B67c 3/06
U.S. Cl. 220—86 R 7 Claims



A container for a liquefied fuel gas, constructed to be prevented from being filled with excess liquefied fuel gas which would otherwise lead to unexpected blasting due to thermal expansion of the stored liquefied fuel gas, the container having main and auxiliary compartments which are completely isolated when the liquefied fuel gas is fed into the main compartment and which are permitted to communicate with each other so as to provide an unoccupied space in the main compartment.

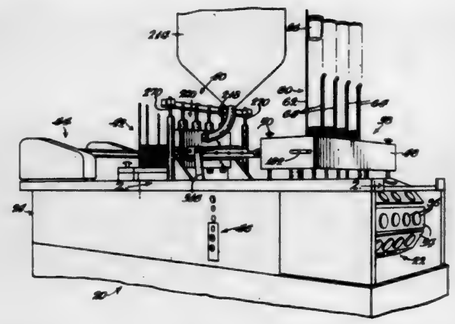
3,659,743
PLASTIC NESTING AND STACKING CASE
Theodor Box, 1108 Allene Road, Brielle, N.J.
Filed July 29, 1970, Ser. No. 59,252
Int. Cl. B65d 21/06
U.S. Cl. 220—97 E 4 Claims



A plastic nesting and stacking case in the form of an open-topped integrally molded rectangular unit having a pair of first opposed side walls, a pair of second opposed side walls and a bottom wall, comprises an upper part with its walls normal to said bottom wall, an intermediate part slightly tapering inwardly and having a height equal to a substantial fraction of the height of said upper part, and a lower part having a height equal to said upper part and tapering slightly inwardly towards the bottom wall of the case. The upper edge of the lower part has an outwardly projecting flange, whereby to enable partial nesting of a first case in a second similar case by the flange of the former resting upon the top edge of the latter. A pair of retractible supporting frames rotatively mounted upon the top of the cases serve to enable stacking of a number of cases with the bottom wall of one case resting upon the supporting frames of the case below in the stack.

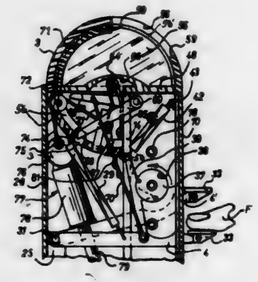
3,659,744
PROCESS AND APPARATUS FOR DISPENSING AND FILLING CONTAINERS
Carl Byrd, Chicago, and Martin Mueller, Glenview, both of Ill., assignors to Owens-Illinois, Inc.
Filed May 18, 1970, Ser. No. 38,245
Int. Cl. B65g 59/00
U.S. Cl. 221—1 19 Claims

A method and apparatus for dispensing containers, and filling the containers with a liquid or semi-solid food product. The container dispensing assembly is adapted to simultaneously dispense the lowermost container from a plurality of stacks of containers in a magazine assembly; and to insure positive dislodgment of the lowermost containers, a stripping plate is positioned above the lowermost containers during the container dispensing step, while lifting plates simultaneously move the containers remaining in the stacks upwardly to positively separate the lowermost containers from the remaining containers. The apparatus includes a conveyor for moving the containers to a filling station, and a suction actuated carrier means positively transports the dispensed lowermost containers to the conveyor and deposits them in a row thereon. A positive displacement piston type pumping means is provided at the container filling station for discharging product into each container in the row, and each pumping means includes a shiftable spool type valve for accurately controlling the amount of product that is dispensed into each



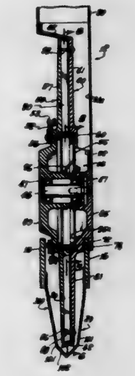
container. The pumping means each include a product dispensing nozzle, and the spool valve is arranged to create a suction on each nozzle during movement of each row of containers to the filling station to prevent dripping and wastage of product. The volumetric output of the pumping means is accurately controlled by a means for adjusting the length of the stroke of the piston means.

3,659,745
MANUALLY OPERATED FOOD PACKAGE DISPENSER WITH AUTOMATIC SLOW DOOR CLOSING
George Striegl, Prescott, and Otto Timm, Spencerville, both of Ontario, Canada, assignors to Otto Timm, Manfried Timm, Irving Richer and Leonard Rabinovitch, trading as Mini Billboard Advertising Regd., Montreal, Quebec, Canada
Filed Apr. 21, 1970, Ser. No. 30,521
Int. Cl. A47f 1/06
U.S. Cl. 221—12 6 Claims



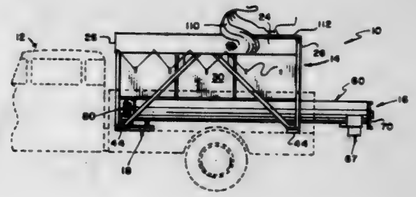
A food package dispenser, more particularly of sugar bags, and for use on restaurant tables. This dispenser forms an open top receptacle for receiving the food packages. A normally closed cover for said receptacle opens upon operation of a lever and closes slowly upon release of the lever to give sufficient time for the operator to move his hand from the lever to the receptacle to grasp a package therein. Automatic closing of the cover keeps the packages in sanitary condition. The dispenser also displays advertising messages which are replaced by other such messages each time the lever is operated to open the cover.

3,659,746
SEED PLANTER
James C. Winslow, 599 Elm Street, Sierra Madre, Calif.
Filed Feb. 9, 1970, Ser. No. 9,824
Int. Cl. A01c 7/04
U.S. Cl. 221—185 10 Claims



A seed planter for planting seeds in a row at uniform spacing. A rotating seed carrier and ejector ring is provided and has in its interior cylindric surface slots which fill with seed supplied thereto, and which have filler portions and ejection portions laterally offset to intersect a groove cut into the inner surface of the ring. The ejection portions of the slots have open bottoms. As the ring rotates, the seeds in the ejection portions are intercepted by an ejector finger which knocks them out the open bottoms of the slots and through apertures leading them to a distribution wheel which drops them at spaced intervals. A flexible vibratory diaphragm is provided to maintain the seed in free motion, and has an aperture for passing the seeds directly onto the lower portion of the rim of the slotted filler and ejector rim, such that they do not pile too high thereon.

3,659,747
AUTOMATIC FEEDER
James A. Teichgraeber, P.O. Box 632, Emporia, Kans.
Filed Mar. 4, 1970, Ser. No. 16,464
Int. Cl. B67d 5/30
U.S. Cl. 222—14 3 Claims

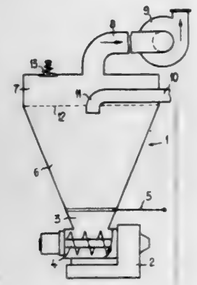


This invention is an automatic feeder mountable on a movable vehicle. It has a frame mounting a hopper, and an auger with a discharge spout extended from the vehicle, and is operable by a control system and powering means. The automatic feeder is mountable on a vehicle, powerable therefrom and operable to deliver automatically a substantially certain amount of material from the hopper.

3,659,748
METHOD AND APPARATUS FOR MAINTAINING CONSTANT THE LEVEL OF FILLING IN A CHARGING CONTAINER ARRANGED BEFORE A CONSUMING DEVICE FOR POURABLE MATERIAL, ESPECIALLY PLASTIC GRANULATE

Erich Beck, Worms-Weinsheim, Germany, assignor to Ingenieurbureau Dr. Brehm AG, Zurich, Switzerland

Filed Jan. 26, 1970, Ser. No. 5,457
Int. Cl. B67d 5/08
U.S. Cl. 222—56 14 Claims

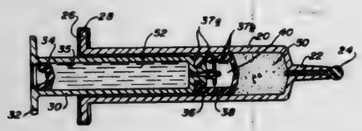


There is disclosed an apparatus and method for maintaining substantially constant the level of filling of pourable material, especially plastic granulate, into a charging container arranged in front of a consuming device. Thus, there is provided a charging container having at its top region a suction pipe directed away from the charging container and therebelow a conveying conduit entering into said charging container. Operatively communicating with the suction pipe and the conveying conduit is a blower or suction device. The suction conveying installation is operated at a feeding capacity which is above the material requirements of the consuming device, and the pressure at the inlet region of the consuming device is maintained such that it does not exceed the pressure in the charging container.

3,659,749
INTERMIXING SYRINGE

Boris Schwartz, 400 Park Avenue, Paterson, N.J.

Filed Apr. 28, 1970, Ser. No. 32,695
Int. Cl. B67d 5/12
U.S. Cl. 222—145 13 Claims

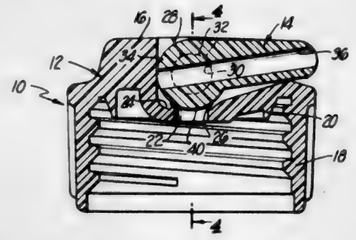


An intermixing syringe provides means for the isolated storage of two components prior to their being mixed which is usually just before injection of the product. This syringe has an outer barrel and a hollow plunger slidable therein with the barrel portion forward of the piston providing one chamber and the plunger providing the other chamber. The plunger is provided with a piston having spaced, ring-like sealing surfaces and a fluid passageway extending from the interior of the plunger to the outer piston surface. The barrel of this syringe is formed with a straight-bored inner surface and includes no undercuts. The forward most sealing surfaces or end of the plunger piston is disposed to be moved from a sealing condition into a fluid flow or conducting condition to permit flow into the forward portion of the barrel.

3,659,750
DISPENSING CLOSURE WITH BONDED SPOUT SEAL

Donald H. La Vange, Uxbridge, Mass., assignor to Polytop Corporation, Slatersville, R.I.

Filed June 22, 1970, Ser. No. 48,094
Int. Cl. B65d 47/10
U.S. Cl. 222—153 6 Claims

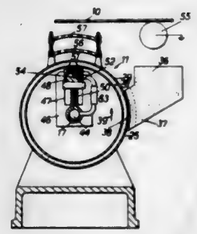


The disclosed invention pertains to dispensing closures having a closure body and a spout rotatably mounted on the body. In such a structure the spout is capable of being rotated between a closed position in which its base engages the closure body around an opening leading through the body so as to close off the opening and an open position in which a passage leading through the spout is aligned with the opening in the closure body. In a closure as disclosed a physical bond or seal connects the base of the spout and the closure body around the opening when the spout is in an initial closed position. When the spout is first moved to an open position this bond or seal is disrupted or broken.

3,659,751
APPARATUS FOR DELIVERING METERED QUANTITIES OF POWDERED MATERIAL TOWARDS A POINT OF USE

Albert Edward Jackson, Giversadfield Mold, Wendover, and Robert Gordon Russell, 72 Nant Parc, Prestatyn, both of England

Original application Dec. 11, 1968, Ser. No. 782,897. Divided and this application July 15, 1970, Ser. No. 55,077
Int. Cl. B05b 5/00
U.S. Cl. 222—194 9 Claims

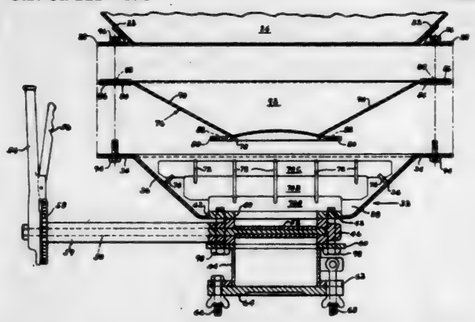


The invention concerns apparatus for delivering metered quantities of powdered material towards a point of use, the said apparatus comprising a rotor having an outer perforated shell whose perforations are adapted to receive the powdered material, the rotor also having an inner perforated shell which is mounted within the outer perforated shell, means comprising a porous filling which spaces the inner shell from the outer shell, the said means closely contacting the outer perforated shell, powder supply means arranged to supply the powdered material as the rotor rotates to the perforations in successive portions of the outer perforated shell, and a fluid conduit which is disposed within the inner perforated shell and which is, at any moment, sealed to a portion thereof which is angularly spaced from the portion of the outer perforated shell which is being supplied with powdered material from the powder supply means, means to supply the fluid conduit with a fluid which will pass through the inner perforated shell and the porous filling, the powdered material being ejected from the perforations in the outer perforated shell and delivered in metered quantities towards the point of use.

3,659,752
EASILY REMOVABLE FLUID PERMEABLE STRUCTURE FOR AERATED HOPPER DISCHARGE OUTLETS

John L. Carney, Jr., St. Louis County, and Dennis J. Schipper, St. Charles, both of Mo., assignors to ADF Industries, Incorporated, New York, N.Y.

Filed Mar. 19, 1970, Ser. No. 21,127
Int. Cl. B65g 3/12
U.S. Cl. 222—195 4 Claims

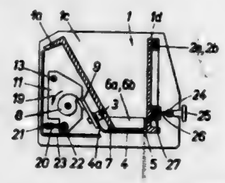


A fluid permeable member for an aerated hopper discharge outlet which may be easily inserted within and removed from the hopper discharge outlet. The fluid permeable member comprises a one-piece inner insert having a central discharge opening in vertical alignment with the discharge opening of the bottom discharge outlet and is easily secured in spaced relation to the outer lower housing or body of the discharge outlet by releasable securing means, such as threaded bolts. The inner fluid permeable insert is preferably formed of a stainless steel wire mesh material. The outer housing of the discharge outlet has an upper peripheral flange mating with a lower peripheral flange on the bottom of the hopper, and the fluid permeable member has a peripheral flange positioned and gripped between the mating flanges of the outer housing and the superjacent hopper.

3,659,753
STREWING APPARATUS, ESPECIALLY FOR BAKING INSTALLATIONS

Hans-Joachim Jager, Burgdorf, Switzerland, assignor to Gustave A. Seewer, Burgdorf Canton of Berne, Switzerland

Filed Mar. 25, 1970, Ser. No. 22,604
Claims priority, application Switzerland, Apr. 9, 1969, 5363/69
Int. Cl. A21c 1/00
U.S. Cl. 222—199 7 Claims

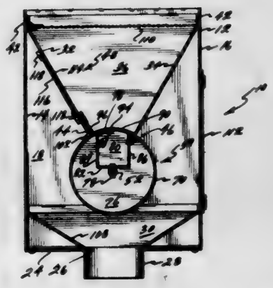


A strewing apparatus, especially for baking installations, which is of the type embodying a container for the material to be scattered or strewn which possesses a cross-sectional configuration which narrows towards the bottom end thereof, said container incorporating a forward wall and a rearward wall. A base plate which serves to close the major portion of the lower opening of the container is mounted via oscillating support elements to the rear wall of the container. An oscillating or vibration drive mechanism disposed behind the rear container wall serves to place the base plate into oscillatory movement. As a result of this oscillatory or vibratory motion imparted to the base plate, the marginal edge thereof which, together with the forward wall of the container forms a throughpassage slit for the material to be strewn, is primarily moved up and down, whereby the upward movement, at least at the start thereof, occurs in jerky fashion. Furthermore, additional means are provided for independently adjusting the basic width of the aforementioned throughpassage slot or slit.

3,659,754
PELLETIZED ANIMAL FEED DISPENSER

Michael Barone, 10250 West 78th Avenue, Arvada, Colo., and Frank Barone, Jr., 2561 South Wolff, Denver, Colo.

Filed May 11, 1970, Ser. No. 36,337
Int. Cl. G01f 11/00
U.S. Cl. 222—368 2 Claims

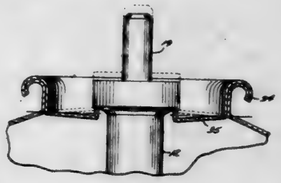


This invention relates to a dispenser for pelletized animal feeds characterized by an overhead open-topped feed storage hopper opening into a hollow cylindrical bucket mounted for rotation about a horizontal axis above a discharge chute. The bucket has an elongate inlet opening in the top thereof having an inclined trailing edge that cooperates with an adjacent edge of the hopper wall to produce a scissor-like shearing action adapted to easily cut through any pellets trapped therebetween. The lower edge of the opposite hopper wall bordering the bucket is foreshortened to provide a gap which is bridged by a brush wiper.

3,659,755
AUTOMATIC PRESSURE RELIEVING AEROSOL PRODUCT

Samuel Benjamin Prussin, and Howard Clyde Tracy, Jr., both of Los Angeles, Calif., assignors to Dart Industries, Inc., Los Angeles, Calif.

Filed Mar. 2, 1970, Ser. No. 15,480
Int. Cl. B05b 3/00
U.S. Cl. 222—397 5 Claims



An automatic pressure relieving aerosol product and container having an actuator member held fixedly against out-

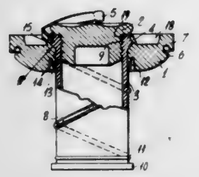
ward movement with respect to the can, and a valve carrying member that will move the valve stem against the actuator in response to excess pressure. When such pressure is present in the can, the valve carrying member moves upwardly whereupon the valve is opened thereby relieving the pressure. The actuator is of the type that will normally be moved with hand pressure to open the valve, thereby permitting the aerosol container to be operated in the usual manner under normal conditions.

3,659,756
CONTAINER COVER
John Kenneth Lancaster, 630 Eagle Lane, Palatine, Ill.
Filed June 24, 1969, Ser. No. 836,090
Int. Cl. B65d *47/08, 47/10*
U.S. Cl. 222—531 **7 Claims**



A one piece cover for a container with a hand actuatable tearstrip portion to provide a pour opening and to form a closure for the opening. The cover is adapted to be semi-permanently attached to and thus ordinarily difficult to remove from the container. The tear sections which define the pour opening and the tearstrip portion seal the contents of the container and make it possible to ascertain that the container had not been previously opened, and the closure forms the means for re-closing the container when not in use. In addition, the closure and the cover are provided with a spout for dripless pour flow.

3,659,757
CLOSURE DEVICE FOR GENERAL CONTAINERS
Francesco Tini, Via Lambro 82/84, Rozzano-Quinto Stampi, Italy
Filed Apr. 15, 1970, Ser. No. 28,619
Claims priority, application Italy, Apr. 23, 1969, 15933 A/69
Int. Cl. B65d *47/10*; B67d *3/00*
U.S. Cl. 222—541 **7 Claims**



A closure device for general containers, comprising a body member adapted to be sealingly secured within a performed bore of a container, an opened-end hollow cylindrical element screwing in said body member between re-entered and extracted positions for allowing the material within the container to exit and a plug which can be sealingly screwed in said cylindrical element. The plug is connected to said body member by a tear off removable strip and the closure device is also provided with means for clamping the hollow cylindrical element at its extracted position and means for preventing said cylindrical element from completely exiting.

3,659,758
SLIDING TOP INTERNAL POURER BOTTLE CAP
Neil S. Waterman, Stamford, Conn., assignor to Atlantic Design & Development Corporation, Stamford, Conn.
Filed Dec. 10, 1969, Ser. No. 883,811
Int. Cl. B65d *47/20*
U.S. Cl. 222—561 **1 Claim**



A two piece molded plastic bottle cap has a slidable closure member inserted into a top cavity of a screw cap body, with corresponding surfaces of the two parts mating in closed position to effect an airtight leakproof seal, and space between corresponding surfaces of the two parts when slidably moved to an open position forming a liquid pouring spout and an air vent channel enabling continuous pouring of liquids.

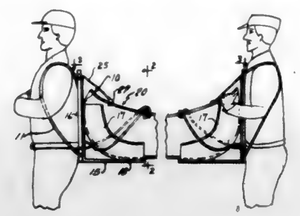
3,659,759
CLIP SUSPENSION DEVICE FOR KEYS AND THE LIKE
Carey E. Walton, Opelousas, La., assignor to Leopold A. Castille and Stephen J. Ledet, Jr., part interest to each
Filed Jan. 19, 1970, Ser. No. 3,698
Int. Cl. A45f *5/02*
U.S. Cl. 224—5 R **1 Claim**



A clip for keys, "pocket" watches and the like for suspending the items from the waist band of an article of clothing on the inside of the article of clothing out of sight between it and the human body in a particular region of the human anatomy, viz. at or near the boundary between the iliac and the hypogastric regions of the lower abdomen directly between the anterior superior iliac spines wherein the body forms a natural, elongated hollow. Such positioning prevents any discomfort to the user and creates no unsightly bulge. The lower extension (5) of the clip angles down and away from the plane of the clip portion (2,4) and assists the natural contours of the human body in positioning the items in the desired location.

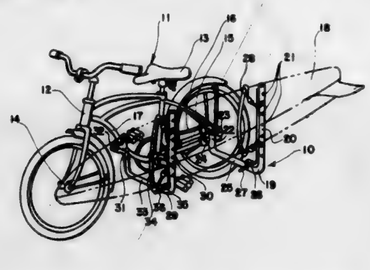
3,659,760
SLING AND BOARD FOR CARRYING CANOES, SMALL BOATS AND OUTBOARD MOTORS
Lewis H. Blood, P.O. Box 141, Leonardo, N.J.
Filed Feb. 11, 1970, Ser. No. 10,561
Int. Cl. A45f *3/00*
U.S. Cl. 224—25 A **5 Claims**

This invention relates to shoulder carriers or slings and to a type that is adapted for the transport particularly of canoes, small boats or outboard motors. It involves shoulder straps in the form of loops, connected at both ends, and a board in which the straps are attached and adjustable and said board



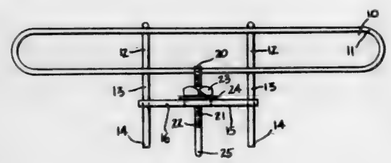
provided with means to hold a boat, canoe or outboard motor.

3,659,761
BICYCLE SIDE RACK FOR SURFBOARD
Bobby Dean Wesson, Santa Barbara, Calif., assignor to Jeffrey Douglas White, Santa Barbara, Calif., a part interest
Filed Oct. 13, 1970, Ser. No. 79,723
Int. Cl. B62j *11/00*
U.S. Cl. 224—39 R **6 Claims**



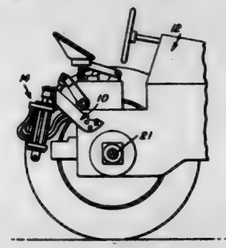
A surfboard carrier rack has fore and aft brackets extending from one side of a bicycle. The brackets coact with corresponding adjustable braces which are looped at least partially around the surfboard forward and rearward sections to resiliently suspend the surfboard while holding it generally in a vertical plane.

3,659,762
BICYCLE WHEEL CARRIER FOR AUTOMOBILE MOUNTING
Harley A. Kravitz, Pepper Pike, Ohio, assignor to Acar Industries, Inc., Willoughby, Ohio
Filed Nov. 12, 1970, Ser. No. 88,827
Int. Cl. B62d *43/00*
U.S. Cl. 224—42.03 B **11 Claims**



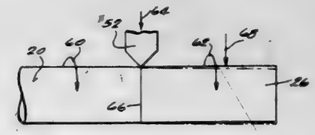
A wheel well is provided having horizontally extending spaced arms inter-connected by a cross-member. An adjustable length swivel hook element is secured to the cross-member and is adapted to engage either the upper edge of the rear bumper of the automobile or the lip of the trunk opening. Tightening of the hook element draws the spaced arms forwardly into engaging abutment with another portion of the rear of the automobile, such as the bumper surface, a body panel or the lip of the trunk lid opening. A pair of such wheel wells are mounted on the rear of an automobile and serve in combination as a bicycle or cycle carrier for convenient transport of such two-wheeled vehicles.

3,659,763
HYDRAULIC CYLINDER SUPPORT FOR TRACTORS
Doyle A. Johnson, R.R. 3 Box 52, Paulding, Ohio
Filed June 29, 1970, Ser. No. 50,865
Int. Cl. B60r *9/06*
U.S. Cl. 224—42.45 R **2 Claims**



An inclined bracket having a hooked end is secured to a tractor chassis and provides a means for supporting an auxiliary hydraulic motor during periods when the motor is not in use. The bracket includes an abutment which engages the hydraulic motor. This abutment serves as a mechanical stop restraining the motor from unwanted motion when the tractor is moving.

3,659,764
METHOD AND APPARATUS FOR SEVERING CYLINDRICAL STOCK
Kazimir Janiszewski, 5426 W. Andover Road, Milwaukee, Wis.
Filed Mar. 16, 1970, Ser. No. 19,918
Int. Cl. B26f *3/00*
U.S. Cl. 225—2 **5 Claims**

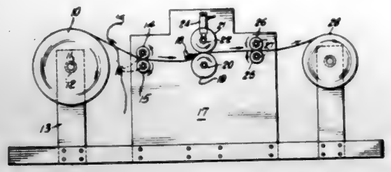


The bar or tube stock to be severed is peripherally scored and rotated while deflecting the length to be severed and thereby angling its axis to that of the unsevered stock, the angle between the axes having its apex in the plane of the scoring.

3,659,765
METHOD FOR FIBRILLATING A TRANSVERSELY ORIENTED PLASTIC MATERIAL
Frank Kalwaites, Somerville, N.J., assignor to Johnson & Johnson
Original application Mar. 5, 1968, Ser. No. 710,611, now Patent No. 3,515,325. Divided and this application Aug. 11, 1969, Ser. No. 870,877
Int. Cl. B26f *3/02*
U.S. Cl. 225—4 **1 Claim**

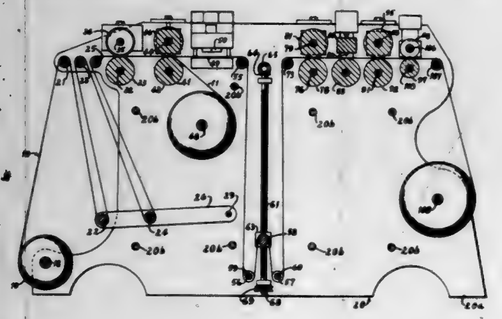
Method for fibrillating transversely oriented plastic material by moving the material in the direction of its length at a

given speed and instantaneously and simultaneously applying compressive forces and longitudinal forces to the material



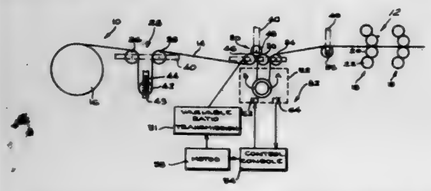
while maintaining the speed at which it is moving to split the material into a web of interconnected fibers.

3,659,766
MATTRESS PANEL CUTTER
Edward Alago, 1347 Hancock Street, Brooklyn, N.Y.
Filed Dec. 8, 1970, Ser. No. 96,021
Int. Cl. B26d *9/00*; B65h *35/10*
U.S. Cl. 225—94 3 Claims



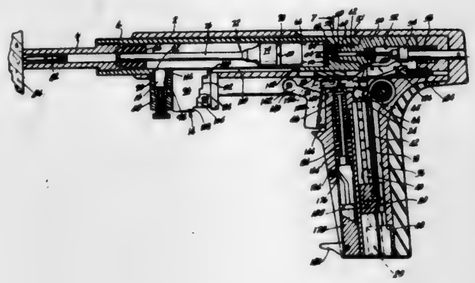
A spool of fabric is fed through a series of rollers where it is exposed to cutters which trim it to a predetermined width, shear cusp-shaped indentations at regular intervals on opposing edges of the fabric and form perforations between the apices of the cusp-shaped indentations. After the perforations are formed, the fabric is burst in the vicinity thereof, thereby forming a mattress panel which is then disposed upon a second spool. During the foregoing operations, the fabric is maintained in an unwrinkled position by means of angular grooves formed upon gripping rollers in contact with the fabric.

3,659,767
TENSION REGULATION APPARATUS
John R. Martin, 2516 Harlem Boulevard, Rockford, Ill.
Filed Dec. 29, 1969, Ser. No. 888,588
Int. Cl. B65h *23/18*
U.S. Cl. 226—195 9 Claims



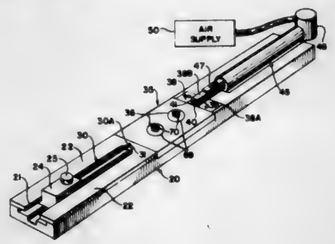
Apparatus for preventing a change in the tension in one region of a moving web from causing a change in the tension in another region of the web. An assembly which is movable translationally and rotationally by a force applied by a change in web tension at one of two engagement lines between the assembly and the web, has masses which are so distributed that a change in force applied at one of the lines produces substantially no acceleration of the assembly at the other engagement line.

3,659,768
FASTENER DRIVING TOOL
Lawrence J. Brunelle, East Haven, Conn., assignor to Olin Corporation
Filed June 12, 1970, Ser. No. 45,651
Int. Cl. B25c *1/14*
U.S. Cl. 227—10 23 Claims



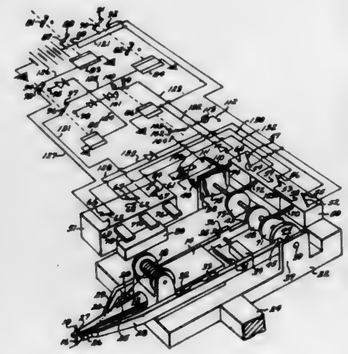
A tool for firing fasteners into a supporting surface, which tool utilizes compacted pellets of ignitable material as a source of power. A compound firing chamber is provided to facilitate loading with a pellet magazine, a pellet feed being positioned in the handle of the tool. The tool is cocked for firing by pushing the barrel against the supporting surface, and cannot be otherwise fired. The tool preferably includes a fastener-driving member in the form of a piston and the piston can be automatically returned to a plurality of driving or firing positions to vary the power of the tool for a given propellant load.

3,659,769
FASTENER ATTACHMENT SYSTEMS
Arnold R. Bone, Needham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.
Filed Apr. 17, 1970, Ser. No. 29,564
Int. Cl. B65c *7/00*
U.S. Cl. 227—68 23 Claims



A machine for inserting an attachment member having a filament and heads on either end through an opening in an article, said machine including a holder for the article, a tube for receiving a head of the attachment member, a device for feeding the attachment member into an end of the tube, said tube adapted to first enter the opening in the article, then proceed to pick up the attachment member from device for feeding an then carry a portion of the attachment member back through the article opening. The device for feeding the attachments includes a fluid powered piston shaped to feed attachment members into the device, said piston carrying a rod to push the attachment members into the tube, needle or the like and the device also including a valve to cause fluid under pressure to move the piston.

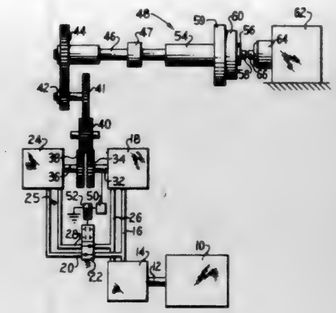
3,659,770
CIRCUIT BONDING MEANS
Charles Fredrick Miller, 843 South State College Boulevard, Anaheim, Calif.
Filed Dec. 13, 1968, Ser. No. 783,571
Int. Cl. B23k *1/06, 5/20*
U.S. Cl. 228—1 8 Claims



This disclosure relates to improvements in methods and in means for accomplishing electrical wiring. The method makes use of a bonding tool which is capable of furnishing energy sufficient to bond a conductor to a circuit point. The conductor is positioned over that point in the line of action of the tool. Bonding energy is applied to complete the bond. The standing part of the conductor is grasped at a point along its length adjacent to but removed from the bond and it is pulled sufficiently to break the conductor adjacent the bond. Grasp of the conductor is maintained and its broken end is then positioned to lie in the line of action of the bonding tool so that the two can be moved together to another circuit point. Advantageously, these are made the end steps, those applicable to completion of a second bond, in a process which includes additional steps by which a first bond is completed. The means envisioned by the disclosure includes a bonding tool and a clamp mounted for movement with the bonding tool but capable of independent movement so that it can break the standing part of a length of conductor wire after completion of a circuit run and so that it can position the broken end properly to initiate another circuit run. In addition to the bonding tool and the clamp and the means to move them together, apparatus is disclosed by which the proper coordination between these several elements is assured.

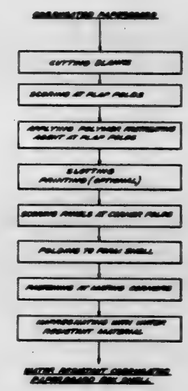
3,659,771
RAPID ACCELERATION MECHANISM FOR FRICTION WELDER
Josef Kiwalle, and Ira H. Sage, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Nov. 2, 1970, Ser. No. 85,854
Int. Cl. B23k *27/00*
U.S. Cl. 228—2 4 Claims

A rapid acceleration mechanism is provided for a friction welder having a fixed displacement fluid pump. The pump is operatively interconnected with the two fluid motors so that both motors drive the welder spindle during the early portion of the acceleration cycle and only one of the motors drives



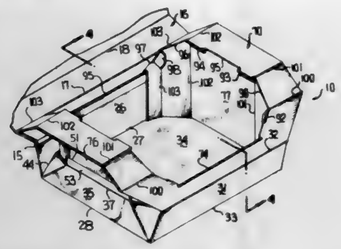
the spindle after the speed of the two motors approaches the maximum output of the pump. Replaceable change gears are provided for the drive train of the welder to provide acceleration and total speed flexibility for the drive system.

3,659,772
WATER RESISTANT CORRUGATED ARTICLES HAVING IMPROVED FOLD FLEXIBILITY
William Smith Dorsey, Fullerton; Thomas Hallis, Jr., Brea, and Edward A. Pullen, Fullerton, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.
Original application Apr. 4, 1966, Ser. No. 539,749, now Patent No. 3,529,516, dated Sept. 22, 1970. Divided and this application June 5, 1970, Ser. No. 43,829
Int. Cl. B65d *25/14*
U.S. Cl. 229—3.1 10 Claims



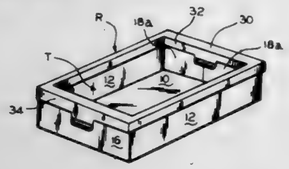
A method for forming a flexible fold in corrugated paperboard rendered water resistant by impregnation with a solidifiable water proofing agent that imparts rigidity to the paperboard in which the fold is first treated with a non-rigid polymer pretreating agent prior to impregnation and a water resistant corrugated article having folds rendered flexible by this method. The method is particularly useful in manufacturing water resistant corrugated paperboard boxes having improved fold flexibility.

3,659,773
CARTON
Guelfo A. Manizza, Blauvelt, N.Y., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Nov. 13, 1970, Ser. No. 89,201
Int. Cl. B65d 5/22, 5/36
U.S. Cl. 229—33 12 Claims



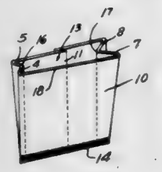
This disclosure relates to an improvement in a collapsible and erectable carton of the type having at opposite ends a depending end wall inboard and adjacent an upstanding end wall, and means between adjacent upstanding and depending end walls for automatically moving the upstanding end wall from a flat collapsed condition to its upstanding condition by moving the depending end walls from like generally flat collapsed conditions to the depending conditions thereof. The automatic means includes a hingeable panel joined between each adjacent pair of upstanding and depending end walls.

3,659,774
COMPOSITE CARRYING CASE
Robert H. Mielke, Chicago, Ill., assignor to Container Corporation of America, Chicago, Ill.
Filed Aug. 7, 1970, Ser. No. 61,979
Int. Cl. B65d 5/46, 15/12
U.S. Cl. 229—52 B 2 Claims



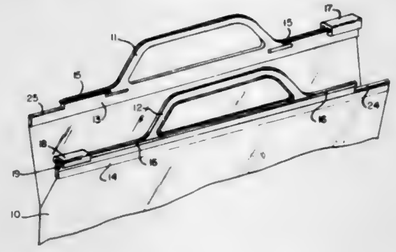
A composite carrying case comprising a paperboard tray and a plastic rim adapted to fit over the upper edge of the tray in interlocking engagement therewith.

3,659,775
UPSTANDING POUCH OF FLEXIBLE MATERIAL
George W. Truman, Irving, Tex., assignor to Dixico, Inc., Dallas, Tex.
Filed Apr. 17, 1970, Ser. No. 29,386
Int. Cl. B65d 33/00
U.S. Cl. 229—53 7 Claims



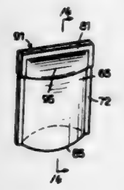
A pouch of one-piece of flexible material having two side gussets of different dimensions and end seals perpendicular to said gussets, one of which end seals in closed before the filling of the pouch and the other end seal being closed thereafter providing a pouch which will stand upright without support using the larger gusset as the base therefore and a method of making such a pouch from web material.

3,659,776
BAG HANDLE
Heikki S. Suominen, Vihmainen, Tampere, Finland
Filed Oct. 19, 1970, Ser. No. 81,796
Int. Cl. B65d 33/06, 33/16
U.S. Cl. 229—54 R 9 Claims



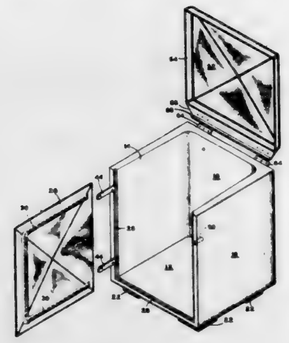
A plastic bag and handle therefor having a closure means for holding two handle parts together wherein two handle grip members are attached to respective elongated strip members which in turn are respectively attached to opposite sides of the top of the bag. Each of the elongated strip members has arranged thereon an outwardly facing track along which a closure member is arranged to slide to hold the mouth of the bag closed. Each closure member has internal walls which define grooves through which the tracks pass.

3,659,777
REINFORCED PACKAGE
Takashi Kanada, No. 28 Shinsaku 1 Chome, and Toshio Tanaka, No. 128 Yotsuyakamichi, both of Kawasaki-shi, Kanagawa-ken, Japan
Filed June 30, 1969, Ser. No. 837,728
Int. Cl. B65d 33/02, 75/58
U.S. Cl. 229—55 5 Claims



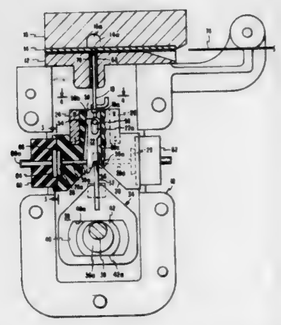
An apparatus for continuously forming packages. Each package comprises a pocket and a flexible container therein with packaged material in the container. An endless tube of flexible material is formed from a continuous web at a tube forming station. Opposed areas of the tube are secured together in a sealing station to form a pouch with the opening of the pouch in the tube forming station. The pouch is supplied with a measured amount of packaging material and is moved through the sealing station to form a bottom for a successive pouch. The closed containers are divided into separate segments and are separated in a pair of cutting stations. A pocket like container is formed around the containers at the sealing and dividing stations. A protective antiseptic film may be marginally secured on each outer side of the pocket at its closed end.

3,659,778
RECEPTACLE
Robert H. Saultz, Pompano Beach, and Julius A. Crane, Oakland Park, both of Fla., assignors to Atlantic Coast Precast, Inc., Ft. Lauderdale, Fla.
Filed July 20, 1970, Ser. No. 56,472
Int. Cl. B65d 91/00
U.S. Cl. 232—43.1 4 Claims



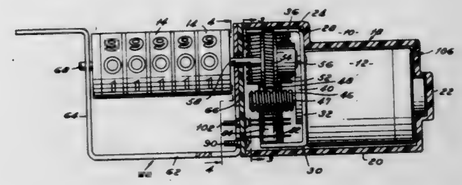
A receptacle comprising a box-like structure having a bottom portion and a circumferential sidewall extending upwardly therefrom; an opening is provided in the sidewall adapted to be normally closed by a door member and which is attached to the sidewall by means of hinges having portions thereof embedded in the sidewall. The top is provided with a cover member hinged to the upper portion of the sidewall and sections of the hinges are likewise embedded in the sidewall; the cover has a circumferential flange which overlies the upper edges of the sidewall and of the door when the door and the cover are in a closed position to seal the receptacle to protect the contents of the receptacle. The door member and the cover member of the receptacle are made of a lightweight material dissimilar from the relatively heavier material of which the body of the receptace is made.

3,659,779
PUNCH MECHANISM
John W. Berkman, Oronoco, and Lawrence R. Gravell, Rochester, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 26, 1970, Ser. No. 22,961
Int. Cl. G06k 1/02
U.S. Cl. 234—114 14 Claims



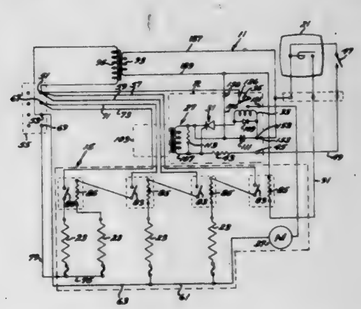
A punch mechanism including a line of punches each having an interposer disposed between it and reciprocating drive mechanism. The interposers are reciprocably disposed in slots in a guide block, being pivoted therein by virtue of end walls of the slots acting on the edges of the interposers. A pneumatic piston is provided for moving each of the interposers into alignment with the drive mechanism to cause a punching action, and permanent magnets are provided for moving and holding the interposers in their inactive positions.

3,659,780
ELECTRIC ODOMETER DRIVE
Gary Floyd Woodward, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Nov. 30, 1970, Ser. No. 93,598
Int. Cl. G01c 22/00
U.S. Cl. 235—95 R 5 Claims



An electrically operated odometer including an electric motor, a plurality of odometer rolls and reduction gearing preferably in the form of series connected worm and worm gear sets coupling the electric motor to the odometer rolls. A plastic housing completely encloses the electric motor and the reduction gears with the housing being positioned in spaced relationship to the electric motor. The electric motor is alternately energized and de-energized by suitable switching arrangements to drive the odometer rolls, and the reduction gearing provides high torque and minimum overrun on the odometer rolls.

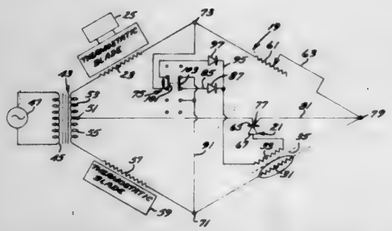
3,659,781
MONITORING APPARATUS HAVING AUXILIARY SWITCHING MEANS
Marvin M. Graham, Seal Beach, and William W. Chambers, Anaheim, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.
Filed Nov. 12, 1969, Ser. No. 875,977
Int. Cl. G05d 23/00
U.S. Cl. 236—11 8 Claims



Monitoring apparatus for controlling a circulating means which circulates a fluid in heat exchange relationship with a temperature change unit. Condition sensing means is provided for actuating the temperature change unit when a predetermined condition is sensed. Monitoring means includes a housing which mounts a current sensing means

which is responsive to current flow in the temperature change unit to produce an electrical signal. An automatic actuator is mounted in the housing and is connected in circuit with the current sensing means and is responsive to such electrical signal to actuate the circulating means. An auxiliary actuator is connected in circuit with the automatic actuator and is actuable to produce an electric signal to actuate the circulating means independently of the temperature change unit whereby the circulating means can be actuated by the auxiliary actuator independently of the temperature change unit.

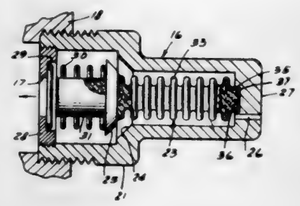
3,659,782
LATCH-ON TEMPERATURE CONTROL SYSTEM
William W. Chambers, Anaheim, Calif., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Aug. 19, 1970, Ser. No. 65,218
Int. Cl. G05d *23/24*
U.S. Cl. 236—68 B 6 Claims



A latch-on temperature control system including a load for operating a heating unit to heat a media. A gate controlled conduction device is provided for controlling current flow through the load. A sensor is provided for sensing the temperature of the media and is connected in circuit with the load and with the gate of the conduction device. A feedback heater is connected in circuit with the conduction device and is disposed in heat exchange relationship with the sensor. A mechanical heat shield is interposed between the sensor and the feedback heater for delaying heat transfer from the heater to the sensor whereby when the temperature of the media drops below a predetermined temperature a triggering signal will be imposed on the gate of the conduction device to initiate current flow through the load and through the feedback heater thereby actuating the heating unit and, concurrently, decreasing the rate of current flow in the sensor resulting in a decrease in its self-heating to enhance the triggering signal and latch the conduction device in its conductive state. After a selected period of time the heat shield will be heated sufficiently to conduct sufficient heat to the sensor to heat such sensor sufficiently to substantially compensate for its decrease in self-heating resulting from energization of the load.

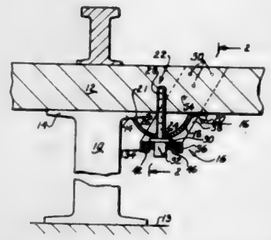
3,659,783
TEMPERATURE REGULATED FLOW CONTROL ELEMENT FOR AUTOMOTIVE AIR-CONDITIONERS
Samuel H. Schwartz, Deerfield, Ill., assignor to Eaton Yale & Towne, Inc., Cleveland, Ohio
Filed Oct. 24, 1969, Ser. No. 869,052
Int. Cl. F25b *41/04*
U.S. Cl. 236—93 1 Claim

Thermally responsive control element in the suction side of the compressor of an air-conditioning system. The control element is in the form of a housing having an integral valve seat formed on the inner wall. A poppet valve is carried by the cup of a thermally responsive element, and is biased into engagement with the seat by a spring. A bellows forms a continuation of the cup and has communication therewith, and with the cup contains a fusible thermally responsive material. The bellows is closed at its outer end and has abutting engagement with the end of the housing. As the temperature of the evaporator reaches a point that condensed water vapor



on the evaporator coils tends to freeze, the bellows will contract and allow the valve to reduce the flow of as from the evaporator to the condenser, and thereby avoid uncontrolled freeze-up of the evaporator coils and the blocking of the flow of air through said coils.

3,659,784
CLAMPING STRUCTURE FOR ELEVATED RAILROAD TIES
Lawrence Klosk, 120 Gale Place, Bronx, N.Y.
Filed Jan. 26, 1970, Ser. No. 5,596
Int. Cl. E01d *19/12*; E01b *9/66*
U.S. Cl. 238—349 22 Claims

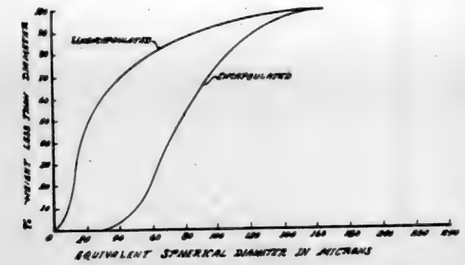


A bracket for use with a clamp and screw spike adapted to clamp elevated railroad ties to a support structure comprises a U-shaped member having a base portion and vertically extending wing portions. The base portion is provided with an elongated slot and a washer received therein for registering with the nut-shaped head portion of the screw spike. The vertically extending wing portions are adapted to be secured to the tie, the bracket preventing the screw spike and clamp from disengaging and falling from said tie.

3,659,785
WEATHER MODIFICATION UTILIZING MICROENCAPSULATED MATERIAL
Loren D. Nelson, Lowell, and Bernard A. Silverman, Natick, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force
Filed Dec. 8, 1970, Ser. No. 96,147
Int. Cl. A01g *15/00*
U.S. Cl. 239—2 R 4 Claims

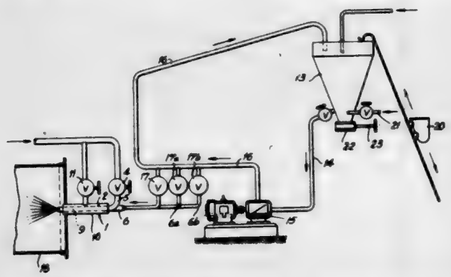
A fog and cloud seeding method and agent utilizing microencapsulation techniques whereby controlled seeding particle size for both dry initial particles and particles dispensed as solution droplets provides for the production and maintenance of a predetermined particle spectrum when using hygroscopic chemical compounds which are fragile, brittle or friable in crystalline structure. A hygroscopic

chemical agent to be utilized in cloud or fog seeding is provided with a liquid permeable capsule shell such that op-



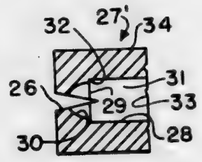
timization of particle size for improved seeding results is obtained.

3,659,786
PROCESS AND INSTALLATION FOR BURNING COMBUSTIBLE MIXTURES
Fritz Vier, and Bernhard Winkeler, both of Salzbergen, Germany, assignors to Wintershall Aktiengesellschaft, Kassel, Germany
Filed Dec. 23, 1970, Ser. No. 100,968
Int. Cl. F02d *1/06*
U.S. Cl. 239—5 10 Claims



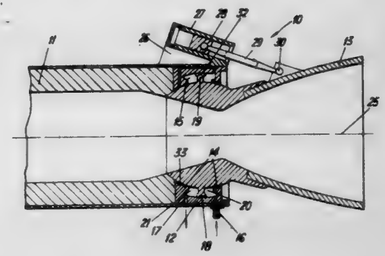
A process and burner installation for burning combustible waste product sludges containing solid particulate contaminants, including a nozzle chamber adapted to mix the waste sludge with pressurized air. The static air pressure in the nozzle chamber is maintained at a predetermined pressure head in order to regulate the inlet of sludge to the chamber, so as to thereby effect control over the ratio of sludge to air in the mixture formed for burning.

3,659,787
NOZZLE
Siro Ito, Kawasaki, Japan, assignor to Ransburg Electro-Coating Corp., Indianapolis, Ind.
Filed Mar. 25, 1970, Ser. No. 22,492
Claims priority, application Japan, Apr. 16, 1969, 44/29575
Int. Cl. B05b *5/00*
U.S. Cl. 239—15 15 Claims



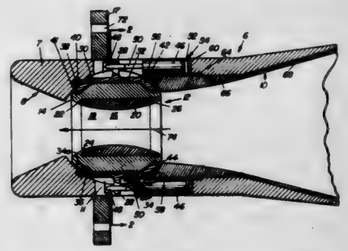
A spray nozzle for an apparatus which hydraulically atomizes and sprays coating material. The spray nozzle includes a body and a passageway in the body. A forward portion of the passageway has converging side walls. An opening, formed in the body, communicates with the passageway to provide an orifice for the coating material. A step is provided in the passageway. The passageway, the opening and the step in the passageway of the nozzle cooperate to provide a pattern of deposited coating material having feathered edges.

3,659,788
JET NOZZLE ASSEMBLY
Harry Oldfield, Coventry; Gordon Terry Healey, Staverton, Nr. Daventry, and John Anthony Ridgway, Hinckley, all of England, assignors to Rolls-Royce Limited, Derby, England
Filed Oct. 14, 1970, Ser. No. 80,738
Claims priority, application Great Britain, Oct. 23, 1969, 52,044/69
Int. Cl. B64d *33/04*; B64c *15/04*
U.S. Cl. 239—127.1 10 Claims



A jet nozzle assembly comprises a housing having a curved bearing surface which provides a seating for a complementary surface of a universally swivellable nozzle member through which in operation a propulsive jet may flow, an actuator for causing swivelling of the nozzle member relative to the housing, a conduit for supplying a cooling and/or lubricating fluid to the surfaces, a flange member secured to the nozzle member, and pressure responsive assembly for applying, in operation, hydrostatic pressure to the flange member so as to reduce or eliminate frictional opposition to its swivelling movement due to said propulsive jet.

3,659,789
THRUST NOZZLE FOR ROCKETS
Stephen D. Schultz, Brigham City, Utah, assignor to Thiokol Corporation, Bristol, Pa.
Filed Nov. 4, 1966, Ser. No. 592,209
Int. Cl. B63h *11/10*; B64c *15/00*
U.S. Cl. 239—265.19 7 Claims



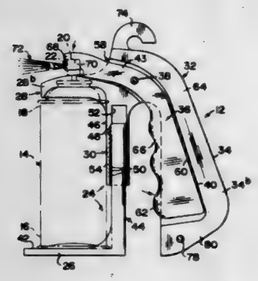
A fixed, convergent-divergent, rocket nozzle having a movable throat section seated in spherical relationship to adjacent surfaces; so that the rocket may be steered by rotating the throat section.

3,659,790
METHOD AND APPARATUS FOR APPLYING COATING MATERIAL
Robert J. Gelin, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation
Filed Apr. 24, 1970, Ser. No. 31,709
Int. Cl. B05b 7/14
U.S. Cl. 239—336 11 Claims



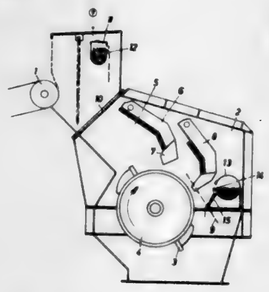
A method and apparatus are provided for spraying reinforced resinous coating material on a surface. Resin and an accelerator are sprayed from one spray device and resin and catalyst are sprayed from a second spray device, each spray being shaped as a horizontally disposed ellipse, as viewed in cross section. The two sprays are directed in converging paths and a flat spray of reinforcing fibers is directed from above in a converging path with the other two sprays. In a preferred form, the resin and accelerator are mixed upstream of one spray device and the resin and catalyst are mixed in a mixing head adjacent the other spray device.

3,659,791
SPRAY GUN ADAPTOR FOR AEROSAL CANS
William O. Clark, Rt. 4, Box 401, Fort Myers, Fla.
Filed Nov. 17, 1969, Ser. No. 877,210
Int. Cl. A47J 45/07
U.S. Cl. 239—375 4 Claims



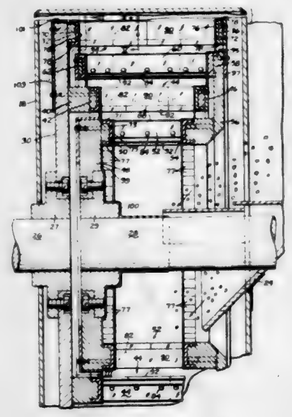
An adaptor device for detachable support to an aerosal spray can having a finger-operative spray knob adapted to be depressed in releasing the spray and aerosal contents of the can. The adaptor device includes convergingly acting base and head sections adapted to lengthwise embrace an aerosal can and includes a handle-like stock projection adapted to be hand-gripped in manipulating the spray can and in spraying the aerosal contents. The adaptor device includes a fulcrumed lever having one end thereof engaging the spray knob of the spray can and having the other end extending along the stock projection. A user of the device sprays the contents of the aerosal can by squeezing the lever and stock elements together.

3,659,792
METHOD OF PROCESSING EFFLUENT SLUDGE
Eugen Von Conrad, Friesenring; Kurt Rosner, and Ludwig Meyer, both of Munster, Westphalia, all of Germany, assignors to Hazemag Hartzerkleinerungs-und Zementmaschinenbau-Gesellschaft mbH, Munster, Germany
Filed Aug. 21, 1969, Ser. No. 851,970
Claims priority, application Germany, Aug. 23, 1968, P 17 84 605.8
Int. Cl. B02c 13/09, 21/00
U.S. Cl. 241—21 8 Claims



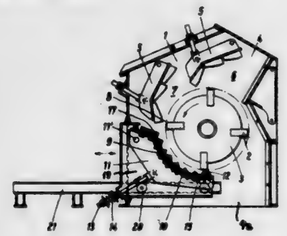
Effluent sludge obtained upon clarification of waste effluent, is admixed with solid refuse either before or subsequent to reduction of the solid refuse to particulate state in an impact grinder.

3,659,793
CAGE MILL
Earle W. Stephenson, Latrobe, Pa.; James G. Newberry, Lakeland, Fla., and Robert C. Hazzard, Mt. Vernon, Ind., assignors to International Minerals & Chemical Corporation, by said Newberry and said Hazzard and Kennametal Inc., Latrobe, Pa., by said Stephenson
Filed Aug. 6, 1969, Ser. No. 847,929
Int. Cl. B02c 7/04
U.S. Cl. 241—187 13 Claims



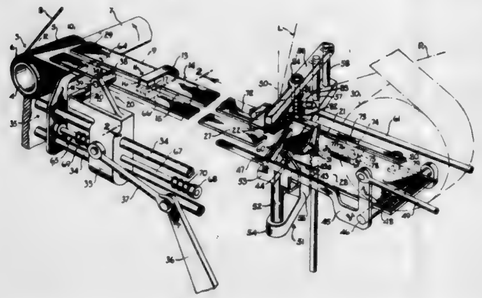
The present invention relates to a cage mill for comminuting material and is particularly concerned with a cage mill having a plurality of counter-rotating cages with the cages widening in the radially outward direction and having hard facing applied to the leading faces of the impact bars and to the axially inner faces of the support rings at the ends of the impact bars.

3,659,794
COMMINUTING DEVICE
Gerhard Hemesath, Munster, Westphalia, Germany, assignor to Hazemag Hartzerkleinerungs -Und Zement-Maschinenbau -Gesellschaft m.b.H., Munster, Germany
Filed June 26, 1970, Ser. No. 50,094
Claims priority, application Germany, July 8, 1969, P 19 34 545.0
Int. Cl. B02c 13/06, 18/08
U.S. Cl. 241—189 R 9 Claims



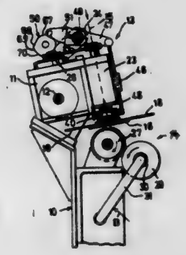
A rotor is mounted in a housing and has circumferentially distributed contact members. Spaced from the rotor are breaker members against which material to be comminuted and admitted into the housing, is flung by the contact members with resulting break-up of such material. The lower portion of the rotor circumference is surrounded by an arcuately curved shell defining with the rotor a channel for comminuted material which tapers in direction towards an outlet of the housing. The shell is composed of supports which mount a plurality of parallel rods extending lengthwise of the rotor axis. Each rod has associated with it a comminuting bar of polygonal cross-section, formed with a longitudinal slot in which the respective rod is lodged. The bars are connected in abutting relationship so that no material can fall through between them.

3,659,795
METHOD OF AND APPARATUS FOR INDIVIDUALLY WINDING COILS WITH PAPER SEPARATING ITS SUCCESSIVE WIRE LAYERS
Robert W. Bachi, Itasca, and John R. Mitchell, Glendale Heights, both of Ill., assignors to Bachi, Inc., Itasca, Ill.
Filed Jan. 2, 1970, Ser. No. 150
Int. Cl. H02k 15/085; B26d 5/20, 7/06
U.S. Cl. 242—7.03 14 Claims



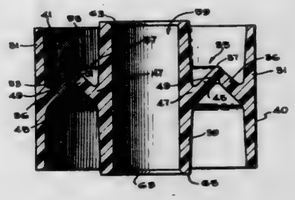
Paper strips are successively severed from strip stock by a guillotine knife which cuts obliquely across the strip stock with the angle of the cut being alternately towards the right and the left; the strips so severed from the stock are fed to a coil being wound with the foremost corner of the leading edge of the strip at the side edge of the strip which is in line with the end of the coil at which the first convolution of the next wire layer is applied, to be gripped between the then outermost wire layer and the wire forming said first convolution of the next layer and drawn about said existing layer while the trailing portion of the strip is held against edgewise displacement by a spring clip which grasps the strip and travels with the strip and is constrained to straight line linear motion normal to the axis of the coil.

3,659,796
YARN WINDING APPARATUS
Erich Bucher, and Alfred Maidener, both of Goppingen, Germany, assignors to Zinser-Textilmaschinen GmbH, Ebersbach, Germany
Filed July 22, 1970, Ser. No. 57,220
Claims priority, application Germany, July 22, 1969, P 19 37 178.9
Int. Cl. B65h 54/28, 54/38
U.S. Cl. 242—18.1 12 Claims



In a yarn winding apparatus the yarn, to effect its deposition on a cross-coil type yarn package, is caused to reciprocate transversally to its direction of feed by means of rotating contour discs. In order to eliminate the formation of circumferential beads adjacent the edges of the yarn package, the winding apparatus comprises means for cyclically displacing said contour discs in a direction normal to their axis of rotation for periodically reducing the amplitude of the transversal reciprocation of the yarn during the winding operation.

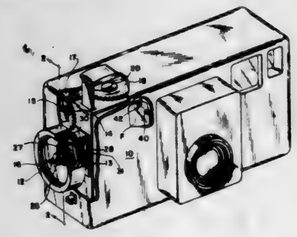
3,659,797
TAPE DRIVE ROLLER
Don R. Coy, Palatine, Ill., assignor to Ampex Corporation, Redwood City, Calif.
Filed Nov. 26, 1969, Ser. No. 880,306
Int. Cl. B65h 17/48, 17/20
U.S. Cl. 242—55.19 A 10 Claims



A pressure or pinch member for cooperating with a capstan to transport a tape is formed with a deflectable tape engaging surface to drive the tape at a substantially constant speed without differential slippage which results in "wow," flutter or tape wear. The preferred embodiment of the pressure member is a one piece, plastic pressure roller which has a deflectable section intermediate an outer tape engaging

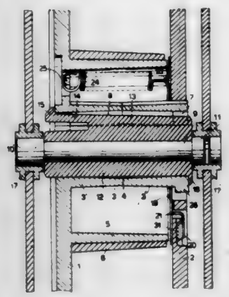
cylindrical wall and an inner cylindrical wall for mounting on a post to replace a conventional elastomeric surfaced pressure roller of the kind used in magnetic tape cartridges.

3,659,798
COIL SPRING SLIP CLUTCH
Fredric A. Mindler, and Charles E. Pickering, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed June 5, 1970, Ser. No. 43,898
Int. Cl. G03b *1/10*
U.S. Cl. 242—71.3 4 Claims



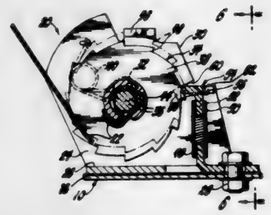
A coil spring slip clutch adapted for use in a roll film camera for advancing a film strip within the camera. The clutch comprises a rotatably mounted cylindrical drive shaft having a smooth surface portion around which the coils of a coil spring are tightly wrapped. One end of the coil spring is bent outwardly so as to drivingly engage a film advancing mechanism when the shaft is rotated. The contacting surfaces of the coil spring and drive shaft are selected from materials which remain in frictional engagement sufficient to cause the coil spring to drive the film advancing mechanism until the retarding force exerted by such mechanism exceeds a critical frictional force characteristic of one of the materials, at which time the coil spring slips relative to the drive shaft.

3,659,799
REEL FOR WINDING TAPE
Giovanni Cerutti; Alessandro Certosa, and Armando Costa, all of Ivrea, Italy, assignors to Ing. C. Olivetti & C. S.p.A., Italy
Filed June 9, 1970, Ser. No. 44,712
Claims priority, application Italy, June 9, 1969, 52153 A/69
Int. Cl. B65h *75/18, 75/14*
U.S. Cl. 242—71.9 7 Claims



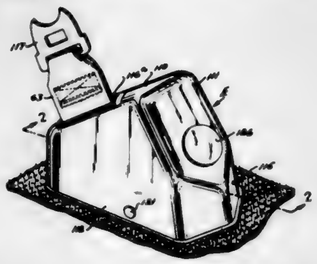
A take-up reel having a pair of flanges is described. One of the flanges is removable and is biased toward the fixed flange. The spacing between the flanges is slightly less than the width of the tape so that the tape is firmly held by the reel. The means which biases the removable flange includes a ring which is nonrotatable with respect to the hub of the reel but which is axially movable relative to the hub.

3,659,800
SEAT BELT RETRACTOR
Barthold F. Meyer, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed June 29, 1970, Ser. No. 50,564
Int. Cl. A62b *35/00*
U.S. Cl. 242—107.4 8 Claims



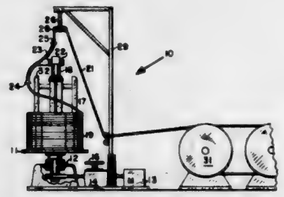
A seat belt retractor includes a U-shaped support having generally vertically disposed closed end slots in the side walls thereof. A reel having ratchet toothed end plates and a shaft mounts a seat belt. The ends of the shaft are received within the slots and torsion springs bias the shaft ends into engagement with the lower ends of the slots. The reel is spring biased in a belt retracting direction. A pawl is movable mounted on the side walls of the frame and normally located against movement by a columnar spring. Cooperating cam surfaces on the pawl and side walls move the pawl laterally of and into engagement with the ratchet plates of the reel when the pawl moves laterally of the side walls or longitudinally of the reel. When belt acceleration or movement of the belt in an extending direction exceeds a predetermined rate, the reel moves bodily upwardly with respect to the frame as the shaft ends move within the slots, and the ratchet plates of the reel engage cooperating teeth on the side walls of the frame to block further rotation of the reel in a belt extending direction. When the pawl is subjected to an acceleration pulse of predetermined amplitude and time longitudinally thereof and generally normal to the direction of bodily movement of the reel, the pawl moves laterally of the side walls and into engagement with the ratchet plates of the reel to provide a fulcrum for movement of the reel bodily upwardly so that the ratchet plates of the reel again engage the cooperating teeth on the side walls of the frame. When the pulse is laterally of the pawl, it also moves into engagement with the ratchet plates to provide the same fulcrum.

3,659,801
SEAT BELT RETRACTOR COVER
Louis Romanzi, Jr., Milford, Mich., assignor to Irvin Industries Inc., Lexington, Ky.
Continuation-in-part of application Ser. No. 3,087, Jan. 15, 1970. This application Oct. 21, 1970, Ser. No. 82,770
Int. Cl. A62b *35/00*
U.S. Cl. 242—107 SB 4 Claims



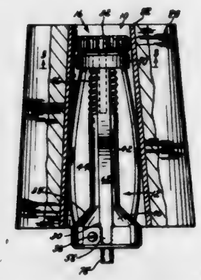
A seat belt retractor cover which may be attached to the retractor to form a unitary assemblage prior to installation in a vehicle.

3,659,802
COIL PAY OFF
Henry A. Agosta, Stamford, Conn., assignor to Anaconda Wire Cable Company
Filed Mar. 11, 1970, Ser. No. 18,438
Int. Cl. B65h *49/00*
U.S. Cl. 242—128 8 Claims



In a pay-off apparatus for wire, coils are laid upon a platform that is driven to rotate on a vertical axis while the wire is pulled off through an overhead guide. A delivery tube, freely rotatable around the platform axis, directs the wire from the coil to the overhead guide.

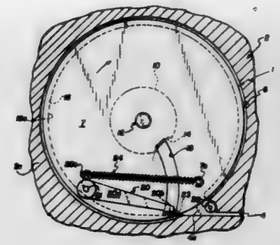
3,659,803
CONE HOLDER
Jakier Baraki, 9 Weller Terrace, Saddlebrook, N.J.
Filed June 8, 1970, Ser. No. 44,117
Int. Cl. B65h *49/02*; D03j *5/08*
U.S. Cl. 242—130.1 7 Claims



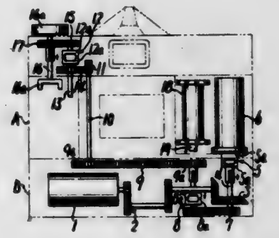
A device for simple and firmly positioning a yarn cone in a knitting machine, allowing rapid removal therefrom. A plurality of leaf springs are anchored around the head of a bolt-shaped member. The threaded portion of the neck carrier axially adjustable means receiving the free ends of the springs to change the compressive forces on them and vary the amount of bowing. This allows the device to accommodate a large number of different internal shapes and diameters of yarn cones.

3,659,804
WEB TAKE-UP DEVICE
Robert J. Roman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed June 26, 1970, Ser. No. 50,274
Int. Cl. G03b *1/04*; G11b *15/32, 23/04*
U.S. Cl. 242—195 9 Claims

An automatic web take-up device for apparatus, such as a motion picture projector, includes a film take-up reel with an arm attached to one flange of the film take-up reel. As film (or other web material) is fed to the device, the reel is rotated in a take-up direction and a hook-end portion of the arm engages the leading end portion of the film. The arm then guides the film end to a core portion of the reel as the reel continues to rotate. The film is released smoothly during rotation of the reel in an unwinding direction. The device may be completely self-contained, i.e., it can be added or removed from the associated apparatus as a unit.



3,659,805
MOTOR-DRIVEN DEVICE FOR FILM WINDING OR REWINDING
Kaoru Umeda, Sakai, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Minami-ku, Osaka, Japan
Filed Aug. 19, 1969, Ser. No. 851,266
Claims priority, application Japan, Sept. 27, 1968, 43/84885
Int. Cl. B11b *15/32*; G03b *1/04*
U.S. Cl. 242—201 7 Claims

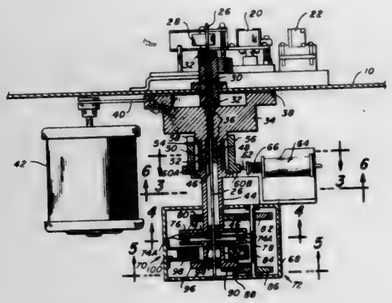


A motor-driven device for winding or rewinding a film in a camera comprises first and second rewinding clutches provided respectively at the initial and terminal portions of a film rewinding drive system and a lever mechanism. Upon the actuation of an operating member the rewinding clutches are simultaneously brought into engagement while a winding clutch and a clutch in a sprocket gear are disengaged, and upon the release of the member the rewinding clutches are disengaged while the latter clutches are brought into engagement. Thus, the rewinding action transmitting system can be left independent of the film winding drive system during film winding operation.

3,659,806
REVERSIBLE INCREMENTAL RECORDING APPARATUS
Robert L. Crafts, Tulsa, Okla., assignor to The Telex Corporation, Tulsa, Okla.
Filed Dec. 14, 1970, Ser. No. 97,712
Int. Cl. B11b *15/32*; G03b *1/04*
U.S. Cl. 242—201 8 Claims

A reversible incremental recording apparatus for moving tape incrementally past a recording head including a rotating capstan, a continuously rotated flywheel supported about the capstan, a drive collar rotatably supported about the capstan, a coil spring coaxially received about a portion of the rotating flywheel and the drive collar normally tending to wind

about both elements to rotate the drive collar with the flywheel, the spring having a radial extending tang at one end thereof, a tubular ratchet member received about the spring and receiving the tang, the ratchet member serving to prevent the rotation of the spring and thereby the drive collar when held in a nonrotating position and permitting such rotation when not held, a solenoid device selectively holding or



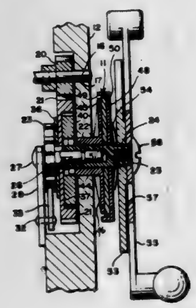
permitting the ratchet member to rotate, a clutch having a driven portion affixed to the capstan shaft, a forward drive portion affixed to the drive collar, and a rearward rotating drive portion rotated by gear means coupling the rearward drive portion to the drive collar, and a coil assembly for selectively coupling the clutch driven portion to one of the forward and reverse drive portions.

3,659,807

BRAKE ATTACHMENT FOR STAR DRAG TYPE FISHING REELS

Oscar Fleischer, deceased, late of 2610 South West 21st Street, Miami, Fla. (by Helen Krohn Fleischer, executrix)

Filed May 1, 1970, Ser. No. 33,836
Int. Cl. A01k *89/02*
U.S. Cl. 242—219 4 Claims



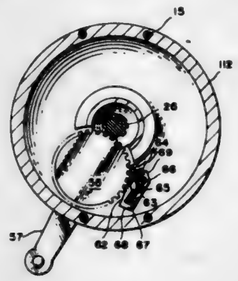
An improved brake attachment for conventional star drag type fishing reels wherein the attachment may be incorporated in the original assembly thereof or as a replacement of a greater number of parts forming the conventional brake mechanism, the attachment consisting of four parts, namely, a drive disk to be rotatably mounted on the conventional drive shaft and positioned within the recess of the conventional driving gear so as to rotate in unison with the driving gear, a brake disk rotatably mounted on the drive shaft and secured to also rotate in unison with the driving gear, and a brake shoe slidably mounted on the drive shaft adjacent the brake disk with a brake member interposed between the drive disk and the brake shoe whereby upon actuation of the star wheel the frictional engagement of the brake shoe and brake disk may be adjusted to provide the desired drag.

3,659,808

ONE WAY DRIVE FOR FISHING REELS

Oscar Fleischer, deceased, late of 2610 S. W. 21st Street, Miami, Fla. (by Helen Krohn Fleischer, executrix)

Filed Oct. 27, 1969, Ser. No. 869,489
Int. Cl. A01k *89/02*; F16d *63/00*
U.S. Cl. 242—219 3 Claims



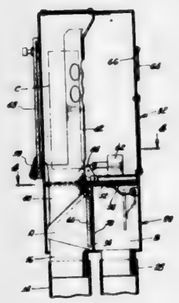
A one way drive for fishing reels to prevent the inadvertent reverse rotation of the spool operating handle having an arcuate gear section with teeth normally in engagement with the spool rotating gear which permits the rotation of the latter in the direction to wind the fishing line on the spool but prevents the reverse rotation of the operating handle.

3,659,809

PUSH-PULL PNEUMATIC TUBE SYSTEM

Ross Cook, 85 Eastfield Drive, Rolling Hills, Calif.

Filed Aug. 5, 1970, Ser. No. 61,259
Int. Cl. B65g *51/32*
U.S. Cl. 243—19 13 Claims



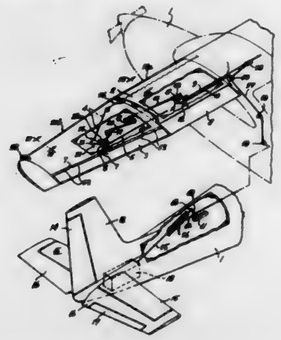
The push-pull pneumatic tube system includes two terminals connected together by a single tube. One terminal is selectively subjected to a positive or negative pressure in order to push the carrier to the remote terminal or to pull the carrier to the near terminal. A simple spring gravity or friction held door may be used on the receiver part of the near terminal without danger of its being blown open, by providing a bypass operative in response to the existence of positive air pressure.

3,659,810

INHERENTLY STABLE TAPERED WING FLAPERON AIRPLANE

James L. Robertson, 15400 Sunset Hwy., Bellevue Airfield, Bellevue, Wash.

Original application May 20, 1968, Ser. No. 730,516, now Patent No. 3,539,133, dated Nov. 10, 1970. Divided and this application Mar. 10, 1970, Ser. No. 23,113
Int. Cl. B64c *13/04*
U.S. Cl. 244—76 R 9 Claims



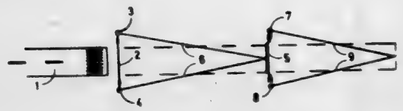
Flaperon-actuating linkage is moved by flap-actuating means to coordinate flaperon droop with flap deflection so that initially the flaperon droop increases with flap deflection and, subsequently, the flaperon droop decreases as flap deflection continues to increase. The wing panels ahead of the flaperons are tapered in planform and their leading edges are more blunt and rounded than the leading edge portions of the wing inboard from such panels, such outboard leading edge portions provide high-lift and postpone stall at the high angles of attack of the outboard wing panels resulting from downward deflection of a flaperon from its maximum drooped position. Jaw cranks connect flaperon push rods to both the flap-controlled flaperon droop setting means and the flaperon differential deflection control means. To lighten nose-up control forces when the flaps and flaperons are deflected, flap deflection stresses springs opposing down-springing loading on the elevators. A fence is aligned with the inboard end of each flaperon.

3,659,811

SAFETY DEVICE FOR AIRCRAFT BARRIERS

Leif Mathias Borehag, Norrkoping, Sweden, assignor to Borgs Fabriks AB, Norrkoping, Sweden

Filed Oct. 23, 1970, Ser. No. 83,437
Claims priority, application Sweden, Dec. 22, 1969, 17715
Int. Cl. B64f *1/02*
U.S. Cl. 244—110 C 4 Claims



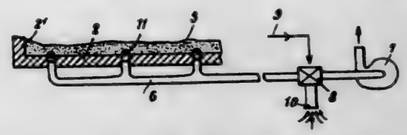
An aircraft arresting system comprising a wire arranged in the path of a landing aircraft and adapted to be engaged by a hook on the aircraft. The ends of the wire are connected to brakes. A barrier net is located behind the wire and is spaced therefrom. Means is provided for raising the barrier net to position it in the path of the aircraft whenever an aircraft fails to engage the wire, with means provided for permitting the barrier net to remain lowered and out of the path of the aircraft when the aircraft successfully engages with the wire.

3,659,812

PATH HAVING VARIABLE RESISTANCE TO VEHICLES MOVING ON IT

Sixten Elnar Carlsson, Norrkoping, Sweden, assignor to Borgs Fabriks AB, Norrkoping, Sweden

Filed Sept. 24, 1970, Ser. No. 75,168
Claims priority, application Sweden, Dec. 1, 1969, 16482/69
Int. Cl. B64f *1/02*
U.S. Cl. 244—114 R 8 Claims



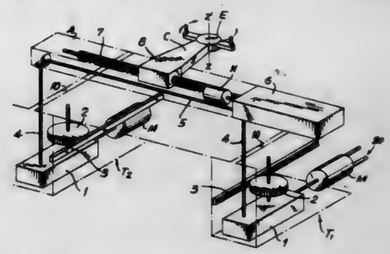
A runway or landing surface for vehicles and particularly aircraft, such surface including a casing or enclosure containing granular material, the casing being connected to means for producing a vacuum within it to an extent to cause compaction of the granular material in order to produce a hard landing surface, and means for breaking or reducing the vacuum or its effect when a soft surface is desired to thereby result in resistance to forward movement of the aircraft or other vehicle.

3,659,813

APPARATUS FOR DOCKING A HELICOPTER

Jean Dominique Francois Gerard Mesnet, London, England; Raymond Louis Le Guennec, Lorient, and Georges Edouard Louis Leon Dadon, Kremlin Bicetre, both of France, assignors to Etat Francais, Paris, France

Filed Apr. 28, 1970, Ser. No. 32,656
Claims priority, application France, Apr. 28, 1969, 6913376
Int. Cl. B64f *1/12*
U.S. Cl. 244—116 10 Claims



A helicopter is attached, at its center of rotation on its wheels, to a turnable coupling of a trolley. The trolley is displaceable along a worm gear mounted in a cross strut and the cross strut is driven in a linear path by a drive mechanism located beneath the surface on which the helicopter rests. The trolley is displaceable on the worm gear along a line which is angularly offset from the linear path of travel of the cross strut and preferably perpendicularly thereto. The helicopter may then be moved along any path of travel by selective combination of the rates of drive of the cross strut and the trolley thereon.

3,659,814

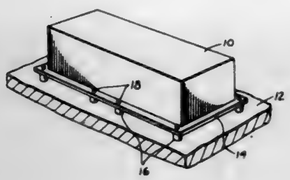
LOAD RESPONSIVE DEVICE AND METHOD OF MAKING

John E. Rode, Ligonier, Pa., assignor to Temper Corporation, Ligonier, Pa.

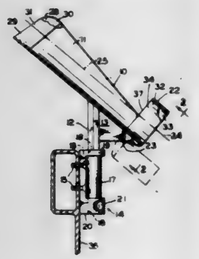
Filed May 18, 1970, Ser. No. 37,958
Int. Cl. F16m *3/00*
U.S. Cl. 248—23 21 Claims

The specification discloses a load responsive device, particularly in the form of a support cell. The support cell is par-

ticularly useful in the process of installing heavy machinery and the like. In making such an installation, the support cells are distributed between the machinery and the foundation therefor and support the machinery during the adjustment thereof to the proper, usually level, position. The support cells are particularly characterized in yielding at a substantially constant load over a substantial range of movement and are selected as to load bearing capacity so that the total number of support cells beneath the machinery will support more than the weight of the machinery while a smaller number of the cells will not support the weight of the machinery without yielding.



3,659,815
FISHING ROD HOLDER
Albert J. Stefanowitz, and Kathleen E. Stefanowitz, both of 15656 S. E. Division, Space 11, Portland, Oreg.
Filed Oct. 9, 1970, Ser. No. 79,537
Int. Cl. A01k 97/10
U.S. Cl. 248—42 4 Claims



A fishing rod holder has an upwardly opening, U-shaped trough holder member for supporting a fishing rod and a ring member pivotally mounted rearwardly of the holder member and having an internal diameter sufficient to permit the end of the fishing rod to pass therethrough. The ring member is pivotal between a first position in which its longitudinal axis is colinear with the longitudinal axis of the holder member when the fishing rod is supported thereby, and a second position in which the longitudinal axis of the ring member is generally vertical. In this latter position, the ring member permits the end of the fishing rod to pass further through it and contact the gunwale, the reel on the fishing rod being retained by the ring member when in this second position.

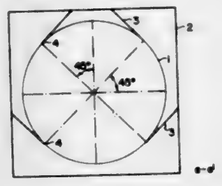
3,659,816
COLLAPSIBLE STAND
James D. Wilson, Long Beach, Calif., assignor to Banner Metals, Inc., Compton, Calif.
Filed Oct. 30, 1970, Ser. No. 85,359
Int. Cl. B65b 67/12
U.S. Cl. 248—97 1 Claim

An improved self-supporting collapsible stand is provided for plastic trash bags, laundry bags, or the like. The stand of the invention is formed of a pair of essentially rectangular wire-formed loops which extend transversely to one another in a pivotal X-like relationship. The sides of one of the wire loops have respective intermediate S-shaped portions therein,



and the sides of the other loop having respective U-shaped portions therein and intersecting the aforesaid S-shaped portions of the first wire loop to form a stop for the loops and limit the angular movement therebetween.

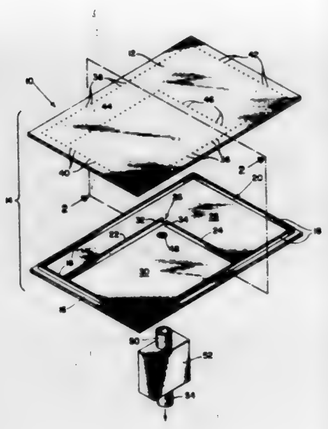
3,659,817
TANK FOR LIQUID CARGO
Willem P. Hendal, Amsterdam, Netherlands, and Lionel R. Prew, Farnham, England, assignors to Shell Oil Company, New York, N.Y.
Filed Mar. 23, 1970, Ser. No. 21,688
Claims priority, application Great Britain, Mar. 31, 1969, 16,619/69
Int. Cl. F16m 1/00
U.S. Cl. 248—317 17 Claims



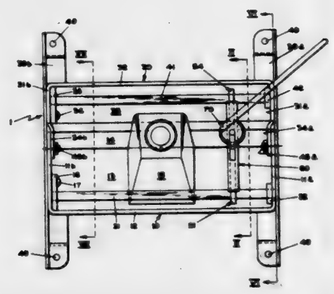
Means are disclosed for storing and transporting liquid cargo, which means include a substantially cylindrical tank and means for supporting such tank from an overhead load-bearing structure with the cylindrical axis of the tank normally horizontal and in which the means for supporting the tank give rise to tensile stresses in the tank wall and reduced bending stresses, whereby the tank wall may be made thinner for a given cargo. Various embodiments of such means are described, all of which include at least two circular arrays each of at least four load-bearing elements, which elements of each array extend upwardly and tangentially from the cylindrical tank wall in a common vertical plane perpendicular to the cylindrical axis of the tank and are attached between the load-bearing structure and the tank wall under tension. Preferred features of such embodiments are disclosed.

3,659,818
UNITARY VACUUM HOLD DOWN APPARATUS FOR LARGE AND SMALL RECORD SHEETS
Stephen H. Duncan, Denver, Colo., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Aug. 21, 1970, Ser. No. 66,023
Int. Cl. G03b 27/60
U.S. Cl. 248—363 10 Claims

A noiseless unitary apparatus to retain small and large size record sheets in selected fixed positions on different parts of a perforated surface of a vacuum chamber by providing a wall within the chamber that No. 1 divides the chamber into two vacuum areas and that No. 2 has a restricted air passageway formed therein to reduce the flow of air between one vacuum area and the other while it is being drawn by a vacuum impeller through any of the perforated surfaces that are not covered by one of said record sheets.



3,659,819
CHAIR IRON
Richard H. Wolters, East Grand Rapids, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed June 8, 1970, Ser. No. 43,995
Int. Cl. A47c 3/00
U.S. Cl. 248—373 38 Claims



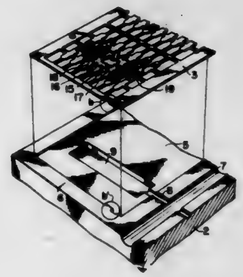
The preferred embodiment of the chair iron includes a seat platform pivotally mounted to a frame which in turn is supportable by a chair base. A torsion rod is mounted on the frame with one end fixed and one end free to rotate. A second torsion rod is similarly mounted on the platform, parallel to the first. A pair of levers are slidably mounted on the rods and are maintained in alignment by a bracket assembly. This assembly also includes a cam and pin arrangement whereby a pretension force can be applied to the levers and thereby to the torsion rods.

3,659,820
BOOK HOLDING BRACKET AND RACK
Robert D. Silfstein, 6 Dudley Lane, Dix Hills, N.Y., and Bernard Blaker, 139 Forest Drive, Jericho, N.Y.
Filed Jan. 16, 1970, Ser. No. 3,330
Int. Cl. A47b 63/06
U.S. Cl. 248—447 11 Claims



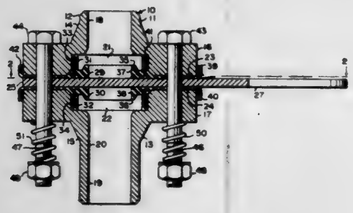
A book holding bracket, adjustable to books of varying back lengths, for suspending books by their backs with their free page edges downward when not in use, and provided with means for swinging or rotating the books upwards about 180° in a vertical plane to permit opening the books and turning the pages sideways right to left in the usual manner, and also provided with means for rotating or swivelling the upturned books in a horizontal plane, for example about 90°, to permit opening and viewing of books required to be read or viewed with the free edge of the page closest to, and the bound edge of the page furthest from, the viewer, i.e. the printing, intelligence or other matter to be viewed is parallel to the bound edge of the page; and a rack, stationary or movable, for holding one or a plurality of such brackets.

3,659,821
STRUCTURE FOR PLASTIC ENCAPSULATION OF SEMICONDUCTOR DEVICES
Yuzaburo Sakamoto, and Keizo Otsuki, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed July 10, 1969, Ser. No. 840,634
Claims priority, application Japan, July 10, 1968, 43/47752
Int. Cl. B29f 1/06
U.S. Cl. 249—84 10 Claims



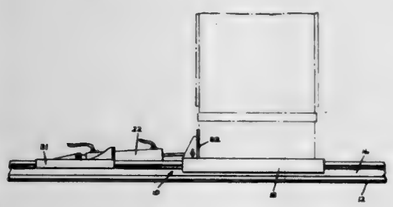
An improvement in a plastic encapsulating process for semi-conductor devices, wherein parts of a sheet-like thin insert are embedded in plastic material injected into cavities in a two-part mold, said insert being loaded or positioned on the cavity part of said mold, characterized in that at least either a projected or recesses portion, and correspondingly either a recessed or projected portion, have been in advance constructed respectively on each side edge of said insert and on said cavity part of the mold near the injection gate therein contacting each other so as to prevent an outflow of plastic material from said injection gate along a peripheral gap created between said side edge of the insert and the cavity part of the mold any further than their contacting point which acts as a stopper in said gap, producing an undesirable channel for plastic material to flow.

3,659,822
NON-SEIZING SLIDE VALVES
Joseph G. Nagy, Box 126, Yarbo, Saskatchewan, Canada
Filed Jan. 22, 1971, Ser. No. 107,750
Int. Cl. F16k 1/16
U.S. Cl. 251—178 4 Claims



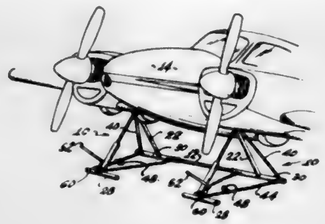
A non-seizing slide valve is disclosed including a valve body having first and second halves between which a lever actuated valve plate is pivoted for sliding between open and closed positions. First and second gaskets are disposed between the sliding valve plate and first and second valve body halves. Formed of flexible and resilient material, the two gaskets include inner and outer annular flanges that are reinforced by rigid rings embedded in the gasket flanges. The valve parts are held in assembled relationship by two through bolts having shanks encircled by compression coil springs that press the gaskets against the valve plate.

3,659,823
DEVICE FOR MOVING LARGE AND HEAVY APPARATUS
Kenneth H. Griffin, Uniondale, Ind., assignor to G & L Corporation, Fort Wayne, Ind.
Filed Apr. 8, 1970, Ser. No. 26,542
Int. Cl. B66f 3/24
U.S. Cl. 254—93 8 Claims



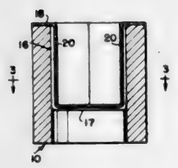
A device for moving large and heavy apparatus comprising an elongated support member secured to a frame, a load shoe is carried by the support member for movement longitudinally of the support member. In a specific embodiment, two such devices are positioned side by side and a large and heavy load, for example, a transformer, is positioned on the load shoes of the two devices. The elongated support members of the devices are generally parallel to each other. A fluid actuated cylinder is connected to each load shoe, the cylinders being connected to a common pressurized fluid source and control.

3,659,824
AIRPLANE JACK
Philip L. Johnson, 9710 Ocean Gate, Inglewood, Calif.
Filed Dec. 15, 1969, Ser. No. 885,244
Int. Cl. B66f 3/00
U.S. Cl. 254—124 6 Claims



Basic unit includes first variable length column and second preferably fixed-length column pivoted together at upper ends, with load contact member at the top of one column. Bases on each column maintain the unit in upright plane. Bases pushed toward each other to initially engage load. Variable length chain holds bases at desired spacing. At least one base frictionally engages ground to prevent undesired movement. First column is extended to swing second column toward vertical and raise load. To lift airplane struts located below load contact member, cable unit is attached to load contact member and extends down to strut to lift in tension. Two basic units are connected in laterally spaced relation for two-point lifting. Third support arm may be added to provide for three-point parallelogram-type lifting of entire airplane.

3,659,825
DISH FOR MIXING DENTURE REPAIR MATERIALS
Gabriel Reiter, 8204 Ventnor Ave., Margate City, N.J.
Filed June 24, 1970, Ser. No. 49,385
Int. Cl. B01f 13/00
U.S. Cl. 259—60 6 Claims

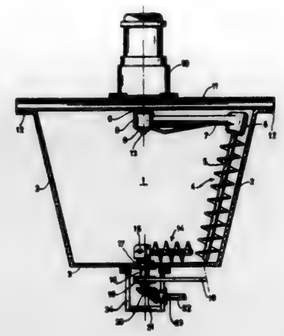


A dish including a heavy walled cylindrical holder and a relatively light walled receptacle removably disposed within said holder.

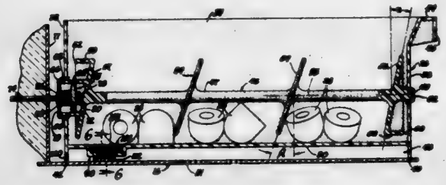
3,659,826
DEVICE FOR TREATING ONE OR MORE SUBSTANCES IN A VESSEL PROVIDED WITH AT LEAST ONE ROTATABLE STIRRING MEMBER
Constant Johan Nauta, Overveen, Netherlands, assignor to Nautamix Patent A.G., Zug, Switzerland
Filed Dec. 22, 1970, Ser. No. 100,575
Claims priority, application Netherlands, Dec. 30, 1969, 6919610
Int. Cl. B01f 7/00
U.S. Cl. 259—102 10 Claims

The present apparatus includes a vessel provided with a

pair of agitators mounted to stir and mix substances in both vertical and horizontal directions.



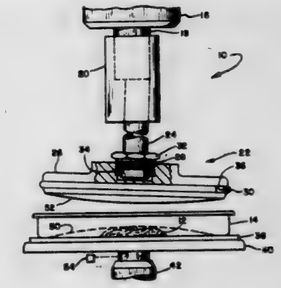
3,659,827
STORAGE RECEPTACLE AND AGITATOR FOR REFRIGERATOR ICE MAKING MACHINES
Thomas H. Fegt, West Carrollton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 14, 1971, Ser. No. 106,430
Int. Cl. B01f 7/10; F25c 5/00
U.S. Cl. 259—110 4 Claims



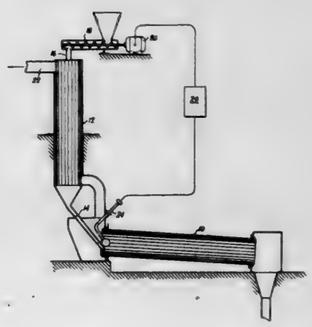
A refrigerator ice piece storage receptacle for use with an automatic ice making machine having a rotatable agitating means to continuously move the ice pieces in the container to prevent their sticking together when stored at temperature below or above freezing. The agitating means comprise a plurality of canted discs continuously revolving on a common agitator rod within the container. Coupling means are provided wherein the agitator rod is separably drivingly connected to a refrigerator drive shaft when the receptacle is located in a compartment of a refrigerator. Drain valve means are provided in the bottom of the receptacle to drain the same of melting ice water wherein said valve automatically closes when the receptacle is removed from the refrigerator for placement on a countertop surface.

3,659,828
DOUGH KNEADING APPARATUS FOR FORMING PASTRY SHELLS
Harold G. Valentine, 117 Manners, Brockton, Mass.
Filed Oct. 7, 1970, Ser. No. 78,759
Int. Cl. A21c 1/00
U.S. Cl. 259—190 10 Claims

A kneading member having a shaft journaled thereto is positioned within a pan having a charge of dough therein. The shaft of a drive motor is fixed to the kneading member shaft by means of a coupler in such a way that the axis of the motor shaft is concentric with the axis of the coupler and the axis of the kneading member shaft is angularly offset from the axis of the motor shaft. The kneading member is provided with an "O" ring about its periphery for sealable engagement with the sidewalls of the pan, both the pan and the kneading member being fixed against rotation. The angular offset of the kneading member shaft with respect to the motor shaft and the journaled connection between the kneading member shaft and the kneading member are such that rotational movement of the kneading member shaft is translated into a non-rotating undulatory movement of the kneading member within the pan. In consequence, the dough is kneaded into the form of a pastry shell.

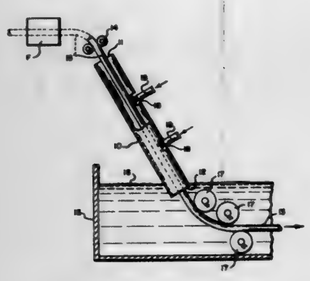


3,659,829
METHOD FOR ADJUSTMENT OF THE HEAT GENERATING PROCESS IN A ROTARY KILN WITH A HEAT EXCHANGER ETC.
Jaroslav Pospisil, and Josef Plack, both of Dvorakova, Czechoslovakia, assignors to Prerovske strojirny, narodni podnik, Prerov, Czechoslovakia
Continuation-in-part of application Ser. No. 810,844, Mar. 26, 1969, now abandoned. This application Sept. 28, 1970, Ser. No. 75,836
Claims priority, application Czechoslovakia, Mar. 27, 1968, 2370-68
Int. Cl. F27b 7/02
U.S. Cl. 263—32 4 Claims



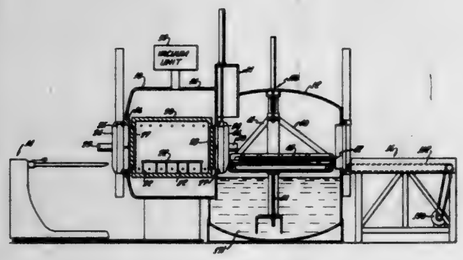
A rotary kiln system employing a pre-heater for feeding material to the kiln. A temperature sensing device is placed in the gas outlet of the rotary kiln and control means are provided to regulate the rate of feed of raw material to the pre-heater in response to variations in sensed temperature from a predetermined level.

3,659,830
DESCALING COPPER RODS
Clermont J. Snyder, and Jack P. Moore, both of Hastings-on-Hudson, N.Y., assignors to Anaconda Wire and Cable Company
Original application July 31, 1968, Ser. No. 749,013, now Patent No. 3,546,029. Divided and this application Apr. 16, 1970, Ser. No. 33,128
Int. Cl. C21d 9/56
U.S. Cl. 266—3 R 4 Claims



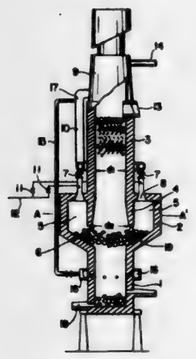
Scale is removed from a copper rod by continuously introducing the copper rod at a temperature below 1,000° F. into a descaling zone wherein the rod is exposed to a reducing atmosphere and is heated in such atmosphere to a temperature above 1,100° F. (preferably between 1,200° F. and 1,400° F.) to effect substantially complete reduction to metallic copper of the oxide scale. Immediately thereafter the rod is quenched in a liquid (preferably aqueous) coolant to a temperature below that at which any substantial reoxidation can occur before exposing the rod to an oxidizing environment. Apparatus for carrying out such descaling operation comprises a tubular descaling chamber through which the rod is passed, burners positioned to direct a reducing flame into the interior of the chamber, and a coolant vessel containing a liquid coolant in which the rod exit end of the descaling chamber is immersed.

3,659,831
INTEGRAL QUENCH FURNACE AND TRANSFER MECHANISM
Russell H. Reber, Orange, and Harold E. Mescher, Pico Rivera, both of Calif., assignors to Pacific Scientific Company, City of Commerce, Calif.
Filed Aug. 25, 1969, Ser. No. 852,671
Int. Cl. C21d 1/66
U.S. Cl. 266—4 A 22 Claims



An integral quench furnace system and transfer mechanism for removing a heat treated charge from the furnace chamber into the quench media and onto an unloading platform. The transfer mechanism includes a forked loading cart mounted on the quench chamber A-frame for movement into the furnace and onto the unloading platform through a hydraulic motor driven chain and sprocket arrangement.

3,659,832
CUPOLAS
Akira Takahashi, Kita-Adachi-gun, Saitama-ken; Akimasa Arata, Tokyo, and Yoshimi Okawara, Kawasaki-shi, all of Japan, assignors to Mitsui Iron Works Co., Ltd., Tokyo, Japan
Filed Oct. 22, 1969, Ser. No. 868,363
Claims priority, application Japan, June 4, 1969, 44/44211
Int. Cl. F27d 7/00
U.S. Cl. 266—30 2 Claims



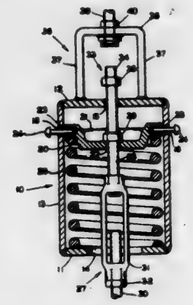
Combustion gases are generated in the liquid fuel combustion chambers provided on the middle shell of a cupola and blasted on the red-hot coke which is supplied automatically below said combustion chambers, to generate gas mixtures consisting of CO, H_2 and N_2 by water gas reaction and reducing reaction. These gas mixtures can be used as useful heat sources. By this process, the steam which has been so far regarded as a taboo in cupola operations can advantageously be utilized as hot gas so that cast iron of superior quality may be produced with better yields.

3,659,833
LADLE SKIMMER
Louis A. Grant, Pittsburgh, Pa., assignor to Louis A. Grant Inc.
Filed Jan. 19, 1971, Ser. No. 107,676
Int. Cl. F27d 23/00
U.S. Cl. 266—37 6 Claims



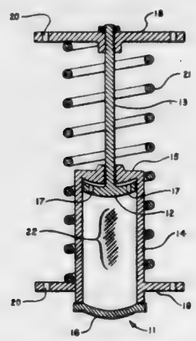
The specification discloses a skimmer mechanism comprising a supporting platform or structure, a turntable rotatably mounted on said supporting platform, a power operated means for imparting a rotary movement to the turntable, a boom assembly pivotally mounted on said turntable and including an extensible and retractable boom section on said boom assembly, a pivotable skimmer blade or paddle mounted at the outer end of said boom section, power operated means for pivotally moving said boom assembly relative to said turntable, power operated means for extending and retracting said boom section with respect to the boom assembly, and power operated means for pivotally actuating the skimmer blade.

3,659,834
SPRING SUPPORT DEVICE
Leonard S. Sozzo, 366 Maple Hill Drive, Hackensack, N.J.
Filed June 10, 1970, Ser. No. 44,976
Int. Cl. F16f 1/06
U.S. Cl. 267—70 7 Claims



A spring support device including a housing having a lower wall and an upper wall, a helical compression spring within the housing and bearing at its lower end against the lower wall, a spring backing plate within the housing and bearing against the upper end of the spring, and a load-carrying unit extending through the spring and the lower wall and engaging the backing plate. In one embodiment, the load-carrying unit includes a threaded rod extending through the upper wall. In another embodiment, a pair of spaced threaded rods, which are parallel to the path of movement of the load-carrying unit, are secured to the backing plate and extend through the upper wall. In both embodiments, the rods are provided with nuts that are operable from the exterior of the housing for adjustably limiting downward travel of the backing plate and the load-carrying unit and, therefore, the force applied to the spring by a load.

3,659,835
IMPACT KINETIC ENERGY ABSORBER WITH AUTOMATIC RESET
Gerald H. Peterson, 520 Russ Bldg., San Francisco, Calif.
Filed Oct. 12, 1970, Ser. No. 79,722
Int. Cl. F16f 9/30
U.S. Cl. 267—136 4 Claims



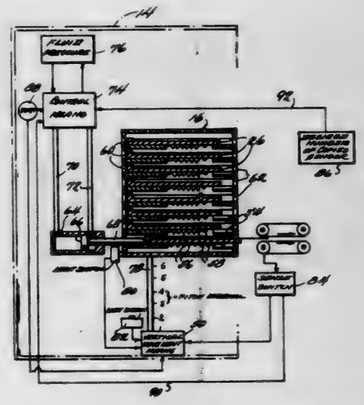
In impact kinetic energy absorber with automatic reset in which the kinetic energy on impact is absorbed by forcing a plunger with an enlarged head through plastic material within a cylinder under pressure below the yield point of the plastic material so that said plastic material is in solid form and which has a resilient means operatively arranged between said plunger and said cylinder sufficiently loaded therebetween to force said plunger with enlarged head back through said plastic material in solid form to reset said impact absorber after impact and to absorb some kinetic energy on impact in addition to that absorbed by forcing said plunger through said plastic material.

3,659,836
FOLD-OVER DEVICE FOR RADIAL PLY BREAKER MATERIAL
Omero Neri, Royal Oak, and Charles E. Todd, Detroit, both of Mich., assignors to Uniroyal, Inc., New York, N.Y.
Filed Jan. 28, 1970, Ser. No. 6,451
Int. Cl. B45h 45/22
U.S. Cl. 270—86 15 Claims



A fold-over device for continuously folding over ply stock or like material, e.g., rubberized tire cord fabric, is disclosed the device being characterized by the presence of a series of rollers arranged in an oblique line along a conveyor and which progressively direct the free edge of the folded-over portion of the stock material into a predetermined overlying relationship with the free edge of the remaining portion of said stock material with edge control means being provided to align the edges of the folded over material with each other in superposed or stepped off relation just prior to the time the layers are adhered together, thereby to provide precisely and uniformly folded over stock material.

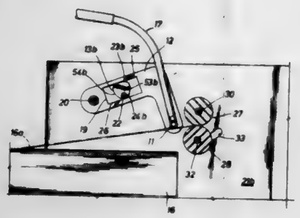
3,659,837
AUTOMATIC ORIGINAL FORM FEEDING DEVICE FOR THE USE OF A COPYING MACHINE
Minoru Umahashi, Higashi, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Continuation-in-part of application Ser. No. 720,286, Apr. 10, 1968, now abandoned. This application May 7, 1970, Ser. No. 35,539
Int. Cl. B65h 1/08
U.S. Cl. 271—9 2 Claims



A device for automatically and successively feeding original forms of varying sizes and thicknesses to a copying

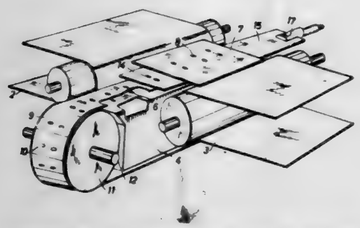
machine. Each original form is individually supported by one of a plurality of vertically spaced, horizontally reciprocable tables which are housed in a vertically movable cabinet to permit automatic and successive feeding of each individual original form to a copying machine.

3,659,838
MATERIAL HANDLING DEVICE
Russell L. Davis, Richardson, Tex., assignor to J. W. Hassell, Jr., Dallas County, Tex.
Filed June 12, 1970, Ser. No. 45,852
Int. Cl. B65h *3/08, 5/08*
U.S. Cl. 271—11 5 Claims



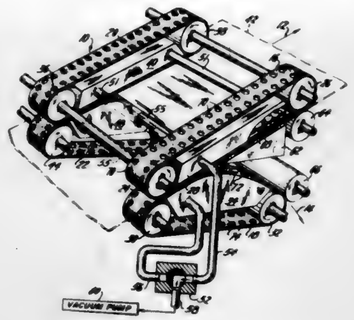
A pneumatic card pick-up member is moved between first and second positions. In the first position the member picks up a card. In the second position the card is removed from the member by two rollers that tilt the card as it travels through them. The card pick-up member is stopped long enough in the first position for it to pick up a card. It is also stopped long enough in the second position for the card to be engaged between the two rollers and removed from the pick-up member. In between these positions, the pick-up member is moved rapidly.

3,659,839
APPARATUS FOR BRAKING AND OVERLAPPING OF SHEETS MADE OF PAPER OR THE LIKE TO BE DEPOSITED ON A STACK
Horst Baucke, Solingen-Ohligs, Germany, assignor to Jagenberg-Werke AG, Dusseldorf, Germany
Filed Mar. 27, 1970, Ser. No. 23,420
Claims priority, application Germany, Apr. 5, 1969, P 19 17 616.0
Int. Cl. B65h *29/68*
U.S. Cl. 271—46 5 Claims



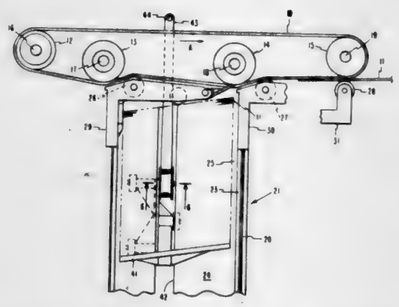
An apparatus for braking the advance of and effecting overlapping of sheets of paper, cardboard or the like material that are to be deposited on a stack in which advancing sheets are fed over a suction brake installation including a suction box having a perforated top through which a periodically applied suction is effected and a perforated control belt means movably arranged over the perforated top of the suction box or chamber to align the perforations of the control belt means with the perforations in the top of the suction box or chamber by moving the control belt means in accordance with the rythm of the fed sheet sequence.

3,659,840
VACUUM GATE
Bernard W. Ruck, Rockville, Conn., assignor to The Connecticut Bank and Trust Company, Hartford, Conn.
Filed June 15, 1970, Ser. No. 46,024
Int. Cl. B65h *29/60*
U.S. Cl. 271—64 7 Claims



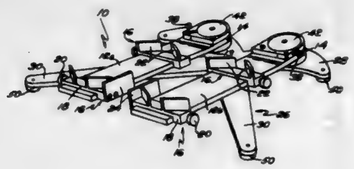
Sheets of material can be selectively transported along either of two alternative flow-paths each of which is followed by a continuous perforated belt constrained by guides. A vacuum chamber is disposed along each flow-path adjacent to the belt. The vacuum chambers are connected to a valve which is responsive to a control signal to selectively actuate either or both of the chambers. Sheets of material which enter the apparatus follow the flow-path adjacent to the vacuum chamber which has been actuated. The apparatus can be constructed using four perforated belts, two of which run parallel to each other along each of the flow-paths.

3,659,841
STACKER FOR DOCUMENT CARDS
James M. Rigotti, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 4, 1970, Ser. No. 86,781
Int. Cl. B65h *31/14*
U.S. Cl. 271—88 7 Claims



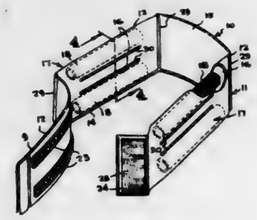
A stacker for document cards having a card receiving pocket, a rotatable roller yieldably disposed at the top of the pocket by means of a cantilever spring, and a supporting plate for the cards in the pocket and yieldably held from downward movement in the pocket by means of a spring of the constant tension type, that is, a coiled spring so constructed as to provide a return force that is constant per unit of width as the spring is unwound from the coil. The spring applied to the supporting plate has a relatively narrow terminal portion which is effective for providing a certain force on the supporting plate for the first portion of the stack of cards formed in the pocket and has a relatively wide portion providing a somewhat higher force on the supporting plate for later cards being stacked in the pocket. As the cards enter the pocket, they deflect the cantilever spring while making contact with the roller; and the spring and roller move the cards and the supporting plate downwardly in the card pocket, with the spring preventing a jamming of the cards initially as they enter the pocket and also preventing a subsequent movement of the card stack away from the roller as the card stack increases in height so that the roller continues to control the cards as they enter the pocket.

3,659,842
DRY LAND SKI TRAINING DEVICE HAVING A PAIR OF CANTILEVERED ARMS PIVOTALLY MOUNTED ADJACENT THEIR FORWARD ENDS
Sulo A. Aijala, Attleboro, Mass., assignor to Intricate Machine & Engineering Inc.
Filed Jan. 12, 1970, Ser. No. 2,052
Int. Cl. A63b *69/18*
U.S. Cl. 272—57 B 6 Claims



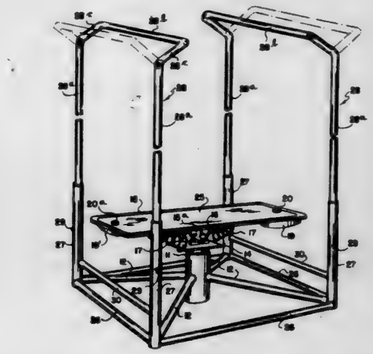
A dry land ski training device having a pair of pivotally mounted cantilever arms, each with adjustable foot support brackets mounted thereon, the cantilever arms having a semi-circular section at their forward ends with a hole at the pivot point, the flat bottom surface of the semi-circular section bearing upon the sloped surface of a support post, and the cantilever arms being bent upwardly at a slight angle to extend outwardly from the support post and give the foot brackets a forward slope. Adjustable brakes are attached to the forward end of the cantilever arms to vary the amount of resistance the user of the device will encounter while pivoting the arms back and forth. Means are also provided for adjusting the lateral distance between the forward ends of the arms.

3,659,843
EXERCISING BELT
John Kojigian, Jr., 3120 East Townsend, Fresno, Calif.
Filed Oct. 27, 1970, Ser. No. 84,419
Int. Cl. A63b *21/26*
U.S. Cl. 272—57 R 2 Claims



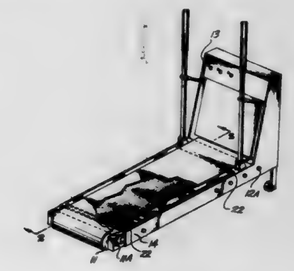
A belt to be worn around the waist of the user for use as a weight-reducing device and exercising device. The belt includes spring members having arranged therein movable balls which cooperate with the spring members and associated parts.

3,659,844
EXERCISES PROPELLED AND BODY SUPPORTING SPRING BIASED PLATFORM
Alfred B. Cummins, 401 Miles Road, Chagrin Falls, Ohio
Filed Aug. 17, 1970, Ser. No. 64,500
Int. Cl. A63b *21/22, 21/00*
U.S. Cl. 272—58 14 Claims



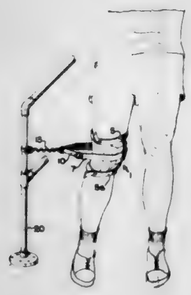
A machine for exercising the human body muscle system has a platform on which the user rests and which is mounted to swivel about a vertical pivot and at the same time to rock or "see-saw" about a central horizontal pivot. The swiveling friction is controlled to some extent by bearing collars. The rocking action is resisted by springs. The rocking load may be increased by attaching weights to the platform. A handlebar support is provided in position to be grasped by a user standing on the platform. Parallel handrails on opposite sides of the platform are adjustable to various positions.

3,659,845
EXERCISE TREADMILL AND BELT SUPPORT APPARATUS
Wayne E. Quinton, Seattle, Wash., assignor to Quinton Instrument Company, Seattle, Wash.
Filed Apr. 10, 1970, Ser. No. 27,287
Int. Cl. A63b *23/06*
U.S. Cl. 272—69 11 Claims



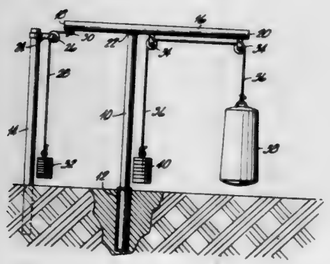
A simplified treadmill and belt support used for exercise purposes and for use as part of an ergometric system. An endless belt is driven over a support surface composed of a fabric such as canvas which is impregnated with wax. A suitable drive assembly causes continuous movement of the belt.

3,659,846
ELASTIC TYPE EXERCISING DEVICE
Walter J. Kanicki, 2011 Third St., Bay City, Mich.
Filed Oct. 29, 1970, Ser. No. 85,117
Int. Cl. A63b 23/04, 21/00
U.S. Cl. 272—80 11 Claims



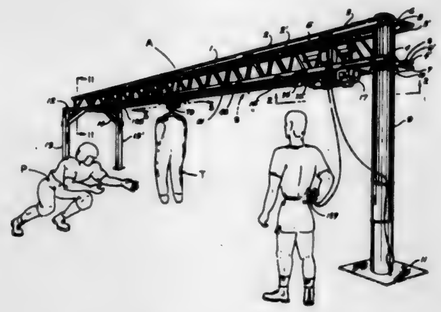
A modality construction comprising a pad having a core formed of yieldable material enclosed within an envelope or cover to one side of which is secured a pair of parallel, spaced apart, elastic mounting straps to enable the pad to be secured to any desired portion of a person's body. Between the mounting straps, and parallel thereto, is secured a non-elastic force transmitting strap having means at its opposite ends for connection to an anchor device which may be secured directly to an immovable object or, if preferred, secured to the immovable object through the intermediary of a spring.

3,659,847
FOOTBALL TACKLING AND BLOCKING TRAINING APPARATUS
Gordon James Gow, Barrie, Ontario, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Oct. 1, 1970, Ser. No. 77,098
Int. Cl. A63b 67/00
U.S. Cl. 273—55 R 4 Claims



Apparatus for improving and training football players in blocking and tackling employing an elevated horizontal member rotatable in a horizontal plane about a point intermediate its ends. One end of the member is spring loaded and a counterbalanced tackling dummy hangs on pulleys below the opposite end of the member.

3,659,848
MOBILE TACKLING DUMMY
Thomas N. DePew, 10 N. Sunningdale Drive, St Louis County, Mo.
Filed June 11, 1969, Ser. No. 832,199
Int. Cl. A63b 67/00
U.S. Cl. 273—55 R 3 Claims



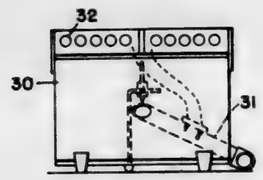
A mobile tackling dummy comprising an elongated overhead support for a track, a trolley adapted for reciprocal movement along said track, a tackling dummy suspended from said trolley for movement therewith, means for effecting detachment of said dummy from said trolley upon engagement of the dummy by an individual during usage, and means for controlling the movement of said trolley to allow for reciprocal travel of said dummy and for optional starting and stopping thereof during its course of movement.

3,659,849
BATON AND RING GAME
William D. Seymour, 1100 N.E. 160th St., Miami, Fla.
Filed Dec. 19, 1969, Ser. No. 886,653
Int. Cl. A63b 67/00
U.S. Cl. 273—96 B 3 Claims



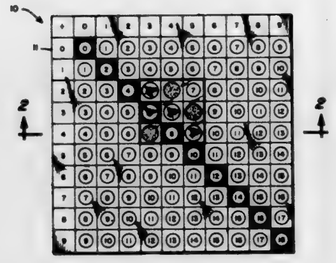
A game, employing a baton and a ring, wherein one end of the baton is held firmly in one hand and the ring is placed over the baton adjacent the outwardly extending end and spun thereon by a rotary movement of the baton. By means of the proper manipulation of the baton, the ring can be launched up into the air and caught on the baton after being permitted to bounce on the floor, sidewalk, etc., or alternatively it may be caught directly out of the air. The normally outwardly extending position of the baton is preferably divided into a plurality of delineated portions having different number values and the ring may likewise be divided into a plurality of sections having different number values or distinctive colors.

3,659,850
TABLE TENNIS PRACTICE OR GAME BOARD
Joseph A. Psenka, 4797 Stoneleigh, Bloomfield Hills, Mich.
Continuation of application Ser. No. 615,816, Feb. 13, 1967, now abandoned. This application Apr. 9, 1970, Ser. No. 27,125
Int. Cl. B63b 61/00
U.S. Cl. 273—102.2 R 6 Claims



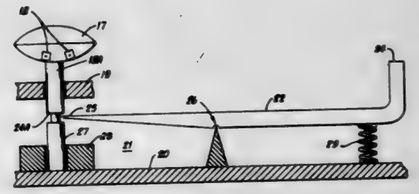
A game board for use on a table such as a table tennis table, the board being angularly adjustable to control the angle of bounce of a ball batted against the board. The board is also provided with indicia, openings for switch actuating devices to permit competitive games or games of skill in which a single player attempts to control the ball so as to hit indicia, pass through openings, or operate a switch. In the embodiments wherein the board has openings for passage of balls, a chute is provided for returning balls to the player.

3,659,851
BOARD GAME APPARATUS
James W. Lang, and Emma P. Lang, both of P.O. Box 224, Mound, Minn.
Filed Aug. 25, 1970, Ser. No. 66,846
Int. Cl. A63f 3/00
U.S. Cl. 273—130 B 2 Claims



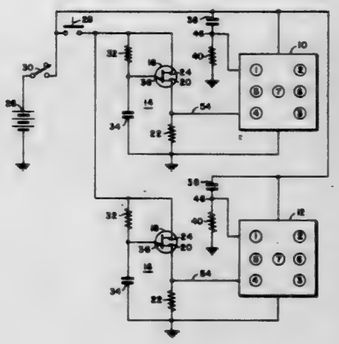
A mathematical game board apparatus comprising game board means having horizontally and vertically disposed lines defining a playing area with a plurality of rows and columns of squares defined by said lines. Indicia means are provided in alignment with the rows and columns with each indicia representing a certain mathematical factor or addend, the square at each intersection of a row and a column containing a numeral which represents a result in which each corresponding mathematical factor or addend is an input function. A generally transparent block is provided, this block being adapted to cover an area three squares wide and three squares long, and a plurality of generally opaque tokens are provided, the individual tokens being adapted to be removably placed on the surface of the generally transparent block to conceal the indicia displayed upon the square disposed beneath the respective token. In use, the generally transparent block provides a playing field for tic-tac-toe.

3,659,852
BOARD GAME APPARATUS
Donald E. Redict, 9433 South Champlain, Chicago, Ill.
Filed July 31, 1970, Ser. No. 60,041
Int. Cl. A63f 3/00
U.S. Cl. 273—134 AD 6 Claims



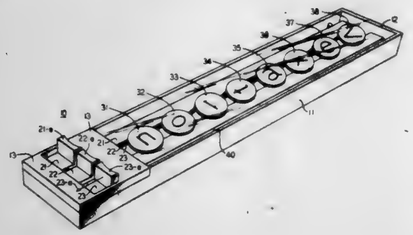
A game of chance incorporating a game board and a number of playing pieces, the game also including a set of dice, a plurality of defense cards and offense cards as well as 36 playing blocks, the defense cards being supportable upon card holders. The game board has mounted thereon at the center thereof a dice display container which is vertically movable to shake the dice. Push buttons are provided on the game board at each of the players' locations for shaking the container.

3,659,853
ELECTRONIC DICE GAME
Donald E. Church, Richmond, Ind., assignor to Avco Corporation, Richmond, Ind.
Filed Feb. 2, 1970, Ser. No. 7,591
Int. Cl. A63f 9/04
U.S. Cl. 273—138 A 4 Claims



A dice game simulated by means of two banks of seven electric lamps each will when activated, by means of a power switch, show present numbers. Four of the lamps are positioned in the corners of a square plus two in the middle of opposite sides and one in the center. The lamps are connected in logic circuitry which when operated ramdomly illuminates the lamps in such a manner as to simulate, with equal probability, the six sides of a die. The circuitry includes a free-running unijunction oscillator having an output coupled to a six-position ring counter.

3,659,854
PUZZLE WITH CHANGEABLE INDICATOR WHEELS ARRANGED IN INTERRELATED GROUPS
Frank W. Sinden, 106 Maple Street, Summit, N.J.
Filed Jan. 8, 1970, Ser. No. 1,411
Int. Cl. A63f 9/08
U.S. Cl. 273—155 10 Claims

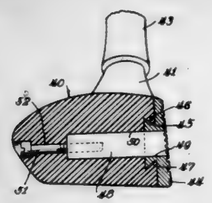


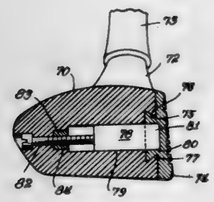
A mechanical puzzle employing interrelated, actuator controlled indicators. The puzzle is solved when the indicators have been moved to prescribed positions by the selective operation of the various actuators.

Each indicator is a kind of ratchet wheel, and each actuator is a slidable, multipawled ratchet bar that is associated with a group of ratchet wheels. A floating, spring-loaded detent bar is common to all of the indicator wheels.

As each ratchet bar is moved translationally, its pawl portions engage the ratchet wheels of the associated group, and each wheel of the group is rotated a prescribed amount. The different rotational positions represent different states or settings of the ratchet wheels. The ratchet bars are operated individually or severally until all of the ratchet wheels have desired settings, and the puzzle is solved.

3,659,855
GOLF CLUB HEAD AND NOVEL METHOD OF PRODUCING SAME
Benjamin T. Hardesty, Fairlawn Village, Ohio, assignor to Shakespeare Company, Kalamazoo, Mich.
Original application June 15, 1967, Ser. No. 667,991, now Patent No. 3,547,445. Divided and this application Nov. 13, 1969, Ser. No. 871,291
Int. Cl. A63b 53/04
U.S. Cl. 273—173 7 Claims





A plastic golf club head is formed in two major parts, a body member and a face plate. Complementary dove-tail members are provided on the body member and face plate so that the face plate may be founded by sliding it onto the body member. To prevent movement therebetween when in position, a plastic insert plug is inserted in channels provided in both the body member and face plate in mutual registry. One or more plugs and complementary channels may be utilized. The plugs may be of any desired cross-section. However, when only one plug is utilized, it should preferably have a non-circular cross-section such as rectangular to prevent rotational movement of the face plate. Where two or more plugs are utilized, they may be of any cross-section. A screw is inserted through the body member and engaged in a threaded means provided either in the insert plug or in the body member. The structure permits ready changing of the face plate to provide the club head with various striking contours and angles. The insert plugs are preferably of the same cross-section as the entry ducts of the mold used for molding of the plastic heads, so that the "trees" from molding of the heads may be used for insert plugs.

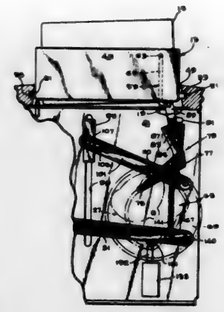
3,659,856
GOLF PUTTING PRACTICE DEVICE AND PUTTING AID
James I. Fatur, 6300 West 78th St., Los Angeles, Calif.
Filed Jan. 13, 1971, Ser. No. 106,055
Int. Cl. A63b 57/00
U.S. Cl. 273—177 R 12 Claims



A golf hole simulator includes a central portion with a pair of similar arm portions extending therefrom to form an open arcuate wall which simulates the cup of the hole. The wall formed by the arm and central portions is shaped so that when a ball is putted thereagainst at the right position and at the right speed, it will be retained in the simulated "hole", while putts made at too high a speed or striking the wall at the wrong position will not be retained. A slope indicator is provided to indicate the slope of the surface on which the device is placed for indoor or outdoor use. A gage is provided to be utilized in conjunction with the slope indicator to set the device at an angulated position with respect to the location of the ball to be putted, this position being indicative of the proper putting line to be used to compensate for the measured slope.

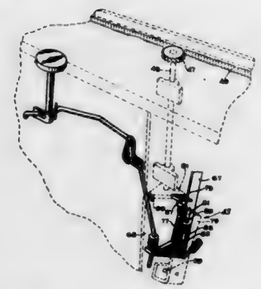
3,659,857
CASSETTE LOWERING AND RELEASE MECHANISM
Donald W. Marcinkus, Arlington Heights, Ill., assignor to Ampex Corporation, Redwood City, Calif.
Filed Nov. 10, 1969, Ser. No. 875,045
Int. Cl. G11b 23/12
U.S. Cl. 274—4 F 4 Claims

Cassettes are transported from a magazine to an operative position for playback or recording by a movable chassis which is smoothly and evenly driven by means including a small motor to the operative position. The cassette is also held at the operative position, released for movement from



the operative position and returned to the magazine without jarring.

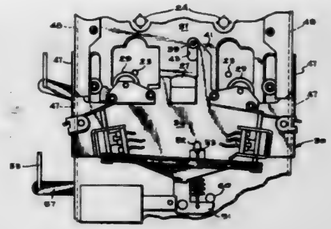
3,659,858
AUTOMATIC TERMINATION OF OPERATION OF A CASSETTE CHANGER
Glenn E. Sterly, Carol Stream, Ill., assignor to Ampex Corporation, Redwood City, Calif.
Filed Nov. 10, 1969, Ser. No. 875,046
Int. Cl. G11b 23/12
U.S. Cl. 274—4 F 7 Claims



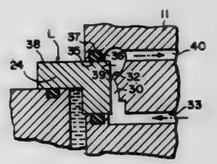
After the playing of a cassette stored in the last one of a series of storage compartments of a cassette changer apparatus, the operation thereof is automatically terminated and operated manual controls or selectors are returned from on positions to off positions. The preferred selectors are push buttons which remain depressed in an on position until the playback or recording of the last cassette is terminated so that during the playing of the last cassette the actual mode of operation of the cassette recorder is correctly indicated to the user.

3,659,859
CASSETTE CHANGER WITH A PAUSE MODE
Donald W. Marcinkus, Arlington Heights, Ill., assignor to Ampex Corporation, Redwood City, Calif.
Filed Nov. 10, 1969, Ser. No. 875,259
Int. Cl. G11b 15/29
U.S. Cl. 274—4 F 5 Claims

By operating a pause selector for a cassette changer apparatus, the user may interrupt a playback from or recording onto a tape of a cassette and, after the interruption, resume playback or recording by return of the pause selector. The mechanism for achieving a pause includes a carrier for carrying a sound transducer head and tape drive components to and from an operative position with the tape and a pause position in which the sound transducer head and tape drive components are spaced from the tape. The carrier will be in the pause position unless a playback or recording operation is in process.



3,659,860
BARRIER SEAL WITH SELF REGULATING BUFFER
Heinz K. Muller, Neustadt, Germany, assignor to Sealol, Inc., Warwick, R.I.
Original application May 14, 1968, Ser. No. 728,950, now Patent No. 3,556,538, dated Jan. 19, 1971. Divided and this application June 8, 1970, Ser. No. 43,998
Claims priority, application Germany, June 3, 1969, M 74257
Int. Cl. F16j 15/40
U.S. Cl. 277—59 9 Claims

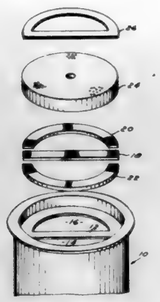


This specification discloses a barrier seal in which the pressure of the fluid is being sealed is opposed by the flow rate of a buffer fluid with a movable ring interposed between the two. This ring is movable axially under the influence of the differential which obtains between the pressures of the sealing fluid and buffer fluid. Appropriate passages are provided for the buffer fluid and seals are provided between the movable ring and the shaft and housing in which the barrier seal is installed.

3,659,861
PARTICULATE COATING FOR THE RUBBING SEAL OF A GAS TURBINE REGENERATOR
Vemulapalli D. Rao, Woodhaven, and Yeshwant P. Telang, Grosse Ile, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed July 6, 1970, Ser. No. 52,309
Int. Cl. F16j 15/54; C23c 11/16
U.S. Cl. 277—96 4 Claims

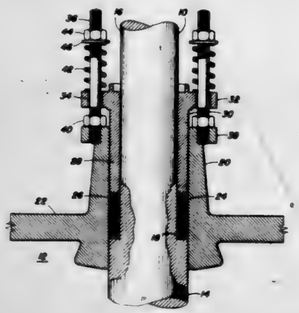
Particles having a core of a glazing material such as calcium fluoride surrounded by a shell of a metal that oxidizes at operating temperature are sprayed on a substrate to form a

rubbing seal for a ceramic regenerator. The oxide of the metal forming these shells is non abradable to the ceramic



regenerator. During engine operation the shell oxidizes and wears to expose appropriate amounts of the glazing material.

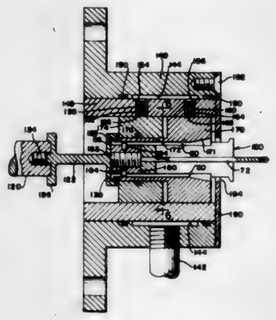
3,659,862
ROTATING SHAFT STUFFING BOX
Allison Sebastian, Albany, N.Y., assignor to GAF Corporation, New York, N.Y.
Filed July 29, 1970, Ser. No. 59,118
Int. Cl. F16j *15/18*
U.S. Cl. 277—106 **2 Claims**



The rotary shaft of a vacuum and pressure pump is provided with an annular flat shoulder located between sections of different diameters. A stationary cylinder contains the shaft, semi-solid packing material, and the cylindrical part of a spring-loaded gland which is also stationary. The cylindrical part of such gland presses the packing material at its inner annular end toward the flat shoulder on the rotary shaft to form a superior vacuum seal. The shoulder on the shaft is simply formed either by a machining operation, or by welding a collar on the shaft.

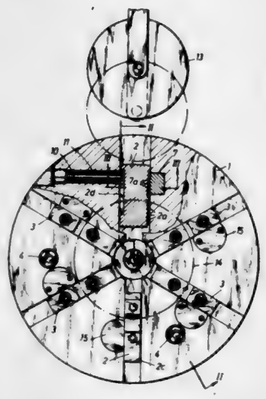
3,659,863
AUTOMATIC DRILL CHUCK AND SPLIT COLLET
Horace J. Buttner, 1501 Palos Verdes Dr., North, Harbor City, Calif.
Filed Oct. 7, 1969, Ser. No. 864,395
Int. Cl. B23b *31/30*
U.S. Cl. 279—4 **24 Claims**

A fluid operated chuck includes drive means having an annular groove formed therein. A fluid actuated collet engaging means engages an associated collet. A novel segmented collet includes a plurality of separate spaced portions having a tapered outer surface which cooperates with a tapered surface on the collet engaging means. Each of these collet portions has a radially outwardly extending flange at the inner end thereof which fits within the annular groove in the drive means for retaining the segmented collet in position. A generally cylindrical longitudinally split inner collet fits snugly within the segmented collet. A locating ring can also be disposed within the segmented collet, this locating ring having a central threaded hole formed therein. Pin means



may also be provided between the collet portions for maintaining them in operative spaced relationship to one another. These pins can be carried by the drive means or the locating ring. A modified form of chuck includes a pair of pistons one of which is slidable upon the other, the pistons being movable in opposite directions to operate an associated collet. Fluid is introduced around the pistons to form a fluid bearing for the pistons and further to urge the pistons away from one another.

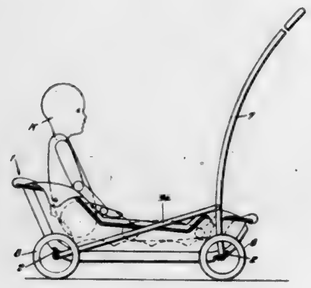
3,659,864
CHUCK FOR MACHINE TOOLS
Johann Blattry, Buderich, Germany, assignor to Paul Forkardt Kommanditgesellschaft, Duesseldorf, Germany
Filed Aug. 6, 1970, Ser. No. 61,740
Claims priority, application Germany, Aug. 9, 1969, P 19 40 609.8
Int. Cl. B23b *31/16*
U.S. Cl. 279—121 **6 Claims**



A chuck for mounting on the spindle of a machine tool comprises a plurality of jaws movable radially by an axially movable plunger. The connexion between the jaws and the plunger can be disengaged so that the jaws can be moved

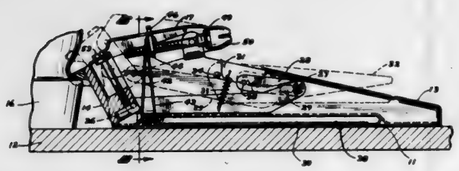
outwardly under the action of centrifugal force and inwardly under the action of a program-controlled thrust roller.

3,659,865
SAFETY SEAT FOR CHILDREN
Siegfried Nothacker, Wuppertal-Elberfeld, Germany, assignor to Gebr. Happich G.m.b.H., Wuppertal-Elberfeld, Germany
Filed Apr. 21, 1970, Ser. No. 30,489
Claims priority, application Germany, June 18, 1969, P 19 30 891.9
Int. Cl. B62b *7/12*
U.S. Cl. 280—7.1 **7 Claims**



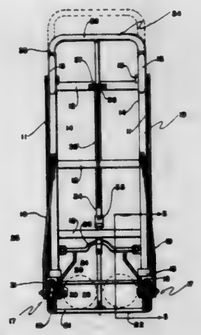
A child's safety seat including a trough like shell with an upholstered interior and a safety padding spanning the width of the shell to be struck by the head of a child if he falls forward; fastening means on the base of the shell permit attachment to carrying straps and belts, transport wheels, sled runners and the like.

3,659,866
HEEL BINDING
Paul S. Petersen, Minnetonka, Minn., assignor to Sports Technology, Inc., Edina, Minn.
Filed Nov. 14, 1969, Ser. No. 876,788
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **15 Claims**



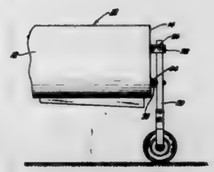
A release heel binding for use with skis and ski boots which utilizes a torsion bar type means for restraining the boot, permitting some upward movement of the heel, and means for positively releasing the ski boot after the heel has lifted a predetermined amount. The unit is adjustable so that the necessary force required to release the boot can be changed to make the binding usable across a wide range of operating conditions. The torsion bars provide for high energy storage to return the binding when lower than release loads have been encountered. The unit can be reset either by stepping into the binding, or by a manual reset movement of a lever.

3,659,867
FOLDABLE TOW-WHEEL DOLLY
Walter John Curry, 337 Roberts Street, Winnipeg 15, Manitoba, Canada
Filed Oct. 1, 1970, Ser. No. 77,099
Int. Cl. B02b *11/00*
U.S. Cl. 280—36 C **3 Claims**



The handles are turned out and the wheels move from the stored position to the wheeling or operating position and vice versa. A bar is depressed which lowers the load plate and the bar also engaged studs on the wheel forks to lock the wheels open and the plate down.

3,659,868
DETACHABLE WHEELS FOR BOATS
Eura Tucker, Santa Ana, Calif., assignor to Dean Sandford, Orange, Calif., a part interest
Filed May 11, 1970, Ser. No. 36,319
Int. Cl. B62b *1/10*
U.S. Cl. 280—47.32 **11 Claims**

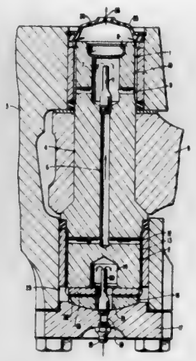


A wheel assembly and mounting brackets for removably attaching the assembly to a boat is disclosed. An upper and a lower mounting bracket are permanently attached in vertically spaced relationship at each side of the boat. A wheel assembly is removably attached to each of the sets of brackets to provide mobile support for the boat on land. The wheel assemblies are normally detached while the boat is in the water.

3,659,869
CONSTRUCTION OF A STEERING KNUCKLE BEARING FOR THE LUBRICATION BY MEANS OF LUBRICATING OIL
Helmut Hase, and Egbert Stwik, both of Gaggenau, Baden, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Nov. 26, 1969, Ser. No. 880,150
Claims priority, application Germany, Nov. 27, 1968, P 18 11 092.4
Int. Cl. B62d *7/18*
U.S. Cl. 280—96.1 **19 Claims**

An axle spindle bearing assembly which includes a lower and an upper bearing connected with each other by a bore

system provided in the axle spindle bolt while a reservoir space connected to the bore system is arranged in the axle spindle bolt within the area of the upper bearing which is in



communication with the section of the bore system leading to the lower bearing, for example, by way of a return checking device.

3,659,870
LEVELLING VALVE ASSEMBLY
Teiji Okuyama, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Sept. 25, 1970, Ser. No. 75,517
Claims priority, application Japan, Sept. 26, 1969, 44/77252
Int. Cl. B60g 17/00
U.S. Cl. 280—124 F 5 Claims

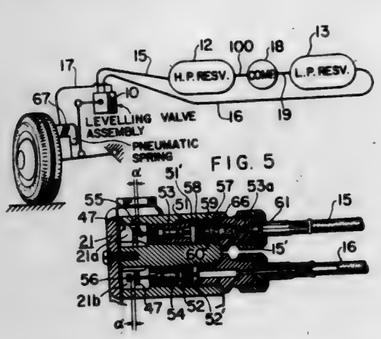


FIG. 5

The levelling valve assembly controls the supply and discharge of air to and from a pneumatic spring by providing a valve operating lever supporting shaft separate from the drive shaft for converting the sensed variations of chassis height into a corresponding rotational movement with a damper device resiliently connected therebetween.

3,659,871
PEDAL OPERATED VEHICLE
Ion V. K. Hott, Dayton, Ohio, assignor to The Joyce-Cridland Company, Dayton, Ohio
Filed Mar. 23, 1970, Ser. No. 21,866
Int. Cl. B62m 1/06
U.S. Cl. 280—221 18 Claims

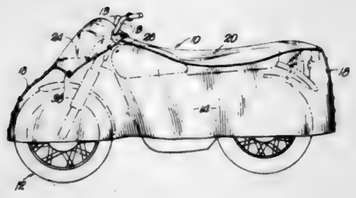
The two rear wheels of a three-wheeled vehicle are mounted on spaced axles with foot pedal operated drives located therebetween. The operator stands on the pedals and powers the vehicle with a jogging motion.

In one embodiment the pedals are mounted on lever arms pivoted forwardly of the rear wheels and drive both the rear wheels with a minimum of lost motion through one-way



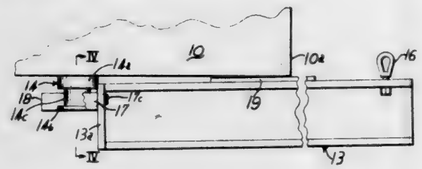
clutches. In another embodiment the pedals are mounted on a crank located between the rear wheels. The three-wheeled vehicles may be made primarily from standard bicycle parts. A seat may be mounted on a post between the front and rear wheels for movement about a generally vertical axis from a usable position to an out-of-the-way position.

3,659,872
FOLDABLE COVER STRUCTURE FOR MOTORCYCLE
Leroy Warner, Box 109, Independence, Mo.
Filed June 26, 1970, Ser. No. 50,107
Int. Cl. B62j 19/00
U.S. Cl. 280—289 4 Claims



A protective cover for a two-wheeled cycle having a pair of handlebars includes a pair of flexible panels which surround and overlie the cycle. An opening in one of the panels receives the handlebars, and a third flexible panel closes this opening. The third panel has first and second sections which present slits for receiving the individual bars of the pair of handlebars, and means on each section is provided for securing each section in close surrounding relationship to a respective handlebar. A plurality of fasteners around the periphery of the third panel secure the latter to the first and second panels and additional fasteners are provided at the front and rear of the cycle for securing the vertical side portions of that panel which surrounds the cycle.

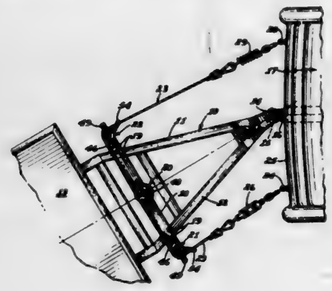
3,659,873
LIFTING AND TOWING BAR FOR KING PIN EQUIPPED VEHICLES
Richard W. Gewalt, Route 2, Box 267, Attalla, Ala.
Filed Sept. 9, 1970, Ser. No. 70,685
Int. Cl. B60d 1/14
U.S. Cl. 280—415 A 3 Claims



A lifting and towing bar for king pin equipped vehicles comprising a bar long enough to project from the king pin outwardly of the forward end of the vehicle, together with a king pin connector at the rear of the bar so designed that the same may be slipped over the king pin, and with seats to receive the lower end of the king pin, so that when in place and the front end of the bar is raised the bar is locked against horizontal and vertical movement relative to the king pin, permitting the vehicle to be raised and towed by attaching a lifting hook to the forward end of the bar

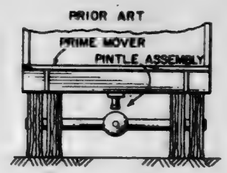
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3,659,874
SWAY CONTROL FOR TRAILER HITCH
William L. Rendessy, 1839 East Moreland, Phoenix, Ariz.
Continuation-in-part of application Ser. No. 638,412, May 15, 1967, now abandoned, and a continuation-in-part of 763,843, Sept. 30, 1968, now abandoned. This application Jan. 16, 1969, Ser. No. 805,924
Int. Cl. B60d 7/00
U.S. Cl. 280—446 13 Claims



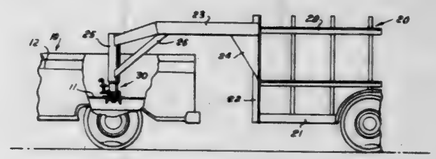
A sway control for a trailer mounted on trailer tongue between the trailer and the towing vehicle utilizing cable means and a drum friction clutch utilizing pivotal means for interconnection between the vehicles. In combination with the clutch, the invention comprises idler pulleys spaced from said clutch and over which cables of the invention project, and means for releasably pivoting at least one of the pulleys to slack the cable in order to permit detachment of the ends of the cable from added structure to the towing vehicle; said invention also comprising novel details of the drum and the manner in which the opposite portions of the cables are substantially contiguous with each other at the periphery of the drum and extending in opposite directions toward the idler pulleys; said opposite portions of said cable wound helically around said drum in opposite directions and toward opposite ends of said drum from a location of said cable portions where they are contiguous with each other such that said opposite portions may reciprocate with each other and always be very close to axial alignment with each other as they extend in opposite directions to said idler pulleys. Said idler pulleys are positioned on a mounting bar or brackets so as to be in close vertical alignment with the cables as they extend outwardly at the point where they are contiguous.

3,659,875
PINTLE ASSEMBLY
Joseph M. Masar, Boonton Avenue, Boonton-Taylortown, N.J.
Filed Aug. 10, 1970, Ser. No. 62,253
Int. Cl. B62d 53/00
U.S. Cl. 280—477 7 Claims



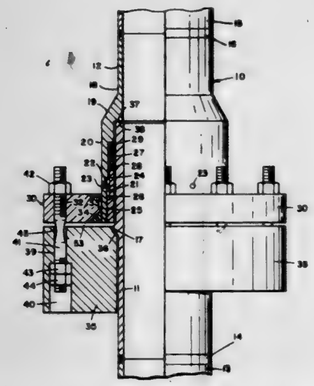
For a trailer coupling hitch, this assembly, in combination with a wheeled prime mover, presents a pivotal platform from which the pintle extends. The pivotability of the platform facilitates incident rising and lowering of the prime mover, as it traverses uneven ground, without causing a trailer coupled thereto to follow every excursion in elevation, and thus avoids the introduction of inordinate tensional and shear forces on the coupling pintle.

3,659,876
TRAILER HITCH
Johnnie D. Melton, Route 1, Barry, Tex.
Filed Dec. 11, 1970, Ser. No. 97,247
Int. Cl. B60c 1/06
U.S. Cl. 280—511 10 Claims



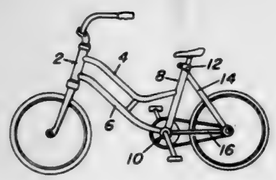
A trailer socket assembly for coupling to an upstanding shank mounted ball of a towing vehicle includes an upstanding cylindrical socket body having a downward opening cylindrical recess for receiving the ball and shank. The body is provided with slots in a transverse plane adjacent to the lower end which open to the socket recess from opposite sides of the body. A pair of elongated locking arms pivotally mounted on the body are swingable into the slots to define a restriction of the socket opening to retain the ball therein. A spring biased locking bar movable transverse to the plane of the locking arms includes recesses for confining the arms against lateral outward movement to release the ball. The socket body is adapted to define a downward extension of a vertical tubular member of a gooseneck drawbar.

3,659,877
BREAKAWAY PIPE COUPLING
James W. Kubesta, Metairie, La., assignor to Shell Oil Company, New York, N.Y.
Filed Sept. 11, 1970, Ser. No. 71,528
Int. Cl. F16l 35/00
U.S. Cl. 285—3 9 Claims



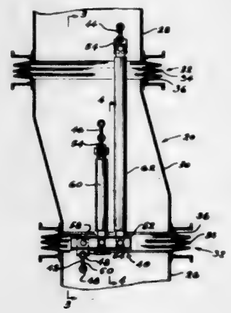
A breakaway pipe coupling for coupling a pipeline together comprising a pair of telescopingly engaged upper and lower tubular coupling members adapted to be connected to a pipeline and including a pair of flanges surrounding the members for holding them in fixed relationship, one flange being secured to the upper coupling member and a split flange surrounding but not secured to the lower coupling member. Frangible bolts secure the upper flange portion to the split flange with the split flange adapted to separate when undue stress is placed on the coupling members and breaks the frangible bolts.

3,659,878
ELEVATED CYCLE VEHICLE UTILIZING A CONVENTIONAL BICYCLE FRAME
Edward T. Carter, 1227 Olive St., Philadelphia, Pa.
Filed May 25, 1970, Ser. No. 40,051
Int. Cl. B62k 3/02
U.S. Cl. 280—7.15 4 Claims



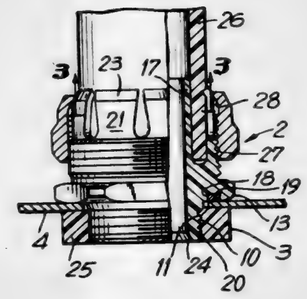
An elevated cycle vehicle is formed from a conventional bicycle frame, inverted from its normal position so that the center post previously used to support the bicycle seat extends downwardly from the sprocket bearing assembly. The contractable clamping means at the lower end of the center post receives a projection which is attached to horizontally oriented step means which assist a rider in boarding the vehicle. An elongated seat has a forward socket which receives a post extending upwardly from frame elements lying forwardly of the center post, while the rear portion of the seat is supported by posts connected to the frame elements lying rearwardly of the center post.

3,659,879
DUCT POSITIONER FOR THE CONTROL OF THERMAL EXPANSION
Gunter J. Stalph, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed July 16, 1970, Ser. No. 55,464
Int. Cl. F16l 51/02
U.S. Cl. 285—114 6 Claims



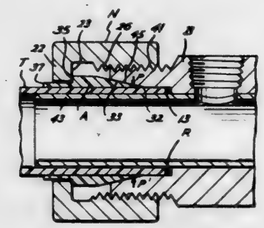
Described herein is a duct system for conducting heated fluids such as, for example, combustion gases from the interior of a vapor generator furnace, or the like. The duct system includes a toggle section connected to adjacent parts of the system by means of expansion joints thereby to accommodate relative displacements that will occur between the parts. Supporting structure for the toggle section is disclosed including lever mechanism so arranged as to control the extend of flexure in the respective expansion joints.

3,659,880
CONNECTOR FOR FLEXIBLE CONDUIT
Norman Goldsobel, 28 Bethal Lane, Commack, N.Y.
Continuation of application Ser. No. 833,502, June 16, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 692,467, Dec. 21, 1967, now abandoned.
This application Nov. 5, 1970, Ser. No. 87,308
Int. Cl. F16l 33/22
U.S. Cl. 285—161 10 Claims



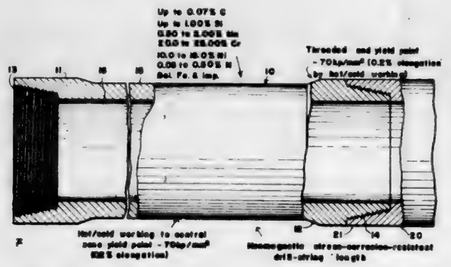
An electrical connector assembly is provided to connect flexible plastic conduit to an electrical fixture, such as an outlet box. The connector body includes a bottom tubular portion which protrudes through a hole in the fixture, a flange portion, and an upper portion. The upper portion includes a ferrule, an outer tubular extension which is castellated at its top and formed from a flexible elastic plastic resin. A compression nut forces the castellated top portion against the conduit which bulges out between consecutive segments of the castellated portion and locks the connector on the conduit.

3,659,881
COUPLING CONNECTOR
Cleere B. Tinsley, and Edward K. Graham, Jr., both of Houston, Tex., assignors to Seabek Products, Inc., Houston, Tex.
Filed Mar. 2, 1970, Ser. No. 15,323
Int. Cl. F16l 33/00
U.S. Cl. 285—249 6 Claims



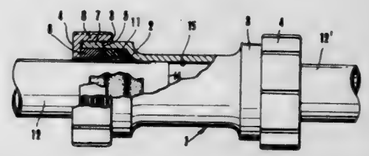
A coupling connector between a tube and a coupling body wherein an annular recess is formed in the coupling body to receive the tube, and wherein the tube is frictionally engaged and forced longitudinally against an annular seal located in the annular recess in the coupling body to form an effective pressure seal between the tube and the coupling body.

3,659,882
NONMAGNETIC CORROSION-RESISTANT DRILL STRING MEMBERS
Herbert Souresny, Teraltz, Austria, assignor to Schoeller-Bleckman Stahlwerke Aktiengesellschaft, Vienna, Austria
Filed Dec. 1, 1969, Ser. No. 881,154
Claims priority, application Austria, Dec. 2, 1968, A11685/68
Int. Cl. F16l 25/00
U.S. Cl. 285—333 2 Claims



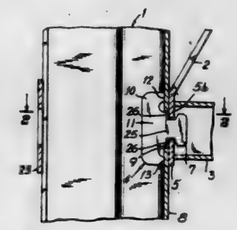
A drill string for deep-well drilling, coring and the like is composed of lengths unitarily formed of a nonmagnetic, high-nitrogen, chromium-nickel austenitic alloy steel and has a pair of threaded ends matingly engageable with the complementary ends of adjoining lengths and an intermediate or central portion between these ends. The drill-string members are composed of alloy steel containing from trace amounts to 0.07 per cent by weight carbon, trace amounts to 1.00 per cent by weight silicon, 0.50 to 2.00 per cent by weight manganese, 20.0 to 25.0 per cent by weight chromium, 10.0 to 15.0 per cent by weight nickel, 0.05 to 0.50 per cent by weight nitrogen and the balance iron and the usual impurities present in chromium-nickel alloy steels. The drill-string members are resistant to stress corrosion cracking and have their central zones worked (hot/cold working) to a yield point up to 70 kp/mm² (0.2 percent elongation) while the threaded end portions are hot/cold worked to a yield point above the minimum of (0.2 percent elongation) 70 kp/mm².

3,659,883
COUPLING CONSTRUCTION AND IMPROVED PACKING RING THEREFOR
Noriatsu Kojima, Yanagishima-cho 5-chome No. 31, Nakagawa-ku, Nagoya, Japan
Filed Nov. 12, 1970, Ser. No. 88,695
Claims priority, application Japan, May 26, 1970, 45/45043
Int. Cl. F16l 17/00
U.S. Cl. 285—348 1 Claim



A coupling construction includes a coupling sleeve fitted over two pipe ends which are to be joined together and which includes a widened end portion at each end for accommodating a packing between the sleeve and a associated pipe and an intermediate portion which is of substantially the same diameter as the diameter of the pipe to be connected. The coupling joint is formed by a packing ring placed within the widened diameter sleeve portion and which is stressed and tightened by a ring member having a surface which bears against a concave surface of the packing ring when a threaded nut is tightened to the coupling sleeve and is displaced axially by the tightening. The packing ring includes an interior surface having an internal groove and includes a concave shoulder at each end on its exterior. One external concave shoulder presses against a convex interior portion of the coupling sleeve and the other shoulder on the opposite end is engaged by a ring member which is displaced axially during tightening. When the joint is fully tightened the packing ring is deformed so that the groove area is reduced to force out the air in the groove and to effect a tight engagement of the ring with the associated pipe.

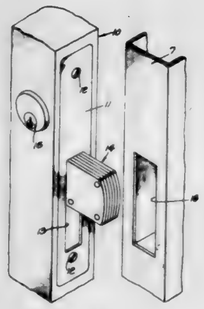
3,659,884
LATCH FOR DETACHABLY CONNECTING STRUCTURAL PARTS
Bror Eric Gustav Ohlin, Saffle, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden
Filed May 7, 1970, Ser. No. 35,311
Claims priority, application Sweden, May 9, 1969, 6595/69
Int. Cl. F16b 3/00, 7/22
U.S. Cl. 287—189.36R 5 Claims



A pair of structural parts having walls formed with elongated slots of generally similar shape are detachably con-

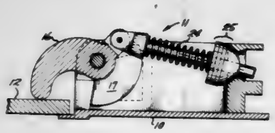
nected by a latch including a body and a catch separated therefrom by a connecting neck portion. When the walls of the parts overlie one another and the openings therethrough are in alignment and coincide, the latch is in an operative position after the catch has been moved through both of the openings in the parts and a projecting wall section of the body has been moved into the opening of one part. When in such operative position the latch functions to detachably connect the parts after they have been moved relative to one another through an angle of 90°.

3,659,885
MAXIMUM SECURITY LOCK BOLT
Billie G. Nail, La Crescenta, Calif., assignor to Adams Rite Manufacturing Company, Glendale, Calif.
Filed Aug. 31, 1970, Ser. No. 68,314
Int. Cl. E05b *15/16*
U.S. Cl. 292—2 **9 Claims**



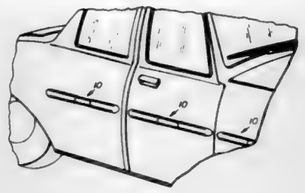
A maximum security lock bolt of composite construction which captivates an insert of a material which is substantially impervious to machining operations, such as a ceramic material, the insert being of a size sufficient to span or bridge the gap between the locked door and strike plate mounted on the associated door jamb.

3,659,886
AIRCRAFT PANELS WITH PRECISELY ADJUSTABLE AND EASY ACTION SPRING TOGGLE LATCH
Weldon R. Andrews, Seattle, Wash., assignor to Sealth Aero Marine Company, Seattle, Wash.
Filed May 1, 1970, Ser. No. 33,958
Int. Cl. E05c *19/02*
U.S. Cl. 292—78 **2 Claims**



An aircraft interior panel, either removable or pivotally mounted in aircraft fixed structure having a new spring toggle latch comprising (1) accurate and precise spring tension, shim adjusting means for varying the compression of the spring for varying the supporting capabilities or forces of the panel latch so that a slightly increased downward, outward, or upward force releases the panel allowing it to swing out for accessibility thereto and (2) a spherical bearing means on the end of a toggle arm of the spring latch for ensuring a reliable, constant resistance, and an easy action in both locking and unlocking of the spring toggle latch.

3,659,887
DETACHABLE PROTECTOR FOR STEEL BODIES
Russell C. Marquette, 2423 East 15th St. Apt. A, Tulsa, Okla.
Filed Nov. 5, 1969, Ser. No. 874,115
Int. Cl. B60r *19/08*
U.S. Cl. 293—1 **2 Claims**



A detachable side protector comprises a base having slidably received on the upper surface thereof and magnetically held thereto two extension strips projecting horizontally therefrom in opposite directions. The protector is magnetically held on the exterior surface of a steel body to prevent damage thereto during the opening of doors on neighboring vehicles.

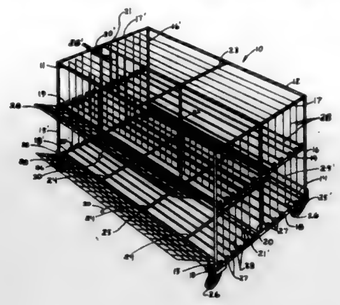
3,659,888
FEED BUNK SHOVEL
Melvin E. Dreier, Dumont, Iowa
Filed Oct. 3, 1969, Ser. No. 863,528
Int. Cl. A01b *1/02*
U.S. Cl. 294—49 **6 Claims**



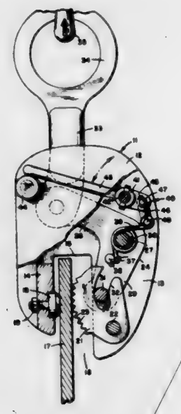
A shovel to remove spoiled silage and other material from cattle feed bunks. Includes a flat bottom with vertical sides. The front end of the shovel is open and the rear end is provided with an inwardly swinging gate so that the shovel can scoop material in either a forward or rearward movement. The gate swings closed when the shovel is lifted for unloading to keep the material from sliding off of the rear. A suitable handle is attached to an arched support between the sides so as to be sufficiently elevated for manipulation from a point outside of the sideboards of the feed bunk.

3,659,889
RACK
Andrew Whitley, Route 2, Box 72, Zebulon, N.C.
Filed June 25, 1970, Ser. No. 49,600
Int. Cl. A24b *1/06*
U.S. Cl. 294—5.5 **7 Claims**

In abstract, a preferred embodiment of this invention is an improved rack for supporting tobacco during the curing process thereof, including a plurality of mesh separating partitions which fold for easy loading and unloading.



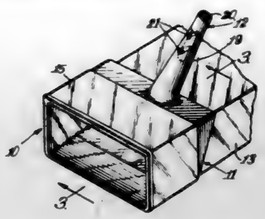
3,659,890
LIFTING CLAMP
Raymond L. Renfroe, Prescott, Ark., assignor to J. C. Renfroe & Sons, Inc., Jacksonville, Fla.
Filed Aug. 5, 1970, Ser. No. 61,074
Int. Cl. B66c *1/48*
U.S. Cl. 294—104 **2 Claims**



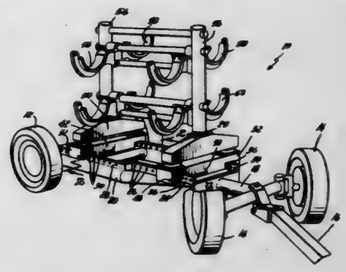
A lifting clamp comprising a body having a slot to receive an article to be lifted, a pair of gripping jaws one of which is movable, a linkage connected to the movable jaw which includes a shackle and a bell crank lever pivotally mounted in the body, and a locking mechanism for resiliently retaining the jaws in a closed position, the lock being operated by a handle lever located outside of the clamp body and movable downwardly toward the slot to a locked position and upwardly and outwardly away from the slot to an unlocked position.

3,659,891
REFUSE COLLECTING DEVICE
Armando U. Pettenon, 12635 South Eggleston Ave., Chicago, Ill., and Edward M. Goraki, 15257 Ingleside Ave., Chicago, Ill.
Filed Dec. 11, 1970, Ser. No. 97,135
Int. Cl. A47f *13/06*
U.S. Cl. 294—19 R **10 Claims**

A refuse collecting device having an improved tubular bag-mounting member at the lower end of a handle for collecting refuse such as animal leavings and the like. The refuse is collected in a disposable bag removably mounted on the tubular element in an improved manner for positive association with the tubular element during use while yet providing for facilitated withdrawal of the bagged matter in a sanitary manner.



3,659,892
MISSILE RACK ADAPTER
Robert F. Briggs, Camarillo, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed June 29, 1970, Ser. No. 50,773
Int. Cl. B60p *3/00*
U.S. Cl. 296—3 **8 Claims**



An adapter member for rendering a cluster-type missile rack supportable on storage brackets or on missile transport vehicles having a variety of differently arranged load bearing surfaces. Each adapter has on its undersurface at least two spaced support contacting surfaces, and includes means to lock the adapter to its support. Shock absorbing vibration isolaters are incorporated into the design.

3,659,893
CAMPER VEHICLE
Byron D. Steele, 1119 Tiffany Rd., Silver Spring, Md.
Filed June 22, 1970, Ser. No. 48,207
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 R **5 Claims**



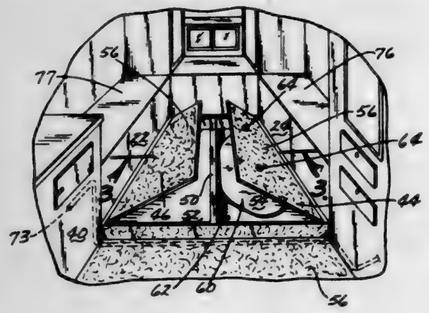
A vehicle of the camper type having a vertically extendible top and a sleeping compartment with extensions to receive

beds when the top is raised, thus providing standing room within the vehicle. Pneumatic jacks, supplied from an on-board air storage tank, are used for raising the top, and simple latches retain it in elevated position when the sleeping compartment is in use.

3,659,894
VEHICLE MOUNTED CAMPER COACH

John N. Dodgen, Humboldt, and Harry L. Taylor, Dakota City, both of Iowa, assignors to Dodgen Industries, Inc., Humboldt, Iowa

Filed May 4, 1970, Ser. No. 34,491
Int. Cl. B60p 3/32
U.S. Cl. 296—23 MC 11 Claims

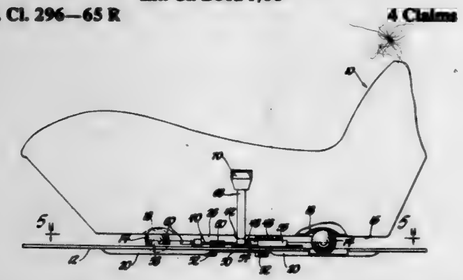


A trailer coach mounted on a pickup truck, the floor of the coach supported on the bed of the truck and the coach having an elevated floor over a compartment assessible through outwardly pivotable doors concealed in their closed position by a carpet covering. One of the doors supports the posts of a table which is foldable unto itself when not used or extended by being pivoted to an open position, the outer half being supported on a pair of pivotal arms carried on the half secured to the posts. The table may be disassembled and stored in the compartment and oppositely disposed ledges over the walls of the truck bed may be extended over the elevated floor and provide double sleeping area while leaving space to pass therebetween. The water lines for the appliances in the camper may extend through the compartment which functions as an insulating chamber protecting the water lines from the freezing outside temperatures.

3,659,895
SWIVEL SEAT LOCKING MECHANISM

Du Wayne D. Dresden, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 10, 1970, Ser. No. 62,296
Int. Cl. B60n 1/08
U.S. Cl. 296—65 R 4 Claims



A vehicle seat is mounted on a vehicle floor pan for both rotational movement about a vertical axis and longitudinal movement with respect to the vehicle. A pair of floor pan mounted longitudinally extending rails slidably mount a carrier on the floor pan for longitudinal movement with the seat. A locking mechanism includes a locking member pivoted to the carrier and spring biased to a locked position in which first and second arcuate arm portions of the locking member respectively engage one of the rails and the seat to hold the seat against both the rotational and the longitudinal movement. An actuating handle is secured to the locking member and actuation thereof in one direction rotates the locking member from locked position to a first released position in which the first arm portion is moved out of engagement with the one rail to allow longitudinal movement of the seat. Actuation of the handle in the other direction rotates the locking member from locked position to a second released position in which the second arm portion is moved out of engagement with the seat to allow rotational movement of the seat.

3,659,896
ADHESIVE SEMI-CURED SEALING STRIP FOR AUTOMOBILE WINDSHIELD

Daniel J. Smith, Washington Crossing, Pa.; Earl H. Sorg, Trenton, N.J.; Elmer V. O'Grady, Yardley, and Fred Walters, Levittown, both of Pa., assignors to Thiokol Chemical Corporation, Bristol, Pa.

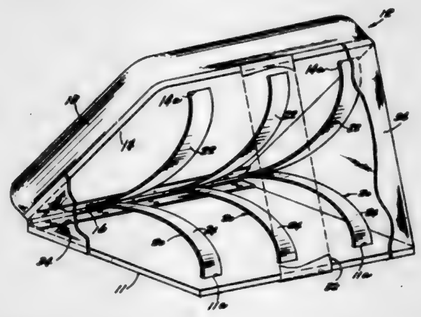
Filed Mar. 17, 1970, Ser. No. 20,206
Int. Cl. C08g 51/10, 51/08; B60q 1/02
U.S. Cl. 296—93 12 Claims

An automobile windshield mounting and sealing means is provided by means of a preformed, adhesive, curable sealing strip comprising a thiol terminated synthetic polymer, particularly a liquid polysulfide polymer, which has been made or modified, e.g. partially cured or blended to increase its molecular weight to at least about 13,000 and its viscosity at 25°C. to at least about 6,000 poises and which has been compounded with a mixture of fibrous and non-fibrous fillers, extenders, curing agent and other ingredients to form an extrudable, semi-cured, curable resilient polymeric sealing composition which is extruded to sealing strip form, which is substantially immediately functional as a windshield glass and the windshield receiving frame on an automobile body, and which further cures in the presence of atmospheric moisture under ambient room temperature and weather conditions in the windshield frame of an automobile to a moderately hard, strongly cohesive, resilient, strongly adhered sealing strip.

3,659,897
SEAT CONSTRUCTION

John Dale Wright, 717 Tenth Ave., Rochelle, Ill.

Filed Sept. 21, 1970, Ser. No. 73,945
Int. Cl. A47c 3/32
U.S. Cl. 297—337 5 Claims

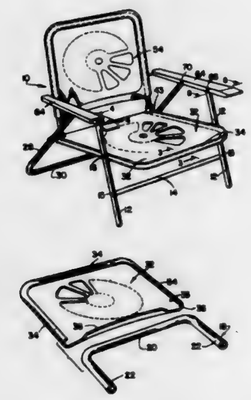


A seat member is hinged to a base member and a plurality of springs are located between the members to resiliently urge them apart. Each spring is made of two counterposed leaf portions joined together at one end and secured to one of the members at the other end. The springs are arranged so that the spring force increases as the seat member moves downwardly, and vice versa.

3,659,898
CHAIR

Bernard Yellin, 5252 S. Kolmar Ave., Chicago, Ill.

Filed Dec. 9, 1970, Ser. No. 96,316
Int. Cl. A47c 7/00, 3/00
U.S. Cl. 297—445 6 Claims

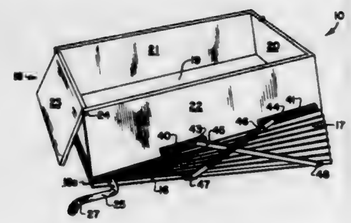


A chair characterized by a seat portion integrally molded of a plastic material and a back rest portion integrally molded of a plastic material, each readily attachable respectively to a seat frame and to a back frame of a chair.

3,659,899
DUMP SYSTEM

Ralph L. Phillips, 226 East 3rd South, Apt. #32, Salt Lake City, Utah, and John L. Ballou, 5891 South 75 West, Salt Lake City, Utah

Filed Mar. 12, 1970, Ser. No. 18,935
Int. Cl. B60p 1/16
U.S. Cl. 298—22 R 10 Claims

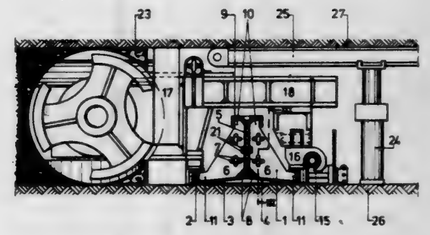


A dumping system wherein a pneumatic bag pivotally lifts a bed and the bag expansion results from use of vehicle exhaust. In a preferred form, a dumping unit is adapted to be placed on and removed from an existing truck bed to provide a dumping vehicle and in another preferred form the dumping bed pivot can be raised and lowered whereby items can be slid into or out of the dumping bed.

3,659,900
SCRAPER CONVEYOR GUIDING LONGWALL MACHINE

Otto Reuzing, Bochum, Germany, assignor to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei mbH, Bochum, Germany

Filed Feb. 3, 1970, Ser. No. 8,283
Claims priority, application Germany, Feb. 4, 1969, G 69 04 184
Int. Cl. E21c 35/14
U.S. Cl. 299—43 9 Claims

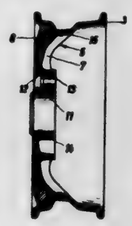


A scraper conveyor in which the entraining means, such as buckets or scrapers, are connected to endless circulating pulling means and move in grooves or troughs for conveying the material while the conveying trough and the trough for guiding the return section of the conveyor are located adjacent to each other and symmetrically with regard to a partition between said troughs.

3,659,901
WHEEL FOR AUTOMOTIVE VEHICLES

Ferdinand Anton Ernst Porsche, Stuttgart-Nord, and Ferdinand Alexander Porsche, Duffingen, both of Germany, assignors to Firma Dr.-Ing. h.c.F. Porsche KG, Stuttgart-Zuffenhausen, Germany

Filed Sept. 9, 1969, Ser. No. 856,381
Claims priority, application Germany, Oct. 10, 1968, P 18 02 298.5
Int. Cl. B60b 3/06
U.S. Cl. 301—65 5 Claims

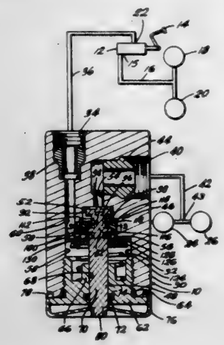


A wheel for automotive vehicles has a flanged hub and a rim connected by at least eight webs which are exclusively Y-shaped in cross-section. The vertical or upright flanges of the webs extend at the front face of the wheel and terminate at an annular disk provided on the front face of the flange, and the bifurcated sections are joined to the outer circumference of an annular body provided on the inner side of the annular disk. The Y-shaped webs extend in planes disposed between the bores, and the bifurcated sections of the Y-shaped webs diverge in the zone of the annular disk in a V-like manner toward each adjacent bore provided in the flanged hub. Additionally, the wheel is cast integrally from a light alloy.

3,659,902
PROPORTIONING VALVE

George R. Kish, Owosso, and Edward L. Volker, Swartz Creek, both of Mich., assignors to Midland-Ross Corporation, Cleveland, Ohio

Continuation-in-part of application Ser. No. 874,483, Nov. 6, 1969, now abandoned. This application July 15, 1970, Ser. No. 55,117
Int. Cl. B60t 8/26, 11/34
U.S. Cl. 303—6 C 14 Claims

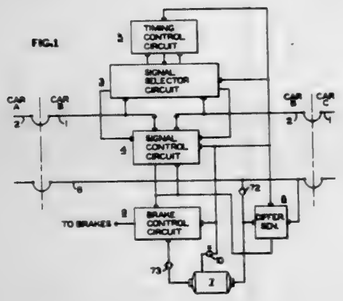


A proportioning valve for use in hydraulic brake systems of automotive vehicles, the proportioning valve being interposed between the master cylinder and the actuators of the rear brakes of the vehicle and incorporating improved means effective to establish a fluid pressure differential between the front and rear brake actuators in the higher ranges of fluid pressure applied by the master cylinder and to increase the pressure differential at a linear rate as the master cylinder pressure increases in such higher range.

3,659,903
POWER AND BRAKE CONTROL SYSTEM UTILIZING FLUIDIC LOGIC ELEMENTS

Ronald A. Sarboch, Columbus, Ohio, assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Sept. 29, 1970, Ser. No. 76,538
Int. Cl. B60t 13/70, 17/06, 11/26
U.S. Cl. 303—20 19 Claims

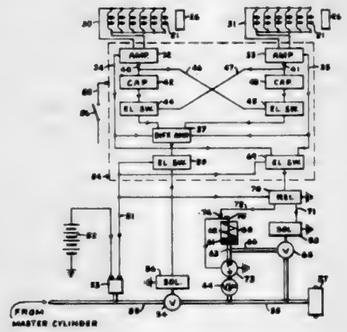


A fluidic signal control system is provided on each car of a railway train for controlling braking thereof in accordance with variation of fluid pressure in a signal pipe extending through the train. An interlock valve device intermediately positioned in the signal pipe separates the signal pipe into segments terminating at opposite ends of the car. Signal selector circuitry responsive to variation of fluid pressure in each signal pipe segment selects the segment in which the incoming signal is being received as the "controlling" segment and establishes the other segment as the "controlled" segment via which the outgoing signal is propagated irrespective of the direction from which the signal is received. The interlock valve device is positioned in accordance with digital pilot signals provided by the signal selector circuit to direct fluid pressure in the "controlling" signal pipe segment to a proportional amplifier means which reinforces the control signal locally for control of a brake control circuit on each car and for connection by the interlock valve to the "controlled" signal pipe segment for transmission to the next car. A timing control circuit is included to momentarily disable the portion of the signal selector circuit responsive to fluid pressure variation in the "controlled" signal pipe segment to assure that the transmitted signal is not falsely sensed as a signal being received.

3,659,904
NON-SKID BRAKING SYSTEM FOR VEHICLES

Fred C. Stevens, 1 Garrett Place, Bronxville, N.Y.

Filed June 23, 1970, Ser. No. 49,100
Int. Cl. B60t 8/12
U.S. Cl. 303—21 CG 7 Claims



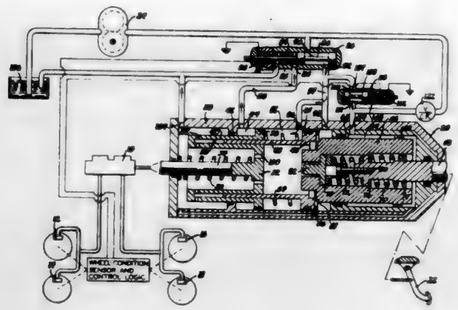
A series of electrical impulses is generated by a set of stationary coils and magnets rotating with the vehicle wheel and is fed to a differential amplifier in such a manner that the output is proportional to variations in amplitude of successive pulses. This output signal is used to interrupt the supply of brake fluid pressure to the wheel brake cylinder and thus prevent further build up of brake pressure when the pulse variation indicates incipient skid conditions. Also the fluid pressure is reduced by being bled off into an accumulator cylinder when the pulse amplitude indicates that the wheel has substantially ceased rotating.

3,659,905
MODULATED HYDRAULIC ANTI-LOCK BRAKE BOOSTER

Joseph N. Goulish, Fenton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 23, 1970, Ser. No. 91,811
Int. Cl. B60t 8/06
U.S. Cl. 303—21 F 3 Claims

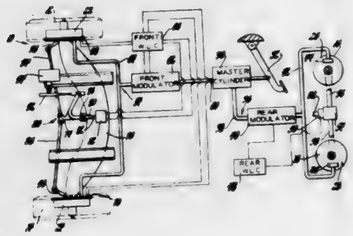
An integrally housed open-center hydraulic brake booster and anti-lock modulator wherein a flow restriction induced back-pressure resulting from movement of a reaction piston into proximity with a manual piston forcibly moves a power piston to actuate the master cylinder. A control valve is shifted upon impending wheel lock to channel the back-pressure to the other side of the power piston to release the brake pressure. The reaction piston, manual piston, and power piston are abuttingly engageable upon over-travel of the operator actuable pedal push rod to actuate the master cylinder independently of hydraulic booster fluid flow.



3,659,906
WHEEL LOCK CONTROL SYSTEM AND METHOD HAVING HIGH AND LOW MODE SELECTION

Robert A. Hervath, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 18, 1970, Ser. No. 12,199
Int. Cl. B60t 8/04
U.S. Cl. 303—21 A 6 Claims

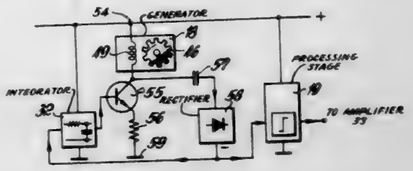


A vehicle wheel lock control system in which the front left and right wheels are provided with separate sensors. The sensors generate signals indicating the changes in wheel velocity during braking and the signals are transmitted to a controller, which, in turn, controls a modulator for the brakes of both front wheels. Due to slight differences in friction coefficient, brake operation, tire and road surfaces, one front wheel will usually have a larger instantaneous wheel slip than the other front wheel and will tend to lock more quickly than the other. Thus, one wheel will have signals generated indicating an incipient wheel lock condition earlier than the other wheel. In normal operation, the front wheel control system will actuate the modulator when both sensors have generated signals indicating the existence of a greater wheel slip than desired for optimum braking, but will not operate when only one wheel causes such a signal to be generated. Under some conditions of vehicle operation, and particularly when leftward or rightward steering is being attempted, the system is modified to cause the modulator to be operated when either of the front wheels causes such a signal to be generated, without also requiring a similar signal from the other wheel. The brake control system for the entire vehicle is also disclosed as including a rear wheel lock control system.

3,659,907
ARRANGEMENT FOR DETECTING SLIPPAGE OF WHEELS OF VEHICLES

Peter Gunsser, and Richard Zechnall, both of Stuttgart, assignors to Klaus Christ, Stuttgart-Durrlewand, all of, Germany and Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 4, 1969, Ser. No. 882,101
Claims priority, application Germany, Dec. 9, 1968, P 18 13 509.6
Int. Cl. B60t 8/08
U.S. Cl. 303—21 CF 7 Claims

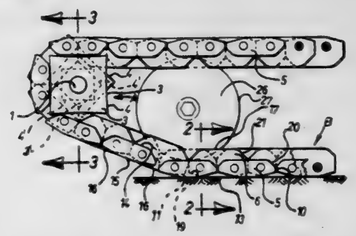


A slippage detecting system for use in conjunction with motor vehicles. Each wheel of the vehicle is provided with a transducer which supplies a voltage dependent upon the speed of the wheel. The transducer output is applied to a Schmitt-trigger circuit which becomes actuated when the voltage exceeds a predetermined value. Upon actuation of the Schmitt-trigger circuit, the braking system of the motor vehicle is operated through an amplifier, so that the braking force is regulated to prevent locking of the wheels. The transducer is in the form of a voltage generator with regulated excitation voltage. The voltage regulator includes an integrator and is connected between the output of the generator and the excitation winding thereof.

3,659,908
TRACK-ENGAGING ASSEMBLY

Edouard Martin Comeau, 154 du Golf Street, Loretteville, Province of Quebec, Canada

Filed Feb. 19, 1970, Ser. No. 12,766
Int. Cl. B62d 55/22
U.S. Cl. 305—38 11 Claims

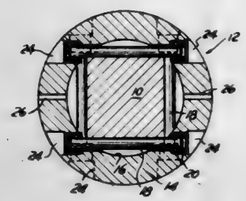


A track-engaging assembly more particularly used as a driving sprocket for an endless track of a caterpillar vehicle, comprising a plurality of parallel square elements mounted on a shaft or tubing with the side edges of the elements arranged at 45° with respect to the side edges of adjacent elements to engage an endless track made of a plurality of rows of interconnected substantially rigid elongated blocks with the blocks of one row displaced half a length of a block relative to the blocks of adjacent rows and wherein the plates are spaced from one another on the shaft or tubing, so that foreign material which may adhere to the track will not clog the sprocket, as it is free to fall between the elements.

The elements can be of similar or of different sizes in the latter case to engage and drive each block of each row when the blocks have different thicknesses, so as to obtain uniform pulling on the endless track across the width thereof.

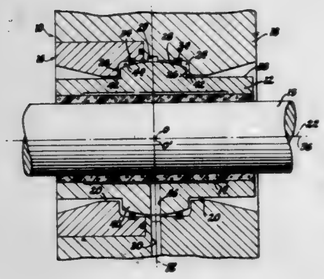
When the endless track system comprises vehicle supporting wheels running on the lower run of the track, said wheels preferably have a rim entirely made of metal in direct running engagement with the endless track blocks.

3,659,909
BEARING CONSTRUCTIONS
James Egbert, Verstand Engineering, Inc. 32371 Dequindre, Madison Heights, Mich.
Filed Oct. 26, 1970, Ser. No. 83,781
Int. Cl. F16c *19/00*
U.S. Cl. 308—6 R 1 Claim



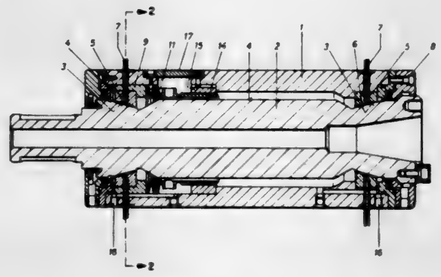
An anti friction bearing construction compriaing a sleeve in which is telescoped a flat sided polygonal cross-section shaft; with longitudinally spaced rollers frictionlessly mounted in the sleeve and engaging the flat sides of the shaft.

3,659,910
RETAINER FOR SPHERICAL ADAPTER
David A. Foster, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed May 6, 1970, Ser. No. 35,167
Int. Cl. F16c *17/16, 23/04*
U.S. Cl. 308—9 1 Claim



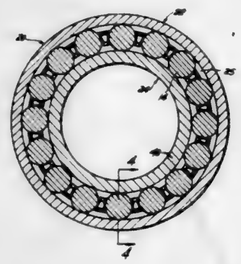
A self-aligning externally pressurized fluid film bearing is provided with a relatively deep grooved self-aligning seat. Critical dimensioning of portions of the seating groove and its cooperating partispherical bearing surface provide a means to insure centering of the bearing surface on the seat after assembly in order to provide adequate sealing of a fluid passage through the self-aligning elements, smooth self-alignment and resilient mounting of the fluid film bearing.

3,659,911
HYDROSTATIC PLAIN BEARINGS
Franz Kessler, and Karl Brand, both of Ebern, Germany, assignors to Kugelfischer George Schafer & Co., Schweinfurt, Germany
Filed July 6, 1970, Ser. No. 52,666
Claims priority, application Germany, July 7, 1969, P 19 34 361.4
Int. Cl. F16c *17/16*
U.S. Cl. 308—122 3 Claims



An arrangement of plain hydrostatic bearings for rotatably mounting a spindle in which the spindle is provided with a pair of tapered bearing surfaces symmetric to a plane perpendicular to the spindle's axis. Front and rear bearing boxes, each formed by several segments having lubricating oil pockets, are formed about the tapered bearing surfaces with the front box being rotatably and axially fixed and the rear box being rotatably fixed but axially movable to compensate for heat expansion.

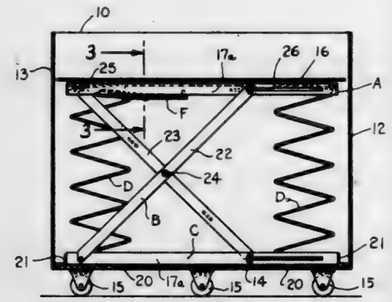
3,659,912
A CAGE AND ROLLER UNIT
Hudson B. Scheifele, 30651 Ponds View Road, Franklin, Mich.
Filed Nov. 18, 1970, Ser. No. 90,636
Int. Cl. F16c *33/38*
U.S. Cl. 308—217 5 Claims



An annular sheet-metal roller-riding cage has a tubular portion with a multiplicity of circumferentially-spaced openings providing pockets for the rollers. Each opening or pocket has opposite cage-support surfaces disposed tangential to the roller mounted therein. The rollers are held in assembly by a corresponding number of L-shaped tabs, two for each roller, with arms extending radially from the tabular portion of the cage and located at the opposite ends of the roller. The free ends of the L-shaped tabs form tongues extending axially toward one another from the opposite sides of the tubular portion and are disposed at the opposite side of the pitch circle of the set of rollers from the tubular portion

of the cage, thereby effecting retention of the rollers in the cage. The opposite sides of the tongues have surfaces converging toward the tubular portion. The tubular portion of the cage is positioned inward of the pitch circle of rollers seated in a two-flanged inner race, or outward of the pitch circle of rollers seated in a two-flanged outer race. Before assembly, the L-shaped tabs are disposed at obtuse angles to the tubular portion of the cage. Upon inserting the rollers in the pockets and seating them in a roller bearing race having fixed flanges on both sides, the opposite sets of roller-retaining tabs are bent axially toward one another to place their free ends or tongues between the rollers for retention and spacing thereof. This assembly is then mounted in a race with a fixed flange on one end and with a flangeless opposite end. The invention thus provides a roller-riding cage with a minimum clearance between it and the lowermost rollers yet accurately located in a radial direction. This is done by causing the normal flat surfaces of the cage support portion on the roller pockets to come into contact with the body of the rollers adjacent the periphery of the tubular portion of the cage which is closest to the pitch circle of the set of rollers so as to minimize the clearance between the cage support surface and the rollers for a given radial movement of the cage.

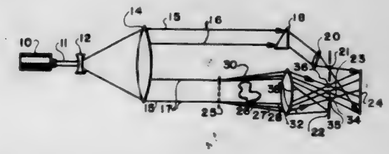
3,659,913
LOCK-DOWN MECHANISM
Linwood J. Waldron, Dover, and William J. Hastings, Rochester, both of N.H., assignors to Spaulding Fibre Company, Inc., North Rochester, N.H.
Filed Aug. 7, 1970, Ser. No. 62,103
Int. Cl. A47f *1/00*
U.S. Cl. 312—71 4 Claims



A lock-down mechanism for a floating platform for use in doff trucks and the like. The lock-down mechanism is carried adjacent the upper ends of a pair of lazy tongs so that its operation is not effected by lint and other foreign matter accumulated in the bottom of the doff truck. The lock-down mechanism includes a pivotal arm that is spring biased in an initial position. As the floating platform is lowered the pivotal arm is moved towards a keeper and engages an inclined notch therein. By lowering the floating platform further the pivotal arm passes around the keeper to its initial position allowing the platform to be raised.

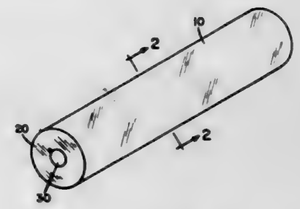
3,659,914
HOLOGRAPHIC SYSTEM WITHOUT LASER SPECKLE
Robert E. Brooks, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed Dec. 17, 1970, Ser. No. 98,978
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 20 Claims

A holographic system particularly for holographic interferometry which minimizes the effect of laser speckle yet permits viewing of the holographic image over a wide angular range at discrete angles. The scene beam passes a periodic grating structure, such as a wire mesh screen, a phase grating, or an amplitude grating for breaking up the scene beam into a number of discrete beams corresponding to different orders. The subject is interposed between the grating structure and the hologram. A lens may be arranged between the subject and the hologram for focusing the various discrete scene beams so that a desired number may be selected by an aperture plate. Alternatively, a pair of mirrors may be used for bringing together the discrete scene beams created by the grating structure. A further refinement consists of a second



periodic grating structure disposed between the lens and the subject; again, the discrete scene beams may be focused by a lens. The two diffraction gratings preferably have different grating constants. Also, each of the discrete scene beams may be recorded on a separate hologram on which a reference beam is also directed. This may be effected by an additional periodic grating structure for also diffracting a discrete reference beam into the plane of each of the various holograms.

3,659,915
FUSED SILICA OPTICAL WAVEGUIDE
Robert D. Maurer, and Peter C. Schultz, both of Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed May 11, 1970, Ser. No. 36,109
Int. Cl. G02b *5/14*; H01p *3/00*
U.S. Cl. 350—96 WG 10 Claims



An optical waveguide having a high purity fused silica cladding layer, and a core of high plurality fused silica doped with a sufficient amount of a multivalent metal oxide so as to increase the index of refraction of the core above that of the cladding layer.

3,659,916
SINGLE-MODE DIELECTRIC WAVEGUIDE
Enrique Alfredo Jose Marcatili, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Continuation-in-part of application Ser. No. 730,192, May 17, 1968, now abandoned. This application July 28, 1970, Ser. No. 59,014
Int. Cl. H01p *3/00*; G02b *5/14*
U.S. Cl. 350—96 WG 5 Claims

This application describes a single-mode dielectric waveguide for guiding electromagnetic wave energy. The guide comprises a low-loss dielectric substrate in which a thin, low-loss, dielectric strip of higher refractive index is em-

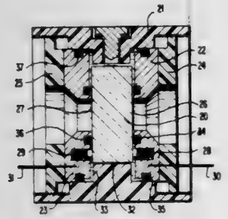
bedded. In general, such a guide is capable of supporting a plurality of modes of two orthogonally-polarized families of modes. To limit the waveguide to single-mode operation, the cross-sectional dimensions are limited so that the guide is incapable of supporting modes higher than the fundamental mode of each of the two families of modes. One of two fundamental modes is then supported by either placing a lossy material along one surface of the guiding strip, thereby making the guide much lossier to one of the two fundamental modes or, alternatively, by placing a higher refractive index material along the strip, thereby destroying the guiding capability of the waveguide with respect to one of the two fundamental modes.



3,659,917
POCKELS CELLS

Jean-Louis Bouttineau, Antony, France, assignor to Compagnie Generale D'Electricite, Paris, France

Filed Mar. 26, 1970, Ser. No. 22,831
Claims priority, application France, Mar. 28, 1969, 6909472
Int. Cl. G02f 1/34
U.S. Cl. 350—160 3 Claims



An electro-optical cell, comprising an insulating case, having two windows arranged opposite to each other; a crystal in said insulating case; two insulating countercheeks, supported on the extreme faces of said crystal, by means of metallic electrodes, said countercheeks covering said windows in said insulating case, said electrodes and countercheeks having openings to allow the passage of light traversing the crystal;, and further characterized in that a sleeve, consisting of an insulating substance, is arranged around a lateral surface of said crystal and is in contact with said lateral surface and the interior surface of said case opposite said lateral surface, so as to insulate electrically said electrodes from each other is disclosed.

3,659,918
COLOR SEPARATING PRISM SYSTEM

Sing Liong Tan, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 24, 1970, Ser. No. 22,178
Int. Cl. G02b 5/28
U.S. Cl. 350—166 6 Claims

A color separating prism system for a television camera including several dichroic layers arranged at angles of less than 30° to a plane normal to the optical axis, which layers are successively struck by the light rays which traverse the prism system, light within a given wavelength range being reflected at each respective layer. Such a color separating prism system increases the efficiency of the incident light and renders the response times of the three channels more equal to one another and to the lowest response time by providing at least one partially reflecting layer in the prism system in an airgap adjoining a dichroic layer.

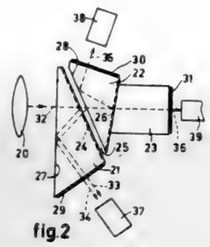
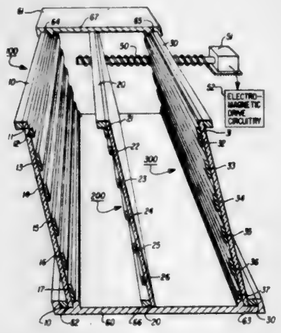


fig.2

3,659,919
TRI-LEVEL INTERFEROMETER

Charles Sumner Williams, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 12, 1968, Ser. No. 783,337
Int. Cl. G02b 1/10; G01b 9/02
U.S. Cl. 350—166 2 Claims



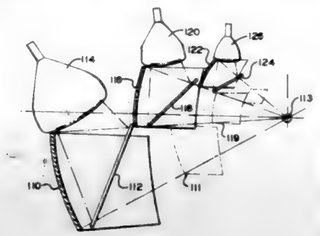
Disclosed is an interferometer having three mutually parallel levels, each having a plurality of reflective stripes which divide light entering the interferometer into two groups of parallel beams to permit the phase difference between the beams to be determined by the position of the center level relative to the outer levels.

3,659,920
WIDE ANGLE INFINITY IMAGE VISUAL DISPLAY

Frank William McGlasson, Windsor, N.Y., assignor to The Singer Company, New York, N.Y.

Filed Aug. 27, 1970, Ser. No. 67,385
Int. Cl. G02b 17/06, 27/14
U.S. Cl. 350—174 13 Claims

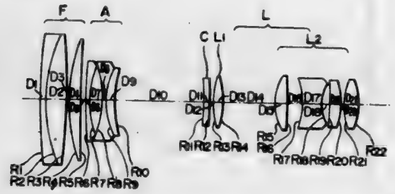
A method of arranging a plurality of infinity image displays to form a wide angle display. Displays are shaped in the form of spherical wedges and butted together to form tiers having the desired horizontal field of view and the tiers arranged vertically to form a continuous vertical field of view. To avoid mechanical interference tiers may be segments of spheres of different sizes and may still, if arranged so that the centers of all spheres of which tiers are segments are centered at the observer's eyepoint, provide a continuous display as seen by the observer.



3,659,921
ZOOM LENS CAPABLE OF EXTREME CLOSEUP PHOTOGRAPHY

Ryusho Hirose, and Eiichi Takano, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 23, 1970, Ser. No. 57,520
Claims priority, application Japan, July 26, 1969, 44/58743
Int. Cl. G02b 15/18
U.S. Cl. 350—186 5 Claims

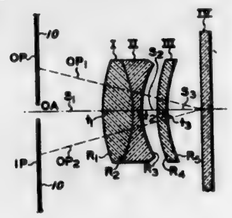


Zoom lens of this invention is capable of extreme closeup photography. The zoom lens has a positive power focusing lens, a negative power variator, a negative power compensator and a relay lens consisting of a movable front and a fixed rear positive power lens groups. In zooming operation, the variator is one-way shifted while the compensator is reciprocatingly shifted. In focusing, the focusing lens is shifted for an object from an infinity to a usual distance. For close-up photography the focusing lens is shifted to its extreme foremost end and the front group of the relay lens is shifted toward the image plane.

3,659,922
SYMMETRICAL HALF-LENS OPTICAL SYSTEM

George L. McCrobie, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 25, 1971, Ser. No. 118,745
Int. Cl. G02b 17/00
U.S. Cl. 350—202 1 Claim

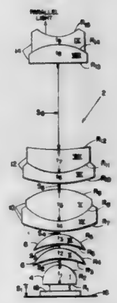


A two component Split-Dagor type lens is herein disclosed utilizing a reflecting surface at the stop position to reverse the light rays passing through the system thus simulating a conventional symmetrical Split-Dagor system.

3,659,923
SIX COMPONENT 100X MICROSCOPE OBJECTIVE

Arthur H. Shoemaker, East Aurora, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed Mar. 17, 1971, Ser. No. 125,080
Int. Cl. G02b 21/02
U.S. Cl. 350—215 2 Claims



A six component achromatic oil immersion microscope objective having a magnification of 100X and a numerical aperture of 1.25.

3,659,924
FOUR MEMBER 100X MICROSCOPE OBJECTIVE

Arthur H. Shoemaker, Erie, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed Mar. 18, 1971, Ser. No. 125,623
Int. Cl. G02b 21/02
U.S. Cl. 350—224 2 Claims



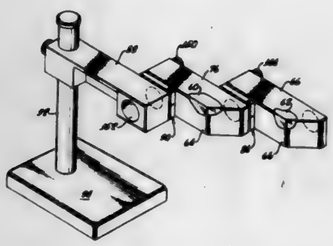
A four member achromatic oil immersion microscope objective having a numerical aperture of substantially 1.25 and a magnification of substantially 100X.

3,659,925
THREE COMPONENT 2.5X MICROSCOPE OBJECTIVE
Arthur H. Shoemaker, Erie, N.Y., assignor to Americana Optical Corporation, Southbridge, Mass.
Filed Mar. 24, 1971, Ser. No. 127,571
Int. Cl. G02b 21/02
U.S. Cl. 350—225 2 Claims



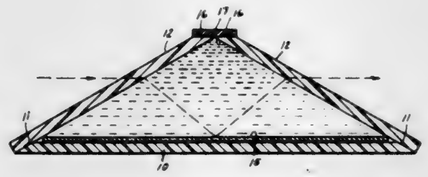
A three component achromatic microscope objective having a magnification of 2.5X and a numerical aperture of 0.07.

3,659,926
BEAM DISPLACER
Marcel L. Charbonneau, 890 S. Ponderosa, Orange, Calif.
Filed May 15, 1970, Ser. No. 37,526
Int. Cl. G02f 1/34
U.S. Cl. 350—285 7 Claims



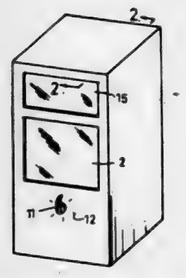
An apparatus for displacing an optical beam to a selected point anywhere within a circular area, providing extensive linear displacement of the beam, includes a plurality of pairs of parallel reflective surfaces. Each pair is arranged to receive an incoming beam and provide an exiting beam that is precisely parallel to the incoming beam. One of the pairs is mounted for rotation substantially about the axis of the incoming beam. At least another of the pairs is mounted to the first pair for rotation about the axis of the exiting beam of the first pairs. The two are relatively positioned so that the exiting beam of the first pair is the incoming beam of the second pair and the two are mounted for linear and rotational motion together along and about a vertical axis. The arrangement receives a light beam directed substantially horizontally to a first reflective surface of the first prism whereby the exiting beam from the second prism can be selectively positioned at any point within a circle lying in a substantially vertical plane. The various relatively movable parts are provided with clamped joints to maintain them in a selected relative position. The clamps normally provide a substantial friction force to lock one movable part with respect to another. A device is provided for opening the clamps a fixed amount to unlock the structure and allow one movable part to be rotated with respect to another while maintaining the required friction force for the structure to be self-supporting, thereby preventing accidental damage caused by the structure moving under its own weight.

3,659,927
REAR VIEW OPTICAL TRAIN AND DOVE PRISM
Charles W. Meultrie, 1543 East 85th Street, Chicago, Ill.
Filed Apr. 1, 1970, Ser. No. 24,486
Int. Cl. G02b 5/04
U.S. Cl. 350—286 11 Claims



Dove prism particularly adapted for the optical trains of rear view vision devices. The prism is relatively large, to provide an adequate image in a rear view vision optical train and is in the form of an isosceles triangular prism filled with optical liquid. A prismatic frame forms a support for two transparent refractory plates of equal length and extending at equal angles with respect to the base of the prismatic frame. A mirror extends along the base between the transparent plates. The sides of the prismatic frame are opaque, to prevent beams of light from entering the prism. The optical liquid may be a distilled water containing alcohol or any other clear anti-freeze which will not settle out of the liquid or change color upon changes in temperature. The plates of the prism, refract beams of light to the mirror and in turn project the beams of light to a lens or mirror for viewing through a screen, which may be in the form of a ground glass screen.

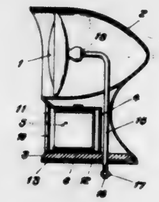
3,659,928
REFLECTION APPARATUS FOR SIMULATING THE EFFECT OF USE BY A PERSON OF A COSMETIC OR ARTICLE
George Macfarlane, Chatswood, Australia, assignor to John Alan Davis, North Sydney, New South Wales, Australia
Filed May 11, 1970, Ser. No. 36,086
Claims priority, application Australia, May 12, 1969, 54887/69
Int. Cl. G02b 5/08
U.S. Cl. 350—291 4 Claims



An interiorly illuminated enclosure houses a changeable disc selectively movable to present one of a plurality of

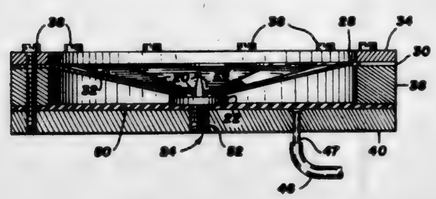
colors or shapes before an apertured chamber within the enclosure. Upon looking into the chamber through a see-through mirror a user views the selected color or shape superimposed upon their image.

3,659,929
BACK-MIRROR AND SIDE-MIRROR COMBINATION DEVICE
Masaharu Yuzawa, 10-23, 2-chome Kamikedai, Tokyo, Japan
Filed Jan. 25, 1971, Ser. No. 109,365
Claims priority, application Japan, Feb. 28, 1970, 45/19294
Int. Cl. G02b 5/08
U.S. Cl. 350—307 2 Claims



The device comprises a back mirror rotationally installed within a cover body and a side-mirror of prism reflection type pivotably supported in a square box provided beneath said back-mirror cover body and having colored glass window thereon to reflect a colored image of the sideward sight whereby the driver can distinguish therethrough between both sideward and backward sights without mistake.

3,659,930
SEGMENTED DEFLECTIBLE SCREEN SURFACE FOR TESTING EYES BY LASER REFRACTION
Horst E. Groneberg, Rochester, and Kenneth A. Snow, Greece, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Sept. 28, 1970, Ser. No. 76,046
Int. Cl. A61b 3/02; G02b 5/02
U.S. Cl. 351—36 4 Claims



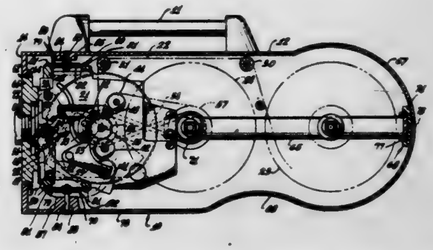
A deflectible generally circular screen for testing eyes by laser refraction includes a plurality of thin flexible generally triangularly shaped segments each having a nonspecular surface. The segments are affixed to a base and disposed to have corresponding apexes of the triangularly shaped segments defining a central area of the screen. The surface of each segment opposite the nonspecular surface is disposed to engage an inflatable rubber diaphragm to deflect the triangular segments from a generally concave disposition to a generally planar disposition. After the diaphragm is inflated to engage and cooperatively move the screen, the diaphragm is deflated at a relatively slow controlled rate and a visual pattern formed on the nonspecular surfaces of the segments of the screen by a laser beam appears to move to an observer having abnormal eyesight.

3,659,931
EYE GLASS LENS ADJUSTER
Philip J. Allen, 6 Nelson Street, Fredericksburg, Va.
Filed Aug. 3, 1970, Ser. No. 60,397
Int. Cl. G02c 1/00
U.S. Cl. 351—41 4 Claims



An eye glass frame is provided with manually adjustable means for individually moving each lens toward or away from the eyeball to vary the lens-eye separation for maximum comfort and optimum focus.

3,659,932
MOTION PICTURE CAMERA WITH COUNTERBALANCING MEANS
Walter H. Bach, 1771 North Crescent Heights Boulevard, Los Angeles, Calif.
Filed Oct. 5, 1970, Ser. No. 78,132
Int. Cl. G03b 17/02
U.S. Cl. 352—242 7 Claims

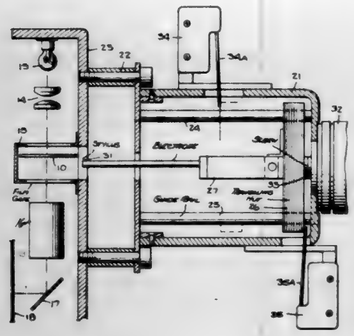


A camera having an elongated hollow case with a lens mount resiliently sealed in its front wall and supporting a zoom lens assembly. The lens mount is fastened to the front of a center plate supported in the front portion of the case on resilient mounts, and a counter-balancing lens stabilizer bar projects rearwardly from the center plate into a cushioned socket on the rear wall of the case.

3,659,933
ANNOTATOR FOR MICROFILM READER
Harry Weltz, New Hyde Park, N.Y., assignor to Benton-Best, Inc., Brooklyn, N.Y.
Filed Aug. 11, 1970, Ser. No. 62,789
Int. Cl. G03b 21/00
U.S. Cl. 353—44 6 Claims

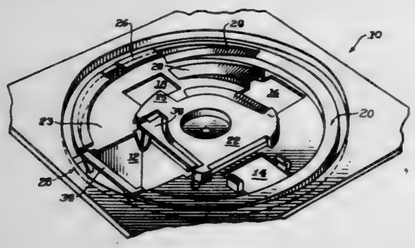
An annotator adapted to erase any selected line of text or a part of the line appearing on a reduced image formed on a microfilm strip of thermoplastic material which is transported within a microfilm reader for projection on a screen. The annotator includes a retractable carriage supporting a pair of electrodes whose ends are bridged by a resistance wire acting as a stylus. The carriage is movable by a stepping motor or other means to cause the stylus, whose length corresponds to the width of the frame, to advance incrementally across the film strip and in engagement therewith in a direction normal

to the direction of film travel. The stylus is arrested at a position in registration with a line of text to be erased, the stylus



and text being viewable on the screen whereby the registration may be readily checked. By electrically energizing the arrested stylus, the selected line is fused and erased.

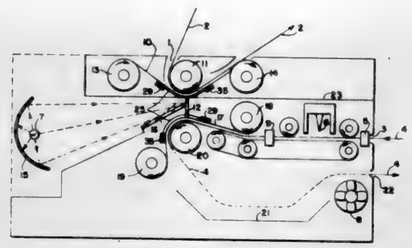
3,659,934
SLIDE TRANSPORT DEVICE
Carl C. Costanza, Chicago; Walter W. Weber, Des Plaines; Frank W. Betlejewski, Chicago, and Richard Frystak, Park Ridge, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.
Filed Sept. 23, 1969, Ser. No. 860,384
Int. Cl. G03b *23/00, 23/02*
U.S. Cl. 353—103 **4 Claims**



A device for transporting slides in a horizontal plane to be projected by a slide projector.

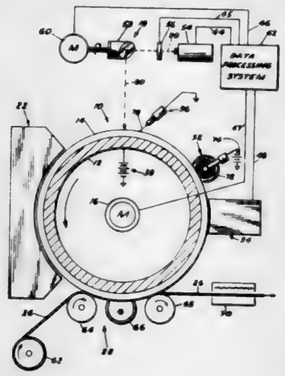
3,659,935
COPYING METHOD AND APPARATUS
Roland Moraw, Wiesbaden-Biebrich, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
Filed Dec. 22, 1969, Ser. No. 886,889
Claims priority, application Germany, Dec. 23, 1968, P 18 16 591.8
Int. Cl. G03b *27/50, 27/54*
U.S. Cl. 355—1 **9 Claims**

This invention relates to a copying apparatus comprising a housing having therein a reflex exposure means, a bridge-like glass fiber optic, means for moving an optically clear spacing film together with copying material past one end of the fiber optic, and means for moving an optically clear spacing film



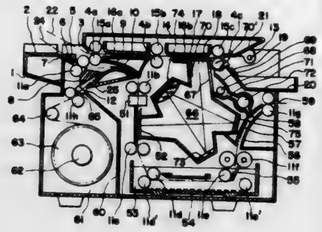
together with a master past the other end of the fiber optic and in a direction opposite to that of the copying material.

3,659,936
APPARATUS FOR ELECTROSTATIC PRINTING
Peter H. Klose, Troy, and Stanford R. Ovshinsky, Bloomfield, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.
Filed Jan. 7, 1970, Ser. No. 1,265
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **17 Claims**



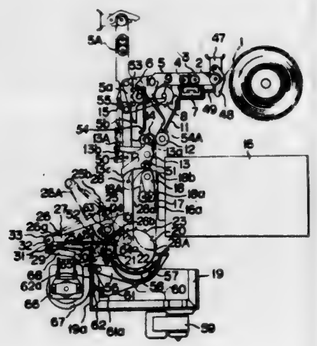
An electrostatic printer employs a metallic drum coated with a semiconductor film. The resistance of the film is varied from its high resistance or insulating state to its low resistance or conducting state in response to a scanning laser beam. A DC voltage source is connected to the metallic drum. The voltage is conducted through the semiconductor and appears at the surface in those regions where the laser beam impinges on the semiconductor. The semiconductor is then dusted with ink particles which cling to the regions where the voltage appears. Printing is accomplished by transferring the ink particles to a document. Multiple copies may be made by employing a semiconductor material exhibiting a memory characteristic.

3,659,937
SMALL SIZED ELECTRONIC DUPLICATOR
Yorio Yamanoi, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Apr. 28, 1970, Ser. No. 32,654
Claims priority, application Japan, Apr. 29, 1969, 44/39226
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **3 Claims**



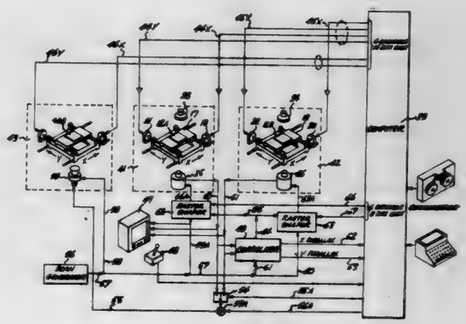
A cover body hinged to the housing of an electronic duplicator is rotatable between a first and second position so that in the first position a plurality of driven rollers within the cover body are aligned and in contact with a like plurality of driving rollers along an original document carrier path so that thin originals can be transported thereby and in the second position the driven rollers are located on the same level as the driving rollers and form an extension thereof so that thick originals can be transported along the carrier path.

3,659,938
INFORMATION RECORDING DEVICE
Sakae Fujimoto, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Apr. 28, 1969, Ser. No. 819,587
Claims priority, application Japan, Apr. 30, 1968, 43/29280; 43/29281; 43/35620; 43/35621; 43/35622; May 24, 1968, 43/35105
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **3 Claims**



An electrostatic-photographic information recording device wherein a recording sheet is fed through an electrostatically charging section, an exposure section (photographing and recording section), a developing section and a drying section. The pressure rollers disposed in said sections and feed rollers are displaced by operation of one lever from the exterior of the device to the positions so as to open the path of feed of said recording sheet for loading the same in the device.

3,659,939
AUTOMATIC ORTHOPHOTO PRINTER
Gilbert L. Hobrough, Vancouver, B.C., Canada, assignor to Hobrough Limited, Vancouver, B.C., Canada
Filed Sept. 18, 1968, Ser. No. 760,435
Int. Cl. G01c *11/12*
U.S. Cl. 356—2 **14 Claims**

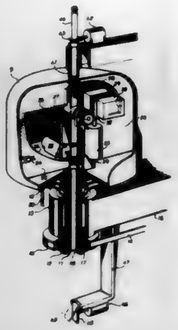


This application discloses an improved system which operates automatically to provide an orthophotograph from one or more pairs of stereo aerial photographs. The system disclosed includes first and second photo-scanning devices which are operated in synchronism to provide data signals for each spot of the two photographs making up a stereo pair. In addition to the usual correlation network which operates on the data signals to determine the amount of parallax error, the system includes image transformation circuitry and raster shaping circuits controlled thereby for altering the scan patterns of the two photo-scanning devices. Efficiency of the correlator is thereby improved, and the problems associated with changes in the elevation of the terrain being mapped are overcome to an extent such that patch printing of a large area is accomplished without the usual discrepancies in alignment of detail in adjacent patches. Details of the raster shaping system, the signal correlator providing the input signals for the raster shapers, and the signal analyzer of the correlator are provided along with a detailed description of the overall system.

3,659,940
METHOD AND APPARATUS FOR EXAMINING LIQUID FILLED CONTAINERS
Knut Bonde Hansen, Malmo, and John Soren Petersson, Sodertalje, both of Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden
Filed June 11, 1969, Ser. No. 832,187
Claims priority, application Sweden, June 11, 1969, 7825/68
Int. Cl. G01n *1/00, 15/02, 21/04*
U.S. Cl. 356—36 **11 Claims**

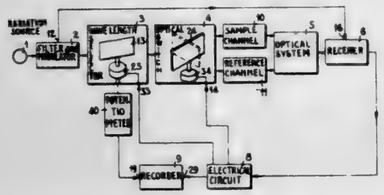
A container which is at least partially filled with a liquid is centrifuged while its longitudinal axis is maintained substantially perpendicular to its axis of rotation thereby causing impurities which may be present in the liquid to move to the end of the container farthest from the axis of rotation while the air bubbles in the liquid collect at the end of the container nearest to the axis of rotation. The container is then moved diametrically past the axis of rotation causing the air to move to the opposite end of the container. The centrifuging of the container continues causing any impurities which

may be present to be transferred from the end of the container in which they have been collected to the opposite end.



The presence or absence of these impurities is sensed by a photoelectric device during this transfer.

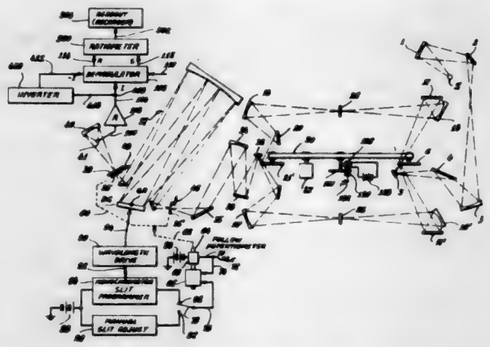
3,659,941
INFRA-RED SPECTROMETERS
Mathias Tong, Courbevoie, France, assignor to Compagnie D'Applications Mecaniques A L'Electronique, Au Cinema Et A L'Atomistique (C.A.M.E.C.A.)
Filed July 9, 1970, Ser. No. 53,516
Claims priority, application France, July 21, 1969, 6924739
Int. Cl. G01j *3/42*
U.S. Cl. 356—51 **5 Claims**



In a two-channel spectrometer, the output signal of the optico-electrical detector is integrated, while one of the two channels is illuminated, for a duration T_o at the end of which the integrated signals reaches a value E, one of the two values T_o and E being predetermined; the output signal of the detector is thereafter integrated, while the other channel is illuminated, for a duration T_1 at the end of which the integrated signal reaches the aforesaid value E; T_1/T_o is the transmission coefficient of the first channel relatively to the other one, and a signal function of T_1/T_o is applied to the recorder.

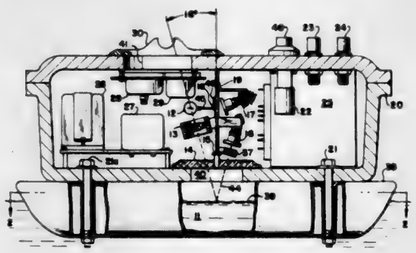
3,659,942
DETECTOR CIRCUITS FOR PHASE COMPENSATION
Joseph A. Vergato, Monroe, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed Nov. 13, 1970, Ser. No. 89,166
Int. Cl. G01j *3/42*
U.S. Cl. 356—51 **12 Claims**

In double-beam optical testing instruments (e.g., spectrophotometers) in which a single radiation detector alternately receives radiation that has passed through two different optical paths, a separator or demodulator is utilized to separate the radiation detector electrical signal components into those representing the intensities of the radiation passing through each of the paths. The demodulator typically receives a synchronizing signal from the means causing the alternation of the two beams seen by the detector (typically one or more choppers having transparent and mirrored sectors). It has been found that when the size of the area of certain types of detectors receiving the radiation vary (caused, for example, by varying the entrance and exit slits of a monochromator in a spectrophotometer), the time lag in the



electrical output of the detector varies. The present device provides means for compensating the phase of the synchronizing demodulator signal with such variation in the radiation detector time lag, as by utilizing a signal representative of the existing slit width to introduce a variable phase shift in the synchronizing demodulator signal.

3,659,943
FLOATING LIQUID MONITOR
Alvin D. Goolsby, Moraga, Calif., assignor to Shell Oil Company, New York, N.Y.
Filed Jan. 15, 1970, Ser. No. 3,161
Int. Cl. G01n *33/28, 21/48, 21/06*
U.S. Cl. 356—70 **11 Claims**

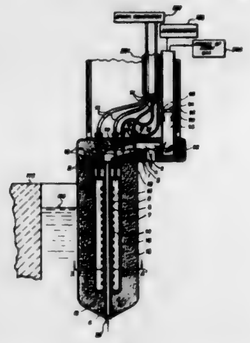


Apparatus for detecting the presence of a reflective liquid of lesser density floating on a more dense liquid of different reflectivity wherein the intensity of a beam of reflected light is measured to detect the presence of less dense liquid.

3,659,944
APPARATUS FOR CONTINUOUS SPECTRAL ANALYSIS OF MOLTEN SUBSTANCES
Milan Bojic, Metz, France, assignor to Institut de Recherches de la Siderurgie Francoise, Saint Germain-en-Laye, France
Filed Feb. 24, 1971, Ser. No. 118,303
Claims priority, application France, Feb. 27, 1970, 7007139
Int. Cl. G01j *3/30, 3/00*; G01n *1/10*
U.S. Cl. 356—86 **10 Claims**

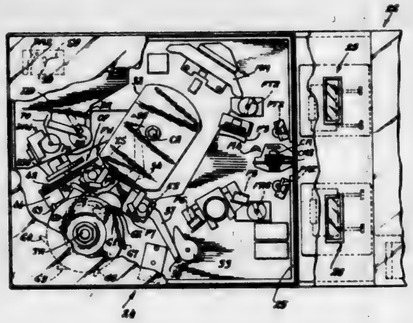
Apparatus for direct and continuous spectrometric analysis of molten metals has a riser which draws a continuous stream of molten metal from a furnace in response to actuation of an electromagnetic pump. The stream flows through a spark chamber which contains a sill or barrier over which the metal

must flow to rise to a predetermined level at a desired distance from a first electrode which is connected with one pole of a spark generator. The other pole of the spark generator is connected with a second electrode which dips into the stream of molten metal in the chamber with attendant generation of a spark between the exposed surface of



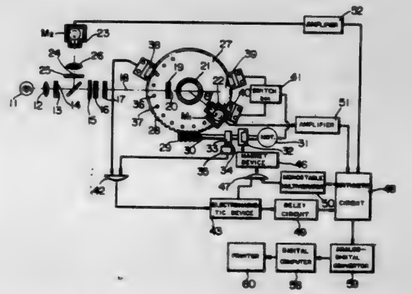
the stream and the first electrode. The light or radiation which is generated by the spark is directed into a spectrometer by way of a horizontal or vertical tube. Such tube further serves to admit into the spark chamber a stream of inert gas which evacuates metallic vapors developing in the chamber in response to generation of the spark.

3,659,945
SCANNING MONOCHROMATORS
John M. Reche, West Redding, and Rene C. Sawyer, Jr., Shelton, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed Nov. 19, 1969, Ser. No. 878,102
Int. Cl. G01j *3/06, 3/18*
U.S. Cl. 356—100 **6 Claims**



A scanning monochromator includes a plurality of diffraction gratings mounted on a rotatable turret, so that each grating may be moved and precisely indexed into operative position. Each grating so positioned is angularly rotated about its axis by the same scanning arm, driven by a cam having two similar (but different) contours for producing one of two similar scanning functions for the various gratings. Preferably more interchangeable order-separating filters than gratings are included to insure complete and efficient filtering (e.g., 14 filters for 7 gratings). Both the stepping of the grating turret and of the filters (e.g., on a filter wheel) are controlled by (digital) signals, derived from the actual wavenumber being separated, as precisely read by (coarse and fine) digital encoder discs on the wavenumber scanning driving shafts (before and after a large-ratio reduction system). The digital control signals and a signal indicating the operative grating provide a readout of the wavenumber, directly usable by data processing apparatus. The closed loop digital nature of the control signals are free of any non-systematic errors, and allow the instrument to be "indexed" to any desired wavenumber (and then "instructed" to scan to any other wavenumber automatically).

3,659,946
AUTOMATED LIGHT SCATTERING PHOTOMETER
Schichibei Kozawa, and Hideki Yamamoto, both of Kyoto City, Japan, assignors to Shimadzu Seisakusho Ltd., Nakakyo-ku, Kyoto-shi, Kyoto-fu, Japan
Filed Dec. 9, 1970, Ser. No. 96,508
Claims priority, application Japan, Dec. 10, 1969, 44/117890
Int. Cl. G01n *21/00, 21/06, 21/26*
U.S. Cl. 356—104 **12 Claims**

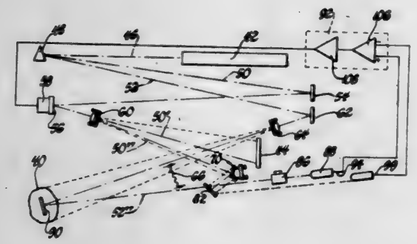


An automated light scattering photometer characterized in that a photoelectric unit used to measure the intensity of light scattered from the sample container at different angles relative to the optical axis of the instrument can be intermittently rotated. This can be achieved by the provision of a pair of switching means, one of which being adapted to be actuated by a pin vertically disposed on the upper surface of a rotary member mounted with said photoelectric unit and the other of which being adapted to be actuated by an actuator means rigidly mounted on a shaft for transmitting the rotational force from a motor to the rotary member. When these switches are closed at the same time, the rotation of the rotary member can be stopped by means of a clutch means. In addition, this photometer of the present invention can be utilized in connection with a commercially available computing machine. To this end, means for integrating the output of the photoelectric unit and that of another photoelectric unit is provided, the output of said integrating means being adapted to be applied to the computing machine.

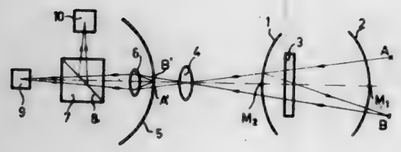
3,659,947
HOLOGRAPHIC APPARATUS WITH AUTOMATIC CONTROL SYSTEM FOR MAINTAINING CONSTANT PHASE RELATION BETWEEN REFERENCE AND OBJECT BEAMS
Don B. Neumann, Ann Arbor, Mich., assignor to GCO, Inc., Ann Arbor, Mich.
Filed June 18, 1970, Ser. No. 47,291
Int. Cl. G02b *27/00*; G01j *1/20*
U.S. Cl. 356—106 **11 Claims**

Apparatus for making holograms is disclosed which includes an arrangement for maintaining a constant phase relationship between the object and reference beams so that the fringe pattern remains stationary during the recording period. The apparatus includes means for detecting spurious motion of the object or elements of the apparatus by means responsive to the intensity of a portion of the wavefront interference pattern. The detection signal which is taken as being

indicative of a phase shift between the reference and object waves is applied to an automatic control system including amplifying means and a transducer disposed in one of the beam paths for producing a corrective phase shift thereof relative to the other beam. The quiescent operating point for the automatic control system is established by an automatic bias system which includes means for producing a signal corresponding to the average value of the intensity of the wavefront interference pattern. In one preferred embodiment a bias signal corresponding to the average value of intensity is developed by a detector with means forming a portion of the interference pattern thereon with the fringe lines being spaced such that the detector responds to an area including both constructive and destructive regions of the interference pattern.



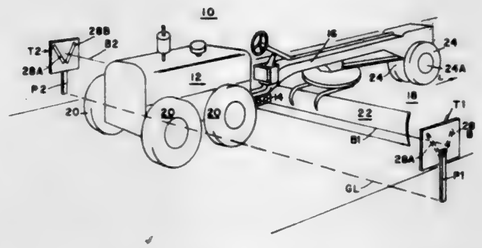
3,659,948
OPTICAL DEVICE FOR ALIGNING AN OBJECT LOCATED AT AN ARBITRARY DISTANCE FROM THE DEVICE
Hendrik De Lang, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 13, 1970, Ser. No. 27,894
Claims priority, application Netherlands, Apr. 23, 1969, 6906306
Int. Cl. G01b *11/26*
U.S. Cl. 356—110 4 Claims



An improvement of an optical device for aligning an object located at an arbitrary distance from the device is described in which the device includes two identical or substantially identical concave mirrors the reflecting concave surfaces of which face each other and which each contain the center of curvature of the other mirror, and at least one **/4-plate.

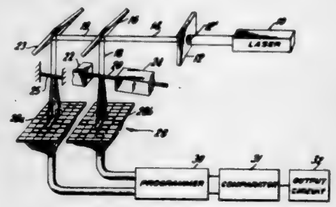
It is shown that by successively including a beam chopper and a beam splitter in the light paths of the beams which emerge from the optical system the device can be adapted to photo-electric alignment without a spatial separation between the observed object and its image.

3,659,949
LASER BEAM SYSTEMS AND APPARATUS FOR DETECTING AND MEASURING PARAMETRIC DEVIATIONS BETWEEN SURFACES AND THE LIKE
Robert R. Walsh, and Martin A. Apostolico, both of Wilmington, Del., assignors to Technidyne, Inc., Wilmington, Del.
Filed Apr. 20, 1970, Ser. No. 30,174
Int. Cl. G01b *11/00*
U.S. Cl. 356—156 15 Claims



A deviation detection and measuring system and apparatus are provided for determining the proper generation of roadbed surfaces and the like in which a laser beam is projected from each side of an ambulatory road grader onto retro-reflective targets of predetermined configuration adjacent to the roadbed, said targets having a known orientation with respect to the ultimately desired dimensions and orientation of the roadbed. Detection devices on the grader detect the laser beams reflected from the target configurations and effectuate a readout such that the current dimensional parameters of the roadbed are determined and compared with the ultimately desired dimensional parameters thereof.

3,659,950
LASER APPARATUS FOR DETECTING THE SIZE AND FORM OF FILAMENTARY MATERIAL BY MEASURING DIFFRACTED LIGHT
John Troll, Ridgefield, and Cole Baker, Stratford, both of Conn., assignors to Iris Corporation
Filed July 14, 1969, Ser. No. 841,213
Int. Cl. G01n *21/18, 21/30, 21/16*
U.S. Cl. 356—199 5 Claims



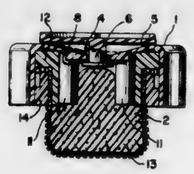
A device for measuring moving filaments includes a laser whose beam is split and the split beams not blocked directed upon distinct filament portions; the light diffracting past the filaments falls upon respective optical sensors. The filament portions may be either longitudinally spaced along the same filament, angularly spaced about the same longitudinal filament position or include the moving filament and a standard. The outputs of the optical sensing means are compared and a signal is produced representative of such a comparison. An arrangement is also disclosed which employs selected energy levels within the diffraction pattern of an unsplit beam to precisely measure a moving filament.

3,659,951
CARTRIDGE FOR A WRITING IMPLEMENT
Werner Germann, Viganello, Lugano, Switzerland, assignor to Amerasia Enterprises, Incorporated, Charlotte Amalie St. Thomas, V.I.
Filed Mar. 11, 1970, Ser. No. 18,544
Claims priority, application Switzerland, Apr. 23, 1969, 6381/64
Int. Cl. B43k *7/10*; C09d *11/18*
U.S. Cl. 401—190 10 Claims



A writing implement cartridge containing a writing medium under pressure, which cartridge has therein a mixture of a highly viscous substance and a chemically reactive substance and a second chemically reactive substance which, when placed in contact with each other, generate a gas so as to maintain the writing medium in said cartridge under pressure, said writing medium comprising a mixture of a highly volatile solvent and a low volatility solvent, thickening agents, and pigments. In addition, the invention is directed to the method of producing the cartridge and the writing medium contained therein.

3,659,952
BRUSH FOR CLEANING GRAMOPHONE RECORDS
Charles Meranesis, La Boisse, France, assignor to Zafira France, La Boisse, Ain, France
Filed June 17, 1970, Ser. No. 46,873
Claims priority, application France, June 19, 1969, 6920280
Int. Cl. B43m *11/06*
U.S. Cl. 401—196 7 Claims



A brush specially intended for cleaning gramophone records comprises a thick plate of moulded plastic material associated with a piece of velvet fabric, the plate being provided with a reservoir of liquid closed by a cover plate and capable of being supplied with a liquid suitable for moisturizing the tufts of velvet fabric.

3,659,953
PLUG AND BARREL ASSEMBLY FOR MARKING DEVICE
Guy A. Taylor, Batavia, Ill., assignor to Sanford Research Company
Filed Apr. 21, 1970, Ser. No. 30,518
Int. Cl. B43k *8/00*
U.S. Cl. 401—198 13 Claims



A writing instrument is provided with a combined decorative and functional ring or band at the juncture between the plug and the barrel of the reservoir section of the instrument. The ring or band cooperates with means on the plug to effect a locking and a sealing relationship between the plug and the barrel.

3,659,954
FOUNTAIN PEN
Heinz Gunther Herrnring, Hamburg-Fuhlsbuttel, Germany, assignor to Montblanc-Simplo GmbH, Hamburg, Germany
Continuation of application Ser. No. 839,228, July 7, 1969, now abandoned. This application Mar. 16, 1971, Ser. No. 124,990
Claims priority, application Germany, July 10, 1968, P 17 61 812.1
Int. Cl. B43k *5/02*
U.S. Cl. 401—223 4 Claims



A fountain pen and method of making same according to which liquid ink is from an ink container conveyed through a capillary section to a gap leading to the writing tip of the pen while the foil forming the writing pen is covered and capillary passages lead into the pen gap, which passages have their opposite ends communicating with the ink container.

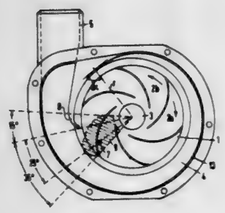
ERRATUM

For Class 408—1 see:
Patent No. 3,659,482

3,659,955
DEVICE FOR AUTOMATICALLY STOPPING DELIVERY OF LIQUID BY A CENTRIFUGAL PUMP DURING REVERSE OPERATION THEREOF

Siegfried Schonwald, Bad Neustadt, Saale, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed July 14, 1969, Ser. No. 841,299
Claims priority, application Germany, July 13, 1968, P 17 03 815.2; G 66 00 523
Int. Cl. F04b 19/00; F04d 1/00
U.S. Cl. 415—116 12 Claims

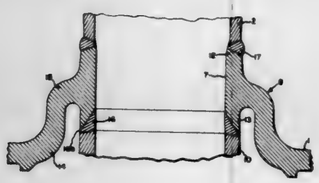


Device for automatically stopping delivery of liquid by a centrifugal pump operating in reverse running condition through the introduction of air into the pump chamber of the pump includes means defining a bore formed in the housing of the pump for connecting the pump chamber to atmosphere, and means cooperating with the bore-defining means for adjusting the pressure in the pump chamber to positive pressure in forward running condition of the pump rotor and to negative pressure in reverse running condition thereof whereby in the latter condition air is sucked from the atmosphere into the pump chamber to stop delivery of liquid by the pump.

3,659,956
WELDED INLET PIPE AND NOZZLE BOX CONSTRUCTION FOR STEAM TURBINES

Earl H. Brinkman, Schenectady, N.Y., assignor to General Electric Company

Filed Dec. 14, 1970, Ser. No. 97,560
Int. Cl. F01d 1/00; F04d 1/08
U.S. Cl. 415—219 4 Claims

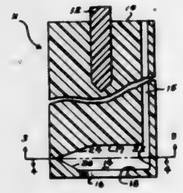


A welded inlet pipe and nozzle box construction for a steam turbine which provides flexible support for the nozzle box. The flexing portions of the construction subject to high stress are in a weld-free location, while the main weld connecting the nozzle box to the turbine shell is located to prevent leakage into the power station should a defect occur.

3,659,957
APPARATUS FOR ATOMIZING LIQUID MATERIALS

Vana Yuen, 2809 Land Park Drive, Sacramento, Calif.

Filed Oct. 27, 1969, Ser. No. 869,665
Int. Cl. B01f 7/24
U.S. Cl. 416—179 4 Claims

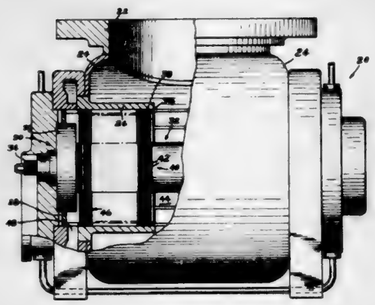


An apparatus for atomizing liquid materials comprises a solid cylindrical body having a rotation means attached to one end and a chamber formed in the other end thereof. Passageways extending through the cylindrical body to the chamber are so arranged that their vertical axes are parallel to and adjacent the sides of the body. An opening is provided into the chamber which has complementary ribs formed in its top and bottom. The apparatus can be employed in a variety of mixing and liquid contacting operations, but it is particularly useful for effecting contact between mercury and agents used in its purification.

3,659,958
BUILT UP ROTOR ASSEMBLIES FOR VACUUM PUMPS

Charles A. Schulte, deceased, late of Lexington, Mass. (by Grace Schulte, executrix)

Filed Oct. 27, 1969, Ser. No. 869,968
Int. Cl. F01d 5/06
U.S. Cl. 416—199 6 Claims



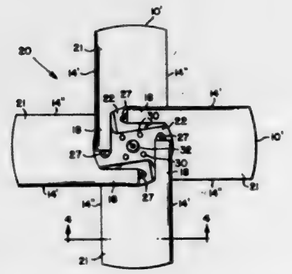
A composite impeller assembly for use in a high vacuum pump operating in the free-molecule flow pressure range. The impeller assembly comprises left and right hand impeller units each made from a plurality of rotor assemblies held in closely abutting relationship by the cooperating relation between at least one fastener and a central core shaft extending through each of the rotors. Each rotor includes a row of blades and a hub portion with front and rear annular contact surfaces thereon, and a center portion extending inwardly and terminating adjacent a central opening for receiving the shaft. The effect of the built-up construction is that the contact surfaces provide a large effective impeller hub diameter for maximum stiffness against deflection, and the relatively

small diameter center openings reduce stresses which would be present with an opening of an order equal to the diameter of the hubs just inside the contact surfaces.

3,659,959
AIR FAN IMPELLER BLADE ASSEMBLY

Allan Holstrom, Rochester, N.Y., assignor to Fasco Industries, Inc., Rochester, N.Y.

Filed July 15, 1970, Ser. No. 55,168
Int. Cl. F04d 29/34
U.S. Cl. 416—212 5 Claims

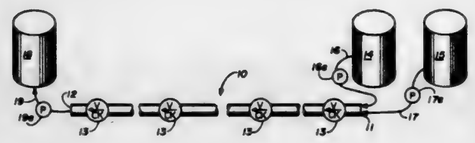


This impeller is constructed from two, identical, preformed metal blanks, which have raised center or hub sections which are secured to one another by riveting or the like. Opposite ends of each blade are laterally offset from one another slightly. Oppositely extending tabs are struck up from opposite sides of each blade at opposite sides of the hub section to provide slots by which the blades are interconnected to extend at right angles to one another. The tabs of one blade are secured to the hub section of the other blade to lend rigidity to the hub sections. A separate bearing may be secured in registering central openings in the hubs of the two blades to accommodate the armature shaft of a drive motor.

3,659,960
TRANSMISSION OF FLUIDS THROUGH A PIPELINE

Donald D. Dunlop, Fairfax, Va., assignor to Creative Enterprises International, Norman, Okla.

Filed Nov. 13, 1969, Ser. No. 876,353
Int. Cl. F04b 19/24; F04f 1/18
U.S. Cl. 417—53 3 Claims



A volatile fluid is transmitted through a pipeline containing a series of check valves by differential heating along contiguous sections of the pipeline to create a decreasing temperature gradient and a consequent decreasing pressure gradient in the direction of desired transmission to thereby cause fluid flow in a desired direction, the check valves preventing the reversal of fluid transmission upon reversal or discontinuance of the temperature gradient. In long pipelines, the differential heating is supplied by the sun moving along the pipeline. Multicomponent fluids can be transmitted by a selection of a volatile mixture of fluid components in such proportions as to create desired pressure differentials and rates of transmission.

3,659,961
GAS LIFT SYSTEM

Charles Paul Lamb; William A. Dudley, both of Dallas, Tex.; George S. Kingsley, Ventura, Calif., and Edward E. DeMoss, Garland, Tex., assignors to Teledyne, Inc., Los Angeles, Calif.

Filed Aug. 7, 1970, Ser. No. 61,943
Int. Cl. F04f 1/18
U.S. Cl. 417—114 11 Claims

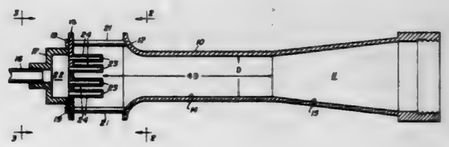


An apparatus and system for alternately venting and lifting fluid from an accumulator in which the alternate connection of the accumulator with a vent and a gas source is controlled by the differential in pressure between two tubes, one of which contains well fluids and the other of which contains well fluids and into which a small quantity of gas is bled.

3,659,962
ASPIRATOR

John Smith Zink; Hershel Goodnight, and Robert D. Reed, all of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed June 2, 1970, Ser. No. 42,775
Int. Cl. F04f 5/46; B05b 7/06; F23d 13/40
U.S. Cl. 417—179 3 Claims

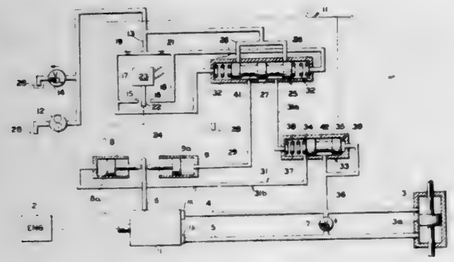


An aspirator assembly for drawing air into the presence of gas and mixing the gas with the air wherein the gas under pressure is released through a plurality of orifices or nozzles with the flow of the gas from the multitude of orifices serving to provide energy for the inspiration of air into the gas streams and for mixture of the air with the gas in the aspirator assembly.

3,659,963
PRESSURE OVERRIDE FOR SERVO CONTROLLED PUMPS

Lyston C. Jennings, Watertown, N.Y., assignor to General Signal Corporation

Filed Mar. 19, 1970, Ser. No. 20,892
Int. Cl. F04b 49/00
U.S. Cl. 417—213 7 Claims

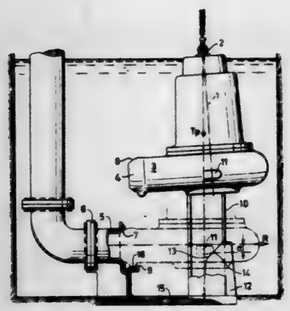


A pressure override for servo controlled pumping apparatus which reduces pump delivery rate as needed to limit discharge pressure by overpowering the servomechanism, in contrast to disabling this device by interrupting its input signal circuits or its supply of motive power.

3,659,964
SELF-COUPLING PUMP UNIT

Jens Karl Adolf Dahlgren, Stockholm, Sweden, assignor to Stenberg-Flygt AB, Solna, Sweden

Filed Aug. 27, 1970, Ser. No. 67,329
Claims priority, application Sweden, Aug. 29, 1969, 12019/69
Int. Cl. F04b 17/00, 35/00; B67d 5/40
U.S. Cl. 417—360 7 Claims

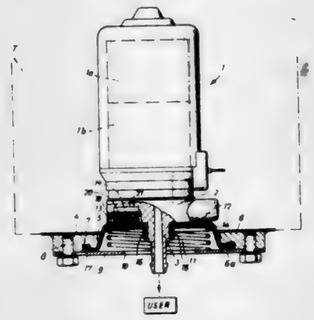


An immersible pump unit comprising a liquidtight motor and a pump with a lateral connection and guiding means which, on lowering of the pump unit, guides the pump connection to the vicinity of a coupling unit, the pump unit being suspended so that the central axis of the pump runs slightly obliquely downwards, there being close to the coupling unit a support for the pump unit in its lowered position. There is in the extension of the coupling unit beyond the support, at least one stop with an inclined plane facing the coupling unit, the point of contact between the pump unit and the inclined plane of the stop lying a distance below an imaginary line of operation for the force of reaction generated at the connection and coupling unit by the pump pressure.

3,659,965
FUEL PUMP MOUNTING ARRANGEMENT

Jurgen Ebert, Gerlingen, and Hermann Nusser, Asperg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 17, 1970, Ser. No. 64,370
Claims priority, application Germany, Sept. 19, 1969, P 19 47 505.9
Int. Cl. F04b 17/00, 35/00, 35/04; B67d 5/42
U.S. Cl. 417—363 9 Claims

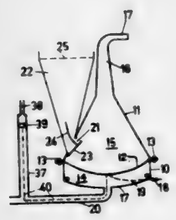


An electrically operable fuel pump is accommodated in the interior of a fuel tank so as to be at least partly immersed in fuel fluid contained in the tank. The bottom wall of the tank is provided with an opening through which the outlet of the pump communicates with the exterior of the tank and a spring arrangement is located in this opening and mounts the pump on the bottom wall over the opening with freedom of displacement relative to the tank so as to preclude or at least reduce the transmission of vibratory motions between the tank and the pump. A diaphragm seals the opening with reference to the exterior of the tank and at the same time acts to limit the displacement of the spring arrangement and thereby of the pump in direction normal to the general plane of the opening.

3,659,966
PUMPING APPARATUS FOR FLOWABLE CONCRETE OR THE LIKE

Peter Faber, 14 Bothard Genrose, Auckland, New Zealand

Filed Apr. 24, 1970, Ser. No. 31,663
Int. Cl. F04b 43/06, 45/00, 15/02
U.S. Cl. 417—395 6 Claims
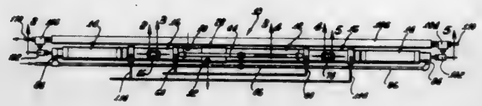


A pumping apparatus for flowable concrete or the like, the apparatus including at least one driving chamber separated from at least one driven chamber by at least one flexible diaphragm which is movable between predetermined positions by the flow of pressurized liquid into and out of the or each driving chamber, a pumping unit having its inlet adapted for connection to a liquid supply source and its outlet connected to the inlet of the or each driving chamber and outlet of the driven chamber for connection to a controlled discharge, the construction and arrangement being such that on flowable concrete being allowed to flow into the or each driven chamber onto its diaphragm, differential pressure is applied to the or each diaphragm to cause the concrete to be pumped through the outlet of the or each driven chamber.

3,659,967
HYDRAULIC INTENSIFIER

Ralph F. McArthur, Huntington Park; Max T. Kardoes, Glendora, and Melle F. Geurts, Los Angeles, all of Calif., assignors to Kobe, Inc., Huntington Park, Calif.

Filed May 27, 1970, Ser. No. 40,860
Int. Cl. F04b 17/00, 35/00, 21/02, 39/10; F01b 11/02
U.S. Cl. 417—397 13 Claims



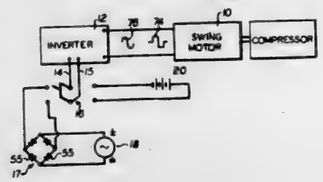
A hydraulic intensifier operable by a fluid, such as oil, at relatively low pressures to deliver a fluid, such as water, at very high pressures for any desired purpose. The intensifier includes a fluid operated, double acting, reciprocating engine and two single acting, reciprocating pumps respectively located at opposite ends of and in alignment with the engine and connected to the engine for actuation thereby, the displacement of the pumps being small as compared to that of the engine so as to produce a discharge pressure many times the operating fluid pressure.

The intensifier is capable of producing discharge pressures of the order of 30,000 to 70,000 psi, or higher, with operating fluid pressures of the order of 2,000 to 5,000 psi. Further, the intensifier is capable of transmitting power of the order of 50 horsepower, or more, in a relatively lightweight unit which is portable and relatively maneuverable.

3,659,968
INVERTER SYSTEM WITH RESONANT ELECTRO-DYNAMICAL DEVICE

John A. Thomas, Jr., and Gerhard D. Spangenberg, both of Boonton, N.J., assignors to J. P. Industries, Inc., Stanhope, N.J.

Filed Mar. 13, 1970, Ser. No. 19,223
Int. Cl. F04b 35/04, 17/04; H02b 3/00
U.S. Cl. 417—417 13 Claims

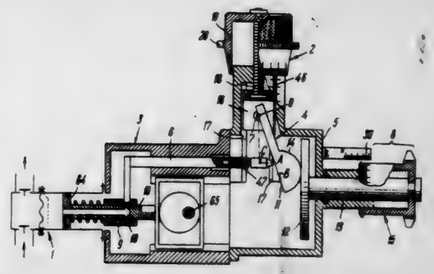


This invention combines a resonant electrodynamical device with an electromagnetic oscillator that has its period of oscillation syntonized with the natural period of oscillation of the resonant electrodynamical device. In the preferred embodiment, the resonant electrodynamical device is a swing motor connected with a compressor load, and power for driving the swing motor is supplied by the syntonic oscillator. A feedback from the swing motor maintains the oscillator in syntonization with the natural period of oscillation of the swing motor.

3,659,969
CONTROL DEVICE FOR METERING PUMPS

Lev Nikolaevich Britvin, ulitsa Dybenko, 12, kv. 51; Vitaly Andreevich Sergeev, ulitsa Semenovskaya, 3/1, korpus 1, kv. 24; Konstantin Semenovich Spassky, Varshavskoe shosse, 176 "a", korpus 8, kv. 69; Igor Nikolaevich Smirnov, Telegrafny pereulok, 15, kv. 20; Gennady Mikhailovich Schegiov, ulitsa Glavnaya, 7 kv. 4; Alexandr Alexandrovich Sitelmakh, Astakhovsky pereulok, 1/2, kv. 123; Boris Moiseevich Prudovsky, ulitsa Dybenko, 4, kv. 10; Vladimir Karpovich Karakhanian, ulitsa Stromynka, 23, kv. 132; Viktor Vasilievich Ivanov, ulitsa Krasnoprudnaya, 26, kv. 26, and Mikhail Ivanovich Semenov, Pokrovsky bulvar, 8, kv. 13, all of Moscow, U.S.S.R.

Filed Oct. 27, 1969, Ser. No. 869,475
Int. Cl. F04b 23/00, 41/00
U.S. Cl. 417—440 18 Claims



A control device for metering pumps is provided with a setter connected via at least one intermediate element with the pump delivery control mechanism, which latter ensures a directly proportional relation between the pump delivery and the movement of said intermediate element. The connection of the intermediate element with the setter is effected by means of a pivoted element installed at an angle to the intermediate element, the pivoted element interacting with the setter and provided with provision for adjusting the distance between the axis of its hinge and the point of its kinematic connection with the intermediate element. The angle of turning of the pivoted element is set by an additional setter.

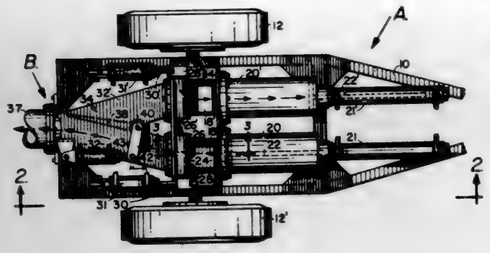
3,659,970
CONCRETE PUMP

Philip W. McElroy, 2300 Dolores Court, Pinole, Calif.

Continuation-in-part of application Ser. No. 750,332, Aug. 5, 1968, now abandoned. This application Aug. 14, 1969, Ser. No. 859,233
Int. Cl. F04b 7/00
U.S. Cl. 417—516 2 Claims

A pump for conveying fluid aggregate-containing concrete from a hopper to the location desired including an improved

valve that allows for sequentially advancing concrete from a

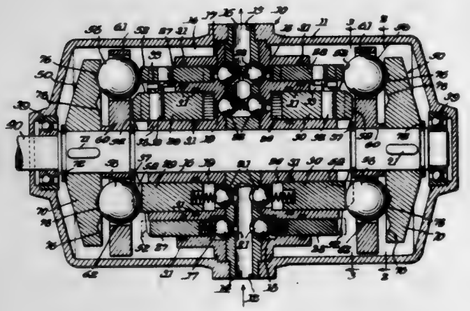


pair of chambers by extension and withdrawal of respective pistons.

3,659,971
FLUID TRANSDUCER

Henry Schottler, North Riverside, Ill., assignor to Roller Gear Ltd., Zug, Switzerland

Filed Apr. 23, 1970, Ser. No. 31,314
Int. Cl. F04b *23/06*
U.S. Cl. 417—538 5 Claims



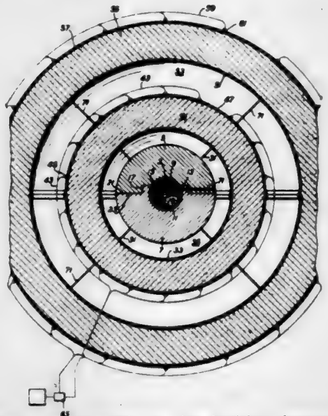
A cam drive mechanism for reciprocating a plurality of pistons in a fluid transducer comprising opposed annular lobed cam surfaces and flat reaction tracks for each piston; a plurality of rolling members positioned between each of said opposed cam surfaces and tracks; and a common retainer spacing said rolling means uniformly around said cam surfaces; with said retainer and tracks adapted so that said rolling means roll between each of said opposed surfaces and tracks with substantially the same angular movement and speed.

3,659,972
DIAMOND IMPLOSION APPARATUS

Donald R. Garrett, 1113 Westover, College Station, Tex.

Continuation of application Ser. No. 708,331, Feb. 26, 1968, now Patent No. 3,499,732. This application Feb. 17, 1970, Ser. No. 870,323
Int. Cl. B29c *13/00*
U.S. Cl. 425—1 2 Claims

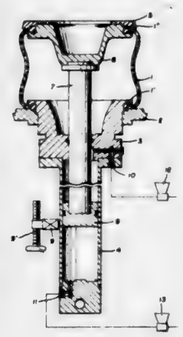
A device for artificially producing diamonds or other articles of substantial hardness by utilization of heat and pressure over an instantaneous time period. The device, which is designed to achieve the requisite heat and pressure by detonation in an implosive manner, consists of two mating hemispheric bodies having a centrally interior cavity of spherical configuration. The two bodies are adapted to be affixed to one another in a positive manner, such as by internal screw threads. The hollow hemispherical bodies, which may be of bronze or other relatively soft material, are suspended such as by nylon string, within a hollow plastic shell. An explosive material is positioned about the exterior surface of the shell in an even and uniform manner with a plurality of detonators operatively connected to the explosive at appropriately spaced positions. An ignition harness is connected to the detonators so that they may all be actuated in a simultaneous manner. The material which is to be transformed, such as graphite or other carbonaceous matter, is disposed in the cavity of the bodies and upon detonation of the explosive there is created extreme inwardly directed pressures and temperatures which transform the carbonaceous material into stable diamond.



3,659,973
CENTER MECHANISMS FOR PRESSES TO SHAPE AND CURE TIRES

Shoushi Yoshida; Atsushi Iwama; Takashi Okada, and Tetsuo Seda, all of Kobe, Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Oct. 5, 1970, Ser. No. 78,019
Claims priority, application Japan, Oct. 6, 1969, 44/80069
Int. Cl. B29h *5/02*
U.S. Cl. 425—29 3 Claims

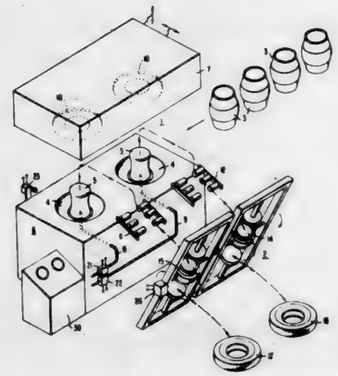


A center mechanism for a press for shaping and curing tires having a bladder member including, a vertical power cylinder of non-magnetic material, a piston in the power cylinder attached to the bladder to selectively erect and collapse it and constructed at least partially of magnetic material, and a magnetic sensor positioned exteriorly of the power cylinder and controlling movement of the piston responsive to a detected position of the piston.

3,659,974
TIRE CURING APPARATUS MONITORING AND CONTROL

Ernst J. Neugroschl, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 6, 1968, Ser. No. 750,512
Int. Cl. B29h *5/00, 17/00*
U.S. Cl. 425—29 2 Claims

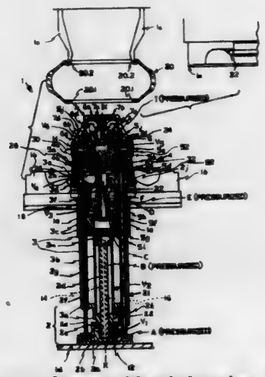


In the process of molding and curing pneumatic tires, this invention senses certain selected quantities (e.g., cure cycle length) in the tire press and, in some applications, a post cure inflator, and feeds the sensed signals to a digital computer. The computer scans the input and compares it with prestored ideal values. If the sensed data differs from the stored values by too great a degree, the computer provides an appropriate output. Further, the computer may control a tire marker to mark those tires which fail the comparison. In addition, by feeding information to the computer from a plurality of presses, accurate inventory counts, production requirements, production and press break-down history, and so forth, may be maintained automatically.

3,659,975
BAGLESS TIRE PRESS

Jean Leblond, Oise, France, assignor to Uniroyal Englebert France S.A., Neuilly-sur-Seine, France

Filed Aug. 17, 1970, Ser. No. 64,414
Int. Cl. B29h *5/02*
U.S. Cl. 425—36 15 Claims

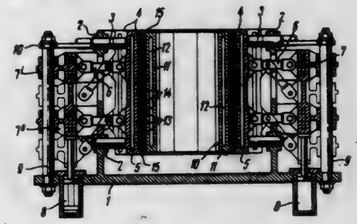


An inflation press for use with tubeless tires, having utility in vulcanization equipment and all other mechanisms which require an air-tight bead seal. In contra-distinction to prior art approaches, the bead-sealing function is carried out by a pair of resilient annular rings each having one edge which is clamped in place and another edge which is freely deformable by suitable camming elements which are responsive to various nested fluid-operated jack mechanisms. This camming action distends the sealing rings radially outwardly against the beads of a tire or carcass to perform the sealing function during vulcanization or any other operation requiring an air-tight seal.

3,659,976
APPARATUS FOR MOLDING AND VULCANIZATION OF ANNULAR RUBBER ARTICLES

Arsenty Vasilievich Yavorsky, ulitsa Zapasskaya, 14v, kv. 70, Kiev; Grigory Lvovich Farber, ulitsa Kutuzova, 33a, kv.66, Tula, and Grigory Andreevich Gavrilenko, ulitsa Politekhnicheskaya, 31v, kv.4, Kiev, all of U.S.S.R.

Filed Aug. 21, 1970, Ser. No. 66,032
Int. Cl. B29h *5/00, 7/22;* B29d *29/00*
U.S. Cl. 425—42 1 Claim

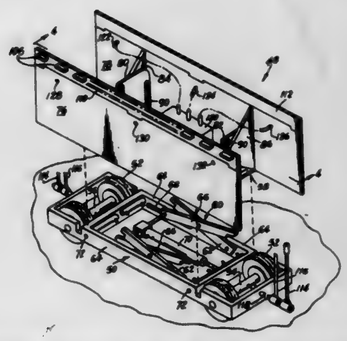


An apparatus for molding and vulcanization of annular rubber articles comprising a drum adapted to receive and support thereabout the articles to be treated and a mechanism for external pressing of the articles received about the drum. The mechanism for external pressing of the articles includes individual selectively heatable segments arranged concentrically about the drum and associated with drive means for displacing these segments radially of the apparatus, this drive means including an annular frame pivotally connected through pivoted arms with the segments of the mechanism for external pressing of the articles, the frame being associated with power means for effecting axial reciprocation of the frame along guiding columns.

3,659,977
APPARATUS FOR ERECTING POURED CONCRETE STRUCTURES

John F. Haws, c/o Stonerer and Haws, 2207 Chestnut Street, Philadelphia, Pa.

Filed Aug. 7, 1970, Ser. No. 62,007
Int. Cl. B28b *7/08*
U.S. Cl. 425—62 18 Claims



Apparatus is disclosed wherein movable pouring forms are mounted on a chassis, such as the chassis of a roadable vehi-

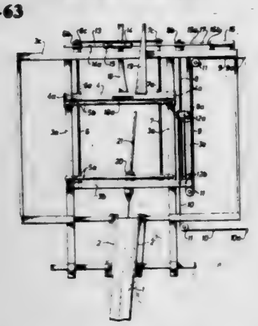
cle. Movement of the forms between respective selectable positions facilitates pouring of vertical and horizontal structural members, respectively. The pouring forms may be elevated with respect to the chassis to position them for pouring the upper portions of high vertical walls, or highly placed horizontal walls. The apparatus also includes means whereby the chassis itself may climb with respect to the lower portions of poured vertical members, to facilitate pouring of the upper portions of such members. In another of its aspects, the invention is a method of erecting poured concrete structures by first pouring vertically oriented members, such as walls, and permitting the walls to set; pouring the uppermost horizontal member, such as the roof, and permitting such member to set; and then pouring successively lower interior horizontal members to complete the structure.

3,659,978

FLEXIBLE SCAFFOLD FOR SUPPORTING SLIDING MOLDS OR CLIMBING MOLDS USED FOR THE ERECTION OF CONCRETE STRUCTURES

Sven-Erik Vilhelm Svensson, Norrbyvagen 39, 141-43 Huddinge, Sweden, and Erno Josef Thoma, Koszta J.u.1., Budapest XII, Hungary

Filed Sept. 3, 1970, Ser. No. 69,379
Claims priority, application Sweden, Sept. 8, 1969, 12380/69
Int. Cl. B28b *7/04*
U.S. Cl. 425—63 12 Claims



A sliding or climbing mold for the erection of concrete structures the horizontal cross-section of which varies vertically comprises a scaffold system composed by a plurality of flexible scaffold units. Each such unit consists of two pivotably interconnected and intersecting rods or the like separated by yokes supporting the mold. First and second hydraulic jacks acting in the vertical and horizontal directions, respectively, accomplish the vertical movement of the scaffold system and contribute to the change of the horizontal size thereof. A spoke assembly connected to the scaffold system and comprising substantially radially and horizontally located spoke wires is used for variation of the horizontal shape of the scaffold system. A number of replaceable templets are designed for variation of the horizontal shape of the scaffold system and of the effective length of the spoke wire so as to synchronize the movements in vertical and horizontal direction.

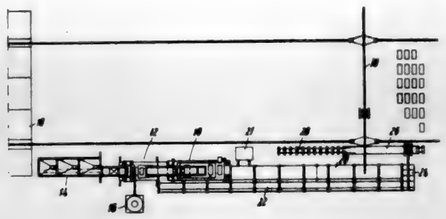
3,659,979

PLANT FOR MANUFACTURING SMALL STRUCTURAL ELEMENTS

Wolfgang Schneider, and Klaus Schneider, both of Mushardiveg 8, 2150 Buxtehude, Germany

Filed July 7, 1969, Ser. No. 839,722
Claims priority, application Germany, July 13, 1968, P 17 71 807.9
Int. Cl. B28b *15/00*
U.S. Cl. 425—62 3 Claims

A plant for manufacturing small structural concrete elements comprises a production station and a hardening station which both are provided with means for loading or unloading from a carrier vehicle. The hardening station is formed by a steam treatment tunnel consisting of two sections which are



connected by hinge means in that way that for transport of the hardening station, one section is swung in position parallel to, and alongside of the other section. During operation, both sections together form a straight elongated tunnel.

3,659,980

APPARATUS FOR MELT SPINNING OF SYNTHETIC FILAMENTS

Miguel A. Fernandez, Greenville, S.C., assignor to Phillips Fibers Corporation

Filed May 11, 1970, Ser. No. 36,031
Int. Cl. D01d *3/00, 5/08*
U.S. Cl. 425—72 11 Claims



Apparatus comprising an improved quench chamber wherein the side panels of said chamber are constructed so as to eliminate undesirable air currents. The side panels are adapted to be moved vertically, either individually or collectively, into and out of engagement with a spinning block.

3,659,981

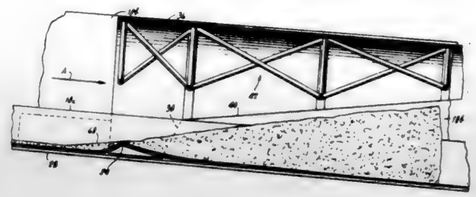
WEB TRANSFER SYSTEM

Charles Ferstenberg, Paramus, N.J., assignor to Tenneco Chemicals, Inc.

Original application Jan. 5, 1968, Ser. No. 696,070, now abandoned. Divided and this application June 1, 1970, Ser. No. 54,048
Int. Cl. B29d *27/04*
U.S. Cl. 425—89 13 Claims

Contouring of flexible webs to the interior of an elongated moving molding channel by the provision of specially located

and specially shaped guiding devices, by the provision of special internal mold supports and by the selective overlapping of separate web sheets.

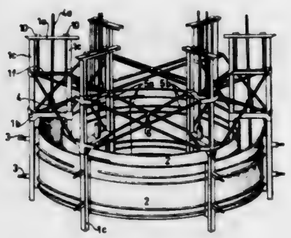


3,659,982

EXTENSIBLE LOCKING SYSTEMS FOR FORMWORK FOR THE CASTING OF CONCRETE CONSTRUCTIONS

Sven-Erik Vilhelm Svensson, Norrbyvagen 39, 141 43 Huddinge, Sweden, and Erno Josef Thoma, Koszta J.u.1, Budapest XII, Hungary

Filed June 3, 1968, Ser. No. 734,079
Claims priority, application Sweden, June 2, 1967, 7785/67
Int. Cl. E04g *11/22*
U.S. Cl. 425—63 4 Claims



The present invention relates to apparatus for casting concrete structures having a varying cross-section and includes a plurality of interconnected units. Each of the units includes at least two rods of equal length which are pivotally interconnected to one another at their mid points, the ends of adjacent units being pivotally connected at an angle to one another such that upon pivoting of the two rods of each of the units, the ends are all moved in parallel relationship to one another. A rigid yoke carries the framework and includes a pair of legs, each of the units being pivotally connected to a stationary point on one yoke leg and pivotally connected to a member movable along a yoke leg.

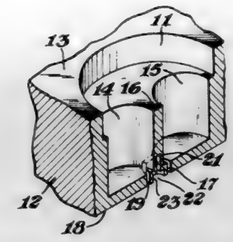
3,659,983

SPINNERETTE FOR THE PRODUCTION OF HOLLOW FIBERS

Earl A. McLain, and Henry L Mahon, both of Walnut Creek, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 19, 1969, Ser. No. 800,504
Int. Cl. D01d *3/00*
U.S. Cl. 425—72 5 Claims

A spinnerette for producing hollow fibers and particularly for producing fine bore, uniform permeable hollow fibers useful as the separation membrane in reverse osmosis, ultrafiltration, etc. is disclosed. The spinnerette combines a unique molten polymer passageway and gas passageway to



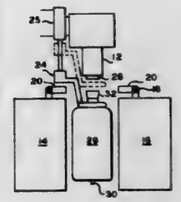
supply an inert gas to the center of the hollow fiber as it is extruded from the orifice.

3,659,984

RECIPROCAL FLUID NOZZLE FOR COOLING PARISON.

Anthony J. Krstolic, Kansas City, Kans., assignor to Phillips Petroleum Company

Filed Dec. 5, 1969, Ser. No. 882,606
Int. Cl. B29d *23/03*
U.S. Cl. 425—72 4 Claims



In a blow molding machine, a nozzle for directing a stream of fluid such as air is attached to each mold half. On closing the molds, the nozzles move into position adjacent the parison and air is impinged on the portion of the parison between the top of the mold and the die. Thereafter, the air is discontinued and the air nozzles retracted with the mold halves to allow a stripper mechanism to tear the finished article free from the die.

3,659,985

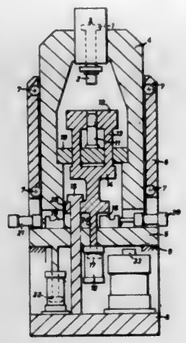
PRESSES

Alec Frank Marshall, Solihull, and Hugh Gordon Taylor, Birmingham, both of England, assignors to The Birmingham Small Arms Company Limited, Birmingham, England

Filed Dec. 9, 1969, Ser. No. 883,404
Claims priority, application Great Britain, Dec. 13, 1968, 059,302/68; Mar. 15, 1969, 13,723/69
Int. Cl. B30b *11/02*
U.S. Cl. 425—78 5 Claims

A machine for compacting metal powder comprises a static frame, a die having a bore, a lower punch defining a receiving die cavity in the bore, an upper punch, an upper punch downwardly movable to enter the die cavity, and a reaction frame to which the lower punch is fixed slidably mounted on the static frame, the reaction frame and the lower punch being moved upwardly by a reaction force generated when the upper punch is moved downwardly. The die is moved upwardly after the die cavity has been filled

with powder a distance at least equal to the upward movement of the lower punch completed before the upper punch



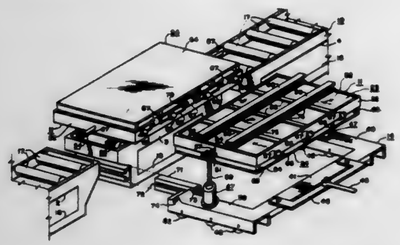
enters the die cavity, and the die is moved downwardly after the upper punch has entered the die cavity.

3,659,986

APPARATUS FOR MAKING CONCRETE PRODUCTS

Nathan L. Gelbman, 17201 N.E. Fourth Avenue, North Miami Beach, Fla.

Filed Mar. 16, 1970, Ser. No. 19,638
Int. Cl. B28b *15/00*
U.S. Cl. 425—88 12 Claims



An apparatus for mass producing large concrete products, in assembly line manner, on a floor mounted conveyor system, with which various operations are performed at different stations along the conveyor. A sectional mold, for casting purposes, is prepared at a first station and then moved forward. At a second station on the conveyor, the mold is vibrated and filled with concrete, and then moved forward. At a third station, the concrete is completely sealed within the mold, and the mold is elevated, removed from the conveyor, rotated 180°, returned to the conveyor, and stripped from the casting. The casting is then moved along on the conveyor for storage.

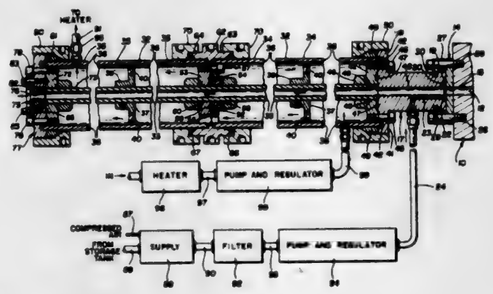
3,659,987

APPARATUS FOR FORMING AND CURING CONTINUOUS ELASTOMERIC STRIP

Ronald G. Mizell, Muncie, Ind., and Daryl D. Cerny, Greenville, Ohio, assignors to Ball Corporation, Muncie, Ind.

Original application Nov. 23, 1966, Ser. No. 596,582, now Patent No. 3,517,097. Divided and this application Dec. 24, 1969, Ser. No. 889,828
Int. Cl. B29f *3/04*
U.S. Cl. 425—97 4 Claims

Continuously molding heat curable thermoplastic material into a strip of definite desired cross-section shape and area with means including a cure die in the form of an elongated tube having an entrance end and an exit end and a cross-section similar in shape to the desired shape and greater in area than the cross-sectional area of the desired strip, said cure die including heating means, an extrusion die spaced from the entrance end of said tube and having a cross-sectional



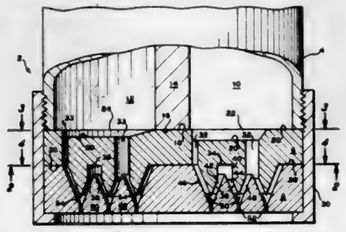
area less than the cross-sectional area of said cure die but greater than or equal to the desired cross-sectional area of the strip, a lubricating die including means for dispensing lubricant upon said strip, said lubricating die connecting said forming die with said entrance end of said cure die and having a passageway defined therein with a cross-sectional area greater than the cross-sectional area of said cure die.

3,659,988

BICOMPONENT DISTRIBUTION PLATE OF A SPINNERET ASSEMBLY

Zbigniew K. Walczak, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Feb. 18, 1970, Ser. No. 12,389
Int. Cl. D01d *3/00*
U.S. Cl. 425—131 5 Claims



A spinneret distribution plate having a plurality of grooves and associated openings for concentrically distributing separate rings of two different fluids.

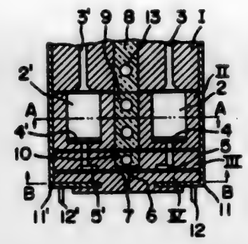
3,659,989

APPARATUS FOR IMPROVING SPINNABILITY AND PROPERTY OF COMPOSITE FILAMENT

Toru Uraya, Kobe City, and Shusuke Kageyama, Osaka, both of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Continuation of application Ser. No. 568,016, July 26, 1966, now Patent No. 3,536,802, dated Oct. 27, 1970. This application June 19, 1970, Ser. No. 47,862
Claims priority, application Japan, Aug. 2, 1965, 40/47078; July 15, 1966, 41/46271
Int. Cl. D01d *3/00*
U.S. Cl. 425—131 7 Claims

Method and apparatus for spinning a composite filament wherein two polymers having different melt viscosities are melted separately and the temperature of each maintained so that the melt viscosity ratio of the molten polymers is 0.4 to 2.5 until extrusion. The apparatus includes means for controlling the temperatures of the two spinning melts separately and retarding transmission of heat between the melts until they are extruded together.



3,659,990

APPARATUS FOR CASTING A FILM

Russel L. Cate, Jr., Raleigh, N.C.; Percy D. Leonard, Jr., U. S. Air Force, and Robert D. Smith, Raleigh, N.C., assignors to Corning Glass Works, Corning, N.Y.

Original application Mar. 28, 1967, Ser. No. 626,560, now abandoned. Divided and this application Nov. 7, 1969, Ser. No. 874,951
Int. Cl. B29d *7/02*
U.S. Cl. 425—141 3 Claims



The apparatus for containing the pool of coating material is mounted on a pivoted backing plate which is arranged for a pivotal movement between two side plates. A slot is provided at the bottom of the pool to allow a strip of material to enter the bottom of the pool and travel upwardly along the backing plate and over considerable guide means adjacent the pivot point for the backing plate. Adjustable stops are provided for holding the backing plate at various angles relative to the vertical so that as the strip of material passes through the pool along the backing plate the amount of coating material picked up by the strip of material will vary depending upon the angle of the backing plate.

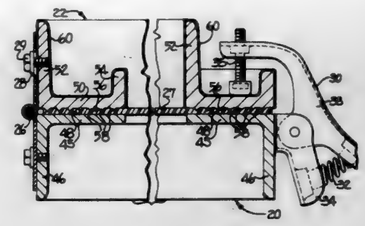
3,659,991

CLAMPING FRAME FOR PLASTIC VACUUM FORMING MACHINE

Harvey J. Diamond, Charlotte, N.C., assignor to Plasti-Vac, Inc., Charlotte, N.C.

Filed Apr. 3, 1970, Ser. No. 25,349
Int. Cl. B29c *17/04*
U.S. Cl. 425—174 5 Claims

A clamping frame for a plastic vacuum forming machine which includes upper and lower clamping members connected by hinges for supporting a plastic sheet during the heating and forming operations and which are constructed to facilitate the clamping of the plastic sheet. Also, a substantial portion of the surface of at least one of the clamping members is coated with a heat absorbing material such that its temperature rises to a higher level than would otherwise be the case.

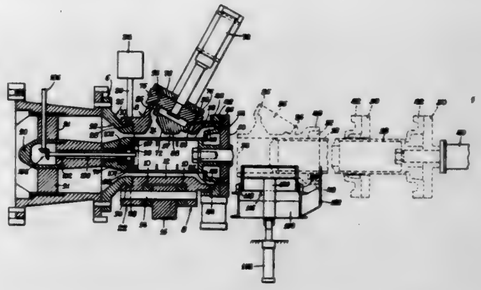


3,659,992

EXTRUDING FITTINGS

Bernard A. Greene, Gray, Ga., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Oct. 7, 1968, Ser. No. 765,378
Int. Cl. B28b *21/52*
U.S. Cl. 425—192 5 Claims



A die, engageable with a clay extruding machine, has a given interior configuration corresponding to the out-side configuration of a pipe fitting. A pair of spaced mandrels are inserted through openings in the die and define a branch opening and a main opening therein. A centrifugal cutting blade is rotatably mounted proximate to the main mandrel and is usable to sever the clay in the die from the extruding machine. A circular cutter is also mounted proximate the die to cut away extruded clay left in the space between the branch opening and the main opening.

3,659,993

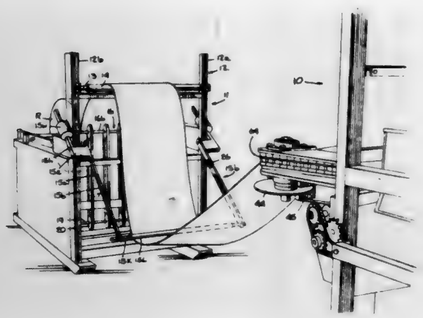
APPARATUS FOR FORMING CONTAINERS

Fred P. Brown, Jr., Centerville, Mass., assignor to Packaging Industries, Inc., Hyannis, Mass.

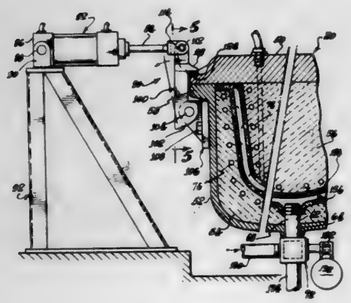
Filed Oct. 24, 1969, Ser. No. 869,249
Int. Cl. B29c *17/02*
U.S. Cl. 425—214 5 Claims

Apparatus for forming containers from webs of plastic material is disclosed as including a forming machine and a web tensioning and feeding apparatus. The web tensioning and feeding apparatus feeds the plastic material to the forming machine in accordance with the consumption of plastic material by the forming machine and maintains a relatively constant tension in the plastic fed to the forming machine. The forming machine forms containers from the plastic material and includes printing apparatus for printing on the formed containers. The printing apparatus includes a platen

with a roller adapted to be rolled on the platen to ink the platen so it can subsequently print on the container. Means are provided for disengaging the forming, blanking and printing devices from the main power drive and bringing these devices to a complete and instantaneous halt even while the motor is running.



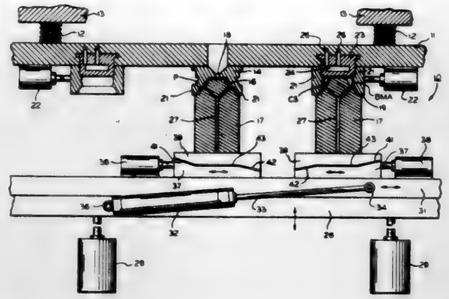
3,659,994
APPARATUS FOR INJECTION MOLDING
Josef Ehrlich, Pacific Palisades, Calif., assignor to Winbrook China, Inc., Santa Monica, Calif.
Filed July 1, 1969, Ser. No. 838,229
Int. Cl. B29b 1/26, 7/16
U.S. Cl. 425—242 4 Claims



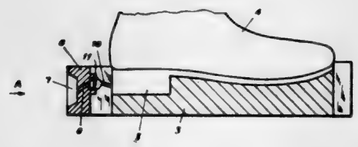
Injection molding apparatus for molding articles, particularly ceramic articles. The injection molding takes place at high pressure. Particular clamping means are provided to clamp the cover or top on the mold while injecting at high pressure. Particular means are provided for handling the molds and for removing the top or cover of the carrier and for removing the finished piece. The mechanism facilitates handling of the molds and makes possible rapid and repeated use of the molds and thereby greatly augments their utility.

3,659,995
COINING STRUCTURES FOR INJECTION-BLOW MOULDING APPARATUS
Pascal A. La Grutta, West Caldwell, N.J., assignor to Container Corporation of America, Chicago, Ill.
Filed Dec. 17, 1969, Ser. No. 885,721
Int. Cl. B29d 23/03
U.S. Cl. 425—242 1 Claim

An injection-blow moulding apparatus characterized by structure at the blow moulding station for coining a surface of the blown parison before it is removed from the blow mould cavity. The coining step is achieved by cooperating cam members, one being fixed to the moving stack of the apparatus, and the other cam member being movable relative to such stack.



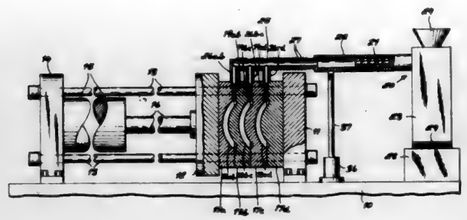
3,659,996
DEVICE FOR THE INJECTION MOLDING OF EXPANDABLE PLASTIC MASSES
Ernst Schwarz, Pottschach, and Peter Scherz, Kottlach, both of Austria, assignors to SEMPERIT Osterreichisch-Amerikanische Gummiwerke Aktiengesellschaft, Wien, Austria
Filed Feb. 19, 1970, Ser. No. 12,669
Claims priority, application Austria, Feb. 20, 1969, A 1739/69
Int. Cl. B29f 1/03
U.S. Cl. 425—245 6 Claims



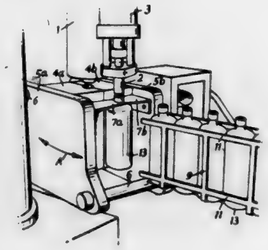
A device for the injection molding of expandable plastic masses, such as foamable synthetic substances through an injection conduit having a valve seat into an injection mold. A valve body is exchangeably inserted into the injection conduit after which the mold is filled therethrough, the plastic mass then flows past the valve body where, upon the termination of the molding process, the valve body is pressed into a closed position against the valve seat by the internal pressure of the mold thereby effectively sealing said conduit against outflow of any of said injection material.

3,659,997
INJECTION-MOLDING MACHINE WITH TRANSVERSE FEED
Herbert Rees, Toronto Willowdale, Ontario, Canada, assignor to HUSKY Manufacturing & Tool Works Limited, Toronto, Ontario, Canada
Filed Mar. 4, 1970, Ser. No. 16,442
Int. Cl. B29f 1/00
U.S. Cl. 425—247 4 Claims

An injection-molding machine with a set of stacked mold plates, defining several axially spaced mold cavities therebetween, includes an injection unit with one or more nozzles movable perpendicularly to the stack for contact with respective inlets, leading to the several cavities, which are aligned with these nozzles in the closed position of the multiple mold. The mold plates may be interconnected by a lazytong linkage or by lost-motion couplings for proper relative spacing in the open mold position.



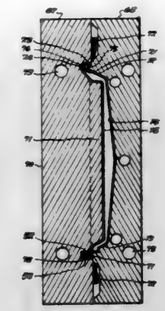
3,659,998
BLOW-MOLDING MACHINES
Ronald G. Saffron, London, England, assignor to Hayssen Manufacturing Company, Sheboygan, Wis.
Filed May 25, 1970, Ser. No. 41,135
Int. Cl. B29c 17/07
U.S. Cl. 425—326 4 Claims



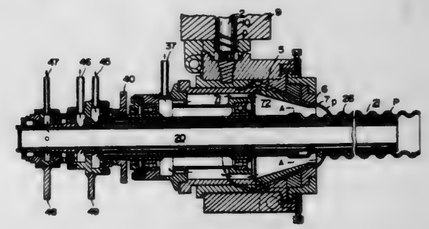
A machine for blow-molding hollow articles has an extruder and a blowing mandrel spaced along the direction of feed of blown moldings, and a track for blown bottles also spaced in the same direction from the blowing mandrel. An assembly of openable die halves and grippers are reciprocable in unison along the feed path between a first station in which they are aligned respectively with the extruder and blowing mandrel, and a second station in which they are aligned respectively with the blowing mandrel and the track. During each cycle of movement of the die halves and grippers, (i) a parison is moved from the extruder to the blowing mandrel, (ii) a blown molding is moved from the blowing mandrel to the track, and (iii) the previous blown molding is shifted along the track. A device is included to exhaust the blown molding more rapidly, and/or to retain it on the blowing mandrel temporarily by suction.

3,659,999
APPARATUS FOR MOLDING CONTAINER PARTS
Peter T. Scharman, Woodbridge, Conn., assignor to The Plastic Forming Company, Inc., Woodbridge, Conn.
Filed Feb. 9, 1970, Ser. No. 9,529
Int. Cl. B29d 23/03
U.S. Cl. 425—326 5 Claims

A plastic container having blow-molded cover and body parts and compression molded interfitting hinge parts formed integral therewith providing hinge pin bearing sections of double-wall thickness. A latch also is provided.



3,660,000
APPARATUS FOR THE CONTINUOUS MANUFACTURE OF CORRUGATED PLASTIC PIPES BY EXTRUDING
Tsunemi Yoshida, Tokyo; Koichi Ishikawa; Masatoshi Ando, both of Yokohama City; Yoshihiko Ueno, Kawagoe City, and Kunio Arisawa, Yokohama City, all of Japan, assignors to The Furukawa Electric Company Limited, Tokyo, Japan
Original application Mar. 20, 1967, Ser. No. 624,584, now Patent No. 3,529,047. Divided and this application Sept. 9, 1969, Ser. No. 871,107
Int. Cl. B29d 23/04
U.S. Cl. 425—327 5 Claims

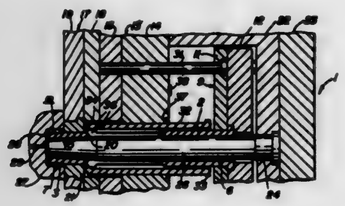


An apparatus for continuous manufacture of helically corrugated plastic pipe from extruded tubing utilizing differential pressure. Thermoplastic material is extruded in a molten state in the form of a tube and the tube is passed over a helically corrugated surface of either an internal mandrel or an external mandrel. A vacuum is supplied between the surface of the cylindrical body and the inside surface of the tube to conform the tube to the surface of the body. A pressure differential is maintained inside the formed pipe, a vacuum being used with the internal mandrel and a pressure with the external mandrel. The cylindrical body is rotated to advance the extruded tube formed thereabout and a cooling fluid is circulated through the cylindrical body to cool the tube as it it formed against the body.

3,660,001
MOLDING APPARATUS WITH POSITIVE COLLAPSE CORE
George L. Roehr, 225 Crescent Street, Lincoln, Mass.
Filed Nov. 6, 1968, Ser. No. 773,817
Int. Cl. B29f 1/14
U.S. Cl. 425—396 7 Claims

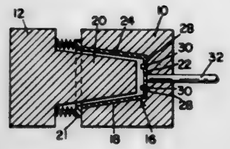
Apparatus for molding plastic articles having an undercut, rib, thread, or the like deformation comprises a core divided

longitudinally into sections having molding ends that are radially shiftable to and from an expanded article-molding position and a contracted article-release position. A center pin holds the sections expanded. The core may be shifted axially resulting in the center pin being withdrawn from support



of the molding ends of the sections. This causes a cam ring that encircles the sections to urge the sections radially inwardly by the engagement of cam-follower lugs on the sections to collapse positively the sections without interference from the pin.

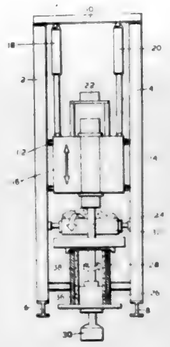
3,660,002
APPARATUS FOR MOLDING OPEN CONTAINERS
Peter J. Morreal, c/o Clearshield Plastic Co., Florence Street, Leominster, Mass.
Filed Sept. 25, 1969, Ser. No. 861,083
Int. Cl. B29f *1/14*; B29c *7/00*
U.S. Cl. 425—405 4 Claims



In the ejection of molded open-top containers from a plastic injection molding die, that improvement which comprises holding the just molded container in the cavity as the mold opens and blowing air onto the exterior of the bottom of the molded container in a direction to force the container out of the cavity.

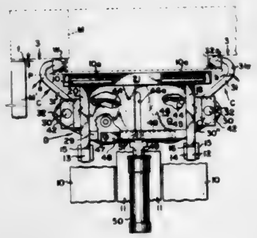
3,660,003
APPARATUS FOR THE MANUFACTURE OF HOLLOW FRANGIBLE PIPES
Philip Waddington, 839 Provost Drive, Ottawa 10, Ontario, Canada
Filed Apr. 28, 1970, Ser. No. 32,693
Claims priority, application Canada, May 8, 1969, 050,591
Int. Cl. B28b *21/32*
U.S. Cl. 425—427 6 Claims

The invention is concerned with the manufacture of hollow frangible pipes and contemplates the provision of an automatic pipe-making apparatus of the packer head or roller head type, including means for adjusting the rate of lift of the packer shaft means for varying the rate of feed of the material from which the pipe is to be formed and means for relating these two variable rates in a manner such that the pipes



formed thereby are uniformly packed to the optimum density throughout their length.

3,660,004
PALLET CLAMP
Robert J. Woelk, Alpena, Mich., assignor to Besser Company, Alpena, Mich.
Filed Apr. 30, 1970, Ser. No. 33,248
Int. Cl. B28b *7/00*
U.S. Cl. 25—41 R 13 Claims

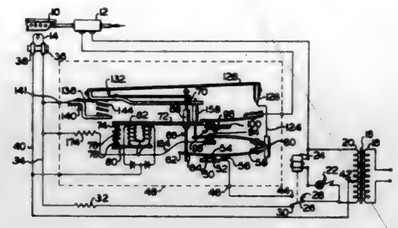


Concrete block molding machinery having apparatus for moving a block receiving pallet against a mold assembly which is used in forming building blocks. The apparatus includes rotatable clamp arms and clamp receiving members having cooperating wedging surfaces, the clamp arms being movable into and out of engagement with the clamp receiving members to move the pallet supporting members toward and away from the mold assembly to clamp and unclamp the pallet to and from the mold.

3,660,005
FAIL-SAFE ELECTRIC IGNITION SYSTEMS
James R. Wilson, Garden Grove, Calif., assignor to Robertshaw Controls Company, Richmond, Va.
Filed June 12, 1970, Ser. No. 45,645
Int. Cl. F23n *5/00*
U.S. Cl. 431—66 37 Claims

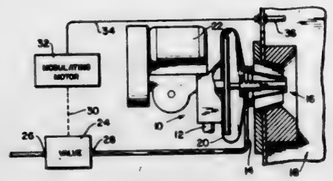
Electric ignition systems utilizing a holding coil in parallel with an electric igniter having a temperature responsive resistance, a heat expansible wire in series with the igniter, first and second switches controlled by the coil and the wire, respectively, to control the operation of a fuel valve, a dropping resistor to maintain the igniter at least partially

energized at all times, and a flame proving network for partially deenergizing the igniter after ignition whereby the



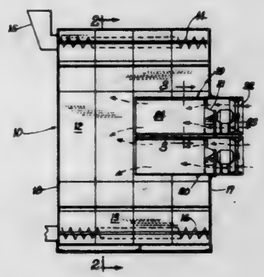
system assumes a fail-safe state in response to burner flame outage or any electrical or mechanical failure.

3,660,006
POLLUTION PREVENTIVE BURNER SYSTEM
David Crosta, 16 Woodland Avenue, Pompton Plains, N.J.
Filed Dec. 14, 1970, Ser. No. 97,629
Int. Cl. F23d *11/04*
U.S. Cl. 431—168 12 Claims



Disclosed herein is a burner system for use with boilers and furnaces, including a rotary cup burner having a combustion chamber and means for igniting a fuel oil and air mixture discharged into the chamber by a rotary cup nozzle. The fuel oil is supplied to the burner under pressure, and its flow rate is controlled by an automatically operated valve. Actuation of the valve is effected by a modulating motor, which, in turn, is controlled by a thermostat coupled to the furnace or boiler. The valve comprises a housing having inlet and outlet ports, and includes a valve chamber therewithin having triangularly shaped openings communicating with the inlet and outlet ports. A valve member is rotatably disposed within the chamber and linked for movement to the modulating motor. The valve member takes the form of a cylinder having a cutout portion extending angularly thereof for imparting a shearing action at the triangularly shaped openings in the valve chamber, thereby dislodging any sediment which may collect at the openings, while also providing an accurately controlled flow of oil due to the adjustable position of the angular edge of the valve member with respect to the converging edges of the triangularly shaped chamber openings.

3,660,007
PROFILE PLATES FOR BURNER
Erhard E. Alme, Barrington, and James E. Mitchell, Cary, both of Ill., assignors to AFE Industries, Inc., Lake Zurich, Ill., by said Mitchell
Filed May 4, 1970, Ser. No. 34,487
Int. Cl. F23d *15/00*
U.S. Cl. 431—351 3 Claims



A flame control device for a cylindrical furnace having a T-shaped gas burner unit and a fan-driven supply of air, the device comprising a pair of plates blocking the air supply to the burner except for a uniform area immediately adjacent the perimeter of the gas burner, whereby to ensure an adequate supply of air at the burner for complete combustion of the gas.

CHEMICAL

3,660,008
DYEING SULFONATED ANIONIC POLYMERIC FIBERS WITH AN AQUEOUS DISPERSION OF A SALT OF A CATIONIC DYE AND AN ARYLSULFONATE
Erik Klaus, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Apr. 25, 1968, Ser. No. 724,239
Int. Cl. D06p *3/82*
U.S. Cl. 8—21 A 13 Claims

An aqueous dispersion of (1) a water-insoluble salt of a cationic dye and a selected anion of an arylsulfonic acid with (2) an anionic dispersing agent selected from lignin sulfonate or a salt of a sulfonated naphthalene-formaldehyde condensate has been found useful in the high-temperature dyeing of acid modified acrylic, polyamide, or polyester fibers, either alone or in blend by continuous dyeing operations.

The salts can be represented by the formulas $D^{\oplus}\ Ar'SO_2^{\ominus}$ and $K^{\oplus}\ ArSO_3^{\ominus}$ where $D^{\oplus}$ is a cationic dye having a resonating or delocalized positive charge and Ar' is an aryl group substituted with substituents such that the summation of the pKa increments for the substituents is equal to or less than -0.9; and $K^{\oplus}$ is a cationic dye having a localized positive charge and Ar is an aryl group substituted with substituents such that the summation of the pKa increments for the substituents is equal to or less than -0.6.

3,660,009
METHOD OF MANUFACTURING READY-TO-WEAR CREASE-RESISTIVE GARMENTS
Frederick H. Sexsmith, Erie, Pa., assignor to Millmaster Onyx Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 491,009, Sept. 28, 1965, now abandoned. This application Feb. 2, 1969, Ser. No. 821,512
Int. Cl. D06m *15/10*, *15/44*
U.S. Cl. 8—116 8 Claims

Crease-resistant properties are imparted to wash-and-wear garments by impregnating cellulosic textile fabrics with a solution of a polymeric acetal obtained by reacting formaldehyde and a polyol, together with an acid catalyst, and thereafter drying and forming a garment from the fabric, and

pressing the same, the pressed finished garment then being subjected to a prolonged cure which imparts crease resistance to the garment.

3,660,010

TREATING TEXTILES WITH SOIL RELEASE AGENTS

Paul C. Georgoudis, Dunellen, and Dilip K. Ray-Chaudhuri, Somerset, both of N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

Filed Dec. 17, 1969, Ser. No. 886,031
Int. Cl. D06m *15/12*; B32b *27/40*
U.S. Cl. 8—115.6 2 Claims

A process of treating textiles with soil release agents to impart soil release properties thereto, said soil release agents being water soluble, hydroxyl terminated polyurethanes.

3,660,011

DIMETHYL SULFOXIDE USED AS A SOLVENT FOR TEXTILE TREATING COMPOSITIONS

Fred B. Shippee, and Domenick Donald Gagliardi, both of East Greenwich, R.I., assignors to Gagliardi Research Corporation, East Greenwich, R.I.

Continuation of application Ser. No. 332,799, Dec. 23, 1963, now abandoned. This application May 3, 1967, Ser. No. 635,924
Int. Cl. D06m *13/40*; C08g *51/46*
U.S. Cl. 8—116.3 8 Claims

The crease resistant properties of cellulosic fabrics is improved by rendering the fabrics highly resistant to both wet and dry wrinkling without serious detriment to fabric tensile strength, tear strength and flex abrasion resistance. This is accomplished by including dimethyl sulfoxide as an essential ingredient in the aqueous solution used to treat a cellulosic fabric with a nitrogen-containing water-soluble organic crease-proofing material.

3,660,012

SELECTIVE ETHYLATION OF THE CELLULOSE MOLECULE

John G. Roberts, Cheadle Hulme, England, assignor to The United States of America as represented by the Secretary of Agriculture

Filed Sept. 4, 1970, Ser. No. 69,865
Int. Cl. D06m *15/58*, *11/04*, *13/02*
U.S. Cl. 8—116.3 1 Claim

This invention relates to a process for the selective ethylation of cellulosic fibers. More particularly, this invention relates to a process for the selective ethylation of cellulosic fibers and a subsequent crosslinking of said fabrics to produce fabrics with improved crease recovery and abrasion resistance.

3,660,013

METHOD AND APPARATUS FOR PRODUCING A DURABLE PRESS IN GARMENTS CONTAINING CELLULOSE OR CELLULOSIC DERIVATIVES

George Louis Payet, and John H. Forg, both of Cincinnati, Ohio, assignors to McGraw-Edison Company, Elgin, Ill.

Filed Aug. 1, 1969, Ser. No. 846,884
Int. Cl. D06m *1/16*, *13/14*, *13/54*
U.S. Cl. 8—116.4 9 Claims

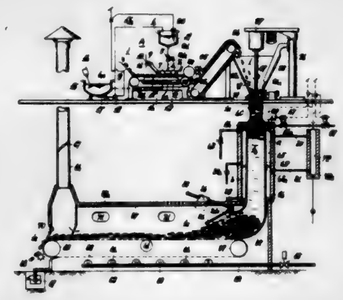
A novel treating method and commercial apparatus for carrying out this method have been developed for reacting prepressed cellulosic and cellulosic-blend garments with cross-linking agents in a gaseous phase to impart a durable press thereto. The durable press finish is imparted by placing the garments in a closed chamber typically at room temperature from 70°F to 80°F or, if preheated, at a temperature not in excess of 150°F, adding formaldehyde gas and sulphur dioxide gas and steam for several minutes causing the temperature in the chamber to rise due to the steam, cutting off the steam and allowing the temperature to drop to saturate the atmosphere and cause greater condensation of steam through the garments, and then heating the chamber to a temperature of the order of 250°F to complete the crosslinking operation. Next, the garments may be freed of residual odors by flushing the chamber with fresh air and/or steam. The apparatus comprises an openable treating chamber adapted to be heated as by steam ducts and having therein a heated tray for receiving paraformaldehyde and vaporizing the same. Also, means are provided for introducing controlled amounts of steam and of sulphur dioxide as the catalyzing agent. The chamber has suitable ports enabling it to be flushed by fresh air and by steam.

3,660,014

CONTINUOUS STEAM-HEATING METHOD AND APPARATUS FOR CONTINUOUSLY TREATING OR DYEING COTTON AND OTHER FIBERS

Shoichi Ohya, Sakai, Japan, assignor to Kabushiki Kaisha Yamadakuma Senkojo, Osaka, Japan

Filed Oct. 29, 1970, Ser. No. 85,033
Claims priority, application Japan, Jan. 10, 1970, 45/3035
Int. Cl. D06p *5/02*, *7/00*
U.S. Cl. 8—149.1 3 Claims



A method of continuously treating or dyeing cotton and other fibers and an apparatus therefor, comprising a mechanism whereby cotton and other fibers are saturated uniformly with a dye liquor or a treating liquor and are fed to a fiber-receiving pipe having a steeply sloped inner surface, a pressing mechanism whereby cotton and other fibers are pressed into the cotton-receiving pipe intermittently in the state of layers, a cylindrical steam-heater provided below the fiber-receiving pipe, a mechanism whereby a sealing force is imparted to the lower end of said steam-heater, and a horizontal steam-heater for the secondary steam-heating.

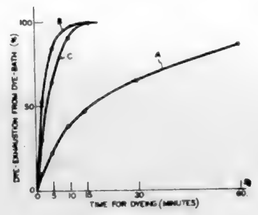
3,660,015

PROCESS FOR THE DYEING OF MODIFIED POLYESTER FIBERS WITH BASIC DYES IN THE PRESENCE OF AROMATIC CARBOXYLIC ACIDS

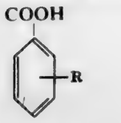
Minoru Ozutsumi; Kazuo Kawakami, and Sumio Ishizaki, all of Tokyo, Japan, assignors to Hodogaya Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 24, 1969, Ser. No. 793,755
Int. Cl. D06p *5/04*
U.S. Cl. 8—173 4 Claims

This invention provides a novel process for the dyeing of fibrous materials such as yarn, filaments and textile fabrics made of modified synthetic polyesters which contain a sulfonate radical, or blended yarn fabrics or union cloths containing said fibrous materials of modified polyester with basic



dyestuffs in a dye bath containing at least one of the aromatic carboxylic acids represented by the general formula



wherein R denotes a hydrogen atom or radical selected from the group consisting of hydroxyl and carboxyl groups serving as dyeing accelerator.

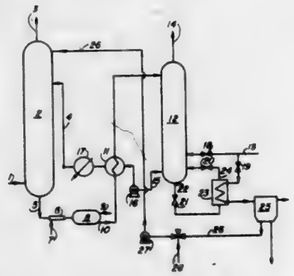
The dyeing process according to the present invention is advantageously carried out with a rapid adsorption of the dyestuff from dye bath resulting in a deep shade of coloration on the materials having an outstanding fastness properties especially light-fastness.

3,660,016

REMOVAL OF CARBON DIOXIDE AND/OR HYDROGEN SULFIDE FROM GASES CONTAINING OLEFINES AND ACETYLENES

Harald Jeha; Rolf Loebdemann, both of Ludwigshafen; Wilhelm Rittinger, Schifferstadt; Artur Sliwka, Krichheim, and Walter Saum, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Dec. 16, 1968, Ser. No. 783,907
Claims priority, application Germany, Dec. 15, 1967, P 16 43 715.3
Int. Cl. B01d *53/34*, *53/16*
U.S. Cl. 23—2 R 6 Claims



A process for the removal of CO_2 and/or H_2S from gases containing olefins and acetylenes by absorption in an aqueous solution of an alkali metal salt of amino acid and desorption by decompressing and heating the solvent, which comprises treating the solvent, before or after desorption, with a hydrocarbon mixture substantially consisting of benzene for the purpose of removing impurities and, after said treatment, separating the hydrocarbon mixture from the aqueous solution.

3,660,017

ABSORPTION AND HYDROLYSIS OF CARBON OXYSULFIDE

Wolfgang Hoesberg, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 28, 1969, Ser. No. 819,959
Int. Cl. B01d *53/34*
U.S. Cl. 23—2 R 8 Claims

Carbon oxysulfide is hydrolyzed with water at a temperature of at least 100° C. in the presence of an N-substituted alkanolamine or ether of the formula

$$R-NH(CH_2)_n-OR_1$$

where R is a saturated alkyl or cycloalkyl radical of 1 to 20 carbon atoms; R_1 is hydrogen or a saturated alkyl radical of 1 to 4 carbon atoms; and n is an integer of 2–4. The process can be carried out in a continuous manner, water being introduced into the system at about the same rate as carbon oxysulfide is decomposed.

3,660,018

METHOD OF MANUFACTURING CARBON FIBRE

Philip George Rose, Burton-on-Trent, England, assignor to Rolls Royce Limited, Derby, England

Filed July 31, 1970, Ser. No. 60,103
Claims priority, application Great Britain, Aug. 4, 1969, 38,868/69
Int. Cl. C01b *31/07*
U.S. Cl. 23—209.4 5 Claims

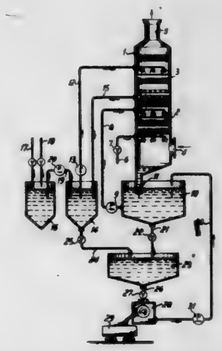
The invention relates to a method of manufacturing improved carbon fibre from polyacrylonitrile in which the polyacrylonitrile is heated to a temperature between 150° C. and 300° C. in an oxygen containing atmosphere to stabilize its structure, then pyrolysed at between 700° and 1,500° C. in an atmosphere containing between 5 and 500 parts per million of oxygen and being otherwise inert.

3,660,019

PROCESS FOR PURIFYING INDUSTRIAL WASTE GASES CONTAINING FLUORINE VALUES

Hans H. Predikant, Haller; Hermann Betz, Neuenkahlau, and Johann Schaffer, Meerholz, all of Germany, assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Jan. 29, 1970, Ser. No. 6,791
Claims priority, application Germany, Feb. 1, 1969, P 19 05 080.7
Int. Cl. C01d *3/02*
U.S. Cl. 23—88 6 Claims



Fluorine values are recovered from industrial waste gases containing fluorine and/or hydrogen fluoride, notably from

gases evolved in the manufacture of aluminum through electrolysis of alumina in the presence of cryolite, by scrubbing with a highly acidic aqueous solution containing hydrogen fluoride in a first washing zone and then with an aqueous sodium hydroxide solution with formation of sodium fluoride in solution without precipitation in a second washing zone, splitting the stream of solution from each washing zone into a recycle stream for return to the zone wherein it was formed, and into a precipitation stream, and the two precipitation streams are combined to precipitate sodium fluoride, which is recovered with recirculation of resultant mother liquor to the first washing zone.

3,660,020
PROCESS FOR THE SEPARATION OF IMPURITIES FROM NICKEL CHLORIDE SOLUTIONS

Louis Gandon; Christian Bozec, and Philippe Lenoble, all of Le Havre, France, assignors to Le Nickel, Paris, France

Filed Aug. 7, 1970, Ser. No. 62,190
Claims priority, application France, Aug. 12, 1969, 6922701
Int. Cl. C01g *53/08*
U.S. Cl. 23—87 R 8 Claims

A process for the separation of metallic impurities, from aqueous nickel chloride solutions by selective liquid/liquid extraction between said aqueous phase containing the said metallic impurities in chloride form and an organic phase containing a trialkyl sulfonium chloride in the form of a solution in an organic diluent substantially immiscible with water, such that at least one of the said metallic valuables is selectively transferred from the aqueous phase to the organic phase, characterized by the fact that the said aqueous phase is substantially neutral and that it presents a total concentration in chloride ions equal at least to 7 gram equivalents/liter.

3,660,021
PREPARATION OF FINELY DIVIDED CALCIUM SILICATE

Lester E. Olmsted, Affton; Eckard J. Puetz, Lemay; Warren Rodgers, St. Louis, and Charles R. Trampler, Jr., Webster Groves, all of Mo., assignors to N L Industries, Inc., New York, N.Y.

Filed Sept. 29, 1970, Ser. No. 76,584
Int. Cl. C01b *33/24*; C01d *5/00*
U.S. Cl. 23—110 R 5 Claims

A new type of finely divided calcium silicate has been produced by reacting calcium sulfate with sodium silicate an amounts to form theoretically a composition containing from about 0.7 to about 4.0 moles of SiO_2 for each mole of CaO. The by-product sodium sulfate is removed from the calcium silicate by washing.

3,660,022
RECOVERY OF COPPER

Walter L. Staker; Karl C. Dean, and Carl J. Chindgren, all of Salt Lake City, Utah, assignors to The United States of America as represented by the Secretary of the Interior

Filed Mar. 2, 1971, Ser. No. 120,360
Int. Cl. C22b *15/10*, *15/14*
U.S. Cl. 23—135 3 Claims

Copper is recovered from copper-containing materials, such as scrap or ores, by leaching with cupric ammonium carbonate solution, followed by addition of elemental sulfur to precipitate copper sulfide and regenerate the cupric ammonium carbonate leach solution.

3,660,023
PROCESS FOR RECOVERING CARBON DIOXIDE FROM STACK GAS

Ludo K. Frevel, Midland, and Leonard J. Kressley, Saginaw, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 2, 1970, Ser. No. 8,036
Int. Cl. C01b *31/20*; B01d *53/34*
U.S. Cl. 23—150 8 Claims

Disclosed is a process for recovering pure CO_2 from stack gases produced by the combustion of carbonaceous material. The process involves contacting the stack gas with porous sodium carbonate having a high surface area, i.e., greater than 0.3 m^2/gm. at a temperature of from about 40° to 75° C. Interaction between moist CO_2 and sodium carbonate forms $3NaHCO_3 \cdot Na_2CO_3$ which upon heating to a temperature of from 150° to 250° C. decomposes into CO_2, H_2O and Na_2CO_3. The liberated CO_2 is readily recovered and the regenerated Na_2CO_3 can be used to recover additional CO_2 thus permitting a cyclic process.

3,660,024
PROCESS FOR AMMONIA OXIDATION

George Richard Gillespie, New York, N.Y., assignor to Engelhard Minerals & Chemicals Corporation

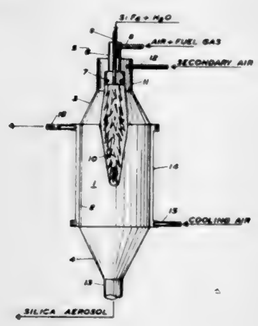
Continuation-in-part of application Ser. No. 2,255, Jan. 12, 1970, now abandoned. This application Sept. 11, 1970, Ser. No. 71,560
Int. Cl. C01b *21/26*
U.S. Cl. 23—162 5 Claims

In an ammonia oxidation process wherein ammonia and an oxidizing gas are contacted with a multilayer pad of platinum metal catalyst, a method is provided for reducing the amount of platinum metal catalyst required. The optimum amount of catalyst needed for a 95 percent ammonia conversion is reduced by replacement of a significant fraction of the gauze with a non-precious metal corrosion resistant foraminous structure which simulates the flow resistance of the fraction of catalyst gauze removed from the optimum pad. The resulting catalyst pack comprising platinum metal gauze and foraminous structure is equivalent in ammonia conversion to the optimum pad and the volatilization of the platinum metal gauze is materially reduced.

3,660,025
MANUFACTURE OF PIGMENTARY SILICA

Richard E. Driscoll, Monroe, La., assignor to Cities Service Company, New York, N.Y.

Filed July 1, 1970, Ser. No. 51,632
Int. Cl. C01b *33/18*, *33/14*
U.S. Cl. 23—182 V 9 Claims

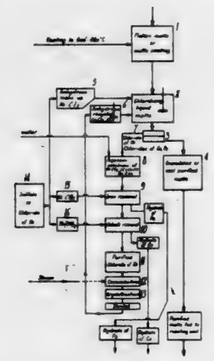


A mixture of fluid fuel and oxygen is burned at a substantially constant rate to produce hot flame gases. Silicon tetrafluoride is commingled with these hot gases and is thus hydrolyzed. The concentration of silicon tetrafluoride in the hydrolysis mixture is established at a selected value which corresponds in direct proportion to the surface area desired of the silica product, i.e., the surface area of the silica is increased by raising the concentration of silicon tetrafluoride in the hydrolysis mixture, and vice versa.

3,660,026
METHOD OF REMOVING IRON AND COBALT FROM A PARTIALLY REFINED NICKEL MATTE

Francis Michel, Meudon Bellevue; Louis Gandon; Roger Jean, both of Le Havre, and Pierre Fer, Le Havre-Caucriauville, all of France, assignors to LeNickel, Paris, France

Filed May 9, 1969, Ser. No. 823,385
Int. Cl. C01g *51/04*; C22b *9/12*; C01g *53/04*; C22b *23/00*
U.S. Cl. 23—183 9 Claims



A partially refined fused nickel matte is energetically and thoroughly washed with a chloridizing substance such as nickel chloride. The use of a chloridizing substance, which is preferred to an oxidizing agent as in the case of the usual treatment in a Bessemer converter, leads to a considerably improved selectivity in the refining of nickel mattes.

3,660,027
HIGH PURITY HOT PRESSED BORON NITRIDE

Victor Mandorf, Jr., Olmsted Falls, and Lionel C. Montgomery, North Olmsted, both of Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed May 6, 1969, Ser. No. 822,214
Int. Cl. C01b *21/06*
U.S. Cl. 23—191 12 Claims



High purity boron nitride articles of manufacture having a high density and improved properties. The improved boron nitride articles have a unique acicular crystal structure, an oxygen content of less than 0.5 percent by weight, a density of at least 1.9 grams/cc., excellent hot strength, low and substantially isotropic coefficients of thermal expansion with no irreversible thermal expansion, excellent thermal shock resistance, moisture insensitivity and improved dielectric properties. These articles are produced by treating conventional hot pressed boron nitride articles with a suitable solvent to lower their boron oxide (B_2O_3) content, and then sintering the treated material in an inert atmosphere at a temperature of from 1,600° C. to 2,100° C. in the absence of pressure or mechanical restraint.

3,660,028
AMMONIA SYNTHESIS CATALYST

Kenzi Tamaru; Takaharu Onishi, both of Kanagawa; Mitsuyuki Soma, and Mizuo Sudo, both of Tokyo, all of Japan, assignors to Tokyo University, Tokyo, Japan

Filed Feb. 6, 1970, Ser. No. 9,426
Claims priority, application Japan, Feb. 6, 1969, 44/8940
Int. Cl. C01c *1/04*
U.S. Cl. 23—198 10 Claims

The present invention provides a novel catalyst and improved process for direct synthesis of ammonia from nitrogen and hydrogen which comprises employing a complex of alkali metal or organo-alkali metal with graphite, said organo-alkali metal being an alkali metal benzophenone ketyl or an alkali metal salt of an aromatic hydrocarbon.

3,660,029
PROCESS FOR BENEFICIATING ILMENITE

Ahmed G. E. Nagulb, Jacksonville, Fla., assignor to Edith W. Carpenter, Jacksonville, Fla.

Continuation-in-part of application Ser. No. 62,612, Aug. 10, 1970. This application Apr. 9, 1971, Ser. No. 132,899
Int. Cl. C01g *23/04*
U.S. Cl. 23—202 R 20 Claims

A process for treating ilmenite to obtain a beneficiated product having a relatively high titanium dioxide content. Particulate ilmenite is first heated in the presence of a reducing agent to reduce the iron compounds in the ilmenite to ferrous oxide and/or metallic iron. The resulting product is then leached with a dilute inorganic acid to solubilize the reduced iron values. The liquor produced during leaching is then filtered from the unsolubilized residue, and the latter is subjected to a combination of process steps. Such steps include magnetic separation to remove essentially all of the iron valves remaining in the residue, and electrical separation to remove essentially all of the silicon values therein. Also, the residue is roasted at a relatively high temperature to drive off the water of crystallization which associates therewith during leaching. The final product contains up to 98 percent titanium dioxide by weight.

3,660,030
METHOD OF PREPARING NITROSYL CHLORIDE

Neville Colebourne, and Philip Richard Edwards, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Apr. 6, 1970, Ser. No. 26,156
Claims priority, application Great Britain, Apr. 21, 1969, 20,286/69
Int. Cl. C01b *21/52*
U.S. Cl. 23—203 N 9 Claims

A process for the preparation of nitrosyl chloride which comprises reacting together hydrogen chloride and nitrogen dioxide in the presence of nitric acid.

3,660,031
METHOD FOR PREPARING BORON SUBOXIDE

Cressie E. Holcombe, Jr., and Ottis J. Horne, Jr., both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 9, 1971, Ser. No. 122,506
Int. Cl. C01b *35/00*
U.S. Cl. 23—204 R 3 Claims

Boron suboxide (B_6O) is prepared by the reduction of zinc oxide with boron in an inert atmosphere at a temperature of 1,200°–1,500 C.

3,660,032

PROCESS FOR REGENERATION OF SULFURIC ACID LADEN ACTIVATED CARBON

Samuel L. Torrence, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 18,353, Mar. 10, 1970, now abandoned. This application July 10, 1970, Ser. No. 53,979

Int. Cl. C01b *17/04*; B01d *15/06*

U.S. Cl. 23—225 5 Claims

A process for regenerating a sulfuric acid laden activated carbonaceous adsorbent by contacting the activated carbonaceous adsorbent at a temperature below about 350° F. with hydrogen sulfide in an amount of at least 3:1 mole ratio of hydrogen sulfide to adsorbed sulfuric acid to reduce the adsorbed sulfuric acid to elemental sulfur which remains adsorbed on the adsorbent, steam stripping at least 1 mole of elemental sulfur per 3 moles of hydrogen sulfide from the activated carbonaceous adsorbent and recovering the steam stripped elemental sulfur. When it is desired to strip less than all of the elemental sulfur from the activated carbonaceous adsorbent the remaining sulfur may be reduced with hydrogen to produce hydrogen sulfide for use in reducing the adsorbed sulfuric acid.

3,660,033

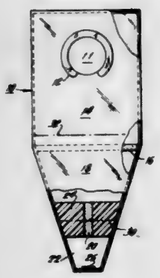
DISPOSABLE SPECIMEN COLLECTION AND ANALYSIS BAG

Leroy L. Schwartz, 3486 Richmond Avenue, Eltingville, Staten Island, N.Y.

Filed Sept. 29, 1969, Ser. No. 861,728

Int. Cl. G01m *1/18, 21/24*; B65d *75/12*

U.S. Cl. 23—230 R 13 Claims



A flexible sealed bag for containing and analyzing a specimen, comprising: an entrance; a first reservoir, communicating with the entrance, which receives specimen through the entrance; manually actuatable sealing means between the entrance and the reservoir; with a solid specimen, a liquid solvent in the reservoir into which the specimen becomes mixed; a narrow channel connecting the reservoir with an analysis chamber for permitting liquid in the reservoir to pass into the analysis chamber; the channel from reservoir to analysis chamber including manually actuatable sealing means for closing off the channel after adequate liquid has passed from the reservoir into the analysis chamber; the analysis chamber already holding a substance for reacting with the liquid transferred thereto; whereby a liquid specimen is divided into two parts, the part in the reservoir and the part in the analysis chamber.

3,660,034

INSTRUMENTAL METHOD AND EQUIPMENT FOR THE DETERMINATION OF THE DEGREE OF MATURITY IN FRUIT, PARTICULARLY IN POMACEOUS FRUIT

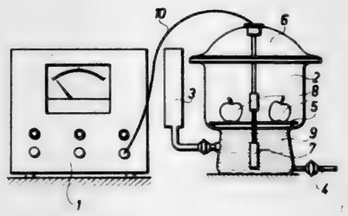
Jozsef Baranyi, Mezotur, and Laszlo Lakatos, Torokszentmiklos, both of Hungary, assignors to Licencia Talalmanyokat Ertekesito Vallalat, Budapest, Hungary

Filed Dec. 2, 1969, Ser. No. 881,441

Claims priority, application Hungary, Dec. 2, 1968, BA2137

Int. Cl. G01m *27/00*; G01n *31/06, 33/02*

U.S. Cl. 23—230 R 7 Claims



A process and apparatus for determining the degree of maturity in fruit by determining the amount of carbon dioxide developed by the fruit. The carbon dioxide formed by the fruit is absorbed in a suitable alkaline solution and the amount of developed carbon dioxide is determined by measuring the electrical conductivity of the solution.

3,660,035

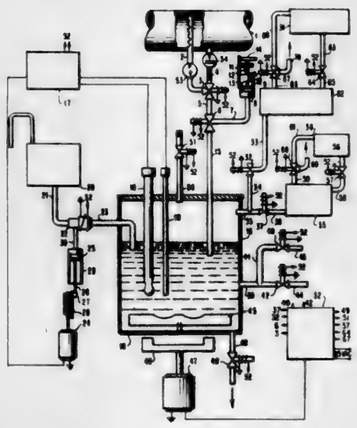
METHOD AND APPARATUS FOR DETERMINATION OF HYDROGEN SULFIDE IN HYDROGEN SULFIDE PETROLEUM PRODUCTS

Robin S. Marsh, Box 1363 c/o Aramco, Dhahran, Saudi Arabia

Filed Mar. 26, 1969, Ser. No. 810,604

Int. Cl. B01k *3/00*; G01n *31/16*

U.S. Cl. 23—230 R 11 Claims



A method for the rapid and accurate determination of the hydrogen sulfide content of a liquid petroleum hydrocarbon. The hydrogen sulfide in a known quantity of said hydrocarbon is dispersed into an ionic state and titrated with a standard cadmium salt solution to determine the hydrogen sulfide content of the hydrocarbon. A hydrogen sulfide analyzer for carrying out the method is also disclosed.

3,660,036

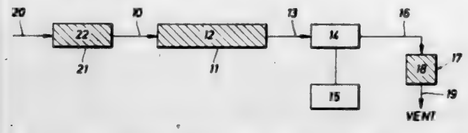
ANALYTICAL METHOD AND APPARATUS

Royal H. Benson, Texas City, Tex., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 22, 1969, Ser. No. 886,953

Int. Cl. G01n *23/12*; G21h *5/00*

U.S. Cl. 23—230 R 19 Claims



An improvement in a method for analyzing labile-hydrogen-containing compounds present in mixtures wherein the mixture is passed over a labile-tritium-containing substrate to effect exchange of the labile hydrogen with the labile tritium and the resulting tritium-containing compound is detected and measured, the radioactivity measurement being used to determine the amount of the labile-hydrogen-containing compound in the mixture, which comprises passing the effluent from the detecting means through a high capacity "tritium trap" containing a substance having labile-hydrogen atoms to prevent the venting of dangerous amounts of radioactive tritium-containing compounds into the atmosphere. The invention also provides the combination of a suitable "tritium trap" with an analytical system for carrying out the above method comprised of a column connected to the outlet of the detecting means and which contains a substance having labile-hydrogen atoms.

3,660,037

DEVICE FOR MEASURING BLOOD SEDIMENTATION RATE

Kurt Rudolf Sokol, Schwachhauser Heerstr. 295, 28 Bremen, Germany

Filed Aug. 10, 1970, Ser. No. 62,256

Int. Cl. B01l *3/00*; G01n *15/04, 33/16*

U.S. Cl. 23—253 R 8 Claims



A unitary device comprising a cannula and a syringe barrel of rather large diameter for withdrawing blood, combined with one or more telescoping cylinders of relatively smaller diameter in which the sedimentation rate is measured.

3,660,038

INTEGRATED GARBAGE PROCESSING SYSTEM

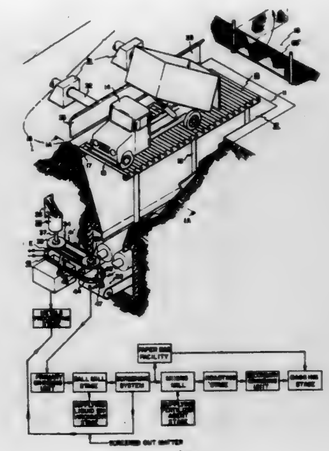
John C. Brewer, Salt Lake City, Utah, assignor to Garbalizer Corporation of America, Salt Lake City, Utah

Original application Feb. 5, 1968, Ser. No. 707,910, now abandoned. Divided and this application Aug. 7, 1970, Ser. No. 61,992

Int. Cl. B65g *67/24*

U.S. Cl. 23—259.1 4 Claims

The present invention provides a system and method for processing municipal refuse or garbage into useable fertilizer products. Suitable means are preferably incorporated for separating metals from the refuse and for processing the same into commercially deliverable metal products such as ingots. In a preferred form of the invention the system or method is used in conjunction with a municipal sewage treatment plant wherein the liquid and sludge phases thereof are utilized in the system and method for milling and also for enriching the slurry developed in the system and method, for ultimate processing as a useable fertilizer product.



3,660,039

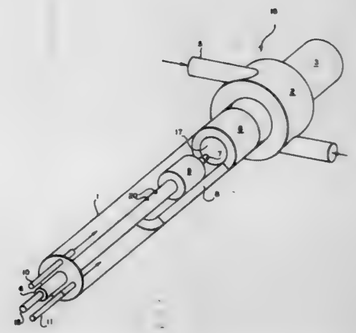
CARBON BLACK REACTOR WITH POSITIONABLE CHOKE

Eulas W. Henderson, Toledo, Ohio, assignor to Phillips Petroleum Company

Continuation-in-part of application Ser. No. 769,283, Oct. 21, 1968, now abandoned. This application Sept. 11, 1970, Ser. No. 71,471

Int. Cl. C09c *1/48*; F23d *15/00*

U.S. Cl. 23—259.5 5 Claims

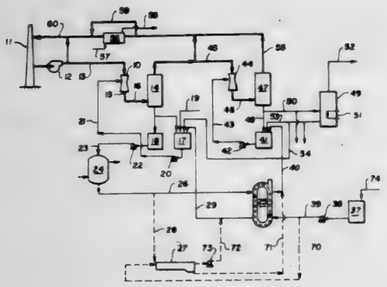


Apparatus for producing carbon black in which a plug choke is variably positionable along the length of the first reaction section to vary its length or, at the extreme position of the choke, to eliminate the first section.

3,660,040
GASEOUS OXIDE RECOVERY

Charles I. Harding; Lamar V. Russell; W. Malcolm Steeves, all of P.O. Box 4850, Jacksonville, Fla., and Irwin R. Higgins, P.O. Box 549, Oak Ridge, Tenn.

Filed Apr. 10, 1969, Ser. No. 814,936
Int. Cl. C01b 17/60; B01d 53/14, 53/34
U.S. Cl. 23—260 11 Claims

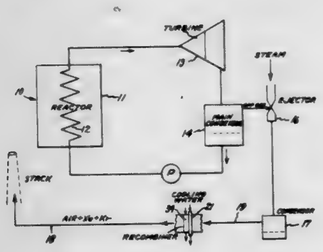


An apparatus for removal of sulfur and nitrogen dioxide from gases which may comprise a plurality of scrubbers and an ion exchange resin bed successively receiving gas containing SO_2 and nitrogen oxides and contacting the same with absorbing liquor and the resin bed, means receiving the absorbing liquor from at least one of said scrubbers for removing and concentrating SO_2 from at least a portion of said absorbing liquor, and means for concentrating SO_2 and nitrogen oxides directly in said resin bed, desorbing means receiving the concentrated SO_2 and nitrogen oxides and placing it in gaseous condition and recovery means for gaseous SO_2 connected to said desorbing means and receiving gaseous SO_2 therefrom, recovering nitrogen oxides in soluble nitrate form.

3,660,041
BURNER-FLAME ARRESTER FOR BURNING OFF-GAS FROM A BOILING WATER REACTOR POWER PLANT

George E. Moore, Scotia, and Lee H. Tomlinson, Schenectady, both of N.Y., assignors to General Electric Company

Filed Oct. 29, 1968, Ser. No. 771,467
Int. Cl. B01j 1/14; F23d 13/16; G21f 9/02
U.S. Cl. 23—262 5 Claims

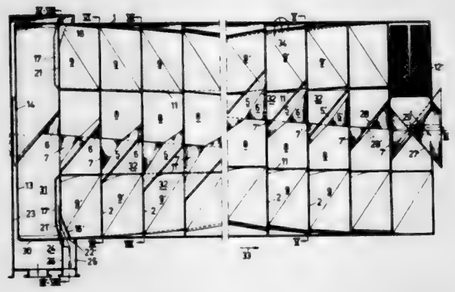


A cooled porous plug device in combination with a continuous ignition source is used for burning off explosive mixtures of contaminated radiolytic hydrogen-oxygen gas flow discharged from the steam turbine cycle of a boiling water nuclear power reactor. Optional use of a second cooled porous plug is shown, the second porous plug being located downstream of the burner to function as a heat exchanger to cool the combustion products for controlled condensation of the water vapor.

3,660,042
APPARATUS FOR EXTRACTING WITH A LIQUID, PRODUCTS WHICH ARE PART OF SOLIDS

Georges Francois Duchateau, Tienen, and Ferdinand Joseph Vanherwegen, Oplinter, both of Belgium, assignors to Raffinerie Tirlemontoise, Brussels, Belgium

Filed Feb. 20, 1969, Ser. No. 801,018
Claims priority, application Belgium, Feb. 23, 1968, 711,219; Feb. 14, 1969, PV 70,061
Int. Cl. B01d 11/02
U.S. Cl. 23—269 8 Claims

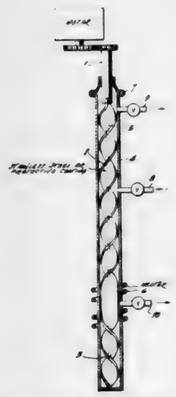


This invention relates to an apparatus for extracting with a liquid, products which are part of solids, by advancing in counterourrent liquid and solids through a drum which comprises at least one screw conveyor with an upstream end and a downstream end, part at least of the conveyor turns defining compartments which are provided with elements for raising the solids and for separating the solids from the liquid, the solids falling from the raising elements back into the drum bottom each time in a different liquid fraction.

3,660,043
METHOD AND DEVICE FOR FEEDING CRYSTALS AND MELTS

Herman Schildknecht, Wilcken Str. 5, and Klaus Maas, Quinke Str. 44, both of Heidelberg, Germany

Filed Jan. 31, 1969, Ser. No. 796,321
Claims priority, application Germany, Jan. 31, 1968, P 17 19 468.2
Int. Cl. B01d 9/04
U.S. Cl. 23—273 F 2 Claims

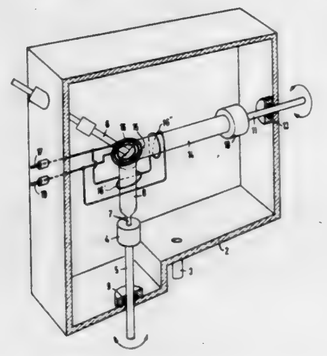


Apparatus for feeding crystals and melts in a crystallization column comprising a rigid strip freely rotatably mounted in the column, the edges of said strip bearing against the inside of the column and the strip being twisted spirally in one direction about its longitudinal axis, at least one end of the strip being connected to a driving means adapted to rotate the strip about its longitudinal axis.

3,660,044
APPARATUS FOR CRUCIBLE-FREE ZONE MELTING OF CRYSTALLINE RODS

Wolfgang Keller, Pretzfeld, Germany, assignor to Siemens Aktiengesellschaft, Berlin-Siemensstadt, Germany

Continuation of application Ser. No. 556,157, June 8, 1966. This application June 25, 1969, Ser. No. 845,599
Claims priority, application Germany, June 10, 1965, S 97543
Int. Cl. B01j 17/10
U.S. Cl. 23—273 SP 11 Claims



Apparatus for crucible-free zone melting a rod of crystalline material includes a melting chamber, axially displaceable and rotatable holders for supporting a stock rod to be recrystallized and a recrystallized rod mounted in the melting chamber, the holders having axes extending inclined or transversely to one another, and means for heating the stock rod so as to form a melting zone therein connecting the stock rod with the recrystallized rod.

3,660,045
SMOKE CLARIFIER

Norman D. Gladu, Langley, British Columbia, Canada, assignor to Intercontinental Environmental Controls Ltd., Vancouver, British Columbia, Canada

Filed Feb. 20, 1970, Ser. No. 13,004
Int. Cl. F23g 7/06; B01d 47/06
U.S. Cl. 23—277 C 11 Claims

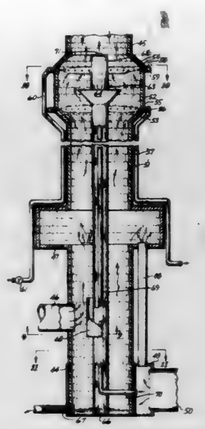


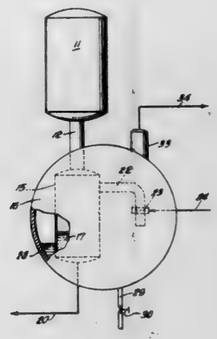
Water sprays projected in the form of a curtain through smoke rising through a smokestack transversely of the direction of smoke movement entrain particulate material in the smoke and carry it away. The sprays may cooperate with a baffle which aids precipitation of particles and creates turbulence to facilitate such separation further. Additionally, combustible impurities may be burned by flame jets preceding the spray washing operation, and supplemental air may be mixed with the smoke preceding the flame zone.

3,660,046
QUENCHING APPARATUS FOR A HIGH PRESSURE SYNTHESIS GAS PROCESS

Randlow Smith, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

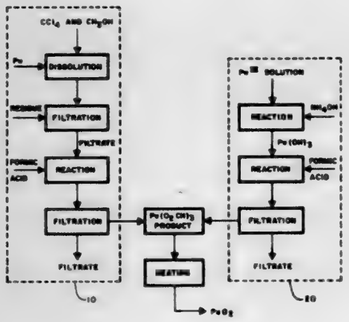
Filed Feb. 5, 1970, Ser. No. 8,791
Int. Cl. B01d 47/02
U.S. Cl. 23—284 8 Claims





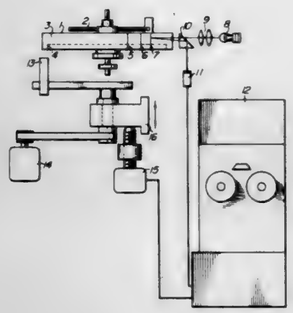
A combined quenching and scrubbing structure for use in a synthesis gas process that employs high pressure and temperature. There is a thin walled quenching vessel that is constructed of high alloy steel to withstand the corrosive effects. It is contained inside of a low alloy steel spherical container that is thick walled to withstand the high pressure. An outlet from the quenching vessel has an orifice scrubber therein and both are located inside the spherical container.

3,660,047
PRODUCTION OF PLUTONIUM FORMATE AND PLUTONIUM DIOXIDE
Larry R. Crisler, Arvada, Colo., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Mar. 18, 1970, Ser. No. 20,779
Int. Cl. C01g *56/00*
U.S. Cl. 23—344 2 Claims



Production of plutonium dioxide by forming the novel compound plutonium formate and heating the plutonium formate, at temperature from about 250° C. to about 350° C., is described.

3,660,048
PRELIMINARY FREQUENCY REGULATING METHOD FOR REGULATORS OF WATCH MECHANISMS
Mitsuo Oh-Oka, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Apr. 21, 1970, Ser. No. 30,539
Claims priority, application Japan, Sept. 5, 1969, 44/70440
Int. Cl. B23p *13/00*
U.S. Cl. 29—178 3 Claims



A flange is provided on the rim of a balance so that the preliminary frequency regulation may be attained by cutting said flange, with a balance spring mounted on the balance. At least three markings are provided on the peripheral surface of the rim so that a true frequency may be detected without being influenced by an amplitude change.

3,660,049
DISPERSION STRENGTHENED ELECTRICAL HEATING ALLOYS BY POWDER METALLURGY
John Stanwood Benjamin, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.
Filed Aug. 27, 1969, Ser. No. 853,327
Int. Cl. B22f *1/00*
U.S. Cl. 29—182.5 6 Claims

This invention relates to the powder metallurgy of wrought, dispersion strengthened, electrical heating elements characterized metallographically by a uniform distribution of dispersoids in both the longitudinal and transverse directions, and also to a powder metallurgy method for producing the same.

3,660,050
HETEROGENEOUS COBALT-BONDED TUNGSTEN CARBIDE
Ralph K. Iler, and Eugene G. Rigby, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed June 23, 1969, Ser. No. 835,817
Int. Cl. C22c *29/00*
U.S. Cl. 29—182.8 8 Claims

Strong, hard, impact-resistant bodies compriaing tungsten carbide bonded with from 3 to 25% by weight of heterogeneous cobalt-tungsten solid-solution alloy, useful as cutting tools, are prepared by heating an intimately mixed cobalt/tungsten carbide powder to a temperature above 1000° C and consolidating the powder to a density of at least 98% of its theoretical density, having either.

1. mixed a carbon-rich and a carbon-deficient powder together prior to consolidation to produce a non-homogeneous binder;

2. added free carbon to a carbon-deficient powder to produce local areas where tungsten is removed from the binder alloy as tungsten carbide; or

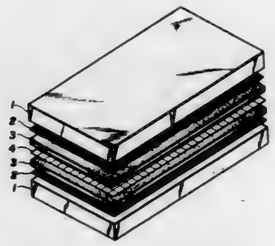
3. allowed a portion of the carbon in the tungsten carbide to oxidize during consolidation to produce areas in the binder phase which are then carbon deficient and high in tungsten.

3,660,051
CONTACT BODY
Harold William Lee, Poynton, England, assignor to Ernest Scragg & Sons Limited, Macclesfield, Cheshire, England
Continuation of application Ser. No. 625,910, Mar. 22, 1967, now abandoned. This application Dec. 11, 1969, Ser. No. 884,387
Claims priority, application Great Britain, Mar. 22, 1966, 44,805/66
Int. Cl. D02j *13/00*
U.S. Cl. 29—191.6 6 Claims



A contact body for contacting traveling materials treated with lubricating substance, such body comprising a thermally conductive base member having a surface adjacent to the path of travel of the materials and consisting of a first material subject to attack by the lubricating substance, and a coating applied to the surface and consisting at least in part of a second material which is impermeable to the lubricating substance and which is not subject to attack by the same.

3,660,052
COMPOUND BODIES OF ALUMINIUM PLATED STEEL STOCKS
Hideaki Takamatsu, Kodaira-shi; Akira Miyata, Kawasaki-shi, and Yutaka Toyabe, Tokyo, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, by said Akira Miyata
Filed June 3, 1969, Ser. No. 829,917
Int. Cl. B32p *3/20*; B32b *5/02*, *15/06*
U.S. Cl. 29—195 6 Claims



Steel stocks in the form of the wire, plate, rod, tube, etc., having thin aluminium plated films are bonded to rubber or synthetic resin having durable bonding and good mechanical properties. Aluminium films prevent diffusion of deleterious elements in rubber into steel.

3,660,053
PLATINUM-CONTAINING X-RAY TARGET
Rudolf Palme, Reutte, Tirol, Austria, assignor to Schwarzkopf Development Corporation, New York, N.Y.
Filed Nov. 18, 1969, Ser. No. 877,874
Claims priority, application Austria, Dec. 2, 1968, A 11682/68
Int. Cl. B32b *15/04*; H01j *35/08*
U.S. Cl. 29—195 9 Claims

This invention relates to alloys useful in X-ray targets comprising tungsten and platinum.

3,660,054
COAL UPGRADING
Robert W. Rieve, Springfield, Pa., assignor to Atlantic Richfield Company, New York, N.Y.
Filed Sept. 29, 1970, Ser. No. 76,601
Int. Cl. C10l *9/00*
U.S. Cl. 44—1 R 4 Claims

A method for upgrading coal to a higher quality fuel or feed stock by mixing coal with water and heating the mixture in a non-oxidizing atmosphere at a temperature near the critical temperature of water and under a pressure sufficient to maintain substantially all of the water in the liquid state. By this process at least the sulfur and/or ash content of the coal is reduced.

3,660,055
SCENTED FIREPLACE FUEL
James Gilbert Haller, 50 S. Prince St., Lancaster, Pa.
Continuation-in-part of application Ser. No. 810,121, Mar. 25, 1969, now abandoned. This application June 18, 1970, Ser. No. 47,628
Int. Cl. C10l *9/00*
U.S. Cl. 44—6 2 Claims

This invention relates to scented wooden fireplace fuel comprising logs of predetermined length upon which a durable coating is applied in which an essential oil is encapulated which has a pleasant scent. The coating may be a lacquer or similar organic vehicle which is capable of minimizing dissipation of the scent of said essential oil while being stored or while the log is being burned. If desired, the logs may also be impregnated with certain pyrotechnic chemicals to impart attractive visual colors to the flames of the burning logs, as well as also being treated with a fungicide and insecticide solution to neutralize the logs from vermin while being stored.

3,660,056
FUEL COMPOSITION
Erwin A. Dorsch, Fox River Grove, Ill., assignor to Union Oil Company of California, Los Angeles, Calif.
Filed Feb. 17, 1969, Ser. No. 802,739
Int. Cl. C10l *1/18*, *1/30*
U.S. Cl. 44—58 12 Claims

A gasoline composition containing, as an anti-wear additive, an aliphatic diether of diethylene glycol, or a combination of the glycol and a dialkyl ester of phthalic acid.

3,660,057
INCREASING LOW TEMPERATURE FLOWABILITY OF MIDDLE DISTILLATE FUEL
Stephan Ilnyckyj, Islington, Ontario, Canada, assignor to Esso Research and Engineering Company
Filed Mar. 17, 1969, Ser. No. 807,952
Int. Cl. C10l *1/18*
U.S. Cl. 44—62 4 Claims

The low temperature flowability of a middle distillate petroleum fuel oil, boiling within the range of about 250° to about 700° F. at atmospheric pressure is improved by adding to the fuel oil from about 0.001 to about 1.0 wt. % of a flow improving additive such as a copolymer of ethylene with another ethylenically unsaturated monomer such as an unsaturated ester or an alpha olefin, along with from about 0.01 to about 0.099 wt. % of an essentially saturated hydrocarbon fraction which is substantially free of normal paraffinic hydrocarbons and which has a number average molecular weight in the range of about 600 to about 3000.

3,660,058
INCREASING LOW TEMPERATURE FLOWABILITY OF MIDDLE DISTILLATE FUEL
Nicholas Feldman, Woodbridge, and Wladimir Philippoff, Cranford, both of N.J., assignors to Esso Research and Engineering Company
Filed Mar. 17, 1969, Ser. No. 807,953
Int. Cl. C10l *1/04*
U.S. Cl. 44—80 6 Claims

The low temperature flowability of a middle distillate petroleum fuel oil, boiling in the range of about 250° to about 700° F. is improved and its pour point is lowered by adding to the fuel oil from about 0.01 to about 3 wt. % of an essentially saturated hydrocarbon fraction which is substantially free of normal-paraffinic hydrocarbons, and which has a number average molecular weight in the range of about 600 to about 3,000.

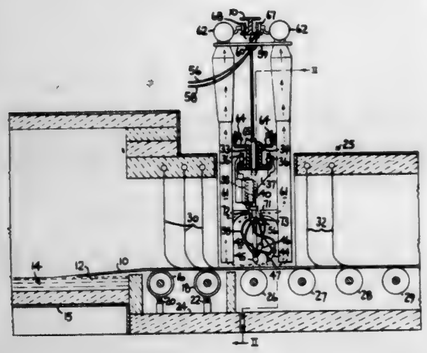
3,660,059
FUEL GAS COMPOSITION
Robert A. Hollemann; Robert F. Huston, and Cyril A. Barrios, all of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.
Filed Apr. 13, 1970, Ser. No. 28,078
Int. Cl. B01j *1/16*; C10c *3/06*
U.S. Cl. 48—197 FM 10 Claims

Disclosed is a composition of matter useful as a fuel gas. The composition comprises a first component selected from methylacetylene, propadiene and mixtures thereof in admixture with dimethyl ether as a second component. The dimethyl ether preferably comprises at least about 25 mole percent of the composition. The composition is safely storable under pressure due to the stability against spontaneous decomposition of the unsaturated hydrocarbons afforded by the dimethyl ether. Additionally, the composition maintains an essentially constant composition upon withdrawal from storage.

3,660,060
PROCESS OF MAKING GLASS LASERS OF INCREASED HEAT DISSIPATION CAPABILITY
Louis Spanoudis, Toledo, Ohio, assignor to Owens-Illinois, Inc.
No Drawing. Filed Dec. 11, 1969, Ser. No. 884,359
Int. Cl. C03c *21/00*
U.S. Cl. 65—30 11 Claims

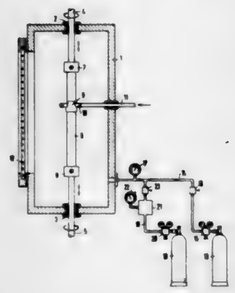
Glass lasers containing at least 1 mole percent of lithium oxide based on the total glass composition expressed in oxide content and 0 0 compound are treated by immersing or otherwise contacting the glass laser in a molten bath containing a mixture of sodium and lithium salts at an elevated temperature, preferably below the strain point of the glass laser. Optionally, the ion exchange immersion in the molten bath may be followed by washing with acid such as hydrofluoric to produce an acid polish. Glass laser rods so treated develop a compresive stress surface layer and exhibit high modulus of rupture.

3,660,061
COATED GLASS SHEET AND METHOD FOR MAKING THE SAME
Harold E. Donley, Monroeville; Raymond G. Rieser, New Kensington, and William E. Wagner, Verona, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 684,131, Nov. 20, 1967, now abandoned. This application Mar. 5, 1970, Ser. No. 16,670
Int. Cl. C03c *15/00*; C03b *18/00*
U.S. Cl. 65—32 9 Claims



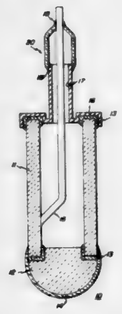
Applying a solution of a metal oxide film forming composition in an oxidizing atmosphere to a surface of a newly formed glass sheet to which oxidizing atmosphere and sheet has been exposed for at least approximately 3 seconds after removing the sheet from a reducing atmosphere containing molten tin and its vapor while the glass surface is at a temperature sufficiently high to pyrolize said composition to form a metal oxide coating thereon of sufficient thickness to provide the coated glass with desired properties, such as reducing the transmission of certain wave lengths of light in one or more desired wavelength bands through the coated sheet or making the coated sheet electroconductive. Care is taken to insure that the carrier for said composition does not evaporate completely en route to the glass surface to avoid a mottled appearance. A particularly desirable operation is to produce a continuous ribbon of a substantially homogeneous float glass composition and periodically apply a metal oxide film forming composition to provide the glass with an appearance and color similar to those of glass compositions containing coloring ingredients homogenously dispersed throughout the glass.

3,660,062
METHOD FOR CRUCIBLE-FREE FLOATING ZONE MELTING A CRYSTALLINE ROD, ESPECIALLY OF SEMI-CRYSTALLINE MATERIAL
Wolfgang Keller, Pretzfeld, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany
Filed Feb. 26, 1969, Ser. No. 802,467
Claims priority, application Switzerland, Feb. 29, 1968, 2585/68; May 30, 1968, 8043/68
Int. Cl. H01j *17/08*
U.S. Cl. 65—32 10 Claims



In method of floating zone melting a crystalline rod, especially of semiconductor material, disposed in a sealed receptacle wherein an induction heating coil surrounds the rod and forms a molten zone therein, the rod and heating coil being relatively movable so as to pass the molten zone through the rod, the improvement is provided which comprises passing hydrogen gas of at least 99.9 percent purity into the receptacle so as to form a protective atmosphere therein, and adjusting the pressure of the atmosphere in the receptacle to a value below atmospheric pressure; and device for carrying out the foregoing method.

3,660,063
METHOD OF FORMING SEALED CONTAINER FOR ELEMENTAL SODIUM
Harold A. Christopher, Scotia, N.Y., assignor to General Electric Company
Original application Mar. 27, 1969, Ser. No. 811,014, now Patent No. 3,579,382, dated May 18, 1971. Divided and this application July 15, 1970, Ser. No. 62,754
Int. Cl. H01m *21/14*; C03b *23/20*
U.S. Cl. 65—36 2 Claims



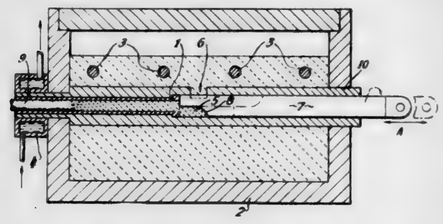
An evacuated, sealed container for pure elemental sodium is disclosed which has an open-ended casing of an ionic conducting material sealed at one end with a high temperature ceramic plug by means of a high melting point sodium resistant glass, an electronic conductor in contact with the interior surface of the ionic conducting material and extending outwardly from the casing, and a seal at the other end of the casing. Such a container provides a suitable device for storing and dispensing pure elemental sodium, or provides a sodium electrode with an associated ionic conducting electrolyte. Methods are also described for forming evacuated, sealed containers for pure elemental sodium.

3,660,064
METHOD OF SEALING REED SWITCHES USING INFRARED ENERGY
Terry L. Rohde, Schiller Park, Ill., assignor to C. P. Clare & Company, Chicago, Ill.
Original application Jan. 17, 1968, Ser. No. 698,471, now Patent No. 3,518,411. Divided and this application Jan. 29, 1970, Ser. No. 6,778
Int. Cl. C03c *29/00*; C01c *27/02*
U.S. Cl. 65—59 3 Claims



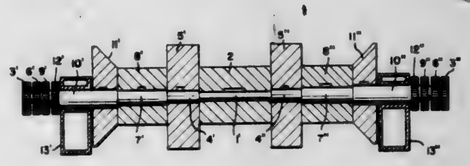
A method of sealing a magnetic reed in the open end of a tube of infrared absorbing glass uses an elliptical reflector with an infrared energy source at one focal point. The open end of the tube is disposed at the second focal point of the elliptical reflector with the axis of the tube extending along an extension of the line connecting the two focal points. The end of the tube to be sealed is also received within a conical reflector with the tube axis aligned with the axis of the cone of reflection. The conical reflector is moved along the axis of the tube as the glass softens to form the seal so as to concentrate the infrared energy on the top of the seal.

3,660,065
METHOD OF MANUFACTURING EXTRUDATES
Frederick James Edwards, Northumberland, England, assignor to Thermal Syndicate Limited, Wallsend, Northumberland, England
Filed Aug. 11, 1970, Ser. No. 62,949
Claims priority, application Great Britain, Aug. 12, 1969, 40,178/69
Int. Cl. C03b *9/00*, *17/00*
U.S. Cl. 65—66 4 Claims



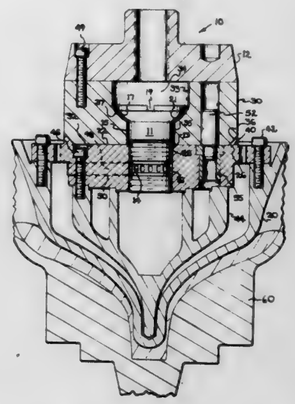
This invention relates to a method of and apparatus for manufacturing an extrudate of high temperature thermoplastic material (e.g. vitreous silica). In simplest form the method comprises delivering the thermoplastic material in plastic state to an extrusion die by means of a pump, the pump output and the dimensions of the die being chosen so that the die contains and supports the thermoplastic material throughout its plastic range. Conveniently the apparatus comprises a reciprocating pump submerged in a reservoir of the thermoplastic material in plastic condition, the inlet side of the pump being arranged to take in plastic material directly from the reservoir and the pump outlet being connected directly to an extrusion die in a wall of the reservoir.

3,660,066
PROCESS AND APPARATUS FOR THE CONTINUOUS MANUFACTURE OF PROFILED GLASS BARS
Rudolf Pfluger, Baden, Austria, assignor to Rubo Vertriebsgesellschaft M.B.H., Wien, Austria
Filed Oct. 30, 1962, Ser. No. 872,513
Int. Cl. C03b *13/06*
U.S. Cl. 65—94 6 Claims



A process for rolling profiled glass bars and an apparatus for this purpose whereby a horizontal roller arrangement with at least one cylindrical roll surface and a pair of lateral roller arrangements, each with a respective roll surface contact the glass ribbon to deform the latter into the desire profile. Means is provided for driving the outer roll arrangements at 0.5 to 1.5 percent higher peripheral speeds than the central roll arrangement.

3,660,067
GLASS-FORMING APPARATUS
Leyshon W. Townsend, Jr., Worthington, and Warren E. Wilburn, Columbus, both of Ohio, assignors to Owens-Illinois, Inc.
Filed Jan. 26, 1970, Ser. No. 5,745
Int. Cl. C03b *11/06*
U.S. Cl. 65—302 4 Claims

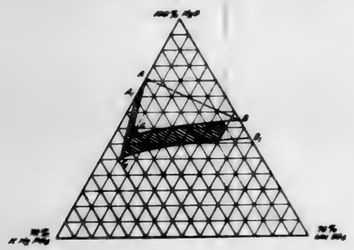


In the operation of a plunger to form the yoke area of an article centrifugally formed in a mold, a ball and socket assembly is provided between the plunger and its associated spindle which permits the plunger to freely float from the formed glass article upon withdrawal of the plunger, thus obviating the production of crizzles and checks due to lateral pressure of the plunger on the side walls of the formed glass article.

3,660,068
SOIL ADDITIVES
Joseph F. Wilson, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Dec. 29, 1969, Ser. No. 888,868
Int. Cl. C05b 7/00; C05d 3/00
U.S. Cl. 71—34 3 Claims

A method of preparing a granulated soil additive of calcium sulfate and a soluble salt, preferably a fertilizer, which involves granulating the calcium sulfate employing the soluble salt, incorporated with the calcium sulfate in solution form, as the granulating agent.

3,660,069
MANGANESE NUTRIENT SOLUTION
Peter Stanley Backlund, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
Filed Nov. 12, 1969, Ser. No. 875,738
Int. Cl. C05b 17/02
U.S. Cl. 71—33 8 Claims



A solution suitable for application to plants and soil to correct manganese deficiencies is described which comprises an aqueous solution of manganese sulfate and mono-potassium or mono-ammonium hydrogen orthophosphate having an acidic pH value from about 1.5 to about 4 and a novel eutectic composition.

3,660,070
PROCESS OF PREVENTING AGGLOMERATION OF FERTILIZERS
Iwao Maruta; Haruhiko Arai, and Moriyasu Murata, all of Chiba, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan
Filed Apr. 30, 1970, Ser. No. 33,520
Claims priority, application Japan, Jan. 20, 1970, 45/5555
Int. Cl. C05g 3/00
U.S. Cl. 71—64 E 3 Claims

A granular fertilizer is treated with an anti-caking agent consisting of an aqueous solution of (1) a substantially water-insoluble polymer of polyvinyl acetate, polyvinyl acetals, partially saponified polyvinyl acetate, partially acetylated polyvinyl alcohol, esters of polyacrylic acid and an aliphatic alcohol, or copolymers thereof with another copolymerizable monomer, dissolved in (2) an aqueous solution of alkyl sulfates, α-olefin sulfonates or alkylsulfonates containing six to 10 carbon atoms or alkylbenzenesulfonates in which the alkyl radical contains four to eight carbon atoms. The treated fertilizer product can be packed in polyethylene bags without causing tearing or the bags during storage.

3,660,071
WATER SOLUBLE ENTRAPPING OF A PESTICIDE
Francis E. Gould, Princeton, and Thomas H. Shepherd, Hopewell, both of N.J., assignors to National Patent Development Corporation, New York, N.Y.
Original application June 13, 1969, Ser. No. 833,182, now Patent No. 3,576,760, and a continuation-in-part of 567,856, July 26, 1966, now Patent No. 3,520,949, and a continuation-in-part of 650,259, June 30, 1967, now abandoned, and a continuation-in-part of 654,044, July 5, 1967. Divided and this application Sept. 9, 1970, Ser. No. 70,940
Int. Cl. A01n 17/00; A61k 9/00
U.S. Cl. 71—65 9 Claims

Materials are entrapped in water soluble hydroxyalkyl acrylate or methacrylate polymers to provide ready sources of the material by the deletion of water. Thus, there can be entrapped drugs, pesticides, flavoring agents and fragrances.

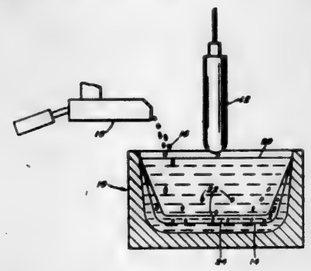
3,660,072
RIPENING OF SUGARCANE BY USE OF CERTAIN QUATERNARY AMMONIUM HALIDES
Louis G. Nickell, Honolulu, Hawaii, assignor to Hawaiian Sugar Planters Association, Honolulu, Hawaii
Filed May 22, 1970, Ser. No. 39,925
Int. Cl. A01n 9/20
U.S. Cl. 71—121 6 Claims

Sucrose yield of sugarcane is increased by treating sugarcane a few weeks prior to harvest with a quaternary ammonium salt such as a higher alkyltrimethylammonium bromide or chloride wherein the higher alkyl group contains between about 8 and 20 carbon atoms.

3,660,073
ORE PELLETIZING AID
Roger W. Youngs, Hinsdale, and Joseph M. Sandri, Flossmor, both of Ill., assignors to Nalco Chemical Company, Chicago, Ill.
Filed May 21, 1969, Ser. No. 826,547
Int. Cl. C21b 1/22, 1/26
U.S. Cl. 75—3 8 Claims

The invention relates to an organic ore pelletizing aid, to a method for making it, and to a method for pelletizing ore using the pelletizing aid. The pelletizing aid comprises coal which has been treated with an alkali metal hydroxide. A particular advantage is the provision of good ore "ballability," even at relatively high moisture content. The pelletizing aid may be coated with a high molecular weight, water dispersible organic polymer to further improve its performance.

3,660,074
METHOD FOR TREATING TITANIUM SCRAP
Russell C. Buehl, Beaver, Pa., assignor to Crucible Inc., Pittsburgh, Pa.
Filed May 7, 1969, Ser. No. 822,522
Int. Cl. C22d 7/02; C22b 53/00, 53/00
U.S. Cl. 75—10 11 Claims



This is a process for melting titanium scrap to provide a material free from dense inclusions. This is accomplished by melting a quantity of titanium scrap in a crucible, maintaining the same molten for a period sufficient to either melt dense inclusions or have them in unmelted form sink to the bottom of the melt, discontinuing heating to form a solidified skull adjacent to the bottom of the melt to entrap the inclusions and then removing the inclusion-free metal from the crucible.

3,660,075
CRUCIBLE COATING FOR PREPARATION OF U AND P ALLOYS CONTAINING ZR OR HF
Delbert R. Harbur; John W. Anderson, both of Los Alamos, and Richard K. Money, Espanola, all of N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Oct. 16, 1969, Ser. No. 867,096
Int. Cl. C22b 7/00; C22d 7/06; C22b 7/00
U.S. Cl. 75—65 1 Claim

A method of limiting adverse oxygen contamination in the preparation of uranium and plutonium alloys containing zirconium or hafnium, in which the metals are melted and alloyed in a graphite crucible coated with niobium carbide or yttrium oxide.

3,660,076
TREATMENT OF MATERIAL REMOVED FROM MOLTEN ALUMINUM
Merlyn M. Williams, Montreal, Quebec, Canada, assignor to Alcan Research and Development Limited, Montreal, Quebec, Canada
Filed Sept. 17, 1970, Ser. No. 73,261
Int. Cl. C22b 7/00, 21/00; C01f 7/02
U.S. Cl. 75—68 R 18 Claims

Material such as is skimmed from the surface of molten aluminum in a casting furnace, which usually contains considerable aluminum metal along with chemical compounds such as alumina, is crushed and treated with dry steam at a moderately elevated temperature, so that unwanted carbides and nitrides are eliminated and the treated skim or the like is conditioned for recovery of useful values, advantageously by classification thereafter into a coarse fraction providing aluminum metal suitable for remelting and a fine fraction in which chemical material is reclaimed, that may include values suitable for use in the fused bath of an aluminum reduction cell.

3,660,077
PROCESS FOR DETINNING TINNED SHEET IRON
Erich Ruf, Essen, Germany, assignor to Th. Goldschmidt A.-G., Essen, Germany
Filed Feb. 16, 1970, Ser. No. 11,290
Claims priority, application Germany, Feb. 20, 1969, P 19 08 503.1
Int. Cl. C22b 25/06
U.S. Cl. 75—98 3 Claims

This invention relates to a process of detinning tin-plated sheet iron with soda lye in the presence of sodium chlorite as an oxidizing agent.

3,660,078
PROCESS FOR THE PREPARATION OF TITANIUM DIOXIDE CONCENTRATES
Shigeki Yamada, Kyoto; Kokichi Miyazawa, Shiga; Hideaki Naka, Shiga, and Yoshio Yoshida, Shiga, all of Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan
Filed Feb. 9, 1970, Ser. No. 10,048
Claims priority, application Japan, Feb. 8, 1969, 44/9012
Int. Cl. C22b 53/00
U.S. Cl. 75—101 19 Claims

A process for the production of a titanium dioxide concentrate highly enriched with titanium dioxide and having low contents of other components comprising leaching a titaniferous material with a mineral acid in the presence of a seed material capable of accelerating the hydrolysis of titanium salts.

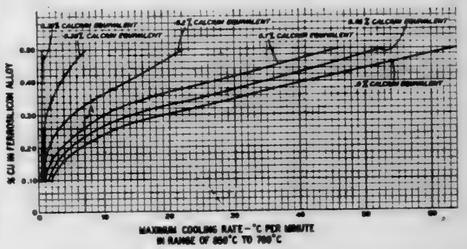
3,660,079
PRECIOUS METALS RECOVERY METHOD
Hargovind L. Goyal, West Nyack, N.Y., assignor to Midland Processing Inc., North White Plains, N.Y.
Filed Jan. 28, 1971, Ser. No. 110,593
Int. Cl. C22b 11/04, 11/06
U.S. Cl. 75—109 17 Claims

Photographic emulsion scrap is broken down into a liquid dispersion in a hot solution of an acid such as hydrochloric acid. A finely divided metal powder, such as zinc powder, is added to the liquid dispersion causing a chemical displacement of the silver and other precious metal combined in halide salts within the photographic emulsion scrap to cause the metals to precipitate for mechanical separation from the remaining liquid.

3,660,080
AUSTENITIC ALLOY AND WELD
Espy, Ronald H., Randallstown, and Elbert E. Denhard, Jr., Towson, both of Md., assignors to Armco Steel Corporation, Middletown, Ohio
Filed Jan. 31, 1969, Ser. No. 795,683
Int. Cl. C22c 39/20
U.S. Cl. 75—128 A 9 Claims

Sound, ductile austenitic alloy and weld of high strength in the as-welded condition. The alloy essentially consists of an iron-chromium-nickel-manganese austenitic matrix with a second phase comprising a columbium compound, the columbium-rich phase serving to host non-metallic impurities such as phosphides, sulphides, silicides and borides and preclude their depositing in the austenitic grain boundaries. The alloy contains about 12% to 30% chromium, about 10% to 55% nickel, about 5% to 15% manganese, up to 3% molybdenum, carbon about 0.03% to .20%, nitrogen about 0.03% to 0.30%, with 0.5% to 4.5% columbium and/or 1% to 7% tungsten, and remainder iron, this amounting to at least about 22%.

3,660,081
METHOD MAKING FERROSILICON ALLOY
John W. Farrell, North Tonawanda, and William D. Forgeng, Niagara Falls, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 652,884, July 12, 1967, now abandoned. This application Jan. 26, 1970, Ser. No. 5,766
Int. Cl. C22c 39/44, 39/54
U.S. Cl. 75—129 4 Claims

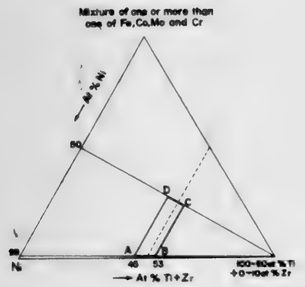


Method for producing tough non-friable, non-disintegrating ferrosilicon by the addition of copper to the ferrosilicon in the molten state and controlling the cooling rate of the resultant casting in accordance with the copper content and the calcium and aluminum contents of the casting.

3,660,082
CORROSION AND WEAR RESISTANT NICKEL ALLOY

Akira Negishi; Kiyoshi Takayanagi, and Masaru Ikeda, all of Tokyo, Japan, assignors to The Furukawa Electric Company Limited, Tokyo, Japan

Filed Dec. 27, 1968, Ser. No. 787,435
Int. Cl. C22c *15/00, 19/00*
U.S. Cl. 75—134 16 Claims



Corrosion and wear resistant nickel alloys are disclosed wherein 1–50 at. % of the Ni atoms is substituted by one or more of Fe, Mo, Co and Cr and 0–10 at. % of Ti atoms is substituted by Zr. The Ni atoms and Ti atoms are contained in an alloy consisting of 45–53 at. % of Ti and the remainder of Ni.

3,660,083
POLYARYLALKANE-TERMINATED, SOLVENT-RESISTANT POLYCARBONATE RESINS AS PHOTOCONDUCTORS

Melvin S. Bloom, and Stewart H. Merrill, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 25, 1970, Ser. No. 49,953
Int. Cl. G03g *5/02*
U.S. Cl. 96—1.5 2 Claims

Polyarylalkane-terminated polycarbonate resins are disclosed which when utilized in photoconductive layers and elements show superior stability and resistance to lixiviation by the carrier liquid of liquid xerographic developers.

3,660,084
RECORDING PROCESS USING QUINOLIN-2-ONE OR QUINOLIN-4-ONE ORGANIC PHOTOCONDUCTIVE SUBSTANCES

Johannes Joseph Vanheertum, Halle-Zandhoven; Albert Lucien Poot, Kontich; Josef Frans Willems, Wilrijk, and Wilhelmus Janssens, Aarschot, all of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Filed Mar. 24, 1970, Ser. No. 22,376
Claims priority, application Great Britain, Mar. 24, 1969, 15,333/69; Aug. 22, 1969, 42,061/69
Int. Cl. G03g *5/06*
U.S. Cl. 96—1.6 33 Claims

Electrophotographic recording process wherein a pattern of increased conductivity is produced image-wise in a photoconductive insulating recording layer using as the essential photoconductive compound guinolin-2-one, quinolin-4-one, certain analogs and structural derivatives thereof, as well as the bis forms thereof, dispersed in an insulating binder. At least about 10 percent by weight of the recording element is constituted by the photoconductive compound and a spectral sensitizing agent for the photoconductor can be included. This class of photoconductors is also useful in the production of phosphor patterns on cathode-ray tube screens.

3,660,085
SPECTRAL SENSITIZATION OF PHOTOCONDUCTIVE COMPOSITIONS WITH PYRROL OR INDOLIZINYL CYANINE DYES

Henri Depoorter, Mortsel; Guy Alfred Rillaers, Kontich; Karel Eugeen Verhille, Mortsel, and Theofiel Hubert Ghys, Kontich, all of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Filed Dec. 2, 1969, Ser. No. 881,597
Claims priority, application Great Britain, Dec. 16, 1968, 59,804/68
Int. Cl. G03g *5/08*
U.S. Cl. 96—1.7 10 Claims

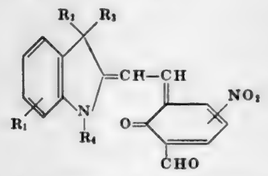
An inorganic recording material is described comprising a photoconductive substance, the light-sensitivity of which is increased by a monomethine, trimethine or pentamethine dye salt or betaine dye wherein the methine group or chain is terminated at each end either by 1H-pyrrol-2-yl or 1H-pyrrol-3-yl groups including such groups with fused aromatic rings or by 1- or 3-indolizinyl groups including substituted indolizinyl groups and wherein, the case of terminating pyrrole nuclei the said dyes contain in their molecule at least one carboxylic acid or sulphonic acid group in acid or salt form when both nitrogen atoms of the heterocyclic pyrrole nuclei carry substituents. The recording material has good spectral sensitizing effects in an aqueous as well as in an organic medium and has a high fastness to light.

3,660,086
ELECTROPHOTOGRAPHIC PLATE AND PROCESS EMPLOYING INORGANIC PHOTOCONDUCTIVE MATERIAL WITH A PHOTOCHROMIC SENSITIZING AGENT

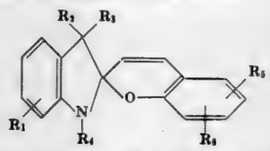
Yasuo Tamai; Chiaki Osada; Hisatake Ono, and Satoru Honjo, all of Asaka-shi, Japan, assignors to Xerox Corporation, Rochester, N.Y.

Filed Jan. 2, 1970, Ser. No. 394
Claims priority, application Japan, Jan. 17, 1969, 44/3261
Int. Cl. G03g *5/00, 7/00*
U.S. Cl. 96—1.7 14 Claims

An electrophotographic plate which comprises a photoconductive layer comprising a photoconductive material, a binder material, and a photochromic sensitizing agent selected from the group consisting of:



wherein: R_1 = H, a halogen, R or OR where R is an alkyl group having one to seven carbon atoms, R_2 and R_3 = an alkyl group having one to seven carbon atoms, and R_4 = $(CH_2)_n SO_3H$ or $(CH_2)_n COOH$, where n = 1 to 7;



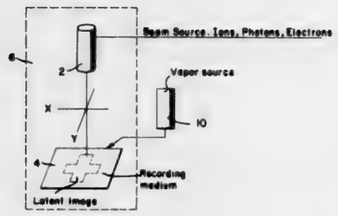
wherein: R_1 = R, a halogen, R or OR where R is an alkyl group having one to seven carbon atoms, R_2 and R_3 = an alkyl group having one to seven carbon atoms, R_4 = $(CH_2)_n SO_3H$ or $(CH_2)_n COOH$ where n = 1 to 7, and R_5 and R_6 = H, NO_2, a halogen, CN, OR, or COOR where R is an alkyl group having one to seven carbon atoms, providing R_5 and R_6 do not represent H atoms simultaneously;

and mixtures thereof, is disclosed. Electrophotographic processes employing these plates are also disclosed.

3,660,087
NUCLEATION IN RECORDING AND DEVELOPMENT

Alfred F. Kaspaul, and Erika E. Kaspaul, both of Malibu, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation-in-part of application Ser. No. 582,079, Sept. 26, 1966, now abandoned. This application July 7, 1969, Ser. No. 839,271
Int. Cl. G03g *13/22, 5/06*
U.S. Cl. 96—1.8 13 Claims



The image-recording medium comprises an actinic ray sensitive material and a metallic compound which acts as a nucleation-inducing medium dispersed in a film-forming vehicle and preferably coated on a substrate. The actinic ray sensitive material is preferably zinc oxide, while the nucleation-inducing medium is preferably a copper-containing compound.

The process is directed to forming and using the medium and comprises dispersing the sensitive material in the vehicle with the aid of a vehicle solvent and dispersing the metallic compound in the mixture with the aid of a solvent compatible with the vehicle solvent, followed by forming the mixture into a film. The medium is imagewise exposed, followed by development by imagewise disposition of metal from metal vapor, in accordance with nucleation sites produced by exposure.

3,660,088
PHOTO-RESIST PROCESS

Christian B. Lundsager, Ashton, Md., assignor to W. R. Grace & Co.

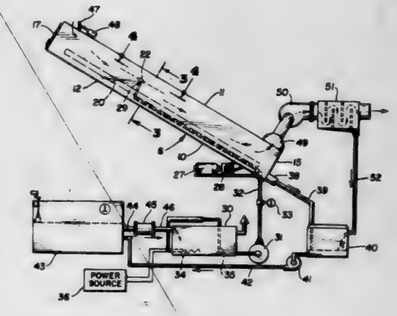
Filed Sept. 16, 1970, Ser. No. 72,776
Int. Cl. G03c *5/00;* G03f *7/00;* G03c *11/12*
U.S. Cl. 96—36 6 Claims

This invention relates to etching metal by a photo-resist process which comprises coating a metal or metal clad, e.g., copper, substrate with a photocurable composition consisting essentially of (1) a polyene containing at least 2 reactive unsaturated carbon to carbon bonds per molecule, (2) a polythiol containing at least two thiol groups per molecule, the total combined functionality of (a) the reactive unsaturated carbon to carbon bonds per molecule in the polyene and (b) the thiol groups per molecule in the polythiol being greater than 4, and (3) 0.0005 to 50 percent by weight of said composition of a photosensitizer, covering said composition with a UV transparent film adherable to the composition in its cured state, exposing said composition through said film and an image bearing transparency or mask to a free radical generator such as electromagnetic radiation having a wavelength of about 2,000–7,000 A. or high energy ionizing radiation to selectively cure and insolubilize the exposed portion of the composition and adhere same to the UV transparent film, removing the image bearing transparency and the UV transparent film with substantially all the cured portion of the composition adhering thereto, thus baring the metal beneath the removed cured portion of the composition, exposing the composition remaining on the metal or the metal clad substrate directly to a free radical generator to cure and insolubilize same, removing the exposed metal from the substrate and thereafter removing the cured composition thus leaving defined metal segments on the substrate.

3,660,089
PRINTING PLATE PROCESSING METHOD

John E. Pickard, Selma, Ind., assignor to Ball Brothers Company Incorporated, Muncie, Ind.

Original application Apr. 19, 1966, Ser. No. 543,675, now Patent No. 3,528,358, dated Sept. 15, 1970. Divided and this application Dec. 24, 1969, Ser. No. 889,827
Int. Cl. GO3c *5/24*
U.S. Cl. 96—48 R 14 Claims

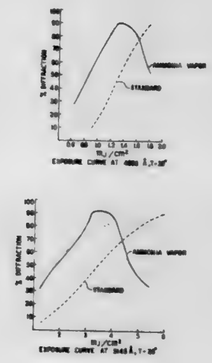


Method for developing and desensitizing lithographic plates having latent images in the form of a polymer coating of varying solubilities in differing areas by dispersing a solvent or desensitizer onto the plate, drying the plate, removing dissolved impurities from the solvent in situ, preferably by distilling the solvent, and returning the purified solvent to a reservoir for re-use.

3,660,090
TECHNIQUE FOR INCREASING THE SPEED OF DICHROMATED GELATIN

Robert Kryan Curran, Stirling, and Lillian Ann Rankel, North Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 30, 1970, Ser. No. 23,575
Int. Cl. G03c *5/22, 5/04*
U.S. Cl. 96—49 6 Claims



A technique for increasing the photographic speed of dichromated gelatin destined for use in holographic system involves subjecting the gelatin to an ammonia-water vapor ambient subsequent to exposure and prior to development.

3,660,091
PASSIVATION OF DICHROMATED GELATIN HOLOGRAMS TO HIGH RELATIVE HUMIDITY AMBIENTS

Theodore Arthur Shankoff, Mendham, and Constance Veronica Stanionis, Piscataway, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 13, 1970, Ser. No. 28,136
Int. Cl. G03c 5/22, 5/04
U.S. Cl. 96—49 3 Claims

A method of passivating dichromated gelatin holograms to high relative humidity ambients is disclosed. The method involves a developing process whereby a dichromated gelatin hologram, which has been exposed to a laser light, is initially treated with a first solvent which both swells and photographically fixes the exposed hologram and also introduces a high relative humidity passivating species into the photographically fixed holographic film. The swollen and fixed hologram is then treated with a second solvent which both removes the first solvent and develops the hologram. A subsequent baking of the developed hologram passivates it to high relative humidity conditions.

3,660,092
COLORPHOTOGRAPHIC MATERIAL

Karl Frank, Leverkusen, Germany, and Jan Jaeken, Hove, Belgium, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 13, 1967, Ser. No. 690,105
Claims priority, application Germany, Dec. 20, 1966, A 54426
Int. Cl. G03c 7/00
U.S. Cl. 96—54 6 Claims

Photographic color images having extremely good lightfastness are formed by converting a silver halide image to an image of a salt of a heavy metal that complexes with an organic complexing agent to make a strongly colored diffusion-resistant complex more light-fast than color coupler dyes. The heavy metal can be copper, chromium, manganese, iron, cobalt, nickel, palladium or platinum, or the like, and the organic complexing agent can have two different locations in its molecule for coordination with the metal. The silver halide is converted to the salt of the complexing heavy metal by applying to the silver halide image a differently colored or uncolored reactive complex of that metal having a disassociation constant larger than the corresponding complex of silver, so that the silver of the silver halide becomes bound by the reactive complex and liberates the heavy metal. It is also possible to go through two such reactive complex treatments to first convert the silver halide image to a mercury salt image, for example, and then convert the mercury salt image to an iron salt image, before the strongly colored light-fast final complex is formed. The organic complexing agent can be uniformly distributed in a light-sensitive silver halide emulsion, or it can be uniformly distributed in a layer adjacent that emulsion. After light-fast complex is formed, the unused complexing agent in such a layer can be complexed with a different metal ion to form a different color suitable for masking.

3,660,093
DRY AZIDO THERMAL DIFFUSION COPYING PROCESS

Erwin Ranz, Leverkusen; Helmut Kampfer, Cologne-Stammheim; Harald Von Rintelen, Leverkusen; Heinz-Dieter Schutz, Leverkusen; Dietmar Mayer, Leverkusen, and Klaus Sasse, Cologne-Stammheim, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 2, 1969, Ser. No. 838,637
Claims priority, application Germany, July 8, 1968, P 17 72 813.1
Int. Cl. G03c 5/54, 5/56, 5/18
U.S. Cl. 96—29 D 2 Claims

Positive copies are produced by a dry heat transfer process, whereby an imagewise exposed light-sensitive layer containing an organic azido compound is heated to transfer the azido compound from the unexposed areas to a reception layer and subsequent reaction to a visible positive image.

3,660,094
STABILIZATION OF PHOTOGRAPHIC SPIROPYRAN COMPOUNDS

Albert Lucien Poot, Kontich, Belgium, assignor to Gevaert-AGFA N.V., Mortsel, Belgium

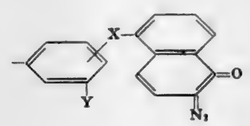
Filed June 22, 1970, Ser. No. 48,540
Claims priority, application Great Britain, July 8, 1969, 34,430/69
Int. Cl. G03c 5/24, 1/72
U.S. Cl. 96—48 8 Claims

Photographic images formed in a layer of photochromic material upon exposure to actinic light are stabilized so that a more permanent image is obtained by intimately mixing the photochromic material with a stabilizing agent of the formula:



wherein:

R_1 represents hydrogen, phenyl or phenyl substituted by at least one substituent taken from hydroxyl, carboxyl, halogen, amino, nitro, methoxy, aryloxy, pyridyl and quinone diazide groups, or wherein R_1 represents a substituent of the formula:



wherein:

X stands in ortho, meta or para-position with respect to the free bond of the phenyl group and represents $-O\cdot SO_2-$, $-NH-SO_2-$, $-O-CO-$ or $-NH-CO-$ and Y is nitro or methoxy;

R_2 and R_3 represent a phenyl or naphthyl group carrying at least one hydroxyl, methylamine, naphthoquinone-diazidesulphonyloxy or -2-methyl-indolyl group; or

R_2 and R_3 together with the common carbon atom form a di- or tri-phenylmethane compound with ring closure over an oxygen atom, a sulphur atom, a sulphodioxide group or a substituted or unsubstituted nitrogen atom.

3,660,095
PHOTOGRAPHIC SILVER HALIDE COLOR MATERIAL UTILIZING BENZOYLACETAMIDE COLOR COUPLERS

Marcel Hendrik Verbrugghe, Wilrijk, and Arthur Henri De Cat, Mortsel, both of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Filed June 27, 1969, Ser. No. 837,299
Claims priority, application Great Britain, July 18, 1968, 34,341/68
Int. Cl. G03c 7/00, 1/40
U.S. Cl. 96—55 8 Claims

Photographic materials are described comprising a light-sensitive silver halide emulsion layer and a benzoylacetamide color coupler capable of forming a yellow azomethine dye by reaction with an oxidized aromatic primary amino developing agent in which the benzoyl part of the color coupler contains at least one substituent of the formula:

RCF_2Q-

wherein:

R is hydrogen, fluorine or polyhaloalkyl, and

Q is oxygen, sulphur or sulphonyl.

These color couplers in light-sensitive silver halide emulsions provide photographic materials having improved light stability.

3,660,096
SPEED INCREASING ADDITIVES FOR NON-SILVER LIGHT SENSITIVE SYSTEMS

Eugene Wainer, Shaker Heights; Victor P. Petro, Brecksville; Robert D. Fox, University Heights; John E. Shirey, Wickliffe, and John A. Smerillo, Cleveland, all of Ohio, assignors to Horizons Incorporated

Filed July 19, 1968, Ser. No. 746,008
Int. Cl. G03c 1/52
U.S. Cl. 96—90 9 Claims

Non-silver photographic compositions of the type described in U.S. Pat. No. 3,481,739 issued Dec. 2, 1969, are increased in photographic speed by the addition of one or more compounds from the group consisting of merocyanine dyes, polyphenylmethane carbinol bases and N-methyl diphenyl amines.

3,660,097
DIAZO-POLYURETHANE LIGHT-SENSITIVE COMPOSITIONS

Shashi B. Mainthia, New Rochelle, N.Y., assignor to Polychrome Corporation, on the Hudson, Yonkers, N.Y.

Filed Nov. 28, 1969, Ser. No. 880,918
Int. Cl. G03c 1/52, 1/64
U.S. Cl. 96—91 34 Claims

Compositions comprising solvent-soluble, negative-acting and positive-acting light-sensitive diazonium compounds and synthetic, film-forming, solvent-soluble essentially linear polyurethane resins, which compositions can be coated onto suitable base sheet materials to form presensitized lithographic printing plates, proofs for multi-color printing, visual aids, printed circuits and the like.

ERRATUM

For Class 96—91 see:
Patent No. 3,660,581

3,660,098
PRODUCTION OF BINDER-FREE SILVER HALIDE ELEMENTS UTILIZING ELEMENTAL HALOGEN OR PLATINUM HALIDE

Russell P. Cook, Wellesley, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 615,962, Feb. 14, 1967, now abandoned. This application Jan. 7, 1969, Ser. No. 789,588
Int. Cl. G03c 1/02
U.S. Cl. 96—94 12 Claims

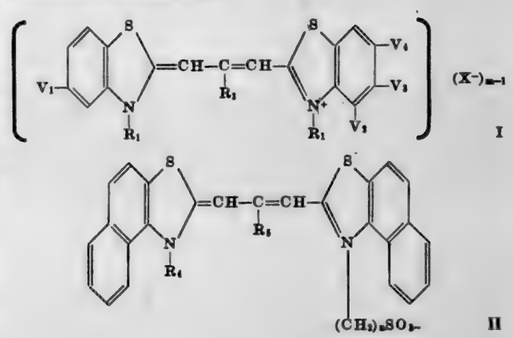
Binder-free silver halide photosensitive strata are prepared by solution halogenation of binder-free silver strata. Mixed silver halides may be prepared by contacting the binder-free silver strata successively with different solutions of halogenating agents.

3,660,099
LIGHT-SENSITIVE SUPERSENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSIONS

Shui Sato, Hachioji-shi; Eiichi Sakamoto, Hano-shi; Shizuo Saito, and Kaiichiro Sakazume, both of Tokyo, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Chuo-ku, Tokyo, Japan

Filed June 9, 1969, Ser. No. 831,714
Claims priority, application Japan, June 10, 1968, 43/39449
Int. Cl. G03c 1/14
U.S. Cl. 96—100 6 Claims

A supersensitized light-sensitive silver halide photographic emulsion is obtained by incorporating in the emulsion a combination of two specific dyes having the general formulas I and II as indicated below.



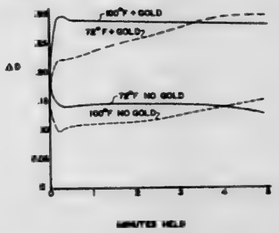
I

II

3,660,100
DIRECT-PRINT LIGHT-DEVELOPABLE EMULSION

Robert E. Heeks, Penfield, and Donald P. Sullivan, Rochester, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 641,135, May 25, 1967 and Ser. No. 707,483, Feb. 23, 1968, abandoned.
Filed Dec. 4, 1968, Ser. No. 782,789
Int. Cl. G03c 1/28
U.S. Cl. 96—108 4 Claims



A photographic emulsion of the silver chlorobromide direct-print light-developable type containing lead and thallium salts. Optimum results may be obtained by addition of gold and iodide salts and certain spectral sensitizing dyes.

3,660,101
PHOTOGRAPHIC MATERIALS AND PROCESSES

James M. Owens; James L. Graham, both of Rochester, N.J., and Edward A. Pilworth, Toronto, Ontario, Canada, assignors to Eastman Kodak Company, Rochester, N.Y.

Original application June 21, 1965, Ser. No. 465,736, now Patent No. 3,469,987. Divided and this application Apr. 30, 1969, Ser. No. 840,574
Int. Cl. G03c 1/08; G03g 5/00; C09b 11/00
U.S. Cl. 96—120 8 Claims

Dispersions useful in spectrally sensitizing photographic materials are provided which comprise spectral sensitizing

dyes dissolved in a hydrophilic colloid. Methods for the preparation of such dispersions are also provided which feature dissolving the dye in an organic solvent, and adding the dye solution to the hydrophilic colloid.

3,660,102

SILVER HALIDE EMULSIONS SENSITIZED WITH METHINE DYES CONTAINING A THIOSULFATOALKYL GROUP

Oskar Riester, Leverkusen, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 1, 1970, Ser. No. 24,867
Claims priority, application Germany, Apr. 2, 1969, P 19 16 845.7
Int. Cl. G03c *1/10, 1/18*
U.S. Cl. 96—127 **1 Claim**

Light-sensitive photographic silver halide emulsions can be spectrally sensitized by new monomethine or polymethine dyes which are hydrophilized by at least one thiosulfatoalkyl group of the formula

$$-(CH_2)_n-S-SO_3H \text{ with } n = 1 \text{ to } 6.$$

These new dyes are prepared by reacting suitable heterocyclic bases with an excess of α,ω-dihalogenalkanes to form the 1:1 addition products from which are formed the heterocyclic ω-thiosulfatoalkyl quaternary salts the latter being a suitable intermediate product for condensation reactions to form the new dyes according to known methods.

3,660,103

SPECTRAL SENSITIZATION BY POLYMETHINE DYES WHICH CONTAIN AN UNSATURATED ALKYL SULFONIC ACID GROUP

Helmut Kampfer, Cologne-Stammheim; Oskar Riester, Leverkusen, and Johannes Gotze, Bergisch-Neukirchen, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of application Ser. No. 446,095, Apr. 6, 1965, now abandoned. This application Aug. 30, 1968, Ser. No. 756,368
Claims priority, application Germany, Apr. 21, 1964, A 45821
Int. Cl. G03c *1/08*
U.S. Cl. 96—137 **6 Claims**

The invention relates to photographic materials which are optically sensitized with cyanine dyes containing at least 1 nitrogen-containing heterocyclic grouping, the nitrogen of which is substituted with an olefinically unsaturated alkyl sulfonic acid grouping. Such dyes provide more sensitization than corresponding dyes in which the alkyl is saturated.

3,660,104

GAME FEED

Roy Herman Godbold, Marfa, Tex., assignor to Godbold, Inc., Marfa, Tex.

Filed Mar. 14, 1969, Ser. No. 807,424
Int. Cl. A23k *1/14, 1/02*
U.S. Cl. 99—4 **1 Claim**

A food block has been prepared for quail. Although this bird thrives on the block, said block is relatively unattractive to other birds and to animals.

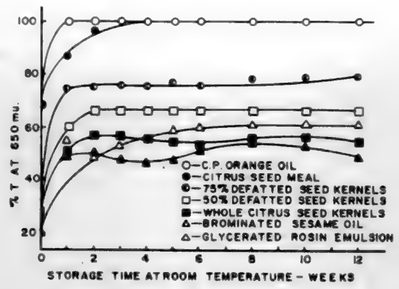
3,660,105

CITRUS SEED CLOUDING AGENT FOR BEVERAGE BASES AND FOOD PRODUCTS

James W. Kesterson, Winter Haven, Fla.; Rudolph Hendrickson, deceased, late of Lake Alfred, Fla. (by Rosalind A. Hendrickson, heir), and Cedric D. Atkins, Winter Haven, Fla., assignors to State of Florida, Department of Citrus

Filed July 25, 1969, Ser. No. 844,984
Int. Cl. A23l *1/00*; B01j *13/00*
U.S. Cl. 99—28 **11 Claims**

Clouding agents are prepared from the whole seed kernels of citrus fruits by preparing a paste from the whole seed kernels, partially defatted seed kernels, seed meal in combination with citrus seed oil or other fats, and combining these



agents with water, gum acacia and the flavor oil from the citrus fruit to form an emulsion.

3,660,106

METHOD OF MAKING FLAKED ROAST AND GROUND COFFEE

Joseph R. McSwiggin, and Charles H. Brandt, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 12, 1969, Ser. No. 823,942
Int. Cl. A23l *1/00*
U.S. Cl. 99—65 **4 Claims**

A method of making flakes of roast and ground coffee wherein said flakes have a flake bulk density of from 0.38 grams/cc to 0.50 grams/cc, a flake thickness of from 0.008 inches to 0.025 inches and a flake moisture content of from 2.5 to 7.0 percent. The method comprises passing roast and ground coffee having a moisture content of from 2.5 to 7.0 percent through a roll mill having a roll diameter of from 6.0 inches to 30.0 inches, at a roll pressure of from 1,500 lbs./inch of nip to 5,000 lbs./inch of nip, at a roll surface temperature of from 50° F. to 200° F. and at a roll peripheral surface speed of from 100 ft./min. to 1,500 ft./min.

3,660,107

EFFERVESCENT BEVERAGE POWDER AND TABLETED BEVERAGE COMPOSITIONS

Frederick S. Mayer, San Rafael, Calif., assignor to Meyer Laboratories, Inc.

Filed Jan. 23, 1970, Ser. No. 5,376
Int. Cl. A23f *1/12*; A23l *1/00*
U.S. Cl. 99—66 **7 Claims**

A food mixture of an effervescent couple tartaric acid, citric acid plus sodium bicarbonate having the relative proportions 2:1:4 respectively and solid flavorant of coffee, decaffeinated coffee, tea or chocolate which upon the addition of water yields a beverage.

3,660,108

AGGLOMERATING GRANULAR MATERIAL

Edmar J. Mednis, Woodside, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

Filed Feb. 19, 1970, Ser. No. 12,855
Int. Cl. A23f *1/08*
U.S. Cl. 99—71 **5 Claims**

An agglomerating technique in which a formulation containing a major amount of granular material and a minor amount of powdered material is throughly blended and fed through an agglomerator. This method provides a means for adjusting and controlling the bulk density of agglomerated products over ranges not readily obtained when agglomeration is performed with all powdered material.

3,660,109

PRODUCTION OF PARBOILED RICE

William A. Lay, Houston, Tex., assignor to Carus Chemical Company, Inc., LaSalle, Ill.

Filed Dec. 11, 1969, Ser. No. 884,382
Int. Cl. A23l *1/10*
U.S. Cl. 99—80 PS **5 Claims**

Treating of rice grain, while still covered by its hull, with aqueous potassium permanganate prior to steaming of the rice in processes for producing parboiled rice. The permanganate treatment has the effect of fixing or destroying color bodies in the hull to prevent their migration onto the surface of the starchy endosperm in the subsequent steaming and drying steps and thus prevent color impartation to the parboiled rice.

3,660,110

METHOD FOR PRODUCING AN IMPROVED PUFFED CEREAL

William E. Holtz, Jr., Chicago, and Robert R. Reinhart, Des Plaines, both of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Sept. 15, 1969, Ser. No. 858,100
Int. Cl. A23l *1/18*
U.S. Cl. 99—81 **10 Claims**

A process for improving whole grain puffed cereal products by reducing the moisture content of the whole grain puffed cereal product to a level of from 0.5 to 1.5 percent by weight based on the weight of the puffed whole grain and then allowing the moisture content to rise to packaging levels.

3,660,111

PROCESS FOR AFFECTING TASTE AND ODOR IN LEGUMINOSAE AND IN PARTICULAR PEANUTS AND SOYA BEANS

Karl-Hellmut Koch, 4 Hallbergstrasse, Duesseldorf, Germany

Continuation-in-part of application Ser. No. 477,316, Aug. 4, 1965, now abandoned. This application Dec. 18, 1969, Ser. No. 886,394
Int. Cl. A23l *1/20*
U.S. Cl. 99—98 **9 Claims**

The method for improving the taste and smell of legumins wherein the legumins are treated with an aqueous solution of a mixture of at least two acids selected from a group consisting of malic, lactic, tartaric, and citric acids in order to provide the improved taste and smell.

3,660,112

2-ALKYLTHIAZOLES AS TOMATO PRODUCT FLAVOR ENHANCERS

Stanley J. Kazeniac, Narberth, Pa., and Robert M. Hall, Haddonfield, N.J., assignors to Campbell Soup Company, Camden, N.J.

Filed Nov. 7, 1969, Ser. No. 870,462
Int. Cl. A23l *1/00*
U.S. Cl. 99—100 **18 Claims**

2-alkylthiazoles, and in particular, 2-isobutylthiazole, and their use as food additives for improving the aroma and flavor of tomato products.

3,660,113

PROCESS FOR PRODUCING POTATO CHIPS

Keng Chock Ng, 1020 Merced Street, Berkeley, Calif.

Filed Jan. 26, 1970, Ser. No. 5,966
Int. Cl. A23l *1/12*; A23b *7/04*
U.S. Cl. 99—100 P **2 Claims**

Fried potato particles, frequently identified as potato chips or French fries, are prepared having an acceptable color, one from Color 4 through 7 of the Color Reference Standard of the International Potato Chip Institute by a method comprising freezing raw sliced potatoes followed immediately thereafter by thawing said slices in warm water and frying the thus treated slices.

3,660,114

POULTRY FLAVOR COMPRISING AMINO ACIDS, SUGARS, VEGETABLE PROTEIN HYDROLYSATE AND 5'-RIBONUCLEOTIDES

Paul D. Thomas, Groton, Conn., assignor to Pfizer, Inc., New York, N.Y.

Filed Apr. 12, 1967, Ser. No. 630,188
Int. Cl. A23l *1/26*
U.S. Cl. 99—140 N **5 Claims**

A method for preparing a synthetic chicken-flavored composition containing amino acids, sugars, vegetable protein hydrolysate, monosodium glutamate, edible fat and 5'-ribonucleotides.

3,660,115

SOLID PARTICULATE AROMATIC MATERIALS AND PROCESS FOR PREPARING SAME

Gilbert N. Revie, Cincinnati, Ohio, assignor to Fries & Fries Inc., Cincinnati, Ohio

Filed May 9, 1969, Ser. No. 823,530
Int. Cl. A23l *1/26*
U.S. Cl. 99—140 R **9 Claims**

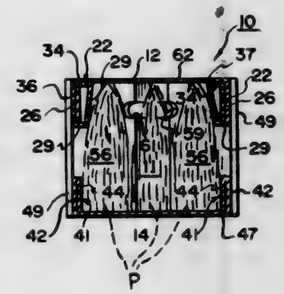
An aqueous mixture containing water soluble or dispersible solids is freeze dried to form porous solids particles. The particles are impregnated with liquid aromatic materials such as essential oils, flavoring oils, or perfumes. The impregnated particles are coated with a film-forming material to seal the liquid within the interstices of the solid particles. Flavor containing particles can be incorporated within dry beverage or gelatin mixes and perfume containing particles can be added to detergents.

3,660,116

VENTILATED STACKABLE CONTAINER

Frank E. Clark, Orinda, Calif., assignor to Container Corporation of America, Chicago, Ill.

Filed Sept. 15, 1969, Ser. No. 857,835
Int. Cl. B65d *85/30, 5/08*
U.S. Cl. 99—171 R **4 Claims**



A container is formed from a unitary cut and scored sheet of corrugated or other paperboard. The blank is folded along score lines and connected at a manufacturer's joint to provide top, bottom and opposed end panels. The top panel has side flaps extending therefrom folded upon themselves to provide tapered cellular structures giving good beam strength to a top panel. The bottom panel likewise has flaps extending therefrom and folded upon themselves to provide stiffening

of the bottom. The upper and lower stiffening structures are spaced to provide open sides of the container for ventilation of the contents. The sides of the end panels have flaps extending therefrom, and folded upon themselves to provide vertical stiffeners and good stacking strength.

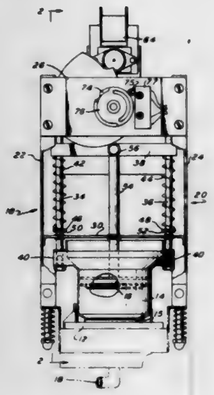
By reason of the tapered cellular structures the internal transverse cross-section of the container is essentially trapezoidal, making the container essentially suitable for tapered bundles of stalk vegetables, such as asparagus.

3,660,117

BEVERAGE BREWING APPARTUS

Raymond J. Neely, Montgomeryville, Pa., assignor to The Pennstar Company, Warminster, Pa.

Filed Dec. 4, 1970, Ser. No. 95,270
Int. Cl. A47j *31/00*
U.S. Cl. 99—289 6 Claims



Apparatus for use in brewing single cup quantities of a beverage from freshly ground charges of beverage material. A simplified apparatus is provided wherein the number of structural elements is greatly reduced and the expense of the entire apparatus is substantially less than that encountered with respect to prior apparatus. A series of cams is provided for operating the component parts of the apparatus and a motor for driving the cam shaft is provided. The profiles of the various cams are interrelated to reduce the load on the motor.

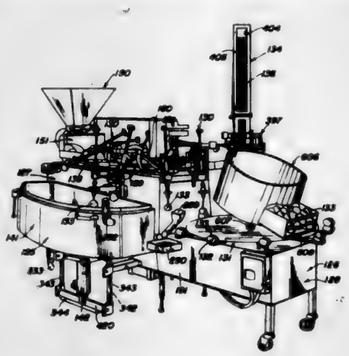
3,660,118

COATED APPLE CONFECTION MAKING MACHINE

Vito O. Raimondi, Chicago, and William V. Raimondi, Cicero, both of Ill., assignors to Beatrice Caramel Apple Co., Inc., Chicago, Ill.

Filed June 25, 1970, Ser. No. 49,888
Int. Cl. A23g *3/12*
U.S. Cl. 99—450.7 62 Claims

A cyclically operated coated apple confection making machine includes a handle stick storage hopper from which handle sticks are discharged one at a time at a first work station and are inserted automatically into handle stick-gripping and apple-holding devices, carried by a main movable endless or rotary turntable carrier, by which the handle sticks are automatically inserted into apples carried by a movable endless or rotary turntable apple carrier at a second apple pick-up work station. If an apple is not picked up at the second and apple pick-up work station the handle stick is automatically ejected from the handle stick-gripping and apple-holding device at a third work station. The handle sticks and attached apples are then moved through a caramel container in which they are rotated to coat the apples with a coating of caramel. The caramel-coated apples are then moved to a fifth work station where whey are lowered into and rotated in a first receptacle or tray for ground nuts so as to coat the caramel-coated apples with an outer coating of layer of ground nuts. The caramel-coated and ground nut-coated apples are then moved to a sixth work station at which the completed coated apple confections, with attached handle sticks, are discharged into a second receptacle or tray where they are given a further coating of ground nuts. The caramel container has a heating unit therebelow and the caramel container and its heating unit are automatically raised in small



increments relative to the handle stick-gripping and apple-holding devices as the rotational cycle of the main movable endless or rotary turntable carrier embodied in the machine progresses so as to assure an adequate coating of caramel on the apples as the supply of caramel in the caramel container is consumed in use. A nut storage hopper has a nut-grinding mechanism therein and ground nut level-responsive means in the first ground nut receptacle or tray, which is responsive to the level of ground nuts therein, controls the operation of the nut-grinding mechanism in such a manner as to assure an adequate supply of ground nuts in the first ground nut receptacle or tray at all times.

3,660,119

SILICATE BINDERS FOR ZINC-RICH PAINTS

Aaron Oken, R.D. #2, Sills Mills Road, Kennett Square, Pa.

Continuation-in-part of application Ser. No. 736,948, June 14, 1968, now abandoned. This application Apr. 14, 1970, Ser. No. 28,551
Int. Cl. C09d *5/10*
U.S. Cl. 106—1 7 Claims

New compositions of matter are made available which contain silicate esters and an alkaline material, the mixtures being kept anhydrous until their use. The compositions are zinc-rich paints, a silicate ester and an alkaline material mixture being mixed with zinc dust. Upon use, the blend is spread out as a coating. Upon exposure to the moisture in air, drying occurs rapidly with the formation of very hard finishes that greatly resist cutting by sharp edges.

3,660,120

FRICTION MATERIALS

Eric Clark, Stockport, and Roger Adrian Summerling, Leek, both of England, assignors to Ferodo Limited, Manchester, England

Filed May 14, 1968, Ser. No. 728,892
Claims priority, application Great Britain, May 15, 1967, 22,463/67
Int. Cl. C09k *3/14*
U.S. Cl. 106—36 5 Claims

A friction material comprising an inorganic fiber, such as asbestos, and a binder wholly or substantially wholly composed of metallic sulphide formed in situ, the metallic sulphide consisting of iron sulphide formed by the reaction of sulphur with iron powder or with lower iron sulphide, with or without copper sulphide formed by reaction of sulphur with copper powder or with cuprous sulphide. Additional materials such as metallic powders, fillers, antioxidants and friction modifiers may be included in the friction material. The material may be formed by a method which comprises compacting and curing a mixture of ingredients which contains sulphur with iron powder or lower iron sulfide, optionally with copper powder or cuprous sulphide. Curing may be carried out under a pressure of from 2 to 20 tons per square inch in the temperature range of 80° C to 600° C depending on the proportions of the sulphides in the binder.

3,660,121

HOT TOP LINER AND REFRACTORY RING COMBINATION FOR USE WITH METAL HOT TOP CASING

James F. McCarthy, Mars, Pa., assignor to The Susquehanna Corporation, Fairfax, Va.

Filed Feb. 5, 1970, Ser. No. 9,083
Int. Cl. B28b *7/36*
U.S. Cl. 106—38.25 11 Claims

A combination of an exothermic insulting fiber and refractory ring for use in a metal hot top casing. The liner composition comprises by weight from 7–10 percent asbestos, from 7–12 percent wood flour, from 41–51 percent sand, from 26–32 percent silica flour and from 5–8 percent resin binder; and the refractory ring composition comprises by weight from 4.5–5.5 percent low water content asbestos, from 4.5–5.5 percent high water content asbestos, from 84–87 percent sand and from 4.5–6 percent resin binder.

3,660,122

HOT TOP LINER AND REFRACTORY RING COMBINATION FOR USE WITH METAL CASING THAT IS HOT

James F. McCarthy, Mars, Pa., assignor to The Susquehanna Corporation, Fairfax, Va.

Filed Feb. 5, 1970, Ser. No. 9,084
Int. Cl. B28b *7/36*
U.S. Cl. 106—38.25 10 Claims

A combination of an exothermic insulating liner and refractory ring for use in a metal hot top casing that is hot. The liner composition comprises by weight from 4 – 6% low water content asbestos, from 4 – 6% high water content asbestos, from 65 – 75% sand, from 12 – 16% silica flour and from 3 – 6% resin binder; and the refractory ring composition comprises by weight from 6 – 9% asbestos, from 87 – 90% sand and from 3 – 4.5% resin binder.

3,660,123

PRODUCTION OF ALPHA-QUARTZ-CRISTOBALITE SILICA FOR POTTERY

Albert Richard Smith, Redhill, England, assignor to British Industrial Sand Limited, Surrey, England

Filed Feb. 4, 1970, Ser. No. 8,613
Claims priority, application Great Britain, Feb. 5, 1969, 6,241/69
Int. Cl. C04b *33/00*
U.S. Cl. 106—39 R 7 Claims

There is described a process for the production of silica for use as pottery body from silica sand. A mixture of the silica sand and from 0.3 to 2 percent by weight of the mixture of a calcium compound, calculated as calcium oxide, is calcinated at a temperature of from 1,200° to 1,550° C. for 5 to 60 minutes.

3,660,124

CERAMIC DIELECTRIC COMPOSITIONS COMPRISING CALCIUM, LANTHANUM AND LEAD TITANATES

Tsunehiko Yoshioka; Hisashi Satou, both of Hiraoawa, Nikaho-machi, Yuri-gun, Akita-ken, and Naoki Suda, Kisagata-machi, Yuri-gun, Akita-ken, all of Japan, assignors to TDK Electronic Co., Ltd., Tokyo, Japan

Filed June 13, 1969, Ser. No. 832,988
Claims priority, application Japan, June 25, 1969, 43/43659; 43/43660
Int. Cl. C04b *33/00*
U.S. Cl. 106—39 R 9 Claims

A ceramic dielectric composition consisting essentially of 45 to 95 mol percent of calcium titanate, 1 to 40 mol percent of lead titanate and 1 to 20 mol percent of lanthanum titanate is advantageous for use in temperature-compensating capacitors. Addition to the basic composition of 0.1 to 5 percent by weight of Ta_2O_5, WO_3 or CdO has the effect of broadening the temperature range for maturation, thus facilitating control of the firing conditions in the manufacture of the ceramic body.

3,660,125

BRIGHTENING PLASTICS WITH 2-ARYL-5-CYANONAPHTHOXAZOLE BRIGHTENERS

Bennett George Buell, Bound Brook, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 13, 1970, Ser. No. 28,146
Int. Cl. C08b *27/68*; C08f *45/67*
U.S. Cl. 106—176 3 Claims

Translucent plastics, particularly polyvinyl chloride, cellulose acetate, and polyolefins such as polyethylene are brightened by distributing uniformly therethrough about 0.01 to 0.5 percent by weight of a 2-aryl-5-cyanonaphthoxazole wherein the 2-aryl moiety is naphthyl, styrylphenyl, anisoylaminophenyl, carboxybenzoylaminophenyl, phenylureidophenyl or acylaminophenyl in which the acyl group is the residue of a higher fatty acid.

3,660,126

ASHPHALT COMPOSITIONS CONTAINING POLYAMIDE

Charles E. Moran, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 16, 1970, Ser. No. 3,530
Int. Cl. C08h *13/00, 17/22*; C08j *1/46*
U.S. Cl. 106—279 4 Claims

A composition comprised of from about 70 to about 95 percent by weight asphalt and from about 30 to about 5 percent by weight of N,N'-distearyl-ethylenediamide, preferably from about 85 to about 92 percent, and from about 15 to about 8 percent, respectively, has desirable properties with regard to softening point, viscosity, and penetration.

3,660,127

FLUX FOR USE IN SOLDERING OF STAINLESS STEELS

Lester Aronberg, Chicago, Ill., assignor to Lake Chemical Co., Chicago, Ill.

Filed Aug. 11, 1969, Ser. No. 849,174
Int. Cl. C09d *1/00*
U.S. Cl. 106—286 12 Claims

Fluxes for use in soldering stainless steels comprising compositions containing a major proportion of orthophosphoric acid and a minor proportion of a mono- or diammonium phosphate, or an amine mono- or diorthophosphate, advantageously in the presence of water, and desirably in admixture with various supplemental materials.

3,660,128
WAX-IN-WATER EMULSIONS
David B. Sheldahl, Griffith, Ind., assignor to Atlantic Richfield Company
Filed Nov. 29, 1967, Ser. No. 686,686
Int. Cl. C08h 9/08
U.S. Cl. 106—271 7 Claims

This invention relates to the composition of an emulsion and a method of producing a stable, wax semi-solid by aeration of the emulsion. The emulsion contains wax, water, a primary mono or secondary dialkanolamine, and an aliphatic monocarboxylic acid in the proportions of about 25 to 75 weight percent water, about 20 to 65 weight percent of a normally solid hydrocarbon wax, about 1 to 15 weight percent of the alkanolamine, and about 3.5 to 15 weight percent of the acid. The aeration can be accomplished with a relatively inert gas.

3,660,129
PROCESS FOR THE MANUFACTURE OF A FREE-FLOWING TITANIUM DIOXIDE PIGMENT
Hans Hermann Luginsland, Opladen, Germany, assignor to Titangesellschaft mbH, Leverkusen, Germany
Filed May 15, 1970, Ser. No. 37,859
Claims priority, application Germany, May 27, 1969, P 19 26 905.7
Int. Cl. C09c 1/36
U.S. Cl. 106—300 4 Claims

A free-flowing titanium dioxide pigment is prepared by employing the following process steps:

1. coating the titanium dioxide pigment with hydrous oxides;
2. sand milling the coated pigment ; and
3. drying the sand milled pigment in a spray drier.

3,660,130
CHROME PIGMENTS
Charles Harold Buckley; Geoffrey Lionel Collier, and John Mitchell, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England
Filed May 11, 1970, Ser. No. 36,472
Claims priority, application Great Britain, Sept. 3, 1969, 43,584/69
Int. Cl. C09c 1/20; C08h 17/04
U.S. Cl. 106—302 7 Claims

Chrome pigments of improved durability, especially to atmospheric sulphurous acid, are obtained by adding to a stirred aqueous suspension of a chrome pigment at an initial pH between 1.8 and 8.0 a source of silicate ions, a source of trivalent antimony ions, and oxalic acid, and adjusting the pH to between 5 and 10.5 by addition of a water-soluble basic compound.

3,660,131
SATIN WHITE PROCESS AND PRODUCT
Margaret H. Murray, Stamford, and Earl E. Brodhag, Westport, both of Conn., assignors to Time, Incorporated, New York, N.Y.
Filed Nov. 10, 1969, Ser. No. 875,531
Int. Cl. C09c 1/02
U.S. Cl. 106—306 3 Claims

Satin white coating pigment of improved uniformity which gives paper coatings having improved physical properties can be prepared by slowly adding an aqueous solution of alum or aluminum sulfate to a stirred aqueous dispersion containing slaked lime or calcium hydroxide and sodium hydroxide.

3,660,132
PROCESS OF MAKING A HIGHLY DISPERSED MIXTURE OF CARBON BLACK AND SILICIC ACID
Alfred Illigen, Heerbrugg, Switzerland, and Walter Neugebauer, Constance/Bodensee, Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt Vormals Roessler, Frankfurt, Germany
Filed Sept. 24, 1970, Ser. No. 75,130
Claims priority, application Germany, Sept. 25, 1969, P 19 48 443.6
Int. Cl. C09c 1/48
U.S. Cl. 106—307 11 Claims

A highly dispersed homogeneous mixture of activated carbon black and activated silicic acid is formed by subjecting gaseous silicon monoxide or a mixture thereof with a gaseous metal oxide to the action of a gaseous oxidizing agent and passing substantially simultaneously a material that forms carbon black upon decomposition into the oxidizing zone or into the stream of gas right above the oxidizing zone.

3,660,133
PROCESS FOR THE MODIFICATION OF CARBON BLACK
Abraham Van Der Schuyt, Hilversum, and Kornelis Gerrit Wolthuis, Amsterdam, both of Netherlands, assignors to Koninklijke Zwavelzuurfabrieken v/h Ketjen N.V.
Filed May 26, 1969, Ser. No. 827,896
Claims priority, application Netherlands, May 30, 1968, 6807617
Int. Cl. C09c 1/44
U.S. Cl. 106—307 8 Claims

Carbon black, in the dry state, is reacted with gaseous sulphur trioxide to increase the ability of the resulting modified carbon black to impart long flow characteristics to printing inks in which it is employed as pigment without increasing the content of volatile substances and without affecting the other pigment properties of the carbon black.

3,660,134
INORGANIC MATERIALS SURFACE REACTED WITH ORGANO TITANIUM COMPOUNDS
Horton H. Morris, and James P. Olivier, both of Macon, Ga., assignors to Freeport Sulphur Company, New York, N.Y.
Filed Oct. 30, 1969, Ser. No. 872,730
Int. Cl. C09c 3/00
U.S. Cl. 106—308 Q 8 Claims

Inorganic materials in particulate or fibrous form the surfaces of which have been reacted with an organo titanium compound are described. The products are particularly suitable as fillers in solvent coating compositions and as settling aids for oil.

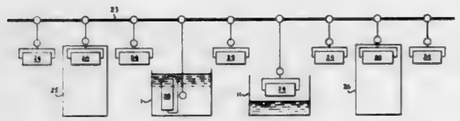
3,660,135
LININGS FOR INGOT MOLDS AND FOUNDRY MOLDS
Henry Nouveau, Corbeil-Essonnes, France, assignor to Doittau Produits Metallurgie Societe a Responsabilite Limitee, Corbeil-Essonnes, France
Filed July 9, 1969, Ser. No. 840,480
Claims priority, application France, Aug. 1, 1968, 161564
Int. Cl. B29c 1/04
U.S. Cl. 117—5.1 2 Claims

An exothermic ingot mold lining is water insoluble and can be formed by filtration, but at the same time has high reactivity, and comprises by weight refractory material 35 to 60 percent, asbestos 3 to 7 percent, wood flour 4 to 10 percent, manganese dioxide 11 to 21 percent, cryolite 0.5 to 7 percent, fluorspar 0.5 to 6 percent, binder 4 to 7 percent, and powdered aluminum 10 to 32 percent, the aluminum substantially all passing a No. 45 screen and including 10 to 70 percent that passes a No. 250 screen. The aluminum is thus a mixture of fine and coarse powder.

ERRATUM

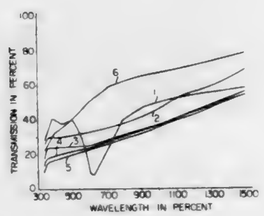
For Class 117—8 see:
Patent No. 3,660,347

3,660,136
METHOD OF COATING SLOTTED ARTICLES
Lawrence J. Guilbault, Akron, Ohio, and David G. Schwenker, Columbia, S.C., assignors to General Electric Company
Continuation of application Ser. No. 765,807, Oct. 8, 1967, now abandoned. This application Nov. 23, 1970, Ser. No. 92,286
Int. Cl. B44d 1/095
U.S. Cl. 117—17 3 Claims



A method of applying a powdered coating composition to solid slotted articles comprising the steps of: preheating the article to the sintering temperature of the composition, coating the article in a conventional fluidized bed of the coating composition, cooling the article to ambient temperature, and coating the article in an electrostatic fluidized bed of the coating composition. The method may advantageously be utilized to apply an integral insulation to the deep, narrow winding slots of a dynamoelectric machine armature or stator.

3,660,137
HEAT-REFLECTING GLASS AND METHOD FOR MANUFACTURING THE SAME
Shigemasa Furuuchi, and Katsuaki Aikawa, both of Kanagawa-ken, Japan
Filed June 13, 1969, Ser. No. 832,991
Claims priority, application Japan, June 25, 1968, 43/43597
Int. Cl. C03c 17/10
U.S. Cl. 117—33.3 6 Claims



On the surface of a glass substrate is formed by hydrolysis or thermal decomposition a light-transmissive film of a metallic oxide having a refractive index higher than that of glass and colloidal particles of metallic palladium or of metallic palladium and metallic gold, said particles being uniformly dispersed in said metallic oxide. The film has the transmission color of bluish gray, neutral gray or yellowish gray and is capable of reflecting about 30 to 40 percent of solar energy radiation. The film also has superior mechanical strength and chemical stability, so that glass having such a film can be successfully used as a heat-reflecting glass in single-pane installations.

3,660,138
METALLIZED ARTICLE
John H. Gorrell, Billerica, Mass., assignor to King Seeley Thermos Co., Ann Arbor, Mich.
Filed Feb. 5, 1969, Ser. No. 796,930
Int. Cl. B44d 1/12, 1/02
U.S. Cl. 117—35 V 2 Claims

Fibrous article with heat-and-light reflecting quality provided by a metal coating. The metal coating is overcoated with a mixed resin system. The article thus produced has enhanced stability of the fibrous substrate due to the heat and light protection provided by the coatings and also has enhanced strength due to the coatings consistent with substantially retaining hand and softness of the fibrous article. The metal coating is uniquely abrasion and mar resistant, water repellent and launderable and dry cleanable consistent with high moisture vapor transmission of the article (breathability).

3,660,139
PROCESS FOR TITLING POSITIVE OR NEGATIVE PHOTOGRAPHIC FILM
James S. Gerhardt, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of application Ser. No. 678,196, Oct. 26, 1967, now abandoned. This application June 15, 1970, Ser. No. 46,449
Int. Cl. B41c 1/08, 1/00
U.S. Cl. 117—38 9 Claims

A method for titling negative or positive photographic film with a minimum of film base embossing comprising the steps of:

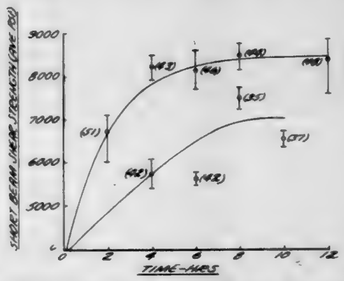
a. providing a titling element comprising a polymeric support having first and second support surfaces and coated upon said first support surface, to provide a printing surface, a layer comprising prolamine, film forming promoter, plasticizer and pigment;

b. juxtaposing the photographic film and the titling element, the printing surface of the titling element being adjacent the photographic film;

c. striking the second support surface of the titling element with heated type to bring the printing surface of the titling element into contact with the photographic film for a period of time sufficient to transfer selective portions of the printing surface having the configuration of the heated type to the photographic film without transfer of any portion of the polymeric support; and

d. withdrawing the printing surface of the titling element from the photographic film to leave the selective portions of the printing surface on the photographic film.

3,660,140
TREATMENT OF CARBON FIBERS
Daniel A. Scola, Glastonbury, and Hilton A. Roth, Cheshire, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed June 18, 1970, Ser. No. 47,490
Int. Cl. C01b 31/07; B44d 1/092
U.S. Cl. 117—47 R 8 Claims



A method of treating high modulus, high strength carbon fiber to improve its bonding characteristics in a resin matrix

comprising immersing the fiber in concentrated nitric acid for 4–8 hours at refluxing temperature.

3,660,141
PRODUCTION OF FILMS HAVING EXCELLENT ADHESIVENESS TO GELATINS

Mitsuo Yoshiyasu; Sadao Saito, and Yoshio Miyabe, all of Yokkaichi-shi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan

Filed Dec. 3, 1969, Ser. No. 881,861
Claims priority, application Japan, Dec. 10, 1968, 43/89932
Int. Cl. B44d *1/14*; B32b *27/08*
U.S. Cl. 117—76 F **8 Claims**

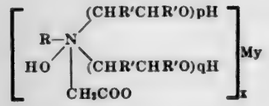
A filler-blended polyolefin film is treated with a solution of acrylic ester polymer in a positive solvent which can at least swell the polyolefin, and the film in contact with the solvent in the solution is heated to the temperature of at least 50° C. After removal of the solvent, a film to which gelatins are adhesive is obtained, which film comprises the polyolefin film substrate and a layer of acrylic ester polymer adhering to the substrate.

3,660,142
METHOD OF MAKING A PHOTOGRAPHIC BASE MATERIAL

Tsuneo Kasugai, Shizuoka, and Wataru Ueno, Kanagawa, both of Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan

Filed June 9, 1970, Ser. No. 44,872
Claims priority, application Japan, June 9, 1969, 44/45271
Int. Cl. B44d *1/44*
U.S. Cl. 117—93.1 CD **9 Claims**

Improving the wettability of photographic base material by incorporating therein a small amount of a compound having the formula



3,660,143
ACRYLIC RUBBER-URETHANE-ACRYLATE PAINT AND PAINTING PROCESS

Olin B. Johnson, Livonia, and Santokh S. Labana, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 21, 1970, Ser. No. 100,477
Int. Cl. C08g *41/04*, *22/00*
U.S. Cl. 117—93.31 **12 Claims**

A radiation-curable paint binder dispersion comprises the addition product of a hydroxy-functional acrylic rubber particle, a diisocyanate and a hydroxyalkyl acrylate and vinyl monomers. The dispersion is applied to a substrate as a paint film and cured thereon by exposure to an electron beam.

3,660,144
UNSATURATED ACRYLIC RUBBER AND VINYL MONOMER PAINT

Olin B. Johnson, Livonia, and Santokh S. Labana, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 21, 1970, Ser. No. 100,478
Int. Cl. C08g *45/04*; C08f *15/00*
U.S. Cl. 117—93.31 **12 Claims**

A radiation-curable paint which on a pigment and particulate filler-free basis consists essentially of vinyl monomers and an alpha-beta olefinically unsaturated, elastomeric particle of crosslinked acrylic polymer. The coating is applied as a film-forming dispersion to the surface of a substrate and cured thereon by ionizing radiation, e.g., an electron beam. This application is further directed to articles of manufacture coated with this paint using this process of curing.

3,660,145
EPOXY RESIN AND ACRYLIC RUBBER-URETHANE-ACRYLATE PAINT AND PAINTING PROCESS

Olin B. Johnson, Livonia, and Santokh S. Labana, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

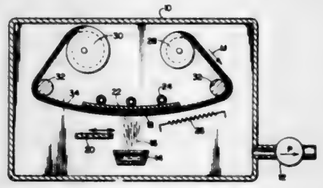
Filed Dec. 21, 1970, Ser. No. 100,493
Int. Cl. C08g *45/04*, *41/04*
U.S. Cl. 117—93.31 **10 Claims**

A radiation-curable paint binder dispersion comprises vinyl monomers, an alpha-beta olefinically unsaturated epoxy resin having molecular weight in excess of about 370, and an addition product of a hydroxy-functional acrylic rubber particle, a diisocyanate and a hydroxyalkyl acrylate. The dispersion is applied to substrates and cured thereon by exposure to ionizing radiation, e.g., an electron beam.

3,660,146
METHOD OF COATING STIFF MATERIALS ONTO FRAGILE, HEAT VULNERABLE SUBSTRATE WEBS

Earl E. Chadsey, Jr., Sudbury, and Frank Feakes, Lexington, both of Mass., assignors to National Research Corporation

Filed Sept. 29, 1969, Ser. No. 861,585
Int. Cl. C23c *11/00*, *13/00*, *13/10*
U.S. Cl. 117—106 R **3 Claims**



Stiff materials such as boron and boron carbide are coated onto a polymeric or thin metal heated substrate web, backed by a screen carrier web and passing over an evaporant source of the coating material. The screen is transparent to radiation.

The present invention relates to coating of continuous substrate webs with stiff materials.

3,660,147
ADHESIVE TAPE

Albert Emiel Van Hoof, Berchem, and Georges Arthur Holvoet, Mortsel, both of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Filed Apr. 12, 1967, Ser. No. 630,224
Claims priority, application Great Britain, Apr. 12, 1966, 16,078/66
Int. Cl. C09j *7/02*, *7/04*; D21h *1/38*
U.S. Cl. 117—122 PA **4 Claims**

An adhesive tape carrying a layer of a water-soluble adhesive composed of a homogeneous mixture of at least one water-soluble polymer and as an elasticizing agent a derivative of a polyol having at least three hydroxyl groups at least one of which is replaced by a hydroxyalkylene ether group, all of the hydroxyl groups of such derivative either remaining as free hydroxyl groups or being replaced by inert alkoxy groups. Preferably, the amount of the polyol derivative elasticizing agent is 25–100 percent by weight of the water-soluble polymer. The tape is characterized by tenacious adherence to surfaces of film or paper and removal with water.

3,660,148
TREATMENT OF ASBESTOS

Gordon F. Heron, Rochdale, England, assignor to Turner Brothers Asbestos Company Limited, Manchester, England

Filed Jan. 9, 1970, Ser. No. 1,665
Claims priority, application Great Britain, Jan. 10, 1969, 1,579/69
Int. Cl. B32b *19/02*, *19/08*
U.S. Cl. 117—126 AB **6 Claims**



The invention comprises treating asbestos cloth and other asbestos products to reduce the dust emitted by them during handling and use. This is done by distributing a small amount of polymeric particles throughout the product to bond the fibers to one another, while leaving the properties except the dustiness essentially unchanged. The preferred method consists in impregnating asbestos cloth with an aqueous emulsion or suspension of the polymeric material and removing the water.

3,660,149
COATED FOAMED ALUMINUM BODY

Michael E. Kucsma, and Wallace W. Parker, both of Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

Filed Oct. 24, 1969, Ser. No. 869,344
Int. Cl. B32b *5/18*, *15/08*
U.S. Cl. 117—132 C **8 Claims**

Foamed aluminum bodies are coated with a polyvinyl chloride composition, the composition being a mixture of polyvinyl chloride made by a suspension process and that made by an emulsion process. Pigments, stabilisers and plasticizers may be added.

ERRATUM

For Class 117—136 see:
Patent No. 3,660,582

3,660,150
COATED WOVEN MATERIALS

Michael Lakin Cooper, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 21, 1970, Ser. No. 39,550
Claims priority, application Great Britain, June 2, 1969, 27,720/69; 27,721/69
Int. Cl. B44d *1/00*; D03d *1/04*
U.S. Cl. 117—138.8 E **5 Claims**

A web of woven tapes of crystalline polyolefines coated with a blend containing at least 10 percent by weight of a crystalline polyolefine.

3,660,151
POLYESTER YARNS FOR REINFORCING RUBBER ARTICLES

Richard David Weimar, Jr., Grifton, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 819,470, Apr. 25, 1969, now abandoned. This application Mar. 16, 1970, Ser. No. 20,147
Int. Cl. B32b *27/02*; B32p *27/36*; B44d *1/14*
U.S. Cl. 117—138.8 F **5 Claims**

An improvement is disclosed in high-strength polyester yarn for use in reinforced rubber articles such as tires. When drawn filaments of polyethylene terephthalate having a relative viscosity of 40 or more are heated in contact with rubber, degradation is caused by amine-producing accelerators commonly used in rubber compounds. This degradation is prevented by a durable surface coating on the polyester of a salt of a metal having a atomic number of 22–30 or 40–48, such as zinc sulfate or ferric ammonium sulfate.

3,660,152
COATED WOVEN MATERIALS

Michael Lakin Cooper, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 21, 1970, Ser. No. 39,551
Claims priority, application Great Britain, June 2, 1969, 27,719/69
Int. Cl. B44d *1/00*; D03d *1/04*
U.S. Cl. 117—138.8 E **5 Claims**

A woven web of tapes made from a blend of from 50 to 90 percent of a crystalline polyolefine and from 10 to 50 percent of another polyolefine coated with a polyolefine based coating composition.

3,660,153
LIGHT-INTERCEPTING COMPOSITION FOR PHOTOGRAPHIC LIGHT-SENSITIVE FILM

Yoshihiro Seto, Ashigara-Kamigun, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan

Filed Jan. 27, 1969, Ser. No. 794,010
Claims priority, application Japan, Jan. 26, 1968, 43/4696
Int. Cl. D21h *1/28*; G03c *1/86*
U.S. Cl. 117—155 UA **7 Claims**



Light-intercepting composition consisting of an ethylene-vinyl acetate copolymer having dispersed therein carbon black. In film form, the composition is laminated to a paper to provide a light-intercepting paper for use in photographic light-sensitive roll film.

ERRATUM

For Class 117—161 see:
Patent No. 3,660,371

3,660,154
METHOD FOR PRODUCING IMPROVED SEMICONDUCTIVE DIODES

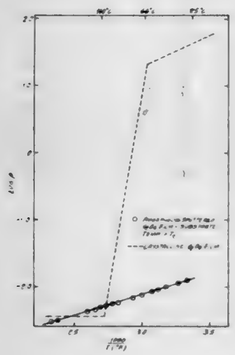
John A. Scott-Monck, Redondo Beach, Calif., and Arthur J. Learn, West Concord, Mass., assignors to TRW Inc., Redondo Beach, Calif.

Filed Aug. 15, 1968, Ser. No. 752,756
Int. Cl. B44d *1/18*; H01l *7/00*
U.S. Cl. 117—200 **11 Claims**

This invention relates to a method for producing improved polycrystalline semiconductive thin film diodes having an in-

creased interfacial barrier height and an increased rectification ratio. The improved diodes are obtained by treating the surface of the polycrystalline semiconductive sulfur compound with an excess of elemental sulfur.

3,660,155
METHOD FOR PREPARING SOLID FILMS
John D. Mackenzie, Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Apr. 15, 1970, Ser. No. 28,841
Int. Cl. C23c 13/00, 15/00; C23f 17/00; C23b 5/50
U.S. Cl. 117—201 4 Claims



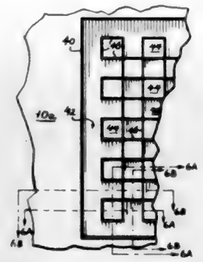
The electrical discontinuity which appears in the temperature response of certain materials when they are in crystalline form and are at characteristic transitional temperatures is suppressed by depositing the material on a substrate which is maintained at a temperature low enough to cause the resulting film to be amorphous. Also, by utilizing temperatures on either side of the transitional temperature, for example, new and different resistivity versus temperature responses may be realized which do not inhibit the semiconductor-metal transition.

3,660,156
SEMICONDUCTOR DOPING COMPOSITIONS
John George Schmidt, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Aug. 19, 1970, Ser. No. 65,358
Int. Cl. H01l 3/00
U.S. Cl. 117—201 19 Claims

The disclosure herein relates to semiconductor doping compositions and to methods for their preparation and use. More particularly, the disclosure relates to liquid silica-based doping compositions which may be applied to a surface of a semiconductor substrate and, upon heating, an impurity is diffused from a film of the doping composition into the substrate to form a region therein having the desired electrical properties.

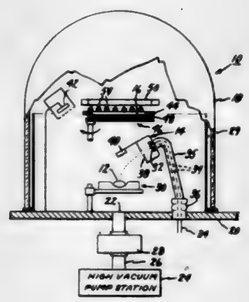
3,660,157
ENHANCED CONTRAST SEMICONDUCTOR WAFER ALIGNMENT TARGET
Philippe Villers, Concord; Martin A. Allen, Sudbury, and James M. Mulvaney, Southboro, all of Mass., assignors to Computervision Corporation, Waltham, Mass.
Filed Aug. 18, 1969, Ser. No. 850,883
Int. Cl. H01l 7/00
U.S. Cl. 117—212 5 Claims

An enhanced contrast semiconductor wafer alignment target for use in automatic, light balanced, null seeking, servocontrolled mask-to-wafer aligners. The target has a line border which differs sharply in its light reflecting characteristic from the surrounding surface of the semiconductor wafer. Within the target area defined by the line border are a plurality of light reflecting and light removing areas arranged,



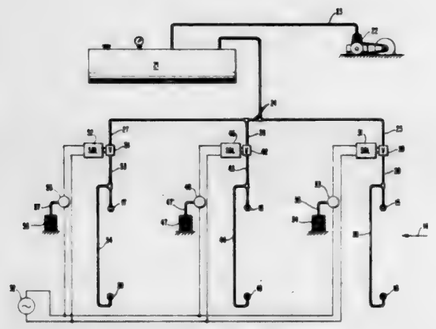
preferably, in alternating sequence to form a checkerboard or parallel line pattern. For semiconductor wafers in which the target cannot be formed in an overlying, electrically insulative layer because of the subsequent removal of the layer, the target is etched directly into the semiconductor materials.

3,660,158
THIN FILM NICKEL TEMPERATURE SENSOR AND METHOD OF FORMING
Arthur C. M. Chen, and James M. Lommel, both of Schenectady, N.Y., assignors to General Electric Company
Filed Dec. 30, 1968, Ser. No. 787,685
Int. Cl. B44d 1/18
U.S. Cl. 117—217 5 Claims



Thin film nickel temperature sensors having a temperature coefficient of resistance of above +0.2 percent/° C and a resistance above 0.35 ohms per square are formed by electron beam evaporation of a high purity nickel source at pressures below 8×10^{-6} torr and deposition of the evaporated nickel atop a dielectric substrate, e.g. a polyimide film, heated above 60° C. The nickel film preferably is deposited to a thickness between 250 A and 3,000 A and masking is employed to produce a desired configuration in the deposited nickel film. To stabilize the resistance of the deposited nickel film, a dielectric encapsulant such as alumina, silica, a polyimide or a fluorocarbon then is overlayed upon the film by conventional vacuum deposition or bonding techniques.

3,660,159
METHOD FOR METERING A CLEANING SOLUTION FOR A VEHICLE WHEEL
Clyde F. Larkin, Jr., 285 Taylor Drive, Lexington, Ky.
Original application Sept. 27, 1968, Ser. No. 763,067, now Patent No. 3,602,236, dated Aug. 31, 1971. Divided and this application Nov. 30, 1970, Ser. No. 93,523
Int. Cl. B08b 3/04
U.S. Cl. 134—32 10 Claims



Linearly spaced spray nozzles are disposed on opposite sides of a vehicle path for spraying a cleaning solution on the wheels of a vehicle. As the vehicle wheel engages a trip mechanism for each pair of aligned nozzles, a portion of the area of the wheel is sprayed with the cleaning solution. A predetermined quantity of the cleaning solution is metered through each of the spray nozzles irrespective of the time that the wheel remains in engagement with the trip mechanism.

3,660,160
DISSOLUTION OF POLYMERS
Kenneth W. Powers, Berkeley Heights, and George E. Seraluk, Roselle, both of N.J., assignors to Esso Research and Engineering Company
Filed Dec. 31, 1969, Ser. No. 889,697
Int. Cl. B08b 7/00, 9/00; C23g 5/00
U.S. Cl. 134—22 14 Claims

Dissolution of cross-linked polymer gels is effected by use of Lewis acids plus Lewis salts.

3,660,161
METHOD FOR INSERTING MATERIAL INTO THE APERTURES OF AN APERTURED WORKPIECE
Helmut Emil Durr, Chatham Township, Morris County, and Albert Heinz Haller, Clark, both of N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.
Filed June 6, 1969, Ser. No. 831,001
Int. Cl. H01m 35/26, 7/00
U.S. Cl. 136—67 9 Claims

This disclosure is directed to methods of and apparatus for inserting a material, e.g., the reactive paste used in secondary batteries, into the apertures of an apertured workpiece, e.g., the plate or grid element of a secondary battery, wherein the material to be inserted is deposited on the workpiece, an insertion means, e.g., a roller, is advanced toward the workpiece against the material, and the insertion means is displaced over the surface of the workpiece against the material concurrently with the advancement of the insertion means.

3,660,162
GALVANIC CELL
Morris Eisenberg, Palo Alto, Calif., assignor to Electrochemica Corporation, Menlo Park, Calif.
Filed Mar. 27, 1970, Ser. No. 23,463
Int. Cl. H01m 17/00
U.S. Cl. 136—83 R 25 Claims

A galvanic cell is disclosed comprising spaced cathodic and anodic electrodes and an electrolyte having an organic aprotic solvent and a soluble solute such as a Lewis acid. At least one of the electrodes has a conductive support member comprising a metal selected from the group consisting of aluminum, magnesium and beryllium.

3,660,163
SOLID STATE LITHIUM-IODINE PRIMARY BATTERY
James R. Moser, Shrewsbury, Pa., assignor to Catalyst Research Corporation, Baltimore, Md.
Filed June 1, 1970, Ser. No. 41,801
Int. Cl. H01m 21/00
U.S. Cl. 136—83 R 21 Claims

A substantially anhydrous solid state battery has a lithium anode, a solid lithium iodide electrolyte and an electronically conductive cathode containing iodine, such as organic iodine charge transfer complexes.

3,660,164
PRIMARY CELL UTILIZING HALOGEN-ORGANIC CHARGE TRANFER COMPLEX
Allen M. Hermann, La Canada, Calif.; Felix Gutmann, W. Pennant Hills, New South Wales, Australia, and Alan Rembaum, Altadena, Calif., assignors to California Institute Research Foundation, Pasadena, Calif.
Continuation of application Ser. No. 643,883, June 6, 1967, Continuation-in-part of application Ser. No. 556,900, June 13, 1966, now abandoned. This application July 2, 1969, Ser. No. 845,616
Int. Cl. H01m 15/00
U.S. Cl. 136—83 R 6 Claims

Primary cells capable of operating essentially in the solid state and utilizing reaction of a halogen with a metallic anode employ as cathode a charge transfer complex in which the acceptor component is the halogen and the donor component is an organic compound, typically aromatic or heterocyclic. Preferred anode materials include magnesium, calcium and barium.

The maximum current produced by such cells can be increased by surrounding them with an atmosphere containing more than the normal partial pressure of water vapor, or containing vapor of an organic liquid such alcohol, acetone and acetonitrile, having a high dielectric constant.

The physical properties of the charge transfer complex is improved by incorporating a polymeric matrix, which may or may not act also as the donor component of the complex.

3,660,165
ELECTRODES COMPRISING FLUORINATED PHOSPHONITRILE POLYMER AND FUEL CELL IN COMBINATION THEREWITH
Nigel I. Palmer, Port Washington, N.Y., assignor to Leesona Corporation, Warwick, R.I.
Filed Apr. 22, 1970, Ser. No. 30,948
Int. Cl. H01m 27/04, 13/00
U.S. Cl. 136—86 D 31 Claims

Lightweight electrodes for use in an electrochemical device are described. In one embodiment the lightweight electrodes comprise a catalyst layer including an admixture of catalyst and a fluorinated phosphonitrile polymer. In another embodiment the hydrophobic backing layer is a continuous film of fluorinated phosphonitrile polymer with a contiguous layer of catalyst thereon. The catalyst can also be admixed and bound with particles comprising the same

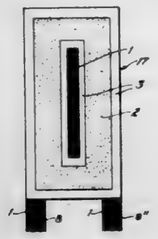
fluorinated phosphonitrile polymer used as the backing layer, derivatives of the polymeric material or other hydrophobic polymers such as polytetrafluoroethylene. The electrode is adapted to be disposed in an electrochemical cell with the catalytic layer in contact with the cell electrolyte.

3,660,166

GAS DIFFUSION ELECTRODE

August Winsel, Kelkheim, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany and Varta Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 14, 1967, Ser. No. 623,109
Claims priority, application Germany, Mar. 17, 1966, S 102563
Int. Cl. H01m 27/04, 13/00
U.S. Cl. 136—86 D **12 Claims**



Catalytic electrode having improved heat dissipating means. The electrode embodies a foraminous metallic web having deposited over major portions of its surfaces porous catalytic material framed within gasket material and essentially having sufficient web surface exposed to effectively remove heat from the electrode during its operation in a fuel cell or other exothermic catalytic processes.

3,660,167

ALKALINE DRY CELL

Cho Kin Ching, 599 West 190th Street, New York, N.Y.; Walter Cohen, 13 Fletcher Drive, Morganville, N.J., and Stanley Tseng, 945 West End Avenue, New York, N.Y.

Filed Nov. 4, 1970, Ser. No. 86,799
Int. Cl. H01m 21/00
U.S. Cl. 136—107 **8 Claims**

An alkaline dry cell of high energy density in which a cathode of powdered manganese dioxide, carbon, and graphite has dispersed throughout it, short filaments of stainless steel, long filaments of stainless steel, and stainless steel powder.

3,660,168

LEAK-PROOF PRIMARY CELL

Robert E. Ralston, Spring Valley, and Yung Ling Ko, Peekskill, both of N.Y., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Apr. 9, 1970, Ser. No. 26,911
Int. Cl. H01m 21/00
U.S. Cl. 136—107 **18 Claims**

A leak-proof electrochemical cell having a cylindrical can closed on its bottom end, and open at its top end, with an internal peripheral bead as a seat for a plastic disc to be seated on the bead to cover the elements within the cell, and to receive the crimped end of the can for closure, and constructed to have a central co-axial bore and co-axial hub around the bore to hold a rivet to support an anode collector from the bottom side of the plastic disc and to support one of the terminals of the cell, here specifically the negative cap or terminal, from the top of the rivet, and to perform the additional function of closing the usual separator, with no intervening structure between it and the separator, to assure greater confining control of he electrolyte by said separator. The plastic disc top also constructed unitarily of full can diameter, and has an annular border disposed to provide a tight seating fit in the can at the bead as a seat, and is held in place by crimped edge rim of the can to assure a substantially hermetic seal between the disc border and the can. An external metal jacket surrounds and is insulated from the can, and serves as an additional element for impressing an additional pressure force on the metal crimped onto the plastic disc, to assure a hermetic seal under continuous pressure between those engaging surfaces of said disc border and of the crimped metal.

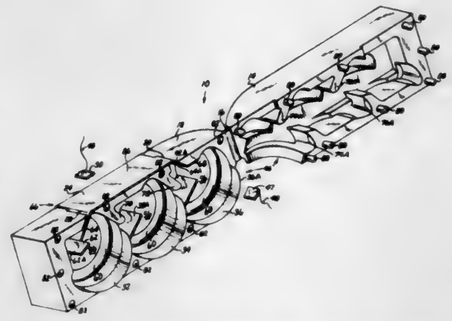
The anode collector is constructed of two hollow semicylindrical parts held to resist radial relative displacement, and to thereby maintain uniform ionic spacing between cathode and anode collector facing surfaces.

3,660,169

BATTERY PACKAGING DEVICE

Richard R. Clune, Ardsley, and Gordon E. Kaye, South Salem, both of N.Y., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Apr. 22, 1970, Ser. No. 30,744
Int. Cl. H01m 1/02
U.S. Cl. 136—111 **12 Claims**



A two-part molded cartridge utilizes one part as an assembly tray or shell for assembling three electric cells in position to permit electrical interconnections between the cells, and to support contact terminal surfaces for connection to external circuit contact terminals, and then utilizes the second molded part as a cover, and the two parts are then sealed to constitute a housing for the cells as a battery unit.

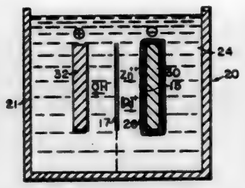
3,660,170

DENDRITE-INHIBITING ADDITIVE FOR BATTERY CELL HAVING ZINC ELECTRODE

Guy Rampel, Gainesville, Fla., assignor to General Electric Company

Filed Apr. 8, 1970, Ser. No. 26,607
Int. Cl. H01m 43/06
U.S. Cl. 136—154 **12 Claims**

To inhibit the formation of overgrowth of excesive dendritic zinc, for example during recharging of a rechargeable electrolytic battery cell, or in electroplating, the electrolyte contains an additive consisting essentially of a cationic high molecular weight organic linear polymer which has a positive ion radical of substituted ammonium which may be one of a large number of related ammonium polymers, preferably quaternary. The quaternary nitrogen in the molecule can be part of a ring which may include the adjacent carbon atom for any two of the nitrogen's four substituent radicals, and the ring may also include ether linkages. The polymer compound is water soluble and is soluble in the electrolyte of the cell to the extent required to be effective for proper charge and discharge operation of the cell. The additive may be dissolved in the electrolyte directly, or



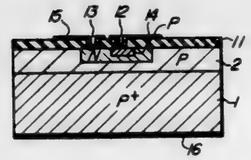
may be added as a coating on the separator film, or be an ingredient of the paste-type anode. A preferred embodiment of the invention comprises, as the additive, diallyldimethylammonium hydroxide polymer.

3,660,171

METHOD FOR PRODUCING SEMICONDUCTOR DEVICE UTILIZING ION IMPLANTATION

Takashi Tsuchimoto, Kodaira-shi; Takashi Tokuyama, Hoya-shi, and Kiichi Komatsubara, Tokorozawa-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 24, 1969, Ser. No. 887,936
Claims priority, application Japan, Dec. 27, 1968, 43/95458
Int. Cl. H01l 7/54
U.S. Cl. 148—1.5 **3 Claims**



A method for producing a transistor structure utilizing ion implantation, comprising the steps of implanting ions of base-forming impurity into a predetermined portion of a surface of a semiconductor body serving as a collector and heated to a temperature above 600° C. but below the melting point of the semiconductor to form a base region, and thereafter implanting ions of emitter-forming impurity into a predetermined portion of the surface of said base region heated to a temperature in the range of 400° to 600° C. to form an emitter region.

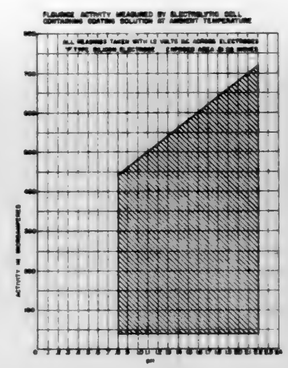
3,660,172

PREPAINT TREATMENT FOR ZINCIFEROUS SURFACES

George Freed Otto, Oreland, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Filed Aug. 19, 1970, Ser. No. 65,071
Int. Cl. C23f 7/26
U.S. Cl. 148—6.2 **3 Claims**

A conversion coating is applied to zinciferous surfaces, thereby enhancing the corrosion resistance and bonding properties of the substrate when a paint or similar siccative organic finish is thereafter applied.

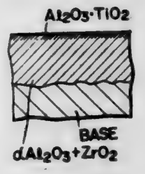


3,660,173

METHOD OF PREPARING CORROSION RESISTANT METALLIC ARTICLES

Akira Matsuno; Takao Sasame; Ikuzo Shimizu; Humio Kim, and Hiroyuki Kagawa, all of Hiroshima-ken, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima-ken and Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed June 23, 1970, Ser. No. 49,052
Claims priority, application Japan, June 25, 1969, 44/50588
Int. Cl. C23f 7/04
U.S. Cl. 148—6.35 **6 Claims**



A method of furnishing the surface of ferroalloys with resistance to hot corrosive gases containing halogens or compounds thereof or to general oxidation which comprises the steps of heating in an oxidizing atmosphere at a temperature of 1,000° to 1,400° C for a suitable number of hours articles prepared from a metal consisting of 10 to 25 percent of chromium, 2 to 5 percent of aluminum, less than 0.04 percent of carbon, 0.005 to 0.05 percent of nitrogen, 0.1 to 0.6 percent of titanium, 0.01 to 0.5 percent of zirconium, iron as the remainder and further containing ordinary impurities, in which constitution ratio of Ti% + Zr% to N% ranges from 10 to 60, so as to diffuse by migration in the surface layer of the base body of the article part of oxidizable elements contained therein, thereby forming an oxide layer mainly consisting of αAl_2O_3 on said surface.

3,660,174

METHOD IN THE MANUFACTURE OF STAINLESS, HARDENABLE CHROMIUM-STEEL STRIP AND SHEET

Klas-Erik Jakenberg, Hagfors, Sweden, assignor to Uddeholms Aktiebolag, Hagfors, Sweden

Filed May 23, 1969, Ser. No. 827,355
Claims priority, application Sweden, May 31, 1968, 7333/68
Int. Cl. C21d 9/18; C22c 39/14
U.S. Cl. 148—12 6 Claims

There is provided a method of producing stainless, chromium-steel sheet or strip having a high resistance to corrosion and an improved hardness, and which has a relatively high yield point / ultimate strength ratio in an unhardened state, the starting material used in the method being one of substantially a pearlite structure and in which the material is heated and worked at specific temperatures so as to break down the pearlite structure and transform said structure to one comprising finely-divided spheroidized carbides in a ferritic matrix.

3,660,175

METHOD OF MANUFACTURING A MAGNETICALLY ANISOTROPIC MAGNET BODY

Theodorus Henricus Carolus Van Melis; Pieter Aart Naasteped, and Krijn Jacobus de Vos, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 11, 1970, Ser. No. 71,526
Claims priority, application Netherlands, Sept. 18, 1969, 6914126
Int. Cl. H01f 1/04
U.S. Cl. 148—103 4 Claims

A method of manufacturing anisotropic permanent magnets having a composition 28 – 42 percent Co, 10 – 20 percent Ni, 6 – 10 percent Al, 2 – 8 percent Cu, 4 – 10 percent Ti, remainder mainly Fe. The anisotropy is induced in the alloy, possibly together with the treatment in a magnetic field, by means of an elastic deformation of the alloy below the segregation temperature T_s. The result, at least when T_s is at least 25° C higher than T_c, is a higher energy product of the magnet than could be achieved so far.

3,660,176

PRECIPITATION-HARDENABLE STAINLESS STEEL METHOD AND PRODUCT

Elbert E. Denhard, Jr., Towson, Md., assignor to Armco Steel Corporation, Middletown, Ohio

Filed Feb. 10, 1970, Ser. No. 10,272
Int. Cl. C21d 1/40, 1/42
U.S. Cl. 148—142 5 Claims

Method for developing great strength, along with ductility, in the martensitic precipitation-hardenable stainless steels, particularly bar, rod and wire products, such as the 17-4 PH grade (about 17 percent chromium, 4 percent nickel, 3 percent copper, 0.07 percent max. carbon, and remainder iron), wherein the product, moving at significant speed, is subjected to high electrical energy heating to quickly take the hardening ingredients (copper, carbon, etc.) into solution; then quenched to transform the metal and preclude excessive grain growth, and finally reheated to effect hardening and strengthening.

3,660,177

PROCESSING OF NICKEL-BASE ALLOYS FOR IMPROVED FATIGUE PROPERTIES

Edgar E. Brown, Glastonbury, and Raymond C. Boettner, Windsor, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed May 18, 1970, Ser. No. 38,227
Int. Cl. C22f 1/10
U.S. Cl. 148—11.5 R 11 Claims

The fatigue properties of the precipitation-hardened, nickel-base alloys, such as Inconel 718, Incoloy 901 and Waspaloy, are significantly improved by a thermomechanical processing technique involving the generation of an intermetallic pinning phase, such as a spheriodal eta phase or an overaged gamma prime phase, with subsequent recrystallization to provide a uniform microstructure having a grain size of ASTM 10–13 or finer.



3,660,178

METHOD OF DIFFUSING AN IMPURITY INTO A COMPOUND SEMICONDUCTOR SUBSTRATE

Susumu Takahashi, Kokubunji; Hisao Nakashima, Hachioji, and Masatoshi Migitaka, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 14, 1970, Ser. No. 63,846
Claims priority, application Japan, Aug. 18, 1969, 44/65205
Int. Cl. H01l 7/44
U.S. Cl. 148—189 8 Claims

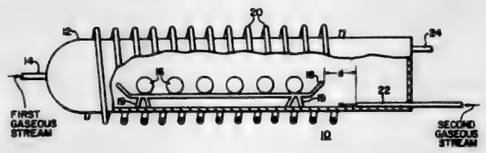
A semiconductor substrate of Group III–V compound such as GaAs or GaP covered uniformly with powder of the same kind of semiconductor with grain diameters of 20–500μ is placed in a quartz tube and a small piece of zinc is also placed in the tube at a place separated from the substrate, the zinc is heated above 700°C to evaporate it by a heating coil placed around the zinc, the substrate is also heated by a coil around it independently of the zinc, and a zinc gas is flowed by being carried by an argon gas over the heated substrate to diffuse zinc into the substrate from the vapor phase through the cover.

3,660,179

GASEOUS DIFFUSION TECHNIQUE

Timothy J. Desmond, Greensburg, and Berton P. Krumanacker, Connellsville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 17, 1970, Ser. No. 64,381
Int. Cl. H01l 7/44
U.S. Cl. 148—189 8 Claims



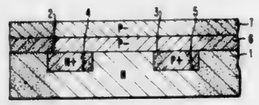
A counter-flow of an inert, or a predominantly inert, gas is provided in a diffusion furnace to provide means for creating turbulence within the diffusion system thereby improving the uniformity of dopant along the length of the diffusion carrier contained therein.

3,660,180

CONSTRAINMENT OF AUTODOPING IN EPITAXIAL DEPOSITION

Edward S. Wajda, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 27, 1969, Ser. No. 802,810
Int. Cl. H01l 7/36; C23c 11/00; H01l 5/00
U.S. Cl. 148—175 6 Claims



Autodoping is minimized during epitaxial deposition by sputtering a primary or initial film on a doped semiconductor substrate prior to epitaxial deposition.

3,660,181

BLASTING SLURRY COMPOSITIONS CONTAINING CALCIUM NITRATE AND METHOD OF PREPARATION

Robert B. Clay, Bountiful; Melvin A. Cook, and Lex L. Udy, both of Salt Lake City, all of Utah, assignors to Intermountain Research & Engineering Company, Inc.

Filed May 1, 1969, Ser. No. 821,095
Int. Cl. C06b 1/04, 19/00
U.S. Cl. 149—2 9 Claims

Slurry blasting compositions of low water content and high density, including substantial proportions of calcium nitrate as an oxidizer component, can be sensitized in various ways to produce economical explosive compositions. Sensitizers may include aluminum powder, granular explosives such as smokeless powder, TNT, etc.; a particularly preferred sensitizer or fuel is ethylene glycol. Solid carbonaceous fuels and conventional thickeners may be added. The calcium nitrate may be produced directly from burned lime with nitric acid and/or other nitrates.

3,660,182

EXPLOSIVE COMPOSITIONS AND METHOD OF PREPARATION

Melvin A. Cook, and Frederick K. Ball, both of Salt Lake City, Utah, assignors to Intermountain Research and Engineering Co., Inc.

Filed Aug. 15, 1969, Ser. No. 850,648
Int. Cl. C06b 1/04, 7/00, 21/00
U.S. Cl. 149—46 12 Claims

An explosive composition in slurry or semi-solid form and containing calcium nitrate is made up by reacting calcium oxide with formaldehyde, preferably in the form of paraformaldehyde, in the presence of ammonium nitrate. The water generated in the reaction serves as a vehicle for the slurry. A thickener of gum or preferably starch is added, and gassing agents may be incorporated to control or reduce composition density. The presence of ammonium nitrate prevents runaway reactions and the hexamethylene-tetramine which is produced in the reaction serves as a fuel tending to give oxygen balance to the composition.

3,660,183

STABLE SUSPENSIONS

Edwin C. Knowles, Poughkeepsie; Frederic C. McCoy, Beacon, and Norman R. Odell, Wappingers Falls, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 39,426, June 29, 1960. This application Dec. 27, 1961, Ser. No. 162,549
Int. Cl. C06d 5/10
U.S. Cl. 149—21 16 Claims

Stable suspensions useful as high energy propellant and agricultural compositions comprising a finely-divided vehicle-insoluble organic or inorganic powder, 0.2 to 3.0 percent vehicle-insoluble microfibers and a liquid vehicle which is either a liquid hydrocarbon or a hydrocarbon soluble polar hydrocarbon derivative such as an amine, amide, ketone, alcohol, etc. The microfibers are either inorganic microfibers having an average particle between 0.01 and 2.0 microns or organic microfibers having an average fiber diameter between 1 and 20 microns. A typical stable suspension comprises 68.72 percent aluminum powder, 1.43 percent diethyl stearyl amide, 0.75 percent glass microfibers having an average fiber diameter of 0.05 to 0.2 microns and 29.1 percent kerosene. This stable suspension useful as a propellant was prepared by blending glass microfibers into the kerosene fraction to form a soft gel and separately blending the aluminum powder with distearyl amide; the aluminum-amide mixture is then slowly added to the glass fiber-kerosene gel until a buttery suspension is formed.

3,660,184

PROCESS FOR MANUFACTURING TIGHT SEALS, AND SEALS OBTAINED BY THIS PROCESS

Pierre Burelle, Le Vesinet, and Jean Alfred Engelhardt, Lyon, both of France, assignors to Societe anonyme dite Cefliac, Paris, France

Continuation-in-part of application Ser. No. 565,754, July 18, 1966, now abandoned. This application May 18, 1970, Ser. No. 38,521
Claims priority, application France, July 29, 1965, 26541
Int. Cl. B29j 5/02
U.S. Cl. 156—62.2 16 Claims

Method of forming gaskets by projecting a layer comprising 70–90% of a fibrous material and 10–30% of a settable binder onto a supporting sheet, causing the binder to set, and there compressing the layer. An adhesive may be used to secure the layer to the sheet, or the sheet may be treated to prevent adhesion of the layer and removed after the compression step.

3,660,185

METHOD OF PRODUCING A HAIRPIECE

David C. Bonham, 1227 Wilmington Avenue, Salt Lake City, Utah

Filed Oct. 25, 1968, Ser. No. 770,767
Int. Cl. B32b 5/00
U.S. Cl. 156—72 8 Claims

A method of manufacturing hairpieces which allows them to be rapidly produced but provides a product that is durable, easy to care for and natural in appearance. Hairs are temporarily positioned with a holding means, a base material is positioned around the hairs to permanently secure them in place and the holding means for temporarily positioning the hairs is removed.

3,660,186

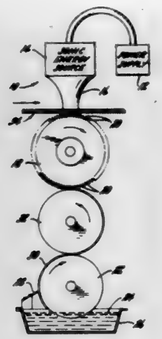
METHOD FOR BONDING WEBS EMPLOYING ULTRASONIC ENERGY

Karl E. Sager, Appleton, and Howard N. Nelson, Neenah, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 8, 1969, Ser. No. 814,383
Int. Cl. B32b 31/16
U.S. Cl. 156—73 9 Claims

A continuous method for bonding or seaming running webs wherein a moving arcuate surface serves as an anvil against which a sonic horn can work while at the same time supplying a bonding medium to the webs as they pass under

the horn, and to apparatus for carrying out such a method. In

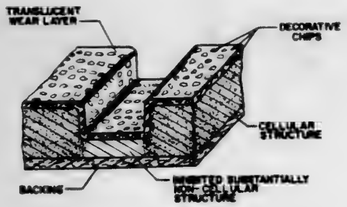


one embodiment, the arcuate surface is designed to provide a seam which simulates a series of stitches.

3,660,187
WEAR RESISTANT, TEXTURED RESINOUS COMPOSITIONS

Harry A. Shortway, Glen Rock; Alan A. Graham, Mercerville; Robert D. Mancolillo, Bloomfield, all of N.J., and Joseph F. Dobry, Langhorne Manor, Pa., assignors to Congoleum Industries, Inc., Kearney, N.J.

Filed Mar. 14, 1969, Ser. No. 807,269
Int. Cl. B32b *5/18*
U.S. Cl. 156—79 20 Claims



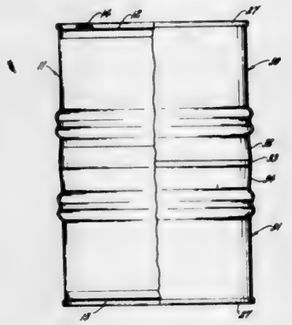
Wear resistant resinous compositions having textured or embossed surfaces resulting from the process which comprises selectively contacting a resinous polymer containing a blowing agent dispersed therein with an inhibitor for said agent, applying thereto a self-supporting layer of a translucent, decorative, resinous wear layer, and, thereafter heating the resulting assembly so as to effect the decomposition of the blowing agent and the resultant expansion on the surface of the resinous composition as well as to fuse the wear layer which has conformed to the surface embossings.

3,660,188
A METHOD OF RECYCLING AND RECONDITIONING A METAL SHIPPING CONTAINER

Oscar J. Van Leer, North Holland, Netherlands, assignor to Inland Steel Company, Chicago, Ill.

Continuation-in-part of application Ser. No. 648,647, June 26, 1967, now abandoned. This application Oct. 24, 1969, Ser. No. 869,245
Int. Cl. B32b *35/00*
U.S. Cl. 156—94 6 Claims

A method of recycling a drum shaped metal shipping container which has at least two parts in overlapping relationship, the overlapping portions of said parts being secured together in liquid tight relation by an adhesive substance which when subjected to heat or an appropriate dissolving agent disintegrates so that said parts may be disassembled to

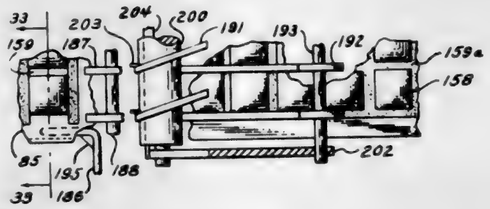


make the container interior fully accessible for reconditioning. The adhesive substance is disintegrable and completely removable from the container parts without deforming the container parts or affecting the metallurgical properties of the parts.

3,660,189
CLOSED CELL STRUCTURE AND METHODS AND APPARATUS FOR ITS MANUFACTURE

Constantine T. Troy, 1330 Cleveland Avenue, Wyomissing, Pa.

Filed Apr. 28, 1969, Ser. No. 819,719
Int. Cl. B32b *31/02, 31/00*
U.S. Cl. 156—145 6 Claims



Cellular cushioning material is prepared by sealing an elastic substance within cells that are formed between two flexible films. When the elastic material is a gas, means may be provided to charge the cells at superatmospheric pressure to achieve full inflation of the cells and maximum efficiency of the cushioning material.

3,660,190
PROCESS FOR THE MANUFACTURE OF A COMPOSITE MATERIAL HAVING A METAL LAYER

Joachim Stroszynski, Wiesbaden, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Dec. 27, 1968, Ser. No. 787,438
Claims priority, application Germany, Dec. 30, 1967, P 17 04 785.7
Int. Cl. C23b *5/00*
U.S. Cl. 156—150 6 Claims

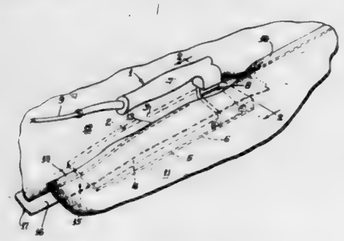
This invention relates to a process for the manufacture of a composite material including a supporting film or foil and a metal layer bonded thereto, which comprises depositing the metal layer on an intermediate support having an endless

rotatable surface, pressing the supporting film or foil onto the metal layer while an adhesive layer is interposed between them and while the film or foil is supported by a cylindrical conveyor roller, and removing the bonded composite material from the surface of the latter roller.

3,660,191
METHOD OF CARPET SEAMING

Robert E. Shimota, Fox River Grove, and Harry J. Dritt, Wheaton, both of Ill., assignors to The Kendall Company, Boston, Mass.

Filed Dec. 8, 1969, Ser. No. 882,985
Int. Cl. D06h *5/00*
U.S. Cl. 156—152 14 Claims



Adjacent sections of carpeting are joined in a seam between abutting edges of the carpet sections by a strip of heat activatable adhesive tape applied to the back sides of the carpet sections with the carpet sections lying face-up on a surface while heating the tape from its non-adhesive back side.

3,660,192
METHOD OF MAKING SEALING RING WITH RESILIENT CORE

Robert D. Smith, Wilmington, and Ronald L. Herron, Newark, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 19, 1968, Ser. No. 738,214
Int. Cl. B65d *53/02*
U.S. Cl. 156—155 8 Claims



The invention deals with a method of making endless sealing ring members by forming a sleeve element of a solid high molecular weight copolymer of hexafluoropropylene and tetrafluoroethylene into a loop. The ends are butt-welded to form a smooth toroidal ring. A hole is punched in the side through which entrapped fluid is removed and a liquid silicone rubber composition is injected to form a core. The point of injection is sealed and the core material is solidified.

3,660,193
A-I POLYMER LAMINATES PREPARED BY FILAMENT WINDING

Benjamin A. Bolton, Winfield, Ill., assignor to Standard Oil Company, Chicago, Ill.

Continuation-in-part of application Ser. No. 748,954, July 31, 1968, now abandoned. This application Mar. 5, 1971, Ser. No. 121,522
Int. Cl. B65h *81/00*
U.S. Cl. 156—169 13 Claims

A continuous process for preparing a heat resistant polymer laminate, said process comprising: (1) coating glass fibers with a solution comprising an uncured aromatic polytrimellitamide polymer, having imide forming groups, dissolved in a suitable solvent, (2) flashing off a limited amount of solvent at a temperature below the curing temperature of said uncured aromatic polytrimellitamide polymer, leaving said polymer uniformly deposited on the surface of said fibers, (3) winding said fibers on a mandrel, and (4) curing the polymer leaving essentially no unconverted imide forming groups, thus preparing said polymer laminates.

3,660,194
METHOD OF FABRICATING FLUID-TIGHT CONTAINERS

Arthur W. Hoffmann, Humlbach; Pierre Locuty, and Walter Buhlmann, both of Thun, all of Switzerland, assignors to Gebr. Hoffman AG, Thun, Switzerland

Continuation-in-part of application Ser. No. 708,070, Feb. 26, 1968, now abandoned. This application Dec. 21, 1970, Ser. No. 100,196
Claims priority, application Sweden, Feb. 24, 1967, 2784/67
Int. Cl. B65h *81/00*
U.S. Cl. 156—191 14 Claims



There is disclosed a method of producing gas-tight and liquid-tight containers, especially collapsible tubes wherein a strip of plastic coated carrier foil is bent or wound into the shape of a substantially cylindrical tube, the longitudinal edges of the strip being arranged in overlapping relationship. These longitudinal edges are then heat-sealed and the tube is coated with a sheath of plastic for covering the overlapping seams and providing a smooth continuous outer surface capable of receiving an imprint. Further, according to the invention the amount of plastic material and application thereof to the surface of the tube is controlled such that the outside surface of such tube when covered with the plastic sheathing possesses a shape and dimension substantially corresponding to the internal receiving wall of a mold cavity for heading the tube. The tube, typically after having been cut into finite tube sections, is then inserted at one end into a mold cavity, the outside surface of such tube section snugly fitting in good sealing relationship against the internal receiving wall of the mold cavity. The inner wall of the tube section, at least at the end region thereof received in the mold cavity is freely exposed, so that when moldable material is introduced into the mold cavity it contacts such exposed inner wall, thereby producing a substantially radially directed force applied outwardly against the inner exposed wall of the tube, urging the outer wall thereof into extreme sealing contact with the internal receiving wall of the mold cavity so that an extremely effective seal appears at the location where the tube section has been inserted into the molding cavity.

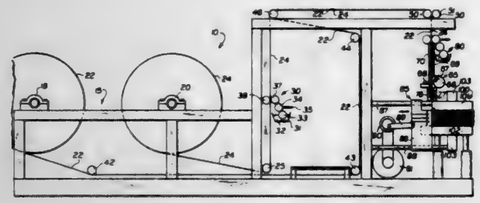
3,660,195
METHOD AND APPARATUS FOR FORMING CELLULAR CORES

Edwin R. Hoyt, Coral Gables, Fla., assignor to Core Cell Corporation, Bayamon, P.R.

Filed June 2, 1969, Ser. No. 829,167
Int. Cl. B31d *3/02*
U.S. Cl. 156—197 16 Claims

A method and apparatus for forming cellular cores from sheet stock of paper, metal or plastic for use in the subsequent formation of laminated cellular panels, or for use in-

dependently to provide sound and thermal insulation. The process comprises the steps of feeding two or more webs of sheet material to be formed into the core; joining the webs by applying spaced lines of adhesive or the like between the webs along their direction of feed, bringing the webs into contact so as to cause them to join along said first applied lines of adhesive; applying spaced lines of adhesive or the like, spaced to lie between the previously applied adhesive lines on an outer face of the joined webs; simultaneously cutting a group-strip equal in length as measured along the web to the thickness of two or more layers of the final core product from the adhered webs transverse to their direction of movement; and packing and simultaneously cutting said group-strip into two or more strips by moving them transverse to the direction of web feed to simultaneously form a plurality of layers of cellular cores of selected thickness. Apparatus suitable for performing the method is provided comprising supports for two or more supply rolls of web sheet



material; means for feeding the sheet material from the supply rolls; sheet joining means such as adhesive applicators and laminating rolls arranged in the path of web feed for applying spaced lines of adhesive between the web surfaces; a final adhesive applicator for providing adhesive on the outer surface of one of said webs; pressure applying means for bringing two or more of the adhesive stripped web surfaces into contact to bond same along the first lines of adhesive application; cutting means for cutting group-strips equal in length as measured in the direction of web feed to the thickness of two or more layers of the cellular core product from the advancing web transverse to the direction of movement; and packing-cutting means for simultaneously packing the group-strips against the strips of previously cut group-strips and cutting the group-strips into a plurality of separate strips equal in length as measured along the web to the thickness of the cellular core product, said packing means packing two or more tiers of strips simultaneously.

3,660,196

METHOD OF APPLYING TRANSFERS TO FIBER GLASS ARTICLES

Robert A. Keeling, and John G. Priest, both of London, England, assignors to Johnson, Matthey & Co. Limited, London, England

Continuation of application Ser. No. 665,319, Sept. 5, 1967. This application June 23, 1969, Ser. No. 840,124

Claims priority, application Great Britain, Sept. 5, 1966, 39,594/66

Int. Cl. B44c *3/02*; B32b *31/12*; B44d *1/14*

U.S. Cl. 156—235 **11 Claims**



There is provided a method of applying transfers or decalcomanias to a tacky surface particularly the surface of a partially cured fiber glass article. The transfer decalcomania includes a backing sheet, a first intermediate layer applied to the backing sheet and a design layer, with or without a second intermediate layer interposed between the first intermediate layer and the design layer. Where a second intermediate layer is not included, the first intermediate layer is such that the adhesion between it and the design layer is less than the adhesion between the first intermediate layer and the backing sheet and between the design layer and a tacky surface. Where a second intermediate layer is included, the adhesion between the said first and second layers is less than the adhesion respectively between the first intermediate layer and the backing sheet, the second intermediate layer and the design layer and the design layer and a tacky surface. The transfer may be applied to an initial resin coat applied to the inside of a mould after which the fiber glass article is completed by additional layers of fiber glass and resin whereby the design is embedded in the article and can be seen from the outside.

3,660,197

METHOD OF MAKING A WARP SHEET COMPRISING CARBON FILAMENTS

Peter E. Morgan, Styvechale, Coventry, and Ronald William Roberts, Camp Hill, Nuneaton, both of England, assignors to Courtaulds Limited, London, England

Filed Feb. 28, 1969, Ser. No. 803,451

Claims priority, application Great Britain, Feb. 29, 1968, 9,789/68

Int. Cl. B32b *31/00*

U.S. Cl. 156—280 **9 Claims**

A process for the production of a warp sheet which comprises preparing a sheet of an inert material and coating that sheet with a polymeric material which can be rendered tacky, causing a number of oriented carbon filaments to adhere to the tacky coating, covering the exposed surface of the carbon filaments with polymeric material, and treating the polymeric material to reduce the degree of tack. Thin warp sheets may be prepared by applying a relatively thick layer of carbon filaments and removing those which do not adhere while thicker sheets are made by spreading the requisite quantity of carbon filaments uniformly over the surface.

3,660,198

METHOD OF MAKING DOUBLE WALLED PLASTIC ARTICLES

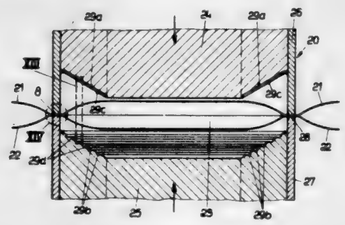
Alfons W. Thiel, Uferstrasse 15, Mainz (Rhine), Germany

Filed Aug. 29, 1969, Ser. No. 854,129

Claims priority, application Germany, Sept. 17, 1968, P 17 79 723.8; Sept. 26, 1968, P 17 79 790.9

Int. Cl. B32b *31/04*

U.S. Cl. 156—292 **19 Claims**



Double walled plastic articles chiefly receptacles comprise jacket and lining members of relatively thin thermoplastic sheet material such as foils connected firmly around outer peripheral portions and relatively shaped to provide on the article an outer annular peripheral wall section containing an insulating air space region between the members. The jacket and lining are formed with ribs and/or the like which cross and are firmly surface bonded to each other under heat and pressure within air space region at a plurality of spaced substantially flat areas. The jacket and lining may be stepped.

Special methods and apparatus are provided for producing the articles including connecting and shaping tools for forming bonded double layer regions surrounding air cushion areas that function in the process to insure proper forming of the jacket and lining as the tool dies come together. The die faces also include projections for imparting an added mechanical interlock at the bonded areas. The articles may be continuously produced starting with two separate heated foil webs, which may be differently responsive to heat or otherwise different, or starting with continuously extruded thermoplastic tubing. In the latter case the heat attendant to the extrusion operation may be sufficient for the bonding operation so that no added heat is necessary.

3,660,199

METHOD OF PREVENTING MEASLING WHEN MAKING EPOXY LAMINATES

Michael Ricciticllo, Amherst, and Harry A. Kreitmayer, Tonawanda, both of N.Y., assignors to Spaulding Fibre Company, Inc., Tonawanda, N.Y.

Filed July 24, 1969, Ser. No. 844,277

Int. Cl. C09j *5/00*

U.S. Cl. 156—306 **9 Claims**

Measling, the appearance of spots or stars under the surface of a resin portion of an epoxy-glass fiber laminate, is prevented or significantly diminished by a laminating process which includes curing plies of glass cloth and epoxy resin at an elevated temperature, e.g., 300° to 400° F., at an elevated pressure, e.g., 750 to 1,500 pounds per square inch, until gel formation occurs by reaction of the epoxy resin and curing agent, after which heating is continued at approximately the same temperature but at a lower pressure, e.g., 50 to 400 lbs./sq. in. Suitably, the initial curing step lasts for about 30 to 80 minutes and the subsequent step takes about 20 to 50 minutes, such times varying with the thickness of the laminate, the nature of the expoxy resin, the temperature employed, the geometry of the laminate, the type of reinforcing cloth, the curing apparatus used and the presence or absence of metal molded into the plastic. After completion of heating, the laminate is cooled in the press and is then removed.

3,660,200

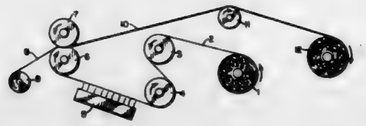
PROCESS FOR BONDING PREHEATED THERMOPLASTIC FILM TO A DISSIMILAR SUBSTRATE

Robert E. Anderson, 108 LaSalle Drive, Richmond, Va., and Augustus W. Bachman, Jr., Williamburg Court, Williamsburg, N.Y.

Continuation of application Ser. No. 572,260, Aug. 15, 1966, now abandoned. This application July 9, 1969, Ser. No. 845,650

Int. Cl. C09j *5/06*

U.S. Cl. 156—306 **11 Claims**



The present process relates to a method and an apparatus for continuously thermally bonding layers of materials together so as to form a laminate from a composite which includes at least one layer of thermoplastic film and at least one layer of substrate. In particular, the present invention is of value for bonding together multiple layers of thermoplastic film and substrate to which have been imparted various decorative and utilitarian effects.

3,660,201

PROCESS FOR PRODUCING A DECORATIVE LAMINATED PLASTIC STRUCTURE CONTAINING IN AT LEAST ONE LAYER THEREOF FROM ABOUT 4 TO ABOUT 100 PARTS PER MILLION OF A LITHIUM COMPOUND

Alwyn Senior, Greenhills, and George Edward Power, Wyoming, both of Ohio, assignors to Formica Corporation, Cincinnati, Ohio

Continuation-in-part of application Ser. No. 572,668, Aug. 16, 1966, now abandoned. This application Dec. 2, 1969, Ser. No. 881,605

Int. Cl. C09j *5/00*

U.S. Cl. 156—309 **7 Claims**

This invention relates to the process for producing a decorative laminated plastic structure in which the thermosetting resin used to impregnate at least one of the fibrous layers of said structure contains a quantity of a lithium compound sufficient to provide from about 4 to about 100 parts per million of said lithium compound in said laminated plastic structure.

3,660,202

BONDING OF SHAPED ARTICLES OF POLYESTER

Robert Alexander Edington, and Derek Harry Aldred, both of Harrogate, England, assignors to Imperial Chemical Industries, Limited, London, England

Continuation-in-part of application Ser. No. 585,243, Oct. 10, 1966, now abandoned. This application Apr. 25, 1969, Ser. No. 819,423

Claims priority, application Great Britain, Oct. 18, 1965, 43,983/65

Int. Cl. C09j *3/12*

U.S. Cl. 156—335 **7 Claims**

An improved process is described for bonding polyester shaped articles to rubber. The improvement comprises treating the polyester surface with an aqueous solution of a bis(dihydroxyphenyl methyl)phenol which results in an increased bond strength using conventional aqueous rubber latex and resorcinol formaldehyde condensate dips to bond the polyester to the rubber. The surface treatment may be effected in a separate prior process followed by a conventional bonding process using a rubber latex and a resorcinol formaldehyde condensate, or it may be effected in a single bath process together with a rubber latex and a resorcinol formaldehyde condensate.

3,660,203

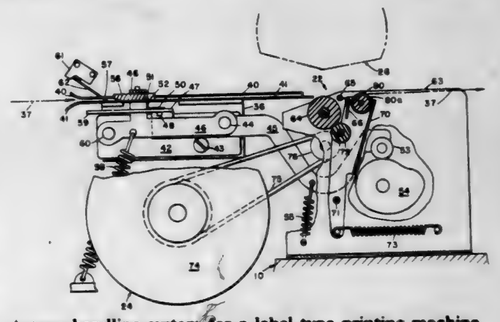
TAPE PRINTING AND HANDLING SYSTEM

Christian A. Beck, Ridgefield, and Harry E. Laperti, Wilton, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Nov. 19, 1968, Ser. No. 777,015

Int. Cl. B65c *11/02*

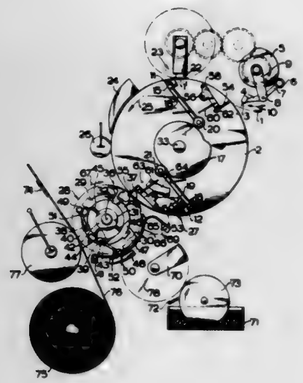
U.S. Cl. 156—384 **1 Claim**



A tape handling system for a label type printing machine wherein the tape includes a backing strip on which is carried

an upper releasable pressure sensitive print receiving strip. The composite tape is perforated at regular intervals along its length so as to facilitate printing positionment of the tape, after which the printed tape portion may be transversely torn off along said perforations. The tape handling apparatus includes a detent for engaging said perforations, a separator for facilitating the stripping of the backing strip from the releasable strip, and a yieldably driven take-up spool for the backing strip.

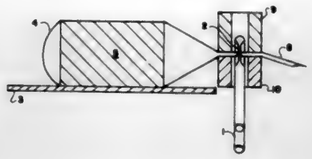
3,660,204
APPARATUS FOR APPLYING CARRYING HANDLES OF PAPER OR PLASTICS MATERIAL TO A WEB
Heinz Wenselmann, Brochterbeck, and Friedhelm Brinkmeier, Ladbergen, both of Germany, assignors to Windmoller & Holscher, Lengerich, Westphalia, Germany
Filed July 17, 1969, Ser. No. 842,633
Claims priority, application Germany, July 17, 1968, P 17 69 880.3
Int. Cl. B31b *1/86*
U.S. Cl. 156—443 10 Claims



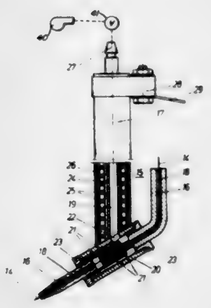
U-shaped carrying handles have been made from elongated strips of paper or plastics material in that both end portions have been folded through 90°. The handles are applied to a web intended to make carrying handles in such a manner that the end portions of the strip lead in the direction of travel of the web. The strip is first gripped in known manner in its intermediate portion. The strip end portions are folded through 90° opposite to the direction of travel of the strip. The resulting legs of the carrying handle are gripped at their end portions and advanced further. The intermediate portion is released. The carrying handles are turned over through 180° opposite to the direction of travel of the gripped ends and with their now leading legs are connected to the web extending in the same direction.

3,660,205
DEVICE FOR CONTINUOUSLY SEALING AND SEVERING EDGES OF FOLDED FILM
Monroe F. Taylor, Greenville, S.C., assignor to W. R. Grace & Co., Duncan, S.C.
Filed Apr. 13, 1970, Ser. No. 27,503
Int. Cl. B32b *31/26*
U.S. Cl. 156—515 6 Claims

This invention is a device and a method for continuously sealing and severing two superimposed layers of heat-sealable film while controlling the cooling of the sealed and severed edge to cause strengthening of the seal and reduction of wrinkles in the film adjacent the seal. A preferred device is an inverted U-shaped electrically heated blade partially enclosed by a pair of cooling bars disposed so that the superimposed layers of sealable film pass therebetween in prolonged contact with the heated blade.



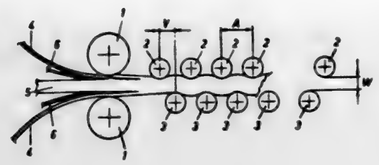
3,660,206
MACHINE FOR ASSEMBLING LAMINA WORKPIECES
Gerhard Ortel, Rietberg, Germany, assignor to Heinrich Kuper, Rietberg, Westfalen, Germany
Filed Sept. 11, 1969, Ser. No. 857,081
Claims priority, application Austria, Sept. 13, 1968, A 8926/68
Int. Cl. B32b *31/10, 31/20*
U.S. Cl. 156—545 8 Claims



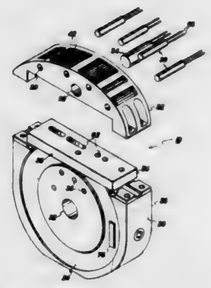
A machine for assembling lamina workpieces has a workpiece table and at least one pressure roller located over the table for pressing an adhesively coated thread in position on the workpiece surfaces. The thread being located by means of a guide device comprising a guide tube and a heating tube, the guide passage of the guide tube receiving the thread communicates with a hot air passage of a heating tube adapted to heat air passing under pressure therethrough into the guide passage via passages defined by edge regions of the guide tube and the heating tube.

3,660,207
APPARATUS FOR THE CONTINUOUS PRODUCTION OF LAMINATES
Jean Schrade, Zurich; Harald Severus, Winterthur, and Walter Muller, Mellen, all of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland
Filed Sept. 4, 1970, Ser. No. 69,820
Claims priority, application Switzerland, Sept. 9, 1969, 13602/69
Int. Cl. B31f *5/00*; B02c *11/08*
U.S. Cl. 156—555 12 Claims

An apparatus for use in the continuous production of composite plates having a core layer of plastic and cover layers. There is used a plurality of first rollers for receiving and discharging the layers, having a space between them equal or larger than the thickness of the laminates prior to rolling and a series of second parallel successive rollers downstream of the first rollers and being at varying planes parallel to the direction of movement.



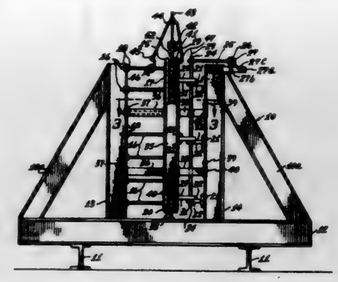
3,660,208
THERMOSTATIC HEAT WHEEL
Leo J. Hubbard, Dayton, Ohio, assignor to Xerox Corporation, Rochester, N.Y.
Filed Dec. 29, 1969, Ser. No. 888,702
Int. Cl. B65c *9/22, 9/28*
U.S. Cl. 156—571 4 Claims



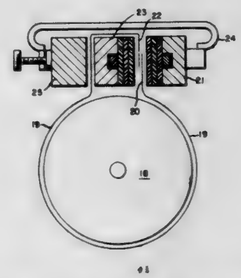
A heat transfer wheel including a label transfer pad to carry address-bearing labels from a label pick-up station to the point of application where the addresses are transferred to an article through the use of heat, heating means in said label transfer pad, said transfer pad being thermally insulated from the rest of the wheel to facilitate heat retention and distribution; vacuum passage means leading to the label bearing surface of the label transfer pad to enable labels to be temporarily attached thereto; and thermostatic control means in heat exchange relation with said label transfer pad for regulating operation of said heating means in response to temperature conditions of said pad so as to maintain said transfer pad at a uniform temperature condition.

3,660,209
LAMINATION PRESS EMPLOYING ECCENTRICALLY ACTUATED ROCK SHAFTS FOR MOVING ITS PLATEN
Billy L. Woods, 3818 West Ocotillo, Phoenix, Ariz.
Filed Aug. 4, 1969, Ser. No. 847,245
Int. Cl. B30b *7/04*; B32b *31/20*
U.S. Cl. 156—580 1 Claim

A laminating press for accurately forming laminated panels for building construction comprising a thick foam plastic sandwiched between masonite side panels covered with fiberglass on their outside surfaces, the press being operable to load the materials, accurately position and support the side panels and fiberglass sheets in precise position during the forming operations.



3,660,210
STATIC AUTOGENOUS SEALING BAR
Harry Samuel Chapman, R.D. 3, P.O. Box 224A, Hickory Hill, Pa.
Filed May 13, 1969, Ser. No. 824,211
Int. Cl. B30b *15/34*
U.S. Cl. 156—583 8 Claims



A static sealer bar is provided for heat-sealing organic polymeric materials, especially fluorocarbon films; the static sealer bar is characterized by a base member of, for example, asbestos material having a heating element disposed in a slot or recess extending substantially the entire length of one face of the base member; the slotted surface of the base member is covered by a layer of polyimide film which is, in turn, covered by a layer of silicone rubber film, and the silicone rubber film is preferably covered by a layer of polyimide. A method for heat-sealing fluorocarbon films in situ on large diameter rolls utilizing the static sealer bar also is provided.

3,660,211
PLASTIC ARTICLE AND METHOD OF PRODUCTION
Norman M. Brody, Los Angeles, Calif., assignor to Norman Industries, Inc., Santa Fe Springs, Calif.
Filed Jan. 15, 1971, Ser. No. 106,706
Int. Cl. B44f *1/14*
U.S. Cl. 161—2 16 Claims



Production of a decorative iridescent cast plastic article comprising a clear cast resin, e.g., polyester, body having em-

bedded therein an embossed multicolored iridescent facsimile on a metal, e.g., aluminum, foil of a multicolored iridescent body, e.g., an abalone shell, the embossed facsimile forming a multicolored iridescent image of the iridescent body in the cast resin, with highlights corresponding to those of the iridescent body, said iridescent cast plastic article being produced by forming color separation negatives from a photographic color transparency of such iridescent body, producing lithographic printing plates from the respective color transparencies, printing the colored image of such iridescent body from said lithographic plates onto a predetermined area of a metal, e.g., aluminum, foil, embossing into the resulting facsimile on such metal foil, a surface contour bringing out the highlights of the iridescent body, cutting the metal foil embossed iridescent facsimile from the metal foil, and embedding the metal foil embossed iridescent facsimile in a clear casting resin.

3,660,212
PLASTIC ATHLETIC LETTERING MATERIAL AND PROCESS FOR MANUFACTURING SAME

Robert James Liebe, Jr., 7 Middlebrook, Creve Coeur, Mo.

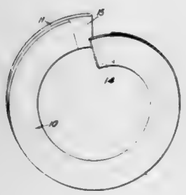
Filed July 17, 1969, Ser. No. 842,476
Int. Cl. B32b 7/06, 27/10, 27/30
U.S. Cl. 161—41 3 Claims

Flexible plastic sheet material is provided from which pigmented letters, designs and the like may be cut for fusing to fabrics. A liquid pigmented mass of heat curable plastic, for example, plastisol, is knife-spread on a high gloss release sheet and heat cured, to serve as the outer, pigmented side of the sheet material to be formed. An unpigmented preformed flexible thermoplastic sheet, whose fusing temperature is lower than the temperature of heat curing, is pressed to the newly cured, hot pigmented film and fused to it; this thermoplastic serves as the inner adherent side of the material. Letters and designs cut from such material may be ironed onto fabric, utilizing heat sufficient to raise the inner, thermoplastic side to fusing temperature without affecting the outer, pigmented side.

3,660,213
CORRUGATED COVERS

Royston L. Moseley, Bewdley, England, assignor to Henry Beakbone (Fortox) Limited, Kidderminster, England

Filed Feb. 2, 1970, Ser. No. 7,518
Int. Cl. F16d 3/84
U.S. Cl. 161—7 7 Claims

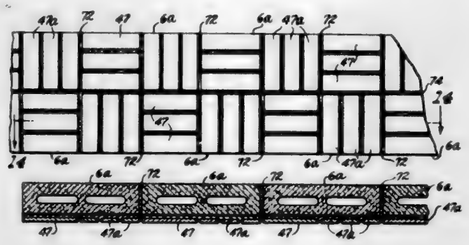


A corrugated cover which has a number of corrugations and a longitudinally extending opening. The cover is made up from pairs of rings formed with offset radial slits. The rings are connected in pairs to form annuli and the annuli are connected together by sewing around their inner and outer peripheries alternately.

3,660,214
CONCRETE BLOCK OR THE LIKE WITH MULTIPLE BRICK FACING AND METHOD OF MAKING THE SAME

Charles E. Nichols, Jr., North Augusta, S.C., and Gerald T. Howard, Gracewood, Ga., assignors to Merry Companies Incorporated, Augusta, Ga.

Filed Apr. 21, 1969, Ser. No. 817,980
Int. Cl. E04c 1/04; B44f 7/00; B32b 5/16
U.S. Cl. 161—38 29 Claims

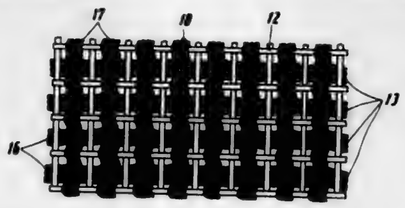


A method and resulting structural building unit wherein a conventional masonry cement block, for example, has a portion removed, if necessary, to give it a predetermined vertical height. The presized block is placed upon a continuously moving conveyer and one side of the block is preheated and then coated with a liquid material comprising a polyester resin, a styrene monomer, a solvent, and a catalyst. The stored heat in the block quickly evaporates the solvent and polymerizes the resin and monomer so that a strongly adhering bonding coat is formed on the block. A layer of matrix material of relatively thick consistency, comprising a polyester resin, a styrene monomer, finely divided silica, colloidal silica, and a catalyst is applied to the coated block. The layer of matrix may be one-eighth inch thick or thicker, depending upon the type of building unit that is being made. A facing of brick or other material is partially embedded in the matrix, in spaced relation, to form a facing for the block with simulated mortar joints. The non-embedded portions of the facing are exposed to the atmosphere. Sand is sprinkled on the facing material and the exposed matrix. The matrix is then cured or polymerized by passing the block through a curing oven. The matrix permanently bonds the facing material to the block, and renders the covered side of the block impervious to moisture. The sand adheres to the matrix, but is readily removable from the facing materials.

3,660,215
DEFORMABLE FIBREGLASS REINFORCED SUPPORTING ELEMENT

Heinrich R. Pawlicki, Faha West Adrigole, Bantry, Co. Cork, Ireland

Continuation of application Ser. No. 740,923, June 6, 1968, now abandoned. This application Dec. 14, 1970, Ser. No. 98,206
Int. Cl. B32b 5/12
U.S. Cl. 161—57 3 Claims

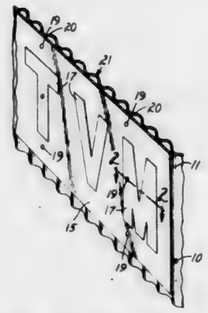


A supporting element comprising a first layer of a flexible grid-like structure, defining the shape of the supporting element and a second layer of a fibreglass mat, interwoven with or bonded to the first layer. One or several additional layers formed either by a grid-like structure similar to the first layer or by one or several fibreglass mats may be bonded to the first and second layers. The supporting element may be deformed into any desired configuration. Subsequently molding resin is applied to the supporting element. After hardening of the resin, the supporting element is fairly rigid and remains dimensionally stable.

3,660,216
SEMI-RIGID PANELING

Jerald W. Theodorson, Oak Park Heights, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Aug. 20, 1969, Ser. No. 851,653
Int. Cl. B32b 3/26, 5/18, 27/40
U.S. Cl. 161—161 14 Claims

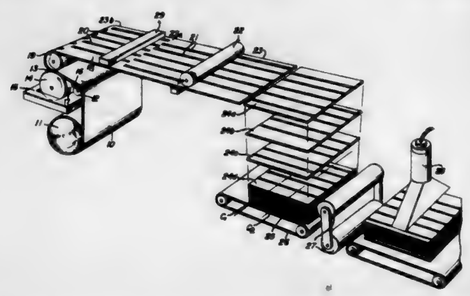


A laminate preferably consisting of a 25–250 mil-thick sandwich having a microsphere-filled elastomeric core (derived from a hollow, particulate filler and an elastomer such as polyurethane with a stress at 100 percent elongation of 500–4,000 psi) and two 1–10 mil high tensile-strength (stress at 2 percent elongation above 10,000 psi) skins provides a paneling material with, for example, good corrosion and impact resistance. The hollow, particulate filler loading is 20–65 volume percent of the core; and the flexural composite modulus of the sandwich-type laminate is in the range of $0.5–4 \times 10^6$ psi; and the density can range from about 0.5 to about 1.0 g./cm^3. These laminates have a wide variety of constructional, decorative, and insulative uses. Somewhat stiffer and thicker laminates can be provided by using more than one core alternating with a plurality of skins.

3,660,217
HONEYCOMB AND METHOD OF PRODUCING SAME

Clifton L. Kehr, Silver Spring; Walter R. Wszolek, Sykesville, and Christian B. Lundsager, Ashton, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Feb. 20, 1969, Ser. No. 800,923
Int. Cl. B32b 3/12
U.S. Cl. 161—68 25 Claims



This invention relates to a method and means for laminating superimposed layers of the same or different material by adhering said layers with a novel curable liquid adhesive composition comprising a polyene and a polythiol which, on exposure to ionizing radiation or a free radical generating agent, cures to a solid adhesive under ambient conditions. The novel adhesive can be used in bonding structural cellular material such as honeycomb cores and facings.

3,660,218
HYDROPHILIC POLYMER CONTAINING SYNTHETIC LEATHER

Thomas H. Shepherd, Hopewell, and Ezekiel J. Jacob, Brooklyn, both of N.Y., assignors to National Patent Development Corporation, New York, N.Y.

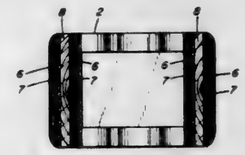
Filed Oct. 15, 1968, Ser. No. 768,616
Int. Cl. B32b 5/16
U.S. Cl. 161—87 16 Claims

A breathable leather substitute is prepared by dispersing particles of a hydrophilic acrylate or methacrylate polymer through a sheet of a polyurethane and/or vinyl chloride polymer, laminating the sheet to a woven or non-woven fabric and heating the product to swell the hydrophilic polymer particles. The particles on the surface of the sheet are then broken by running the laminate through a sander to give a suede-like finish.

3,660,219
HETEROGENEOUS CONSTRUCTION OF TEXTILE SHUTTLE SIDE WALLS

Carl Starner Pugh, Jr., and Robert Clay Curry, both of Cincinnati, Ohio, assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Jan. 11, 1971, Ser. No. 105,389
Int. Cl. B32b 17/04, 21/08; D03d 5/02
U.S. Cl. 161—93 6 Claims



Sidewalls for loom shuttles are made of outer or wearing surfaces of unidirectional textile fabric reinforced with phenolic resin and laminated, providing a high abrasion resistant surface with a smooth finish. The next layers on each side are of glass fiber cloth coated with phenolic resin, and finally, between the glass cloth layers, a layer of bulking or filler material. This bulking or filling material layer may be another laminate of textile fabric and phenolic resin or it may be low density material, such as wood. If the bulking layer is of phenolic laminate or wood, an increased amount of rigidity results, though this is not the primary factor for rigidity, which is the result of the outer two layers on each side and particularly the glass cloth laminate layers. The sidewall construction can be fabricated either by pressing all components together as a laminate at one time or forming the individual components separately and later bonding them to form the desired structure in a separate operation.

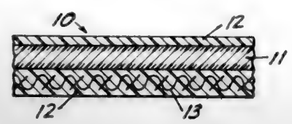
3,660,220
ELECTRICALLY INSULATIVE TAPE

Gaylord L. Groff, North St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of application Ser. No. 637,765, May 11, 1967, now abandoned. This application Aug. 26, 1970, Ser. No. 67,189
Int. Cl. B32b 17/06
U.S. Cl. 161—93 9 Claims

Electrically insulative tape comprising a base electrically insulative sheet impregnated or coated with a resin composi-

tion that includes epoxy resin and an acid-terminated ester



reaction product of hydrogenated castor derivative and dicarboxylic acid or anhydride.

3,660,221
STRETCHABLE CREPED MICA FOIL AND METHOD THEREFOR

Hans-Werner Rotter, Nurnberg, Germany, assignor to Siemens-Schuckertwerk Aktiengesellschaft, Berlin-Siemensstadt, Erlangen, Germany

Continuation of application Ser. No. 174,462, Feb. 20, 1962, now abandoned. This application Sept. 20, 1966, Ser. No. 580,830

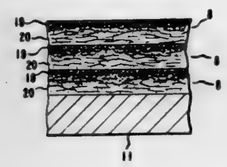
Claims priority, application Germany, Feb. 24, 1961, S 72704
Int. Cl. B32b *19/00, 3/28, 5/16*
U.S. Cl. 161—128 12 Claims

Method of producing stretchable creped mica foil includes depositing a mica suspension upon a web of creped material selected from the group consisting of fiber paper and textile material and subsequently drying the mica suspension on the web; and foil produced thereby.

3,660,222
FILLING MATERIAL OF POLYESTER FIBERS

David Alexander Fleming, Jr., Wilmington, and Gilbert Douglas Rawlings, Hockessin, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 1, 1969, Ser. No. 811,819
Int. Cl. B32b *5/14, 5/28*
U.S. Cl. 161—156 2 Claims



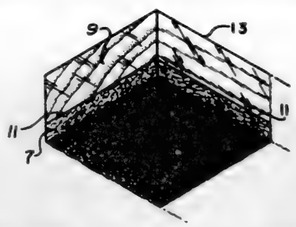
A filling material of polyester fibers is formed by garnetting staple length fibers to a web then spraying a resinous bonding agent on the web and curing the resin to bond the constituent fibers. The resin is present in diminishing quantities through the web from one face to the other. A plurality of such webs may be used to form a layered structure which has a high degree of filling support weight along with a desirable degree of softness.

3,660,223
RIGID, FLEXIBLE AND COMPOSITE SOLID OBJECTS HAVING CELLULOSE CONTAINING RICE HULL PARTICLES AND RADIATION INDUCED POLYMER AND METHOD OF MAKING SAME

Samuel L. Cassiina, 71 Paddon Road, Watsonville, Calif.

Continuation-in-part of application Ser. No. 720,331, Apr. 10, 1968. This application Sept. 16, 1968, Ser. No. 762,173
Int. Cl. B32b *5/16, 21/02*
U.S. Cl. 161—168 7 Claims

Discrete, cellulose containing, rice hull particles are impregnated with a monomer, usually a liquid, having a radiation activatable reaction group, molded under pressure to place the particles in substantially touching relation and form an article, and subjected to high-intensity ionizing radiation to polymerize the monomer and bind the particles into an ob-



ject of stable shape. Additionally, the monomer may be selected to produce objects that are rigid and hard or flexible and resilient. A composite layered article is also disclosed.

3,660,224
METHOD FOR MAKING ADHERE TO EACH OTHER CURED LAYERS OF EPM OR EPDM ELASTOMERS AND/OR BUTYL RUBBER AND PRODUCTS THUS OBTAINED

Pasqualino Cau, Oggiono, and Ermes Anelli, Milan, both of Italy, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Jan. 30, 1970, Ser. No. 7,217
Claims priority, application Italy, Feb. 3, 1969, 12354 A/69; Sept. 10, 1969, 21833 A/69
Int. Cl. B27b *27/08*; B29h *5/02*
U.S. Cl. 161—252 7 Claims

The present invention relates to a process for making adhere or for welding together layers or shaped articles such as plates, sheets, tube-tires, and the like, based on cured synthetic elastomers chosen from among the group including: copolymers and/or terpolymers of ethylene, of an alpha-olefine and optionally of a polyene, (for example EPM and EPDM rubber), and/or butyl rubber, by interposing between the layers to be caused to adhere a plastomeric layer consisting of thermoplastic polymers and/or copolymers, free of polar substituting groups or of reactive groups, of ethylene, propylene and/or butene, and by the successive heating under pressure of the associated layers.

3,660,225
DELIGNIFICATION AND BLEACHING OF CELLULOSE PULP LAYERS WITH OXYGEN GAS

Abraham Jacob Verreyne, Peterafield; Leonard Austin Job, Bramley North, both of Republic of South Africa; Paul Rerolle, Nogent-sur-Marne, and Johan C. F. C. Richter, St. Jean Cap Ferrat, both of France, assignors to South African Pulp and Paper Industries Limited and L'Air Liquide, Societe Anonyse pour L'Etude et L'Exploitation des Procedes Georges Claude and Aktiebolaget Kamyr

Filed July 10, 1969, Ser. No. 840,639
Claims priority, application Sweden, July 11, 1968, 9540/68; July 15, 1968, 9689/68; Jan. 22, 1969, 868/69; South Africa, Oct. 14, 1968, 68/6629
Int. Cl. D21c *3/26*
U.S. Cl. 162—17 11 Claims

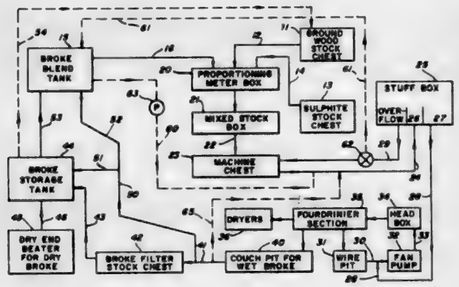
A method of dividing a stream of pulp into a series of layers comprising discrete batches and progressively transferring the batches from layer to layer in controlled fashion so that the height of each layer does not exceed a maximum value at which the pulp at the bottom of a layer has a predetermined minimum gaseous content, the pulp being contacted with oxygen gas under pressure while progressively transferring pulp from one layer to the next in the series. The method may occur in an apparatus comprising a cylindrical pressure vessel including axially spaced floors which define chambers between them, the chambers being subdivided into a plurality of compartments by dividing walls disposed axially

to the pressure vessel and transversely to the floors, each floor having an aperture and the compartments and floors being relatively movable to allow pulp in the compartments sequentially to be transferred from one chamber to the next as relative movement occurs.

3,660,226
PAPER MACHINE BROKE CONTROL

Lewis A. McKeown, 473 Mayfair Avenue, Ottawa, 3 Ontario, Canada

Filed June 10, 1970, Ser. No. 44,936
Claims priority, application Canada, June 11, 1969, 054,067
Int. Cl. D21f *1/66*
U.S. Cl. 162—264 8 Claims

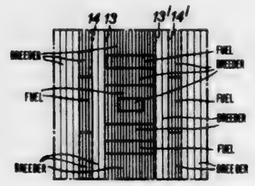


There is described a paper making system that includes (1) a broke tank, couchpit or other receptacle for broke stock fibers and (11) a machine chest or other container that feeds a supply of suitably prepared fibers to the paper machine. The invention is the improvement that comprises means of restricting the flow of suitably prepared fibers from the machine chest, and in their place feeding broke stock fibers from the broke tank, couchpit or other receptacle for broke stock fibers so that, when the paper making system is malfunctioning, the paper machine can be kept running on substantially broke stock. The system has the advantage of being able to avoid the excessive production of broke.

3,660,227
NUCLEAR REACTORS

Ronald Tunstal Ackroyd, Upton-by-Chester, and Maurice Arthur Perks, Stockton Heath, near Warrington, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Nov. 4, 1969, Ser. No. 873,922
Claims priority, application Great Britain, Nov. 15, 1968, 54,439/68
Int. Cl. G21c *1/02*
U.S. Cl. 176—17 5 Claims



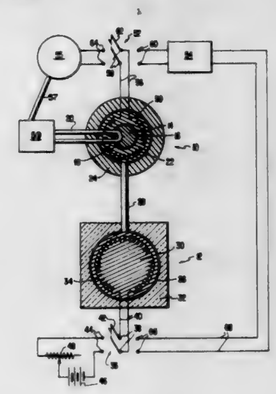
A core configuration for a liquid metal cooled fast breeder nuclear reactor includes a generally cylindrical breeder region, a first fissile region which completely embraces the central breeder region, a second fissile region wholly or partially surrounding said first fissile region with axial and radial clearance, an inner breeder region occupying said clearance, and an outer breeder region extending from the outer boundary of the second fissile region to the boundary of the core itself, which is generally cylindrical.

A variation envisages the second fissile region only partially surrounding the first fissile region, the "corner" portions being occupied by breeder material in place of the fissile material of a completely embracing second fissile region.

3,660,228
NUCLEAR REACTOR CONTROL WITH REFLECTOR AND ABSORBER MEANS

Robert E. Magladry, Baltimore, Md., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed Nov. 6, 1967, Ser. No. 680,658
Int. Cl. G21c *7/00*
U.S. Cl. 176—20 13 Claims

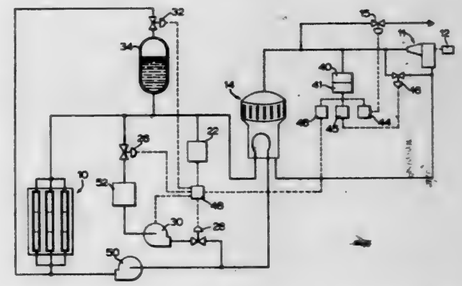


A nuclear reactor of the metal hydride control type. Metal hydride is in two portions, one in the core and the other exterior of the core, and means are provided for permitting flow of hydrogen between the two portions. Control of reactivity is obtained by providing heating means in one or both portions, the heating being responsive to a neutron sensor.

3,660,229
REACTOR CONTROL SYSTEM

Herbert N. Klingbell; Walter W. Cliffe, and William A. Castell, all of Peterborough, Ontario, Canada, assignors to Canadian General Electric Company Limited

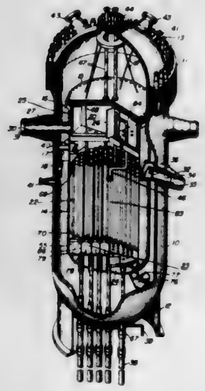
Filed Feb. 7, 1969, Ser. No. 797,447
Int. Cl. G21c *7/00*
U.S. Cl. 176—20 8 Claims



A method of controlling the pressure in the primary circuit of a nuclear power plant in which the fluid in the primary cir-

cuit is liquid and the circuit has a surge tank and spray means for condensing vapors in the tank. The pressure in the primary circuit is controlled by controlling the spray means in response to the pressure in the secondary circuit.

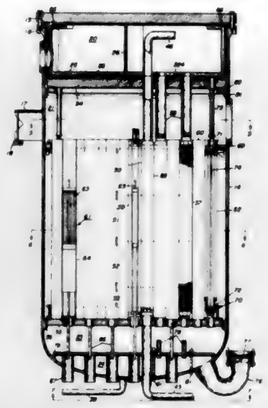
3,660,230
NUCLEAR REACTOR CONTROL SYSTEM
Herbert S. Bailey, Jr., Mountain View, and Samuel L. Stewart, Campbell, both of Calif., assignors to General Electric Company
Filed Nov. 26, 1968, Ser. No. 779,132
Int. Cl. G21c 7/10
U.S. Cl. 176—36 R **1 Claim**



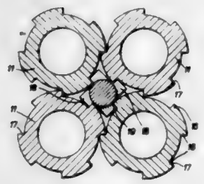
A nuclear reactor control system is described in which reactivity in the core is controlled by neutron absorbing material which is moved into and out of the fuel containing core region. Neutron moderating material is included in followers connected to the neutron absorbing control elements so that the moderating material is brought into the core fuel region when the neutron absorbing material is removed therefrom. This system is especially applicable to a reactor of the fast neutron breeder type. The use of moderating material in a fast reactor core improves the inherent safety characteristics of the core by improving the Doppler reactivity effect and coolant voiding reactivity. The incorporation of the moderating material in control material followers results in improvement in core fissile requirement, breeding ratio and core conversion ratio.

3,660,231
STEAM COOLED NUCLEAR REACTOR
Jack N. Fox; Ned P. Hansen; Eugene E. Olich; Ralph W. Guenther, all of San Jose, and Herbert J. Rubinstein, Los Gatos, all of Calif., assignors to General Electric Company
Filed Nov. 26, 1968, Ser. No. 778,998
Int. Cl. G21c 15/00
U.S. Cl. 176—56 **16 Claims**

A nuclear reactor pressure vessel internals arrangement including a core assembly, control means and steam flow directing means is disclosed. The reactor utilizes a two-pass steam flow scheme in which steam flows downwardly through non-fueled core components and then flows upwardly through the fuel assemblies. The reactor internals are located within a shroud which forms a second pressure-tight vessel. Water located in an annular space between the internal shroud and the main pressure vessel provides additional shielding and is readily available for core flooding. The arrangement provides improved safety, simplicity and reliability in steam cooled reactor operation.



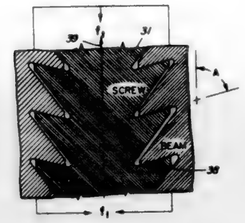
3,660,232
INTERLOCKED ASSEMBLY OF BLOCKS FOR A NUCLEAR REACTOR MODERATING CORE
Robert Banks, Timperley, Cheshire, England, assignor to United Kingdom Atomic Energy Authority, London, England
Filed Mar. 13, 1969, Ser. No. 806,958
Claims priority, application Great Britain, Mar. 21, 1968, 13,841/68
Int. Cl. G21c 5/00, 5/14
U.S. Cl. 176—84 **5 Claims**



A moderator structure is provided wherein bodies of moderator material are stacked in layers to provide juxta posed columns. The bodies are each provided with splines which have side faces lying in planes passing through the longitudinal axis of the body. Bodies in a given layer abut one another only by said side faces.

3,660,233
NUCLEAR REACTOR UPPER CORE GRID
Charles Arthur Dalke, San Jose, and Cedric L. Child, Cupertino, both of Calif., assignors to General Electric Company
Filed Nov. 12, 1969, Ser. No. 875,928
Int. Cl. G21c 3/00
U.S. Cl. 176—87 **6 Claims**

A fuel assembly top guide for the fuel core of a nuclear reactor including screws having threads with an acute included angle between the thread pressure flank face and the screw axis for fastening the notched intersections of the beams forming the top guide.



3,660,234
METHOD OF ATTENUATING VIRUSES
Oscar S. Gray, Fort Lauderdale, Fla., assignor to Gray Industries, Inc., Ft. Lauderdale, Fla.
Continuation-in-part of application Ser. No. 19,520, Mar. 17, 1970, now abandoned, which is a continuation of application Ser. No. 687,157, Dec. 1, 1967, now abandoned. This application Feb. 16, 1971, Ser. No. 115,812
Int. Cl. C12r 7/00
U.S. Cl. 195—1.2 **13 Claims**

A live virus is subjected to microwave energy under controlled conditions whereby the virus is attenuated to a less virulent state.

The present invention relates to a novel method for attenuating live viruses; and, more particularly, the present invention relates to a novel method for quickly attenuating viruses in a simple, controlled and reproducible manner.

3,660,235
METHOD FOR PRODUCING PHENYLALANINE BY FERMENTATION
Shinji Okumura, Tokyo; Shinichiro Otsuka, Yokohama; Akio Yamanoi, Tokyo; Fumihiro Yoshinaga, Kawasaki; Takeshi Honda, Yokohama; Koji Kubota, Tokyo, and Takayasu Tsuchida, Kawasaki, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
Filed Aug. 14, 1970, Ser. No. 63,953
Claims priority, application Japan, Aug. 22, 1969, 44/66374; Oct. 29, 1969, 44/86601
Int. Cl. C12d 13/06
U.S. Cl. 195—29 **11 Claims**

Mutants of microorganisms of the genere Brevibacterium, Corynebacterium, Arthrobacter, Bacillus, and Candida which tolerate amounts of phenylalanine analogues sufficient to inhibit growth of the parent strains produce extracellular L-phenylalanine in conventional culture media in amounts sufficient to warrant recovery.

3,660,236
PRODUCTION OF GLUCOAMYLASE
Robert G. Dworschack, and Carolyn A. Nelson, both of Clinton, Iowa, assignors to Standard Brands Incorporated, New York, N.Y.
Filed Jan. 8, 1969, Ser. No. 789,964
Int. Cl. C12d 13/10
U.S. Cl. 195—65 **13 Claims**

The disclosure is directed to the production of the enzyme glucoamylase. During the growth of glucoamylase producing microorganisms, ammonium hydroxide or ammonia gas is introduced into the growth medium to provide a source of ammonia and to maintain the pH of medium at the level where optimum growth of the microorganisms occurs.

3,660,237
PROCESS FOR OBTAINING KALLEKREIN FROM PANCREAS OR SUBMANDIBULARIS GLANDS OF PIGS
Fritz Schulz, Wuppertal-Sonnborn, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed May 19, 1970, Ser. No. 38,906
Int. Cl. C07g 7/026
U.S. Cl. 195—66 R **4 Claims**

The extraction of Kallekrein from the pancreas and submandibularis gland of pigs is carried out by subjecting the fresh comminuted glands at about room temperature with an aqueous solution of a salt, such as sodium chloride, of a concentration of from 3 to 25%, preferably 8% of the salt, at a pH value of 5.5 to 9.5, preferably 7.5 to 8.5, in the presence of a water-miscible solvent such as methanol, and the mixture stirred for about 1 hour. The aqueous kallekrein-containing phase is separated from the solids and the kallekrein precipitated in the presence of kieselguhr and acetone. High yields and great reduction in extraction time are noted.

3,660,238
EXTRACTION OF ASPARAGINASE FROM BACTERIAL CULTURE
Henry E. Wade, Kings Bridge Mead, Stratford-Sub-Castle, Salisbury, England
Filed Aug. 21, 1969, Ser. No. 852,082
Claims priority, application Great Britain, Aug. 23, 1968, 40,344/68
Int. Cl. C07g 7/028
U.S. Cl. 195—66 A **16 Claims**

The enzyme L-asparaginase, used in the treatment of leukemia and disseminated cancer, is extracted in high yield by treating L-asparaginase producing bacteria with strong alkali to release the enzyme from the bacterial cell in soluble form and thereafter isolating and purifying the enzyme by conventional methods.

3,660,239
FIBRINOLYSOKINASES FROM STREPTOMYCES
Werner Frommer, and Otto Wagner, both of Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Nov. 18, 1969, Ser. No. 877,818
Claims priority, application Germany, Nov. 22, 1968, P 18 10 277.7
Int. Cl. C12d 13/10
U.S. Cl. 195—66 B **5 Claims**

Fibrinolysokinase of good stability is isolated from culture solutions of actinomycetes by heat treatment at a low pH followed by fractional precipitation.

3,660,240
FLAVIN CO-ENZYME ASSAY
Emmett W. Chappelle, Baltimore, and Grace L. Picciolo, Bladensburg, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed May 5, 1969, Ser. No. 822,039
Int. Cl. G01n 31/14
U.S. Cl. 195—103.5 R **11 Claims**

Flavin coenzymes, the active forms of vitamin B_2, are assayed by using boiling perchloric acid to rupture bacterial cells, free the flavin from protein, and hydrolyze flavin adenine dinucleotide to flavin mononucleotide, which is reduced with sodium borohydride and palladium chloride and reacted with the enzyme luciferase to produce light with intensity directly proportional to flavin concentration.

3,660,241
CONTAINER FOR ORGAN PERFUSION OR THE LIKE

Paul Joseph Michielsen, Herent, Belgium, assignor to Baxter Laboratories Inc., Morton Grove, Ill.

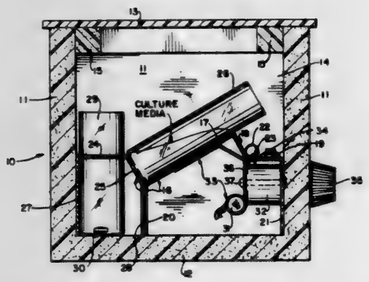
Filed Jan. 12, 1970, Ser. No. 2,231
Int. Cl. C12k 9/00
U.S. Cl. 195—127 6 Claims

A container having at least one access port defined therein; and a flexible conduit passing through the access port in sealing relation, in which the conduit is slideable relative to the port without disruption of the seal.

3,660,242
INCUBATOR

Harry W. Gordon, Bronx, N.Y., and Gustav Fingado, Ho Ho Kus, N.J., assignors to Julius Schmid, Inc., New York, N.Y.

Filed Mar. 5, 1970, Ser. No. 16,681
Int. Cl. C12b 1/00
U.S. Cl. 195—139 7 Claims

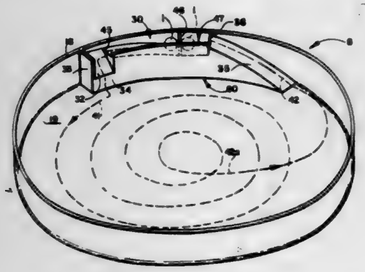


An incubator is described that comprises an insulated chamber in which heating of a culture media takes place by conduction and the incubator is designed to prevent overheating of the culture media and provide uniform temperature control. The incubator has a broad field of application and is particularly adapted because of its compactness for use in a physician's office.

3,660,243
PETRI DISH WITH COMPARTMENT FOR STERILIZED SPREADING ELEMENT

Cecil G. Young, La Canada, Calif., assignor to North American Rockwell Corporation

Filed Mar. 16, 1970, Ser. No. 20,010
Int. Cl. C12k 1/10
U.S. Cl. 195—139 12 Claims

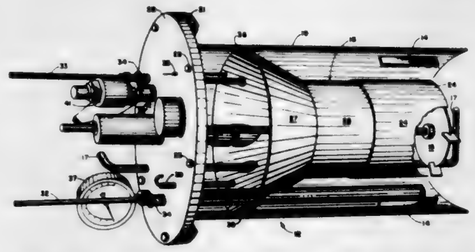


A petri dish compartment for a sterile ball for use with an automatic spreading element is provided with at least one sloping surface for release and recovery of the ball. The sloping surface has its highest point adjacent a recessed area in the compartment, the recessed area housing the spreading element prior to and after streaking.

3,660,244
FERMENTATION APPARATUS

Chi-Sin Che, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Aug. 14, 1969, Ser. No. 850,124
Int. Cl. C12b 1/10
U.S. Cl. 195—143 7 Claims

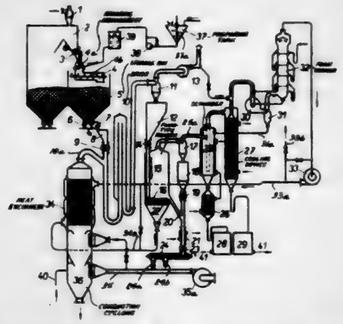


A fermentation apparatus is provided having a reactor vessel, baffle means, impellor means, and a telescopeable draft tube means which enables the upper portion of the draft tube means to be raised and lowered with respect to the lower portion of the draft tube means.

3,660,245
APPARATUS FOR CONTINUOUS MANUFACTURE OF FURFURAL AND ACETIC ACID

Aurej Zelnik; Frantisek Rezdos; Frantisek Kozmal; Radislav Domansky, all of Bratislava, and Josef Pajtik, Zvolen, all of Czechoslovakia, assignors to Ceskoslovenska Akademie Ved, Prague, Czechoslovakia

Filed May 21, 1965, Ser. No. 457,867
Claims priority, application Czechoslovakia, May 22, 1964, 2970-64. The portion of the term of the patent subsequent to May 2, 1987, has been disclaimed.
Int. Cl. C10b 49/10, 1/04
U.S. Cl. 202—99 3 Claims

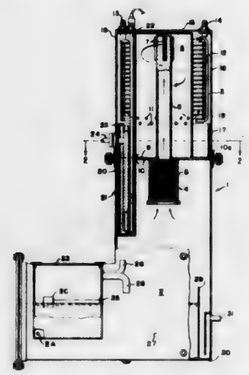


An apparatus for continuously producing furfural and acetic acid by thermodecomposition of ligneous and similar raw materials in the presence of the catalyst and in an inert atmosphere. A source of raw material is provided, a source of catalyst and a source of heated inert gaseous carrier. A drier is provided. Means are provided for conveying raw material and catalyst from the respective sources to the drier and for impregnating such raw material with the catalyst. Reactor means are provided and means for conveying impregnated raw material from the drier into the reactor means in a first direction. Pneumatic conveyor means conveys heated carrier from the respective source through and beyond the reactor means in a direction counter to the first direction so that the impregnated material yields distillate and solid particulate matter which is entrained by the carrier. Means are provided for separating the solid particulate matter from the carrier downstream of the reactor means. Condensor means separate distillate from the carrier downstream of the reactor means.

3,660,246
DISTILLATION APPARATUS HAVING CONCENTRIC RISER, EXPANSION AND CONDENSING CHAMBERS

Verity C. Smith, Dedham, Mass., assignor to Vapomics, Inc., Waltham, Mass.

Filed Aug. 13, 1969, Ser. No. 849,741
Int. Cl. B01d 3/00
U.S. Cl. 202—187 2 Claims

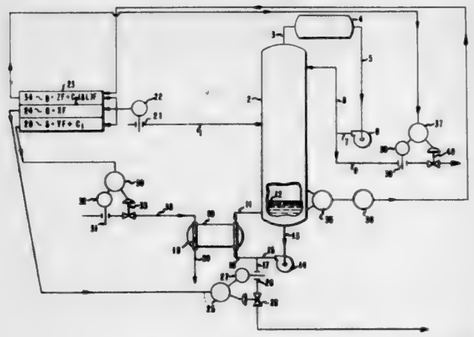


An apparatus and process for purifying water by distillation and subsequent condensation. The impure water is heated to form a distillate which is moved in a rotational path, expanded condensed and recovered. The recovered condensate contacts only materials not imparting impurities thereto and does not contact the outer shell of the purifying apparatus. Rotational movement is imparted by means of a riser having baffled openings from which the steam exits into an expansion zone.

3,660,247
PROCESS AND APPARATUS FOR CONTROLLING WITH A COMPUTER A DISTILLATION COLUMN PRODUCT AND HEAT FLUID RATES OF FLOW

Roger G. E. Franks, Wilmington, Del., and Steven L. Ritchey, Clark, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 31, 1970, Ser. No. 59,941
Int. Cl. B01d 3/42; C07c 119/04
U.S. Cl. 203—1 4 Claims

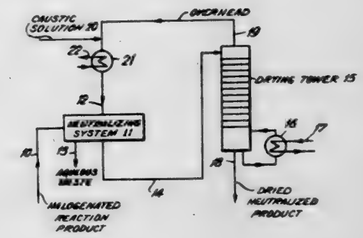


A process and apparatus for controlling a distillation column, especially useful for purifying tolylene diisocyanate. The process comprises (a) selectively proportioning both the reboiler steam flow rate and the column bottoms take-off rate to the distillation column feed rate and (b) adjusting the distillate take-off rate in accordance with variations in the distillation column feed rate and deviations in the level of the column bottoms.

3,660,248
NEUTRALIZATION AND DRYING OF HALOGENATED AND ALKYLATED HYDROCARBONS

Utah Tsao, Jersey City, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Mar. 6, 1969, Ser. No. 804,842
Int. Cl. B01d 3/34; C07c 19/00
U.S. Cl. 203—7 15 Claims

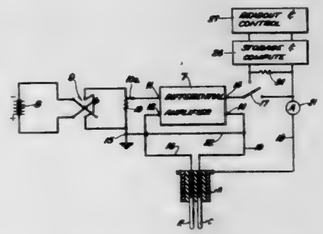


Halogenated and alkylated products containing corrosive acids are neutralized and dried by contact with caustic in a neutralization system in which the neutralized product is separated into aqueous and organic phases. The organic phase is azeotropically distilled in a drying tower to obtain neutralized, dried halogenated product and an overhead containing halogenated product, water and trace amounts of the corrosive acid formed during the distillation. The overhead is recycled to the neutralization system after being mixed with caustic upstream of the neutralization system, whereby the need to protect the neutralization system and recycling system from the effects of the corrosive acid is avoided.

3,660,249
METHOD AND APPARATUS FOR DETERMINING BOTH THE AVERAGE CORROSION RATE, AND THE PITTING TENDENCY, SUBSTANTIALLY INDEPENDENTLY OF THE RESISTANCE OF THE ELECTROLYTE

Clarence R. Townsend, Anaheim, Calif., assignor to Magna Corporation, Sante Fe Springs, Calif.

Filed Feb. 5, 1970, Ser. No. 8,809
Int. Cl. G01n 27/26
U.S. Cl. 204—1 T 20 Claims



The method makes use of three electrodes which are exposed to the corrosive environment, the electrodes being the corroding or test electrode, the reference electrode, and the auxiliary electrode. The corroding electrode is made 10 millivolts positive relative to the reference electrode, and is then made 10 millivolts negative relative thereto. The anodic and

cathodic currents which flow through a circuit including the corroding electrode and the auxiliary electrode are then averaged to produce an indication of the general or average corrosion rate, there being no substantial error due to the resistance of the electrolyte. The difference between such anodic and cathodic currents is determined in order to provide the pitting tendency or pitting index of the system. In accordance with a second embodiment of the method, the corroding electrode is forced to be at the same potential as that of the reference electrode. The current which then flows through a circuit including the corroding electrode and the auxiliary electrode is measured by a microammeter and is the pitting tendency of the system. Thereafter, the microammeter is caused to read zero despite the fact that current is passing therethrough, and the corroding electrode is forced to be at a 10 millivolt potential difference from the reference electrode. The reading of such microammeter is then directly proportional to the general or average corrosion rate.

3,660,250

METHOD OF DETERMINING IMPURITY PROFILE OF A SEMICONDUCTOR BODY

Michael C. Duffy, Boissise-Le-Roi, France, and Richard L. Hudson, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Original application Dec. 22, 1967, Ser. No. 692,817, now Patent No. 3,554,891. Divided and this application Aug. 31, 1970, Ser. No. 68,271
Int. Cl. G01n *27/04*
U.S. Cl. 204—1 T 9 Claims



A machine and method for automatically determining the distribution of impurities contained in a semiconductor body. The machine is particularly useful in determining the depth of very shallow junctions in the order of one-half micron and less. The machine successively anodizes the surface of the semiconductor body to produce an anodized semiconductor layer, removes the anodized layer by chemical etching, measures an electrical characteristic, such as spreading resistance and sheet resistance, of the semiconductor body and records the electrical characteristic in terms of the characteristic versus the amount of material removed. The machine automatically repeats this cycle until a resistivity profile for the desired depth of material is obtained. A sharp change will be observed in the recorded profile of the electrical characteristic versus the amount of material removed when a PN junction is crossed.

3,660,251

METHOD FOR THE ELECTROLYTICAL DEPOSITION OF HIGHLY DUCTILE COPPER

Werner Fluhmann, Zurich, and Walter Saxer, Urdorf, Zurich, both of Switzerland, assignors to Werner Fluhmann and Galvanische, Zurich, Switzerland

Filed July 6, 1970, Ser. No. 52,730
Claims priority, application Switzerland, July 10, 1969, 10563/69
Int. Cl. C23b *5/48, 5/18*; B01k *3/00*
U.S. Cl. 204—15 14 Claims

A homogenous, brittle-free, pore-free and dense copper layer of high ductility and having a content of included gases and/or organic impurities of less than 100 ppm is electrolytically deposited on electrically conducting surfaces from a bath comprising the copper ion and the pyrophosphate ion by maintaining the electrolytic bath constantly free from particles having a size substantially exceeding 3 microns.

3,660,252

METHOD OF MAKING ENGRAVED PRINTING PLATES

Gualtiero Giori, Lausanne, Switzerland, assignor to De La Rue Giori S.A., Lausanne, Switzerland

Filed June 17, 1970, Ser. No. 47,114
Int. Cl. B41n *1/04*; B41b *1/02*; B41m *5/00*
U.S. Cl. 204—17 11 Claims

An engraved printing plate for steel or copper plate printing machines, includes an engraved part made of a material which accepts a coloring or inking material and a non-engraved part spaced from the engraved part and having a layer of porous material impregnated with hygroscopic substance. The porous material can be black chromium or be made from nickel phosphide or alumina. The hygroscopic substance can be made from lithium chloride.

3,660,253

STEEL PICKLING BATH

Stewart E. Rauch, Jr., and Edward H. Mayer, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation

Filed June 12, 1970, Ser. No. 45,929
Int. Cl. C23g *1/08*
U.S. Cl. 204—34 3 Claims

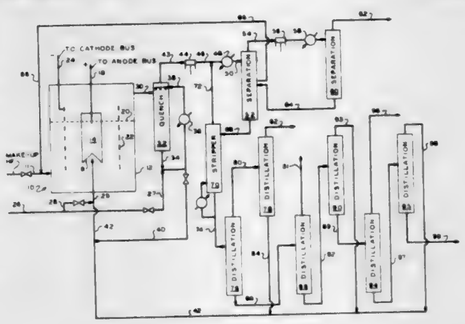
A method and bath for cleaning and conditioning steel prior to tinplating in which the strip is pickled in a dilute aqueous solution of nitric and sulfuric acids. The pickled strip, when tinplated, has improved corrosion resistance.

3,660,254

RECOVERY OF PRODUCTS FROM ELECTROCHEMICAL FLUORINATION

Robert O. Dunn, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed June 8, 1970, Ser. No. 44,041
Int. Cl. B01k *3/00*
U.S. Cl. 204—59 14 Claims



Fluorinated products are recovered from an effluent stream from an electrolytic cell in an electrochemical fluorination process by employing a combination of steps comprising cooling said effluent stream to a temperature near its dew point but insufficient to cause any significant condensation thereof, compressing said cooled effluent stream, chilling said compressed effluent stream to a temperature sufficient to condense at least the major portion of the components thereof other than hydrogen, and recovering fluorinated products from said chilled stream. In a preferred embodiment the initial cooling of said effluent stream is effected by directly contacting same with a liquid stream comprising the feedstock to the electrolytic cell.

3,660,255

PROCESS FOR ELECTROCHEMICAL CONVERSION

Homer M. Fox; Forrest N. Ruehlen, and Keith A. Williams, all of Bartlesville, Okla., assignors to Phillips Petroleum Company

Continuation of Ser. No. 739,476, June 24, 1968, abandoned. Filed Sept. 24, 1970, Ser. No. 75,291
Int. Cl. B01k *3/00*
U.S. Cl. 204—59 10 Claims



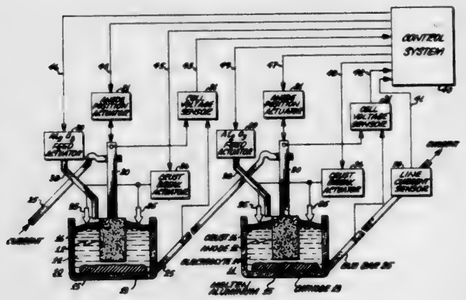
In an electrochemical process, the reaction takes place within the confines of a porous electrode element. The feed materials are introduced into the bottom of this porous electrode element by means of a sparger which is positioned within the bulk of the electrolyte adjacent a bottom surface of said electrode element.

3,660,256

METHOD AND APPARATUS FOR ALUMINUM POTLINE CONTROL

David L. Lippitt, Scotia, N.Y., and Rainer W. Schlunk, Schenectady, both of N.Y., assignors to General Electric Company

Filed Dec. 7, 1967, Ser. No. 688,810
Int. Cl. C22d *3/12, 3/02*
U.S. Cl. 204—67 5 Claims



A method and apparatus for controlling the operation of aluminum reduction cells by controlling the position of the cell anode and by controlling the addition of alumina ore to the cell electrolyte. Anode position adjustment occurs after addition of alumina to the electrolyte and is based upon periodic measurements of resistance drop across the cell. Upon completion of anode position adjustment, the cell resistance is monitored by periodically determining first and second resistance values. The addition of alumina to the electrolyte is initiated upon detection of a predetermined difference between the current second resistance value and a base resistance value determined from the first resistance values.

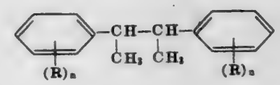
3,660,257

ELECTROLYTIC PROCESS FOR THE PREPARATION OF α-METHYLBENZYL DIMERS FROM SULFONIUM COMPOUNDS

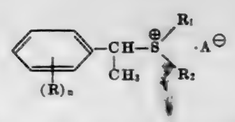
William J. Settineri, and Ritchie A. Wessling, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 2, 1969, Ser. No. 881,574
Int. Cl. C07b *29/06*; C07c *1/00, 15/18*
U.S. Cl. 204—72 10 Claims

α-Methylbenzyl dimers having the formula



wherein *n* is an integer from 0 to 5 and R is an inert substituent, are prepared by electrochemically reducing a sulfonium salt having the formula



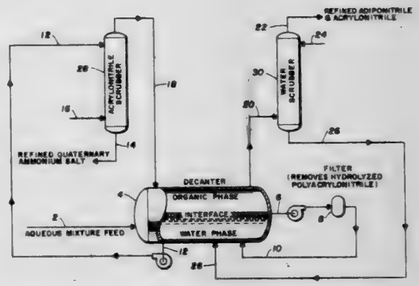
wherein R_1 and R_2 are alkyl or hydroxy-substituted alkyl groups and A^- is an electrolytically acceptable anion. The reduction and coupling occur at a mercury cathode without the formation of organomercury compounds.

3,660,258

PROCESS OF REMOVING HYDROLYZED POLYACRYLONITRILE FROM AN AQUEOUS MIXTURE

Donald E. Danly, Pensacola, Fla., and Andrew M. Patterson, Jr., Decatur, Ala., assignors to Monsanto Company, St. Louis, Mo.

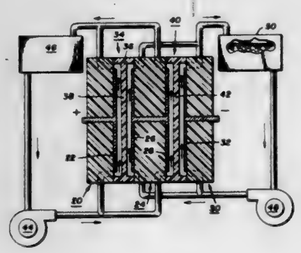
Continuation-in-part of application Ser. No. 618,248, Jan. 30, 1967. This application Jan. 23, 1970, Ser. No. 5,440
Int. Cl. C07b *29/06*; C07c *121/25, 121/28*
U.S. Cl. 204—73 7 Claims



Hydrolyzed polyacrylonitrile is removed from an aqueous mixture consisting essentially of a quaternary ammonium salt, adiponitrile, acrylonitrile and hydrolyzed polyacrylonitrile by containing the mixture at a temperature up to about 45° C. and for at least about one hour to form an organic phase and a water phase, the phases separated by an interface (the interface not being definitely defined but consisting essentially of an emulsion

which consists essentially of the hydrolyzed polyacrylonitrile), and withdrawing a portion of the interface and filtering said portion to remove the hydrolyzed polyacrylonitrile.

3,660,259
ELECTROLYTIC CELL
Donald E. Danly and Robert W. McWhorter, Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.
Original application May 31, 1966, Ser. No. 553,851. Divided and this application Mar. 25, 1969, Ser. No. 810,123
Int. Cl. C07b 29/06; C07c 121/26; B01k 1/00
U.S. Cl. 204—73 A **3 Claims**



An ion exchange membrane divides an electrolytic cell into separate anolyte and catholyte compartments. Spacer strips between the membrane and cathode define smooth-walled catholyte passages between the membrane and cathode. The spacer strips are parallel to catholyte flow. Anolyte pressure is slightly higher than catholyte pressure. The dimensions of the membrane frame are chosen to seal against the anode and cathode blocks without distorting the electrodes.

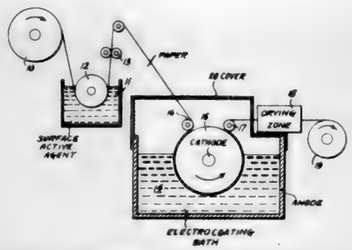
3,660,260
PHOTOSYNTHESIS OF ALKOXYOXETANES
Sigfried H. Schroeter, Schenectady, N.Y., assignor to General Electric Company
No Drawing. Original application Sept. 29, 1967, Ser. No. 671,576. Divided and this application Apr. 27, 1970, Ser. No. 43,282
Int. Cl. B01j 1/10
U.S. Cl. 204—158 R **6 Claims**

Alkoxyoxetanes are produced by the reaction of an aldehyde or ketone with a vinyl ether in the presence of ultraviolet light. The alkoxyoxetanes produced in accordance with this invention are useful as solvents for chemical reactions and as monomers for polymerization to polyoxyalkylene compounds employing, for example, trialkyl aluminum compounds with water in accordance with known processes.

3,660,261
METHOD FOR REDUCTION OF BROMINE CONTAMINATION OF CHLORINE
Edward R. Wright, Freeport, and Bobby G. Messick, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Apr. 20, 1970, Ser. No. 30,352
Int. Cl. C01d 1/06, 1/08; B01k 1/00
U.S. Cl. 204—98 **7 Claims**

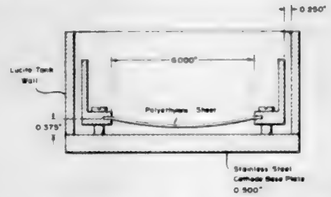
Disclosed is a method for reducing the amount of bromine contamination in free chlorine produced by the electrolysis of brine containing chloride and bromide ions. The method involves oxidizing the bromide to bromate and maintaining the pH of the brine at a value of from 2.0 to 6.5 during the electrolysis.

3,660,262
PRODUCTION OF ELECTROPHOTOGRAPHIC PAPER BY ELECTROPHORETIC DEPOSITION
Lester L. Spiller, Indianapolis, Ind., assignor to Ransburg Electro-Coating Corp., Indianapolis, Ind.
Filed June 19, 1969, Ser. No. 834,815
Int. Cl. B01k 5/02
U.S. Cl. 204—181 **14 Claims**



Electrophotographic paper is provided by electrophoretically depositing on paper zinc oxide and a resinous binder associated therewith from nonaqueous medium at the cathode of a unidirectional electrical system.

3,660,263
HOSTILE ENVIRONMENT PROTECTION OF CRITICAL METALLIC SURFACES BY ELECTROPHORETICALLY DEPOSITED COATINGS
Lucien V. Auletta, Wappingers Falls, Blair E. Cornish, Stone Ridge, Eugene P. Damm, Jr., and Mark A. Faigenaum, Poughkeepsie, and Andrew M. Simon Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Poughkeepsie, N.Y.
Filed Oct. 28, 1969, Ser. No. 871,825
Int. Cl. B01k 5/02; C23b 13/00
U.S. Cl. 204—181 **5 Claims**

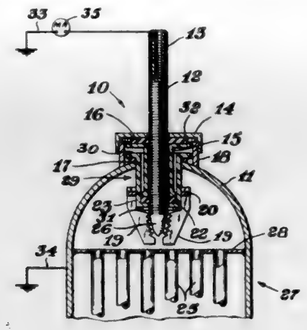


Application techniques and material design properties and formulations are described for electrophoretically deposited hostile environment protective coatings for exposed critical metallic surfaces. Formulation properties and examples of electrophoretically depositable aqueous polymer latices and/or co-blends of aqueous polymer latices are disclosed. Said latices and/or latice blends having such desirable coating properties as low gas transmission, adhesion, non-flammability crack resistance, flexibility, selected and useful dye compatibility, requisite thickness, electrical requirements and chemical resistance, are illustrated for the generic latice blends, polyvinylidene chloride (saran) and epoxy ester.

3,660,264
SACRIFICIAL ANODE ASSEMBLY FOR VESSEL INTERIORS
Karl Wilhelm Schuller, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
Filed July 22, 1970, Ser. No. 57,267
Int. Cl. C23f 13/00
U.S. Cl. 204—197 **5 Claims**

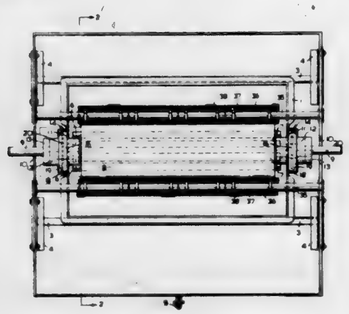
Sacrificial anode assemblies for the protection of vessel interiors are provided with means for adjusting anode surface exposure to maintain a uniformly protective

potential. A packing gland assembly positioned within a port in a vessel wall allows adjustment of anode exposure from the outside of the vessel. The sacrificial anode is in



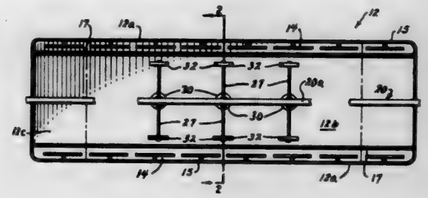
the form of a rod which may be moved in or out against the frictional engagement of a seal ring compressed within the packing gland.

3,660,265
TANK FOR METAL PLATING CYLINDERS
Tauno M. Kangas, 1578 Alexandra Blvd., Port Credit, Peel, Ontario, Canada
Filed June 3, 1970, Ser. No. 42,960
Int. Cl. C23b 5/68, 5/56
U.S. Cl. 204—212 **4 Claims**



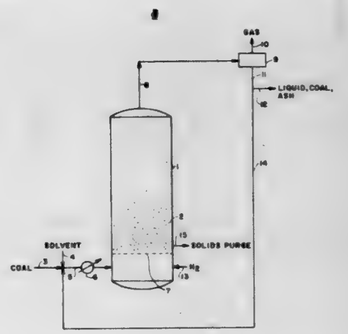
An apparatus for use in electroplating a metal onto the surface of a cylinder having a shaft extending from either end thereof, said apparatus comprising a tank for containing electrolyte, a cylindrical sleeve resistant to attack by said electrolyte adapted for releasable fixed location on each shaft with one end thereof in leak-proof abutment with an end of said cylinder, each sleeve being of a length such that the total distance between the remote ends of the sleeves on said shafts is greater than the distance between a pair of opposite walls of said tank, each of said opposite walls of said tank having a recess in the upper edge thereof dimensioned to releasably accommodate the sleeves extending therethrough with the cylinder located for rotation in said tank to form the cathode during the electroplating, each recess being adapted to releasably receive dam means to close said recess such that the level of the electrolyte in said tank may be raised to completely immerse the cylinder during the electroplating, said dam means including mutually separable bottom and top members defining a circular opening dimensioned for slidable fit with the sleeve extending therethrough and anode means for containing said metal to be plated.

3,660,266
ELECTROCOATING EQUIPMENT ACCESSORY
Robert L. Koch II and James H. Muehlbauer, Evansville, Ind., assignors to Ashdee Corp., Evansville, Ind.
Filed Feb. 12, 1968, Ser. No. 704,920
Int. Cl. B01k 5/02; C23b 13/00
U.S. Cl. 204—300 **5 Claims**



An accessory for electrocoating equipment characterized by a floating helper electrode assembly movable with respect to fixed electrodes disposed on the sides of an electrocoating tank, and where electrical energy induced in such floating helper electrode assembly is passed within a hollow article being coated for effective inner coating action.

3,660,267
COAL PROCESSING
Robert W. Rieve, Springfield, and Harold Shalit, Drexel Hill, Pa., assignors to Atlantic Richfield Company, New York, N.Y.
Filed Oct. 14, 1970, Ser. No. 80,662
Int. Cl. C10g 1/04
U.S. Cl. 208—8 **7 Claims**



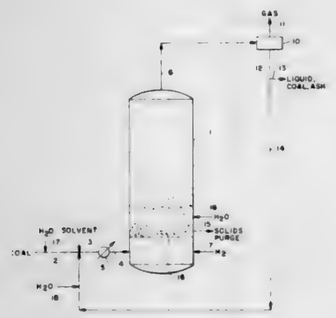
A method for hydrogenating coal to at least partially liquify same wherein the hydrogenation is carried out in at least one zone containing an ebullated bed of substantially inert, solid contact particles.

3,660,268
RECOVERY OF OIL FROM TAR SANDS USING HIGH WATER CONTENT OIL-EXTERNAL MICELLAR DISPERSIONS
Joe T. Kelly, deceased, late of Littleton, Colo., by La Verne S. Kelly, executrix, and Fred H. Poettmann, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio
No Drawing. Filed Dec. 29, 1969, Ser. No. 888,900
Int. Cl. C10g 1/04
U.S. Cl. 208—11 **13 Claims**

Oil from tar sands is extracted by contacting the tar sands with an oil-external micellar dispersion (contains 55–90% water), thereafter the sands are separated from

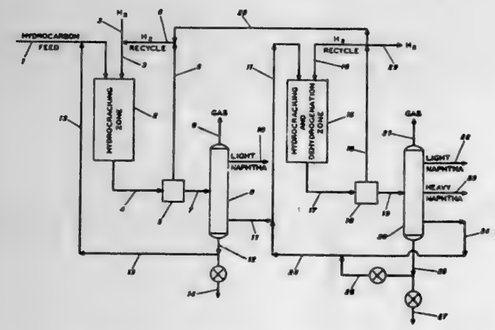
the micellar solution containing solubilized oil, and then the oil is recovered from the micellar dispersion. The micellar dispersion can be at a temperature in excess of 100° F. and the pH of the water within the dispersion can be about 7–14. Volume amounts of 0.5–30 volumes of micellar dispersion per volume of tar sand are useful with the process.

3,660,269
COAL PROCESSING
John C. McCauley, Philadelphia, Pa., assignor to Atlantic Richfield Company, New York, N.Y.
Filed Oct. 14, 1970, Ser. No. 80,661
Int. Cl. C10g *1/04*
U.S. Cl. 208—8 **6 Claims**



A coal hydrogenation process carried out in the absence of hydrogenation catalyst and in the presence of water.

3,660,270
TWO-STAGE PROCESS FOR PRODUCING NAPHTHA FROM PETROLEUM DISTILLATES
Harold F. Mason, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Continuation-in-part of application Ser. No. 763,603, Sept. 30, 1968. This application Jan. 15, 1970, Ser. No. 3,237
Int. Cl. C10g *23/00, 37/04*
U.S. Cl. 208—59 **5 Claims**

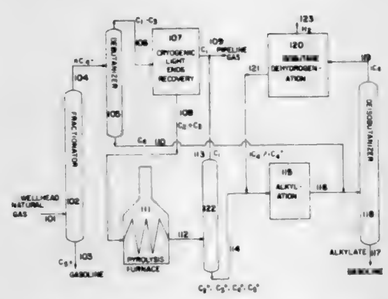


A hydrocarbon conversion process comprising hydrocracking a petroleum distillate in a first conversion zone, recovering at least one hydrocracked product, subjecting a portion of the effluent from said first conversion zone boiling generally above said hydrocracked product to hydrocracking and dehydrogenation in a second conversion zone without a net consumption of hydrogen, at a temperature in the range 825° to 950° F. and a pressure in the range 0 to 1500 p.s.i.g., and recovering at least one upgraded naphtha product from said second conversion zone.

3,660,271
SERIAL REFORMING WITH PLATINUM ON A NON ACIDIC SUPPORT AND PLATINUM-RHENIUM ON AN ACIDIC SUPPORT
Carl D. Keith, Summit, N.J. (% Engelhard Minerals & Chemicals Corporation, 429 Delancy St., Newark, N.J. 07105); George P. Masologites, Broomall, Pa.; and John Mooi, Homewood, Ill. (both % Atlantic Richfield Company, 400 E. Sibley Blvd., Harvey, Ill. 60426)
No Drawing. Filed Mar. 20, 1970, Ser. No. 21,548
Claims priority, application Canada, June 20, 1969, 54,898
Int. Cl. C10g *35/08, 39/00*
U.S. Cl. 208—65 **24 Claims**

A process for the catalytic reforming of naphthene and paraffin-containing hydrocarbons to improve their octane rating is disclosed which involves the use of a series of catalytic reaction zones of which one of the first contains a supported platinum group metal-containing, low acidity catalyst which is substantially devoid of rhenium and which serves to dehydrogenate naphthenes, and one of the last of which zones contains a supported platinum group metal and rhenium-containing catalyst of higher acidity which serves to dehydrocyclize paraffins.

3,660,272
GASOLINE PRODUCTION FROM WELLHEAD NATURAL GAS
George W. Frick, Hightstown, N.J., assignor to Cities Service Oil Company, Tulsa, Okla.
Filed Dec. 30, 1970, Ser. No. 102,687
Int. Cl. C10g *39/00*
U.S. Cl. 208—93 **5 Claims**



A process for the production of gasoline from wellhead natural gas is disclosed in which light hydrocarbon compounds found in wellhead natural gas are converted by an integrated process of operations into salable gasoline and natural gas principally composed of methane.

3,660,273
PRODUCTION OF IMPROVED LUBRICATING OILS BY HYDROCRACKING AND SOLVENT EXTRACTION
Billy H. Cummins, Nederland, Tex., assignor to Texaco Inc., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 837,930, June 30, 1969. This application Nov. 12, 1969, Ser. No. 876,113
Int. Cl. C10g *41/00, 37/00*
U.S. Cl. 208—96 **6 Claims**

Lube oils of improved ultraviolet stability, color and viscosity index are obtained by hydrocracking a lube oil fraction and subjecting the product to solvent refining

the then dewaxing. The preferred solvent is N-methyl-2-pyrrolidone. The feed may be a wax distillate, a deasphalted residuum and may be subjected to pre-hydrocracking solvent refining step.

3,660,274
HYDROCARBON TREATING PROCESS
James J. Blazek, Reisterstown, and Richard W. Baker, Ellicott City, Md., and Charles P. Wilson, Jr., Cincinnati, Ohio, assignors to W. R. Grace & Co., New York, N.Y.
No Drawing. Continuation of application Ser. No. 686,725, Nov. 27, 1967. This application Feb. 18, 1970, Ser. No. 11,928
Int. Cl. C10g *11/04*
U.S. Cl. 208—120 **1 Claim**

A catalytic process of upgrading hydrocarbons which is characterized by contacting the hydrocarbons under reactive conditions with a catalyst having a low surface area matrix.

3,660,275
CYCLIC HYDROGENATION-REFORMING
Ralph A. Carey, San Anselmo, and Robert L. Jacobson, Pinole, Calif., assignors to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed Oct. 2, 1969, Ser. No. 863,330
Int. Cl. C10g *35/08, 23/04*
U.S. Cl. 208—138 **1 Claim**

A process for alternately producing gasoline and jet fuel, in a reformer reactor containing a catalyst comprising platinum on alumina, by

(a) feeding a kerosene feedstock to the reformer reactor and hydrogenating the kerosene by contacting the kerosene with said catalyst in the presence of hydrogen at a temperature between 500° and 700° F., and at a relatively low pressure, for example, below 700 p.s.i.g.;
(b) preferably sweeping the catalyst bed with hot hydrogen;
(c) switching from a kerosene feed to the reformer reactor to a naphtha feed; and
(d) feeding a naphtha feedstock to the reformer reactor and contacting the naphtha with said catalyst at a temperature between 800° and 1100° F.

3,660,276
PURIFICATION OF HYDROCARBON OILS
John Aldwyn Lacey, Solihull, England, assignor to The Gas Council, London, England
Filed Mar. 20, 1969, Ser. No. 809,016
Claims priority, application Great Britain, Mar. 21, 1968, 13,738/68; Aug. 22, 1968, 40,252/68
Int. Cl. C10g *23/00, 31/14*
U.S. Cl. 208—212 **9 Claims**

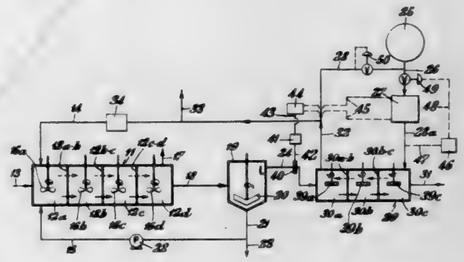
In a process for desulphurising hydrocarbon distillate oils, a mixture of the oil vapour and a carbon oxide-containing hydrogenating gas is passed over (a) a hydrodesulphurisation catalyst and then (b) a material capable of absorbing hydrogen sulphide and rapidly eliminating any carbonyl sulphide present either by absorbing the carbonyl sulphide or by converting it to hydrogen sulphide and absorbing the hydrogen sulphide.

The hydrogenating gas may be a lean gas, a town gas, a rich gas, or a substitute natural gas produced by steam reforming the desulphurised distillate oil.

The material used in stage (b) is preferably zinc oxide.

The process is capable of attaining a very high degree of purification (e.g. 0.2 p.p.m. or less). When a high degree of purification cannot be attained by use of a single pair of stages (a) and (b), the desired degree of purification can be attained by passing the mixture over (c) a zinc oxide-copper oxide composition or by repeating the stages (a) and (b).

3,660,277
OXYGENATION-OZONATION OF BOD-CONTAINING WATER
John R. McWhirter, Westport, Conn., and Ernest K. Robinson, West Liberty, W. Va., assignors to Union Carbide Corporation, New York, N.Y.
Continuation-in-part of abandoned application Ser. No. 52,196, July 7, 1970. This application May 17, 1971, Ser. No. 144,243
Int. Cl. C02c *1/06*
U.S. Cl. 210—6 **16 Claims**



BOD-containing water such as sewage is biochemically treated with oxygen and the liquid effluent is disinfected by chemical treatment with ozone while simultaneously fortifying the effluent with dissolved oxygen.

3,660,278
PROCESS FOR PREPARING SPECIALLY ACTIVATED SLUDGE
Akio Mimura, Tokyo, Takatsugu Kawano, Saitama, and Kanshi Yamaga, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha
No Drawing. Filed Apr. 15, 1969, Ser. No. 816,412
Claims priority, application Japan, Apr. 27, 1968, 43/27,978
Int. Cl. C02c *1/06*
U.S. Cl. 210—11 **8 Claims**

A process for preparing a specially activated sludge capable of being utilized in the biological treatment of waste waters containing poisonous substances, which comprises culturing in liquid media the screened microorganisms having properties of decomposing said poisonous substances contained in the chemical industry waste waters or in sewage waste waters, blending said cultured liquid of the microorganisms with an aqueous suspension of the usual activated sludge used in the treatment of the waste waters discharged from the food industries, fermentation industries, paper manufacturing industries, leather industries, etc. or in that of sewage or human excrements, and flowing continuously the aqueous solution containing said poisonous substances into the resulting blended liquid under aerobic conditions to force said microorganisms to combine with said usual activated sludge in commensal state.

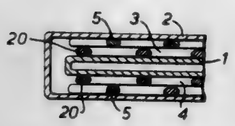
3,660,279
METHOD FOR SORPTION OF ANTIBIOTICS FROM UNFILTERED LIQUIDS
Erik Hoff, Oslo, Norway, assignor to A/S Apothekernes Laboratorium for Specialpraeparater, Oslo, Norway
Filed Feb. 10, 1970, Ser. No. 10,183
Claims priority, application Norway, Feb. 12, 1969, 566/69
Int. Cl. C02b *1/80*
U.S. Cl. 210—19 **5 Claims**

A method for the sorption of an antibiotic from unfiltered liquids using at least one vessel having an inlet and an outlet from the liquids which comprises continuously feeding the unfiltered liquid into the vessel by means

of said inlet, oscillating the vessel containing the sorbent particles horizontally around its own axis to provide horizontal movement with minimal axial movement to the sorbent particles and withdrawing effluent reduced in antibiotic concentration from the vessel by means of said outlet.



3,660,280
DIALYSIS APPARATUS
George A. Rogers, Crewe, England, assignor to Calmic Engineering Company Limited, Crewe, England
Filed Apr. 23, 1969, Ser. No. 818,649
Claims priority, application Great Britain, Apr. 25, 1968, 19,761/68
Int. Cl. B01d *31/00, 13/00*
U.S. Cl. 210—22 11 Claims



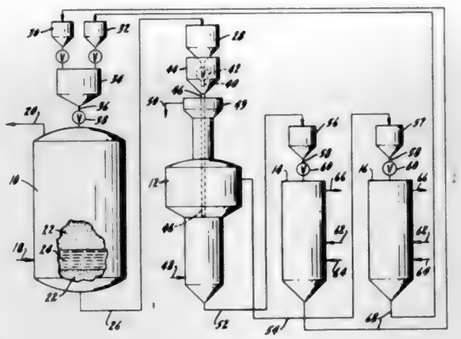
A dialysis system for removing toxic substances from the blood, provided with a dialysis membrane in the form of a semi-permeable flat member and a flat envelope within which the flat member is situated, and including a flexible lattice.

3,660,281
PERMEATION SEPARATION MEMBRANES
Frank William Tober, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed May 6, 1970, Ser. No. 34,948
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 11 Claims

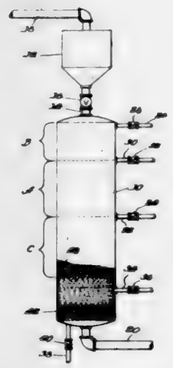
A membrane for the selective permeation separation of aqueous mixtures, which is a thin film or hollow filament of a linear aliphatic polyamide resin containing a hydrolyzable tannin.

3,660,282
METHOD AND APPARATUS FOR REGENERATING MIXED BEDS OF ION EXCHANGE RESINS
Dennis M. O'Brien, Chatham, N.J., assignor to Ecodyne Corporation, Chicago, Ill.
Filed June 17, 1969, Ser. No. 834,070
Int. Cl. B01d *15/06;* B01j *1/06*
U.S. Cl. 210—33 3 Claims

The invention provides an improved method and apparatus for delivering a mixture of anion and cation exchange resins to a separation column. In carrying out the method, resin is delivered rapidly from a metering zone to the transfer zone, and then is delivered from the transfer zone to the separation column at a relatively slow rate of speed. This two-step transfer minimizes undesirable disturbances in the separation column. In the apparatus, the metering and transfer zones are preferably defined by suitable hoppers located above the separation column.

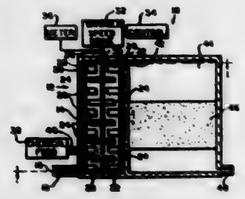


3,660,283
METHOD FOR REGENERATING CATION EXCHANGE RESIN
Leo F. Ryan, Somerville, N.J., assignor to Ecodyne Corporation, Chicago, Ill.
Filed Oct. 7, 1969, Ser. No. 864,347
Int. Cl. B01d *15/06*
U.S. Cl. 210—33 5 Claims



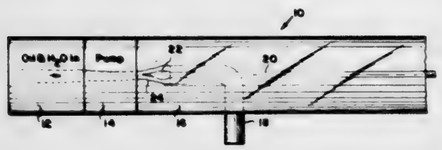
A method is provided for regenerating cation exchange resin containing insoluble sulfate-forming cations while preventing the formation of sulfate precipitates. In carrying out the method, sulfuric acid is introduced into a regeneration column at a regenerant inlet to establish a concentrated regenerant zone. Exhausted regenerant is withdrawn from the column at an outlet. In accordance with the invention, dilution water is introduced into the column between the regenerant inlet and the outlet to form a dilute regenerant zone. During regeneration, the resin passes first through the dilute regenerant zone, where it is partially regenerated. The resin is then further regenerated in the concentrated regenerant zone.

3,660,284
METHOD FOR WATER AND WASTEWATER TREATMENT
Thomas R. Camp, Boston, Mass., assignor of a fractional part interest to Walter J. Kreske, Newton Centre, Mass.
Continuation-in-part of abandoned application Ser. No. 828,552, May 28, 1969. This application Apr. 9, 1970, Ser. No. 26,954
Int. Cl. C02b *1/20*
U.S. Cl. 210—49 9 Claims



Increasing the efficiency of continuous flow water and wastewater treatment plants by mixing the water or wastewater with a floc forming chemical in a first mixing stage at a speed effecting a mean velocity gradient corresponding to a flow volume concentration less than 300 parts per million until flocculation is substantially complete and then either passing it through a rapid filter or alternatively mixing it in a second mixing stage at a lesser speed effecting a velocity gradient corresponding to a selected effluent floc volume concentration greater than 300 parts per million before passing on to subsequent treatment such as settling and filtering.

3,660,285
METHOD OF SEPARATING FLUIDS HAVING DIFFERENT DENSITIES
Arthur L. Markel, Miami, Fla., assignor to Reynolds Sub-Marine Services Corporation, Miami, Fla.
Filed Nov. 6, 1970, Ser. No. 87,435
Int. Cl. B01d *12/00, 17/02*
U.S. Cl. 210—65 12 Claims



Methods of separating fluids having different densities wherein the fluids are first separated by passing them through an axial flow pump. Thereafter, the flow diameters of the fluids are altered so that the flow diameter of one of the fluids is substantially equal to the internal diameter of a suitable extractor tube. In one embodiment of the invention, a mandrel having a tapered end is inserted into one of the fluids after it has been separated in a manner to increase its flow diameter to that of the internal diameter of an extractor tube. In another embodiment, an additional fluid, such as air, is injected into the fluids being monitored thereby increasing the flow diameter of the fluid to be collected to that of the internal diameter of an extractor tube. In another embodiment, an obstruction is inserted downstream from the axial flow pump thereby creating a venturi flow whereby the extractor tube may be positioned to remove substantially all of the desired fluid. In all embodiments, it is preferred to use a section of conduit downstream from the axial flow pump that is at least translucent whereby visual inspection permits the extractor tube to be positioned properly for maximum withdrawal efficiency.

3,660,286
LIQUID WASH CYCLE SOFTENER
Ralph Raymond Sepulveda, Suffern, N.Y., and Kenneth Fred Schoene, Palisades Park, N.J., assignors to Lever Brothers Company, New York, N.Y.
No Drawing. Filed Jan. 3, 1969, Ser. No. 788,918
Int. Cl. D06m *13/38, 13/46*
U.S. Cl. 252—8.8 5 Claims

Fabric softening compositions containing a mixture of branched and straight chain di-higher alkyl and straight chain di-lower alkyl quaternary ammonium compounds with alkyl amine oxides have been found useful in the wash cycle of conventional household or industrial washing machines to impart softening to fabrics in the presence of either anionic or nonionic detergents or both.

3,660,287
AQUEOUS REACTIVE SCALE SOLVENT
Frank J. Quattrini, P.O. Box 1414, Midland, Tex. 79701
No Drawing. Filed Oct. 12, 1967, Ser. No. 674,730
Int. Cl. C02b *5/00*
U.S. Cl. 252—8.55 B 13 Claims

An aqueous reactive scale solvent composition comprising basically a partially neutralized aminopolyacetic acid and a carbonate, such as, ammonium bicarbonate, has been found useful for the removal of scale by dissolving such deposits as calcium sulfate from oil well equipment, the porous and permeable zones of the reservoir rock, and from industrial equipment. The pH of the aqueous composition should be between 6.5 and 9.5 and preferably between a narrow range of 7.5 to 7.8, depending upon the temperature of the scale environment, e.g. the higher the temperature, the higher should be the pH of the solution.

3,660,288
GREASE COMPOSITIONS CONTAINING MAGNESIUM SALTS OF UNSATURATED FATTY ACIDS AS RUST INHIBITORS
Erling Hansen, Oakland, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed Sept. 30, 1968, Ser. No. 763,920
Int. Cl. C10m *5/16, 5/20*
U.S. Cl. 252—40.7 7 Claims

Grease compositions providing improved rust resistance comprising a major amount of an oil of lubricating viscosity, a minor amount, sufficient to thicken the oil to the consistency of a grease thickener, and a minor portion of a magnesium salt of an unsaturated unsubstituted or hydroxy-substituted fatty acid of 14 to 24 carbon atoms.

3,660,289
REACTION PRODUCT OF POLYAMINE AND CARBOXYLIC ACIDS, AND FUELS, LUBRICATING OILS, GREASES AND PLASTICS CONTAINING SAID PRODUCT
Henryk A. Cyba, Evanston, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed May 15, 1970, Ser. No. 37,941
Int. Cl. C10m *1/30, 1/32;* C10l *1/22*
U.S. Cl. 252—51.5 A 16 Claims

Reaction product formed by the condensation of a polyamine containing at least two primary and/or secondary nitrogens, polyhalopolyhydropolycyclicdicarboxylic acid or derivative and halogen-free dicarboxylic acid or derivative. In one embodiment the reaction product is used as an additive in hydrocarbon oils and lubricants. In another embodiment it is used as an additive in plastics.

3,660,290
LUBRICANT COMPOSITIONS
Roland T. Schlobohm, Bethalto, Ill., assignor to Shell Oil Company, New York, N.Y.
No Drawing. Filed Sept. 22, 1969, Ser. No. 860,035
Int. Cl. C10m *1/34*
U.S. Cl. 252—51.5 A 5 Claims

4-alkylphenyl-1-alkyl-2-naphthylamines and mixtures of 4-alkylphenyl-1-alkyl-2-naphthylamines with 4-alkylphenyl-2-naphthylamines are effective in improving the oxidation resistance, cleanliness and bearing performance properties of lubricant compositions.

3,660,291
MAGNETO-OPTICAL ELEMENTS AND GLASSES
Guy E. Stong, Elmira, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Jan. 19, 1970, Ser. No. 3,872
Int. Cl. G02f *1/22*; C03c *3/04, 3/30*
U.S. Cl. 252—62.51 8 Claims

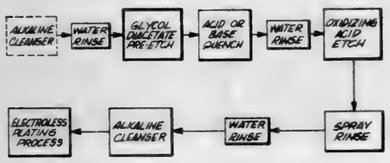
The invention relates to magneto-optical elements such as switches, modulators and isolators having very high Verdet constants. The elements are produced from glasses composed essentially of silica (SiO_2) as a glass former, a rare earth metal oxide as a primary modifier, and one or more stabilizing oxides selected from the group consisting of ZrO_2, TiO_2 and Nb_2O_5 as secondary modifiers.

3,660,292
FERRITE MATERIALS
Clement Bryce, Southport, England, assignor to U.S. Philips Corporation
No Drawing. Filed Sept. 17, 1970, Ser. No. 73,216
Claims priority, application Great Britain, Sept. 18, 1969, 46,049/69
Int. Cl. C04b *35/26, 35/36*
U.S. Cl. 252—62.6 1 Claim

High resistivity manganese-zinc-magnesium-copper ferrites for yoke ring applications. These ferrites have a composition expressed in mol. percent within the following ranges:

Fe_2O_3	33–39
MnO	20–32
ZnO	14–22
MgO	12–22
CuO	0.5–15

3,660,293
PRE-ETCH TREATMENT OF ACRYLONITRILE-BUTADIENE-STYRENE RESINS FOR ELECTROLESS PLATING
Eileen Maguire, San Gabriel, and Leon A. Kadison, Pasadena, Calif., assignors to Crown City Plating Co., El Monte, Calif.
Filed Sept. 23, 1969, Ser. No. 860,236
Int. Cl. B44d *1/092*
U.S. Cl. 252—79.4 21 Claims



Solutions containing glycol diacetate, particularly solutions containing glycol diacetate at concentrations close to solution saturation, are used as a pre-etch to improve the adhesion of metals to ABS resins in electroless plating processes.

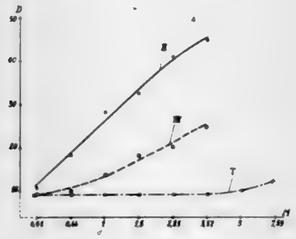
3,660,294
METHOD OF CLEANING GLASS
Alexander Farkas, New York, N.Y., assignor to George Goda
No Drawing. Filed Aug. 31, 1970, Ser. No. 68,535
Int. Cl. C11d *7/54*
U.S. Cl. 252—100 1 Claim

A method of cleaning a glass surface by applying a mixture of ammonium persulfate and sulfuric acid to the surface and then rinsing the surface with water. The method leaves the glass free of agents which could interfere with subsequent analytical tests performed using the glassware.

3,660,295
BLEACHING COMPOSITIONS
Robert G. La Barge and Donald K. Bradley, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Apr. 27, 1970, Ser. No. 32,276
Int. Cl. C11d *7/54*
U.S. Cl. 252—104 9 Claims

Disclosed herein are liquid bleaching compositions which when dispersed in water provide aqueous solutions having good oxidizing power. The aqueous solutions can be used, for example, to launder clothes. The bleaching compositions comprise an inorganic peroxygen compound dispersed in a carrier liquid. The carrier liquid also has a carboxylic acid anhydride dissolved therein.

3,660,296
DETERGENT AND ANTISEPTIC COMPOSITIONS COMPRISING A STOCK SOLUTION OF 3,4,4'-TRICHLOROCARBANILIDE AND PROCESS FOR THE PREPARATION OF THE STOCK SOLUTION
Maurice Lavril, Paris, France, assignor to Etablissements Clin-By la, Paris, France
Filed June 19, 1969, Ser. No. 834,637
Claims priority, application France, June 28, 1968, 157,133; July 5, 1968, 158,080
Int. Cl. C11d *3/48*
U.S. Cl. 252—106 2 Claims



Detergent and antiseptic composition comprising a stock solution of 3,4,4'-trichlorocarbanilide characterized in that the stock solution includes a solubilizing agent for 3,4,4'-trichluorocarbanilide compatible with a subsequent aqueous dilution.

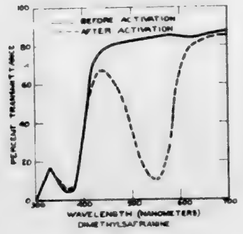
3,660,297
LIQUID PAINT BOOTH DEFLOCCULANT
Thomas A. McCammon, Greenville, S.C., assignor to Morton-Norwich Products, Inc.
No Drawing. Filed Jan. 29, 1970, Ser. No. 6,951
Int. Cl. C11d *7/06, 7/12, 7/14*
U.S. Cl. 252—156 4 Claims

A paint booth deflocculant wash solution utilizing electro-positive lithium ions to precipitate the paint.

3,660,298
FURNACE CHARGE FOR USE IN THE PRODUCTION OF SILICON METAL
Richard J. McClincy, Lewiston, James H. Downing, Clarence, and Benjamin J. Wilson, Youngstown, N.Y., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed Nov. 19, 1969, Ser. No. 878,229
Int. Cl. C09k *3/00*; C01b *33/02*
U.S. Cl. 252—188.3 3 Claims

A low density stoichiometric agglomerated furnace charge for use in the carbothermic reduction of silica in electric type furnaces according to the overall reaction of $SiO_2+2C \rightarrow Si+2CO$. The charge comprises a fine fraction and a coarse fraction of particulated silica homogeneously mixed with a particulated carbon and a low density filler to provide an overall average bulk density of between about 20 and 50 pounds per cubic foot.

3,660,299
VARIABLE DENSITY LIGHT FILTERING MEANS UTILIZING LEUCO PHENAZINE DYES
Richard J. Hovey, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Apr. 10, 1969, Ser. No. 814,955
The portion of the term of the patent subsequent to Oct. 29, 1985, has been disclaimed
Int. Cl. G02b *5/24*
U.S. Cl. 252—300 2 Claims



A light filter of variable optical density includes a body of solution of a leuco phenazine dye and a reversible reducing agent, and exposure of the body to ultraviolet light colorizes the leuco dye automatically varying the optical density of the body proportionally to the amount of ultraviolet light incident on the body.

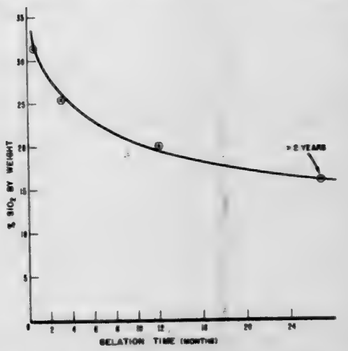
3,660,300
METHOD OF PREPARING OXIDIZED RADON SOLUTIONS
Lawrence Stein, Downers Grove, Ill., assignor to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed June 5, 1970, Ser. No. 43,990
Int. Cl. C09k *3/00*
U.S. Cl. 252—301.1 R 5 Claims

A solution of nonvolatile, oxidized radon is prepared by reacting elemental radon with a fluoride-containing oxidant and dissolving the radon compound formed thereby in a suitable nonreducing, water-free solvent.

3,660,301
PROCESS FOR MAKING SILICA ORGANOSOLS
James F. Kovarik, Berwyn, and Peter H. Vossos, Lisle, Ill., assignors to Nalco Chemical Company, Chicago, Ill.
No Drawing. Filed Feb. 4, 1971, Ser. No. 112,813
Int. Cl. B01j *13/00*
U.S. Cl. 252—309 5 Claims

A method of preparing silica organosols which comprises: (1) dissolving a quaternary ammonium compound in a non-polar organic solvent; (2) adding an aqueous silica sol; (3) adding isopropanol; (4) thoroughly mixing; (5) separating the layers; and (6) removing the isopropanol by heat to recover the product.

3,660,302
ANHYDROUS SILICIC ACID ORGANOSOLS
Milton E. Winyall, Ellicott City, Md., assignor to W. R. Grace & Co., New York, N.Y.
Filed May 27, 1968, Ser. No. 732,423
Int. Cl. B01j *13/00*
U.S. Cl. 252—309 9 Claims



A process for preparing non-aqueous organosols of low molecular weight silicic acid. Very stable organosols are obtained by adding freshly prepared acidic silica hydrosols to solvents which are strong electron donors and which are free of hydroxyl groups and unsaturation. After removal of water, the resultant anhydrous solutions are very stable and the dissolved silicic acid has an unusually low molecular weight.

3,660,303
AQUEOUS EMULSIONS
Armin Hiestand, Binningen, Switzerland, assignor to Ciba Limited, Basel, Switzerland
No Drawing. Filed Jan. 22, 1970, Ser. No. 5,147
Claims priority, application Switzerland, Jan. 27, 1969, 1,202/69
Int. Cl. B01j *13/00*
U.S. Cl. 252—311.5 13 Claims

Aqueous emulsions are provided which contain

(a) a methylolaminotriazine
(b) a waxy substance
(c) a water-soluble non-ionic polyethylene glycol compound and
(d) an alkylbenzenesulfonic acid salt.

In a dilute form, and additionally containing a curing catalyst, these emulsions serve for the production of wash-fast, water-repellent finishes on fiber materials.

3,660,304
METHOD OF PRODUCING OILY LIQUID-CONTAINING MICROCAPSULES
Hiroharu Matsukawa, Fujimiya-shi, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
No Drawing. Filed June 4, 1969, Ser. No. 830,539
Claims priority, application Japan, June 4, 1968, 43/38,087
Int. Cl. B01j *13/02*; B44d *1/02*
U.S. Cl. 252—316 21 Claims

A method for producing microcapsules including dissolving a hydrophobic, shell forming polymer in a low boiling point solvent, mixing the resulting solution in a water-insoluble high boiling point solvent which is a poor solvent for the polymer, emulsifying the mixture in an aqueous medium at a temperature below the boiling point of the low boiling solvent, and heating the emulsion to above the boiling point of the low boiling solvent, but below the boiling point of the high boiling solvent.

3,660,305
FOAM CONTROL IN LIQUID HYDROCARBONS
Raymond J. Michalski, Riverdale, Ill., assignor to Nalco Chemical Company, Chicago, Ill.
No Drawing. Filed June 6, 1968, Ser. No. 734,881
Int. Cl. B01d *17/00*
U.S. Cl. 252—321 8 Claims

Improved defoaming compositions are afforded by combining acetylenic alcohols with known silicone antifoams. Preferred are acetylenic glycols which contain from 8 to 18 carbon atoms in an aliphatic grouping.

3,660,306
PROCESS FOR REGENERATING A DEHALOGENATION CATALYST
Kurt Sennewald, Hermulheim, near Cologne, Alexander Obrodnik, Libiar, Joachim Hundeck, Knapsack, near Cologne, Werner Mittler, Hermulheim, near Cologne, Hermann Vierling, Hurth, near Cologne, and Wolfgang Opitz, Knapsack, near Cologne, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany
No Drawing. Filed Apr. 20, 1970, Ser. No. 30,334
Claims priority, application Germany, Apr. 24, 1969, P 19 20 806.1
Int. Cl. B01j *11/18, 11/02*
U.S. Cl. 252—415 5 Claims

A catalyst containing metallic palladium deposited on an acidproof carrier for use in the hydrogenation and dechlorination of dichloroacetic acid and/or trichloroacetic acid to produce monochloroacetic acid and/or acetic is regenerated. To this effect, the poisoned catalyst containing moisture in form of water and/or acetic acid and/or monochloroacetic acid is treated with chlorine gas in an acid medium, at temperatures of between 20 and 200° C., whereby the metallic palladium is oxidized to palladium chloride; residual chlorine is expelled by means of an inert gas; and the oxidized catalyst is successively treated with a reducing agent to re-effect reduction of the palladium chloride to metallic palladium.

3,660,307
PROCESS FOR REGENERATING FLUORINATION CATALYSTS OF THE CHROMOXY-FLUORIDE GROUP
Otto Scherer, Bad Soden, Taunus, Paul Peter Rammelt and Jürgen Korinth, Hofheim, Taunus, and Peter Frisch, Schwalheim, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Apr. 4, 1969, Ser. No. 813,692
Claims priority, application Germany, Apr. 11, 1968, P 17 67 200.3
Int. Cl. B01j *11/76, 11/02*
U.S. Cl. 252—415 5 Claims

Process for regenerating fluorination catalysts of the chromoxy-fluoride group, wherein hydrogen fluoride is passed over the catalyst at 100°–600° C. in an amount of at least 5 g. per liter of catalyst per hour. By the process the initial activity of said catalysts can be restored in an economic way.

3,660,308
IN SITU REGENERATION AND RESULFIDING OF A PLATINUM- AND SULFUR-CONTAINING CATALYST IN A HYDROCARBON CONVERSION PLANT CONTAINING METALLIC SULFIDE SCALE
John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Continuation-in-part of application Ser. No. 663,988, Aug. 29, 1967. This application Mar. 12, 1970, Ser. No. 19,126
The portion of the term of the patent subsequent to Dec. 2, 1986, has been disclaimed
Int. Cl. B01j *11/02, 11/18*; C10g *35/08*
U.S. Cl. 252—416 8 Claims

A deactivated hydrocarbon conversion catalyst, comprising a combination of a platinum group component, a halogen component and a sulfur component with a porous carrier material, is regenerated and resulfided in situ in a hydrocarbon conversion plant that contains metallic sulfide scale by the steps of: (a) stripping sulfur from the catalyst with a hydrogen stream at conditions including a temperature of about 600–800° F., effective to remove sulfur from the catalyst while not substantially affecting the metallic sulfide scale (b) purging hydrogen from the plant (c) burning carbon from the catalyst at relatively low severity conditions, including an inlet temperature of about 650–850° F. (d) purging oxygen from the plant (e) circulating a sulfur-free hydrogen stream through the plant and into contact with the resulting oxidized catalyst at conditions including a temperature of about 600–800 F., selected to reduce the resulting oxidized catalyst without reducing the metallic sulfide scale; and thereafter (f) increasing the temperature of the circulating hydrogen stream to a level selected from the range of about 1000–1100° F. to reduce at least a part of the metallic sulfide scale to hydrogen sulfide and continuing the circulation of the resulting stream for at least one hour, thereby resulfiding the catalyst.

3,660,309
CATALYTIC COMPOSITE OF A PLATINUM GROUP COMPONENT AND A GROUP IV-A METALLIC COMPONENT WITH A CARRIER MATERIAL CONTAINING ALUMINA AND CRYSTALLINE ALUMINOSILICATE AND USES THEREOF
John C. Hayes, Palatine, Roy T. Mitsche, Island Lake, Richard E. Rausch, Mundelein, and Frederick C. Wilhelm, Arlington Heights, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed May 4, 1970, Ser. No. 34,539
Int. Cl. B01j *11/78, 11/40*
U.S. Cl. 252—442 22 Claims

A catalytic composite, comprising a platinum group component and a Group IV-A metallic component combined with a carrier material containing alumina and a finely divided crystalline aluminosilicate, is disclosed. A specific example of the catalytic composites disclosed herein is a composite containing 0.01 to 2 wt. percent platinum and 0.01 to 5 wt. percent germanium, combined with a gamma-alumina carrier material having 0.1 to 20 wt. percent of the hydrogen form of mordenite uniformly distributed therethrough. Principal utility of these catalytic composites is, broadly, in processes for the conversion of hydrocarbons and, more particularly, in a process for the production of LPG and a high octane reformate.

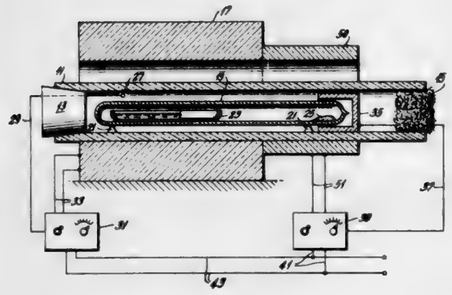
3,660,310
HYDROCARBON CONVERSION CATALYST
Harris E. Kluksdahl, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Continuation-in-part of application Ser. No. 729,079, May 14, 1968, now Patent No. 3,558,477, which is a continuation-in-part of application Ser. No. 639,719, May 19, 1967, now Patent No. 3,415,737, which in turn is a continuation-in-part of application Ser. No. 560,166, June 21, 1966. This application Nov. 19, 1969, Ser. No. 878,165
Int. Cl. B01j *11/58, 11/40*
U.S. Cl. 252—454 1 Claim

A hydrocarbon conversion catalyst comprising a crystalline zeolitic molecular sieve cracking component, 0.01 to 2.0 weight percent, based on said cracking component and calculated as the metal, of a hydrogenating component selected from platinum, palladium and iridium and compounds of platinum, palladium and iridium and 0.01 to 2.0 weight percent, based on said cracking component and calculated as the metal, of a hydrogenating component selected from the group consisting of rhenium and compounds of rhenium.

3,660,311
NOVEL FRAGRANCE METHODS AND COMPOSITIONS
Christian F. Wight, Mount Kisco, N.Y., assignor to International Flavors & Fragrances Inc., New York, N.Y.
No Drawing. Filed Jan. 9, 1970, Ser. No. 1,873
Int. Cl. A61k *7/00*; C11b *9/00*
U.S. Cl. 252—522 4 Claims

Processes for imparting fragrances to articles which comprise incorporating with such articles an effective amount of a polyalkylindanylpropanol, together with compositions for carrying out such processes and the products so obtained.

3,660,312
METHOD OF MAKING DOPED GROUP III–V COMPOUND SEMICONDUCTOR MATERIAL
Rowland E. Johnson and Edward W. Mehal, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Mar. 21, 1960, Ser. No. 16,572
Int. Cl. H01b *1/06*; H01l *3/20*
U.S. Cl. 252—518 4 Claims



Method of making Group III–V compound semiconductor having the requisite impurity level for direct fabrication into tunnel diodes. In a reaction chamber, a high temperature zone containing a mixture of first element (e.g. gallium) and excess doping agent (e.g. zinc), and a low temperature zone containing excess second element (e.g. arsenic) are provided. The heating temperatures in the zones are controlled so that sufficient second element is vaporized and enough mixture of first element and doping agent are maintained above the melting point of the compound to assure reaction to give a stoichiometric melt of compound. A temperature gradient is established through said melt, and the temperature of the high temperature zone is lowered while maintaining said temperature gradient to freeze said melt progressively from one end.

3,660,313
HIGH FOAMING MIXTURES OF FATTY ALCOHOL SULFATES
William R. Axtell and Earl G. De Witt, Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 2,670, Jan. 13, 1970, now Patent No. 3,598,747, which is a continuation-in-part of abandoned application Ser. No. 558,237, June 17, 1966, which in turn is a continuation-in-part of abandoned application Ser. No. 277,078, May 1, 1963, This application Nov. 19, 1970, Ser. No. 91,145
Int. Cl. C07c *141/04*; C11d *1/14*
U.S. Cl. 252—545 10 Claims

Higher alcohol sulfate compositions are disclosed which are primarily derivatives of mixtures of myristyl, palmityl, and stearyl alcohols containing small quantities of alcohols of lower molecular weight.

3,660,314
POLYETHERS CONTAINING PHOSPHINYL GROUPS
Edwin J. Vandenberg, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
No Drawing. Filed May 11, 1970, Ser. No. 36,452
Int. Cl. C08g *23/20, 43/02*
U.S. Cl. 260—2 A 11 Claims

Polyethers are provided that have phosphinyl groups attached to aliphatic carbons in side chains pendant from the polyether backbone. These phosphinyl containing polyethers are obtained by reacting a polyether containing a haloalkyl group, as for example, poly(epibromohydrin), with an organic phosphite, phosphonite or phosphinite. Said phosphinyl group has the general formula

$$-\overset{\overset{O}{\|}}{P}-(R')_x(OR)_{3-x}$$

where x is 0 to 2.

3,660,315
PROCESS FOR PREPARING FLUORINE-CONTAINING POLYMERS
James T. Hill, Wilmington, Del., and Michael E. Garabedian, Ringwood, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Sept. 22, 1970, Ser. No. 74,527
Int. Cl. C08g *23/14, 23/20*
U.S. Cl. 260—2 A 10 Claims

A process having beneficial utility in the manufacture of fluorine-containing polymers from HFPO (hexafluoropropylene oxide), especially useful for applications requiring difunctional polymer products that are substantially free of monofunctional polymer. The polymerization process employs a mixture of HFPO and a catalyst; the catalyst, which preferably is substantially free of cesium fluoride, is made up of a solution in an ethylene glycol ether of a particular organic compound containing both cesium and fluorine. The polymerization reaction zone is preferably at about —30 to —60° C., and it preferably contains hexafluoropropylene or the like as a solvent for the polymer.

3,660,316

POLYEPOXIDE BISUREA ADHESIVE COMPOSITION CONTAINING A 1 - CYANO - 3-(LOWER ALKYL) GUANIDINE AS AUXILIARY CURING AGENT

Frederic Charles Schaefer, Darien, and James Sterling Noland, Greenwich, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Nov. 20, 1970, Ser. No. 91,594
Int. Cl. C08g 30/14
U.S. Cl. 260—2 N 6 Claims

Compositions which consist essentially of an organic polyepoxide having at least two reactive 1:2-epoxy groups, a bisurea curing agent and a 1-cyano-3-(lower alkyl) guanidine as auxiliary curing agent for useful stability at room temperature yet thermoset at 180° F., making this composition specially useful as an adhesive for aluminum.

3,660,317

SPHEROIDALLY OR BEAD-SHAPED POROUS CONDENSATION-TYPE ION EXCHANGE PRODUCTS

Kishima Masatsugu, Kobe, Japan, assignor to C. Weinberger & Co., Ltd., Osaka-shi, Kita-ku, Japan

No Drawing. Continuation of application Ser. No. 774,504, Nov. 8, 1968. This application Nov. 3, 1970, Ser. No. 86,643
Claims priority, application Japan, Nov. 14, 1967, 42/18,142
Int. Cl. C08g 9/06
U.S. Cl. 260—2.2 C 6 Claims

Process of producing porous ion-exchange resin particles by forming a precondensate liquid mixture of a polyfunctional aldehyde, a phenol and an amine; incorporating a soluble filler material in such precondensate liquid; dispersing this mixture in a non-aqueous non-solvent liquid medium composed of a dialkyl phthalate higher than methyl and an alkyl chloride, preferably carbontetrachloride; condensating the precondensate in bead form during such agitation, completing the condensation by heat-treatment and then dissolving out the filler material to form a porous ion-exchange product.

3,660,318

ANTI-FLAME POLYSTYRENE COMPOSITION CONTAINING FLAME-RETARDING HALOGENATED COMPOUNDS

Akira Taniuchi, Kyoto, and Takuji Nakano, Suita, Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

No Drawing. Continuation-in-part of application Ser. No. 764,307, Oct. 1, 1968. This application Mar. 12, 1970, Ser. No. 19,068
Claims priority, application Japan, Oct. 23, 1967, 42/68,217; June 11, 1968, 43/40,121
Int. Cl. C08j 1/18
U.S. Cl. 260—2.5 FP 18 Claims

Novel halogenides of a reaction product of a phenol, alcohol, fatty acid. thiophenol or mercaptane with a glycidyl ether, glycidyl ester or glycidyl thioether and, if necessary, an alkylene oxide or alkylene sulfide are excellent flame-retarding agents for polystyrene and a polystyrene composition containing said halogenated compound is self-extinguishable and resistant to weather and discoloration with lapse of time.

3,660,319

TERTIARY POLYOXYALKYLENEPOLYAMINES

Ernest Leon Yeakey, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Continuation-in-part of application Ser. No. 803,934, Mar. 3, 1969. This application Dec. 8, 1970, Ser. No. 96,247
Int. Cl. C08g 22/44
U.S. Cl. 260—2.5 AC 8 Claims

New tertiary amines prepared from polyoxyalkylenepolyamines are useful catalysts for preparing urethane foams. The new tertiary amines are prepared by alkylation of the polyoxyalkylenepolyamine with an aldehyde and hydrogenation of the product.

3,660,320

DRY BLEND POLYVINYL CHLORIDE FOAM-FORMING COMPOSITION AND METHOD

Murdoch L. Johnson, Fort Lee, and Francis J. W. Bartlett, Wallington, N.J., assignors to The Flintkote Company, White Plains, N.Y.

No Drawing. Filed June 3, 1969, Ser. No. 830,149
Int. Cl. C08f 47/10, 45/40, 29/18
U.S. Cl. 260—2.5 P 7 Claims

A particulate, dry blend, vinyl chloride polymer-containing, foam-forming composition having improved foam-forming properties is disclosed. A mixture of vinyl chloride polymers having different molecular weights, e.g., relative viscosities of 1.4 to 2.6 and a relative viscosity difference of 0.003 to 0.7 is used, to provide a composition that is foamable over a relatively wide range of heating conditions to provide a greater degree of latitude in achieving desired combinations of cell structure and physical properties of the cellular material.

3,660,321

SHAPED ARTICLES COMPRISING SELF-EXTINGUISHING COMPOSITIONS OF PLASTICS AND MICROCAPSULES CONTAINING FLAME-ABATING COMPOUNDS AND PROCESS FOR PRODUCING THE SAME

Hans Eberhard Praetzel, Schubertstr. 3, Bensberg-Frankenforst, Germany, and Herbert Jenkner, Deutz-Kolker Str. 66, Cologne-Deutz, Germany

No Drawing. Filed Sept. 22, 1969, Ser. No. 860,010
Claims priority, application Germany, Sept. 30, 1968, P 17 94 271.1
Int. Cl. C08f 7/04; C09k 3/28
U.S. Cl. 260—2.5 FP 16 Claims

Shaped articles of self-extinguishing compositions are produced by mixing a combustible plastic with microcapsules having a diameter of 5 to 5000 microns and containing a flame-abating compound for the plastic and forming a shaped article from the mixture, the mixing and forming being conducted under conditions such that the microcapsules are neither physically nor thermally ruptured and the flame-abating compound is retained in the microcapsule.

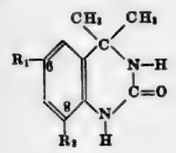
3,660,322

BENZENE-RING-SUBSTITUTED TETRA-HYDRO-QUINAZOLINES

Luigi Bernardi, Alberto Bonsignori, Severina Coda, and Giselbert Karl Suchowsky, Milan, Italy, assignors to Societá Farmaceutici Italia, Milan, Italy

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,880
Claims priority, application Italy, Nov. 26, 1968, 24,160/68
Int. Cl. C07d 51/48
U.S. Cl. 260—251 QA 6 Claims

Quinazolines of the formula:



wherein R_1 is selected from the group consisting of chlorine, bromine or nitro, and R_2 is selected from the group consisting of hydrogen, chlorine, bromine or nitro. These compounds possess a central nervous system depressant activity.

3,660,323

PRESSURE SENSITIVE ADHESIVE MASS

Roger C. Raguse, Michigan City, Ind., assignor to The Scholl Mfg. Co., Inc., Chicago, Ill.

No Drawing. Filed Mar. 30, 1970, Ser. No. 24,003
Int. Cl. C08c 9/08
U.S. Cl. 260—5 6 Claims

Pressure sensitive adhesive mass particularly useful for adhesive tapes, the mass including a blend of a polyisoprene, a polystyrene-polyisoprene-polystyrene block copolymer, natural rubber, and conventional additives in controlled amounts to provide an adhesive composition which evidences improved adhesion to the backing coupled with satisfactory physical properties in all other respects.

3,660,324

PROCESS FOR PRODUCTION OF CATIONIC SYNTHETIC RUBBER LATEX

Kotaro Onchi, Yokkaichi, Japan, assignor to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

No Drawing. Filed Mar. 2, 1970, Ser. No. 15,902
Claims priority, application Japan, Mar. 8, 1969, 44/17,671
Int. Cl. C08c 7/18; C08d 7/18; C08f 47/18
U.S. Cl. 260—17.5 8 Claims

A cationic surfactant comprising an adduct of ethylene oxide and an alkylamine and an ampholytic surfactant or lignin derivative are added to an ordinary anionic synthetic rubber latex and the pH of the latex is maintained within a certain range of about 7.5 to 2.0; a cationic synthetic rubber latex is obtained which is not diluted with a great amount of an aqueous medium and which is excellent in dispersion stability.

3,660,325

PREPARATION OF TOUGHENED POLYVINYL AROMATIC COMPOUND

Alexander McColl Bremner, Amberley, near Stroud, England, and John Mansel Squire, Dollar, Scotland, assignors to The British Petroleum Company Limited, London, England

No Drawing. Filed Feb. 25, 1970, Ser. No. 14,241
Claims priority, application Great Britain, Mar. 12, 1969, 13,009/69
Int. Cl. C08f 15/40, 19/08
U.S. Cl. 260—17 R 5 Claims

A toughened polyvinyl aromatic compound is made by prepolymerising a solution of rubber and vinyl aromatic monomer until phase inverted and suspending the solution in water using a mixture of hydroxyethyl cellulose and polyvinyl alcohol as suspension stabilisers, Polymerisation is then completed in suspension.

3,660,326

POLYURETHANE PREPOLYMER COMPOSITION CONTAINING THE REACTION PRODUCT OF A CARBOXYLIC ACID AND A MONOMERIC ISOCYANATE

John J. Mallabar, Solihull, England, assignor to The Dunlop Company, London, England

No Drawing. Filed May 20, 1969, Ser. No. 826,263
Claims priority, application Great Britain, May 21, 1968, 24,074/68
Int. Cl. C08g 22/04
U.S. Cl. 260—18 TN 14 Claims

A polyurethane prepolymer composition comprising a polyurethane prepolymer and the reaction product of a carboxylic acid with a monomeric isocyanate. Also the method for producing shaped articles which comprises forming into the desired shape and at least partially curing a foamable composition consisting of the polyurethane prepolymer composition plus a polyfunctional amine curative.

3,660,327

LACTONE OR LACTAM PRE-ESTERIFIED ISOCYANURATE-CONTAINING RESINS

Donald F. Loncrini and Henry J. Markowski, St. Louis, Mo., assignors to The P. D. George Company, St. Louis, Mo.

No Drawing. Filed June 8, 1970, Ser. No. 44,479
Int. Cl. C09d 3/70, 3/72
U.S. Cl. 260—22 TN 40 Claims

Resins, including polyesters, polyester-amides, polyester-imides, polyester-amide-imides, etc., prepared from lactone or lactam pre-esterified isocyanurate derivatives (PEIC). These resins are preferably derived from hydroxyalkyl, such as hydroxyethyl, isocyanurates, and most preferably from tris(2-hydroxyethyl) isocyanurate or its equivalent, which has been pre-esterified with a lactone, a lactam or their equivalents.

These resins may be cured with curing agents for example triazine-aldehydes such as melamine-aldehydes, phenol-aldehydes, isocyanates, etc.

These resins may be employed in electrical insulation, particularly as wire enamels, electrical varnishes, etc. as well as for other uses.

3,660,328

DIELECTRIC FILMS

Claude A. Lindquist, Jr., Easton, Pa., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 697,934, Jan. 15, 1968, now Patent No. 3,551,197. This application July 27, 1970, Ser. No. 58,722
Int. Cl. C08g 17/16, 51/04
U.S. Cl. 260—22 R 4 Claims

Dielectric films of high capacitance consisting of finely divided ceramic dispersed in water-insoluble organic resin matrix, and process for their manufacture.

3,660,329

WATER-REDUCIBLE PRINTING INK VEHICLE AND INKS MADE THEREFROM

John L. Wysocki, Hasbrouck Heights, N.J., assignor to Frye Industries Inc., New York, N.Y.

No Drawing. Filed May 7, 1969, Ser. No. 822,712
Int. Cl. C09d 11/10, 11/12
U.S. Cl. 260—22 CQ 4 Claims

A water-reducible ink vehicle composition comprising, in its preferred aspect, an alkaline aqueous phase having dissolved therein a cross-linkable water-soluble polyester resin and one or more coupler solvents and further, having dispersed therethrough, finely-divided styrenated shellac and a wax. The ink vehicle composition can be employed per se as an overprint varnish or it can be pigmented with a wide variety of pigments to provide pigmented inks.

3,660,330

AQUEOUS ELECTRODIPPING LACQUER COMPOSITIONS

Rolf Dhein, Krefeld-Bockum, Hans-Jurgen Meibner, Krefeld, and Hermann Schnell, Krefeld-Uerdingen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 9, 1969, Ser. No. 823,494
Claims priority, application Germany, June 7, 1968, P 17 69 545.3
Int. Cl. C09d 3/64, 3/72, 5/24
U.S. Cl. 260—22 TN 9 Claims

The invention relates to aqueous electrodipping lacquer compositions comprising water-dissolved amine salts of

alkyd resin semi-esters of tetrahydrophthalic acid or its homologues, said alkyd resin semi-esters being modified with saturated fatty acid radicals and with cross-linking N-alkoxymethyl groups and phenol and/or alkylphenols.

3,660,331
VINYL HALIDE RESINS STABILIZED WITH TETRAHYDROPYRANYL ESTERS AND ETHERS
Jerome H. Ludwig, Shaker Heights, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio
No Drawing. Continuation-in-part of application Ser. No. 695,570, Jan. 4, 1968. This application Apr. 29, 1970 Ser. No. 33,048
Int. Cl. C08f *45/58*
U.S. Cl. 260—23 XA **17 Claims**

Stabilization of vinyl halide and vinyl halide copolymer resin compositions against degradation by heat and the like by incorporating therein tetrahydropyranyl ethers or esters.

Vinyl halide resin stabilized compositions containing tetrahydropyranyl ethers or esters are employed in combination with metallic soaps, epoxidized fatty compounds, organic chelators and plasticizers. Effective and even synergistic stabilizing activities are demonstrated by the disclosed compositions.

3,660,332
PROCESS FOR PREPARING GRANULAR GRAFT COPOLYMERS
Kosaku Kamio, Motoyuki Kuwana, Atsushi Takahashi, and Masao Sahara, Uozu, Japan, assignors to Nippon Carbide Kogyo Kabushiki Kaisha, Tokyo, Japan
No Drawing. Filed Sept. 4, 1970, Ser. No. 69,971
Claims priority, application Japan, Sept. 5, 1969, 44/75,015
Int. Cl. C08f *47/02*
U.S. Cl. 260—23 XA **9 Claims**

In a process for preparing a granular graft copolymer from a latex of graft copolymer produced by the emulsion graft polymerization of 70–5 parts of vinyl chloride onto 30–95 parts of an ethylene/vinyl ester copolymer through the salting-out, dehydrating and drying steps, the graft copolymer is heat treated at any step prior to the dehydrating step at a temperature of 60°–110° C. under the condition that the value (heating time)$^{1/6}$ × (heating temperature −30)^{2} (min.$^{1/6}$. ° C.^{2}) falls within the range of 2,000 to 20,000 and the graft copolymer is dehydrated at a temperature lower than 60° C. but higher than 0° C. Thereby the graft copolymer can be dehydrated and dried much more conveniently than in the conventional processes, and the granular dry graft copolymer thus obtained causes far less odor of fatty acid during a long preservation or use compared to the conventional ones. Such improvements are promoted further by adding a Mg, Ca, Zn, Sr, Cd, Ba or Pb salt of a higher fatty acid to the graft copolymer at any step prior to the drying step.

3,660,333
WAX COMPOSITIONS CONTAINING AN ETHYLENE-VINYL ACETATE COPOLYMER, AN ORGANIC ACID AND A POLYVINYL ALKYL ETHER
Charles J. Kremer, Brookhaven, Pa., assignor to Atlantic Richfield Company, New York, N.Y.
No Drawing. Filed July 22, 1969, Ser. No. 843,787
Int. Cl. C09d *3/44*
U.S. Cl. 260—23 H **14 Claims**

This invention relates to wax compositions containing a wax, an ethylene-vinyl acetate copolymer, an acid component and a polyvinyl alkyl ether. Most preferably the polyvinyl alkyl ether is either polyvinyl methyl ether or polyvinyl isobutyl ether. These compositions have highly improved resistance to stress cracking and improved seal strength. They can be utilized as hot melt coatings for items such as paperboard and corrugated board for use in the packaging industry and particularly as pressure sensitive adhesive coatings.

3,660,334
STRIPPABLE WAX COATING COMPOSITIONS
Dominic Apikos, Park Forest, Ill., assignor to Atlantic Richfield Company, New York, N.Y.
No Drawing. Original application June 10, 1966, Ser. No. 556,555, now Patent No. 3,518,215, dated June 30, 1970. Divided and this application Jan. 12, 1970, Ser. No. 2,383
Int. Cl. C08f *45/52*
U.S. Cl. 260—28.5 **13 Claims**

This invention relates to a strippable wax coating containing an ethylene-vinyl acetate polymeric composition and a stripping agent which is either an N-substituted fatty acid amide or a nitrogen containing compound containing a fatty acid residue. Particularly preferred are wax compositions which contain as the stripping agent an N-substituted fatty acid amide containing a fatty acid residue having from 10 to 17 carbon atoms. The composition can also contain minor amounts of a mineral oil to increase the strippability.

3,660,335
PETROLEUM WAX BLENDS
Charles D. Mason, Florham Park, and Julius P. Rakus, Basking Ridge, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed June 21, 1966, Ser. No. 559,113
Int. Cl. C08f *45/52*
U.S. Cl. 260—28.5 **1 Claim**

Blends of petroleum wax with (1) from 1 to 20 wt. percent of polybutene-1 having an average molecular weight of about 50,000 to 1,000,000 and an isotactic content of about 50 to 98 wt. percent, and (2) from 1 to 20 wt. percent of an ethylene/vinyl acetate copolymer containing from about 10 to 40 wt. percent vinyl acetate have improved tensile strength, hardness, softening points and gloss, without markedly increased viscosity or shrinkage, and have cloud points not appreciably higher than that of the petroleum wax constituent. These blends are particularly useful as coatings for paper, paperboard and the like.

3,660,336
PROCESS FOR BLENDING HIGH MOLECULAR WEIGHT POLYETHYLENE INTO WAX, AND WAX COATING COMPOSITION PRODUCED THEREFROM
Stewart J. Gonta, Marina Del Rey, and Thomas Hallis, Jr., and Lawrence S. Johnson, Brea, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.
No Drawing. Continuation-in-part of abandoned application Ser. No. 680,975, Nov. 6, 1967. This application Nov. 27, 1970, Ser. No. 93,032
Int. Cl. C08f *45/52*
U.S. Cl. 260—28.5 **6 Claims**

Low concentrations of high molecular weight, high density polyethylenes are incorporated into wax compositions used for coatings. A stable colloidal dispersion of the polyethylene is prepared by blending the same in powdered form into the wax at below the congealing temperature of the polymer, and then heating the wax-polymer blend until the polymer melts. The properties of the wax coating combine high viscosity with adhesion and gloss at a lowered cost of the polymeric additive.

3,660,337
THERMOSTABLE RESINS AND THEIR PRODUCTION
Maurice Balme and Maurice Ducloux, Rhone, France, assignors to Rhone-Poulenc S.A., Paris, France
No Drawing. Filed July 8, 1968, Ser. No. 743,016
Claims priority, application France, July 13, 1967, 114,383
The portion of the term of the patent subsequent to Feb. 1, 1989, has been disclaimed
Int. Cl. C08g *25/00*
U.S. Cl. 260—29.2 **9 Claims**

Thermostable resins are made by dissolving in ammonia a polycondensation product of a monophenol or polyphenol with a polyanhydride, a corresponding polyacid, evaporating the solution to dryness, and heating the residue.

3,660,338
AMPHOTERIC STRENGTHENING AGENTS FOR PAPER
Peter Economou, Bedford, Mass., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Continuation-in-part of abandoned application Ser. No. 546,214, Apr. 29, 1966. This application July 22, 1969, Ser. No. 843,838
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 NR **14 Claims**

Normally liquid water-insoluble polysalt coacervates, wherein one of the component polymers is only weakly ionic, are water-soluble where they contain a sufficient amount of an ionization suppressor.

3,660,339
LATEX THICKENER
Theodore R. Schuh, Jr., North Riverside, Ill., assignor to Nalco Chemical Company, Chicago, Ill.
No Drawing. Filed June 3, 1969, Ser. No. 830,098
Int. Cl. C08d *7/14*
U.S. Cl. 260—29.7 D **3 Claims**

A latex composition comprising a colloidal aqueous emulsion of a polymer and 0.1–5% by weight, based on dry latex, of a thickening agent.

The thickening agent is prepared by reacting a maleic anhydride copolymer with a polyalkylene glycol in a mole ratio of .001:1 to 0.1:1.

3,660,340
HALOGENATED HYDROCARBON MATERIALS AS TACKIFIERS FOR SYNTHETIC RUBBERS
Sung Ki Lee, Niagara Falls, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.
No Drawing. Filed Nov. 30, 1966, Ser. No. 597,878
Int. Cl. C08c *11/24*; C08d *13/30*
U.S. Cl. 260—31.8 HA **17 Claims**

Tackifying agents for rubbers, especially ethylene-propylene (EPDM and EPR) type rubbers, can be prepared by treating paraffinic and/or aromatic hydrocarbon process oils having at least ten carbon atoms with an alkylating or acylating or halogenating agent. Four methods of preparataion are given: (1) reaction of the hydrocarbon oil directly with an alkylation or acylation agent, such as polychlorinated benzyl chloride, in the presence of a Lewis acid, (2) halogenation of the hydrocarbon oil, (3) modification of a halogenated hydrocarbon oil into an alkylating agent, such as by treatment with chloromethyl ether in the presence of a Lewis acid, and then further reacted with a hydrocarbon oil, and (4) alkylation or acylation of a hydrocarbon oil, such as by treatment with benzyl chloride in the presence of a Lewis acid, and followed by halogenation.

3,660,341
HEAT STABLE POLYURETHANE SOLUTIONS
Kornelius Dinbergs, North Royalton, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
No Drawing. Filed Nov. 3, 1969, Ser. No. 873,514
Int. Cl. C08g *51/44, 51/58*
U.S. Cl. 260—32.6 N **5 Claims**

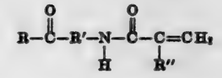
Solutions of polyurethane are stabilized by the addition of an organic halogen-containing compound such as ethyl iodide. These stabilized solutions are protected against severe degradation on aging, even at high temperatures.

3,660,342
PREPARATION OF 1,3-DIENES
John C. Duggan, Chicago, Ill., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Dec. 22, 1970, Ser. No. 100,784
Int. Cl. C07c *3/10*
U.S. Cl. 260—666 A **3 Claims**

The invention relates to the preparation of 1-vinylcyclohexene and other 1,3-dienes by an isomerization and pyrolysis process.

3,660,343
ADHESIVE DENTAL FILLING MATERIAL AND METHOD OF USING THE SAME
Jacob A. Saffir, Los Angeles, Calif., assignor to Dentsply International, Inc., York, Pa.
No Drawing. Filed June 17, 1970, Ser. No. 47,159
Int. Cl. C08g *51/04, 33/10*
U.S. Cl. 260—37 EP **6 Claims**

A color stable adhesive dental composition particularly adapted for use as a dental filling material for posterior and anterior teeth comprising a dentally acceptable thermosetting epoxy resin hardened with from about 2% to about 50% by weight, based on the weight of the epoxy resin of an N-3-oxohydrocarbon-substituted acrylamide of the formula



wherein R and R″ are each independently selected from hydrogen and lower alkyl radicals and R′ is selected from ethylene and lower alkyl substituted ethylene radicals. Such color stable dental composition preferably comprises about 17 to about 70% by weight of such hardened dentally acceptable epoxy resin and from about 10 to about 83% by weight of a finely divided ceramic filler. Due to the esthetic resemblance in color to dental enamel such adhesive dental composition can be utilized to fill both anterior and posterior teeth without the need for any special retentive means.

3,660,344
SELF-EXTINGUISHING POLYAMIDE MOULDING COMPOSITIONS
Dietrich Michael, Krefeld-Bockum, and Wilfried Kosiol, Moers, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Continuation of abandoned application Ser. No. 804,262, Mar. 4, 1969. This application Mar. 29, 1971, Ser. No. 129,206
Int. Cl. C08g *51/10, 51/58*
U.S. Cl. 260—37 N **5 Claims**

Self-extinguishing polyamide moulding compositions containing as a flame retardant agent melamine, a derivative of melamine or the melamine condensation product melam.

3,660,345
ORGANOPOLYSILOXANE ELASTOMER COMPOSITIONS

William Joseph Bobear, Latham, N.Y., assignor to General Electric Company

No Drawing. Filed Sept. 9, 1968, Ser. No. 758,575
Int. Cl. C08f 11/04; C08g 31/02
U.S. Cl. 260—37 SB 10 Claims

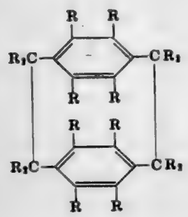
Organopolysiloxane compositions are provided which are convertible to elastomers having high tear strength and resiliency comprising either a two component blend of a vinyl containing organopolysiloxane gum having minor amounts of chemically combined siloxy units with at least one vinyl radical attached to silicon, and a vinylpolysiloxane having up to major amounts of chemically combined siloxy units with at least one vinyl radical attached to silicon, or a three component blend comprising an organopolysiloxane gum free of chemically combined siloxy units with at least one vinyl radical attached to silicon in combination with the aforementioned two component blend.

3,660,346
FLAME-RETARDED COMPOSITIONS AND ADDITIVE SYSTEMS THEREFOR

Roy A. Gray and Harold R. Deck, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Aug. 14, 1970, Ser. No. 63,915
Int. Cl. C08k 1/24; C09k 3/28
U.S. Cl. 260—41 10 Claims

Fire-retardant compositions of normally flammable organic materials are provided by admixing with said materials an additive system consisting essentially of (A) at least one bromine-containing organic compound having a bromine content of at least 30 weight percent, (B) at least one paracyclophane compound of the formula



wherein each R is selected from hydrogen, chlorine, bromine and alkyl radicals having 1 to 4 carbon atoms, and optionally (C) antimony trioxide.

3,660,347
FILM FOR PROTECTING A VEHICLE BOTTOM PLATE

Gerhard Hermann Wendler, Schwetzingen, and Gunther Heinz Minet, Heidelberg, Germany, assignors to Teroson Werke G.m.b.H., Heidelberg, Germany

No Drawing. Filed Feb. 17, 1970, Ser. No. 11,941
Int. Cl. C08f 45/08; B32b 3/00
U.S. Cl. 117—8 3 Claims

The bottom plate and other parts of a vehicle are protected from corrosion and road materials by applying a film comprised of 10 to 40 percent of an ethylene copolymer, 90 to 60 percent of inorganic fillers, and optionally up to 20 percent of a plasticizer and up to 10 percent of a vinyl resin to impart special properties. The film is self-supporting and has a specific density of 1.5 to 3.0 g./cm.³. The film is in the form of a sheet or shaped to the contour of the surface to which it is to be attached by adhesive or melt bonding.

3,660,348
COATING COMPOSITIONS BASED ON VINYL POLYMERS

Roger Garnier, Lyon, Roger Hogenmuller, Sainte-Foy-les-Lyon, and Jacques Massebeuf, La Sarranziniere, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Mar. 5, 1969, Ser. No. 804,665
Claims priority, application France, Mar. 6, 1968, 142,608
Int. Cl. C08f 45/28
U.S. Cl. 260—41 5 Claims

Polymers of vinyl esters of certain branched chain aliphatic monocarboxylic acids, alone or with a proportion of other vinyl esters as comonomers, dissolve in aliphatic hydrocarbons to give solutions useful in paints.

3,660,349
DISPERSANTS FOR ORGANIC SOLVENT SYSTEMS

Thomas D. Mutaffis, Springfield, Leon Katz, Midland Park, and Frederick Grosser, North Plainfield, N.J., assignors to General Aniline & Film Corporation, New York, N.Y.

No Drawing. Continuation of application Ser. No. 610,240, Jan. 19, 1967. This application Feb. 25, 1970, Ser. No. 14,756
Int. Cl. C08f 45/04, 45/14, 48/28
U.S. Cl. 260—41 4 Claims

This invention is directed to a free-flowing colorant paste dispersion of high solids comprising a colorant, preferably oil-soluble pigments or dyestuffs, and as the dispersant, an alkylated polymer of a heterocyclic N-vinyl monomer and a hydrocarbon liquid medium having a Kauri Butanol Value of less than about 45.

3,660,350
FLAME RETARDANT THERMOPLASTIC POLYMERS

Bernard G. Kushlefsky, Edison, N.J., assignor to M & T Chemicals Inc., Greenwich, Conn.

No Drawing. Filed May 7, 1971, Ser. No. 141,387
Int. Cl. C08f 45/56; C08g 51/56
U.S. Cl. 260—45.75 R 6 Claims

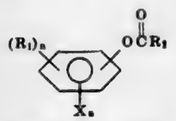
The drastic reduction in flame-retardant properties that occurs when polymer compositions containing organic phosphine oxides are processed at elevated temperatures is substantially eliminated when the phosphine oxides are present as complexes with selected Lewis acids.

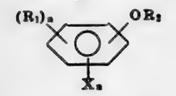
3,660,351
FLAME RESISTANT ACRYLONITRILE POLYMERS

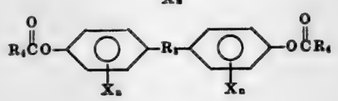
Richard Frederick Schmidt, Stamford, and Joseph Jacinto Pellon, New Canaan, Conn., assignors to American Cyanamid Company, Stamford, Conn.

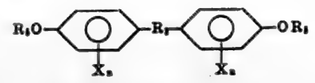
No Drawing. Filed Mar. 12, 1970, Ser. No. 19,124
Int. Cl. C08f 45/58
U.S. Cl. 260—45.85 8 Claims

An acrylonitrile polymer such as an acrylonitrile fiber having improved flame resistance contains a halogenated aromatic compound having the formula

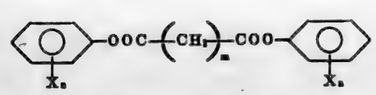
(1) 

(2) 

(3) 

(4) 

or

(5) 

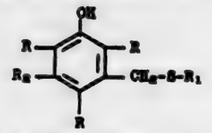
wherein R_1 is hydrogen, chlorine, bromine or an alkyl radical having from 1 to 9 carbon atoms, R_2 is an alkyl radical having 1 to 22 carbon atoms and the sum of the carbon atoms of R_1 and R_2 is greater than 9, R_3 is methylene, isopropylidene, oxygen or sulfur; R_4 is an alkyl radical containing at least one carbon atom; R_5 is a 2,3-dibromopropyl group; X is bromine or chlorine; *m* is an integer of from 0 to 22 and *n* is an integer of from 0 to 4 with the proviso that each formula contains at least two aromatically bound halogen atoms.

3,660,352
HINDERED PHENOL SULFIDE ANTIOXIDANTS FOR POLYMERS

John Song, Bound Brook, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 705,624, Feb. 15, 1968. This application June 4, 1970, Ser. No. 43,594
Int. Cl. C08c 27/66; C08f 45/58; C08g 51/58
U.S. Cl. 260—45.95 6 Claims

Compounds of the type represented by the formula:



wherein each R is independently a lower alkyl group, R_1 is higher alkyl or higher alkylbenzyl, R_2 is hydrogen or the group $—CH_2SR_1$, and their use as effective antioxidants for organic materials normally subject to oxidative deterioration, especially polyolefins.

3,660,353
MONOMERS AND POLYMERS OF 10-(ALKENYL) OXYPHENOXARSINES

Chun-Shan Wang and David P. Sheetz, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Apr. 1, 1970, Ser. No. 24,818
Int. Cl. C07d 105/06; C08f 3/62, 15/02
U.S. Cl. 260—47 UA 16 Claims

10-(alkenyloxy)phenoxarsine monomers and certain homopolymers, and interpolymers of certain 10-(alkenyloxy)phenoxarsines with copolymerizable ethylenically unsaturated compounds are disclosed as novel compounds useful as herbicides and as antimicrobial agents for the control of a wide variety of fungal and bacterial organisms.

3,660,354
QUATERNARY AMMONIUM AND PHOSPHONIUM THIOCYANATES AND THEIR USE AS ACCELERATORS FOR EPOXY RESINS

Heinz Uelzmann, Cuyahoga Falls, Ohio, assignor to The General Tire & Rubber Company

No Drawing. Filed Aug. 13, 1969, Ser. No. 849,924
Int. Cl. C08g 30/12
U.S. Cl. 260—47 EC 13 Claims

Quaternary ammonium and phosphonium thiocyanates have been found to accelerate the curing of epoxy-amine or epoxy-anhydride systems effectively. Since these compounds are free of protons, they are especially useful for epoxy-anhydride adhesives. These accelerators can also be used in conjunction with known accelerators, such as tertiary amines.

3,660,355
THERMOSET MOLDING POWDERS FROM HYDROXY-FUNCTIONAL ACRYLIC RUBBER PARTICLES AND MONOBLOCKED DIISOCYANATES AND MOLDED ARTICLE

Olin B. Johnson, Livonia, and Santokh S. Labana, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,459
Int. Cl. C08g 22/00
U.S. Cl. 260—77.5 CR 22 Claims

Novel thermosetting resin powders which can be molded to form unique, urethane-crosslinked, elastomer-comprising products are prepared by reacting hydroxy-functional, elastomeric, acrylic polymer particles with a monoblocked diisocyanate. These powders are molded by conventional molding techniques to form unique thermoset products.

3,660,356
POLYESTER AMIDE ELASTOMERS CONTAINING POLYETHER UNITS

Eduard Radlmann, Lothar Ruetz, and Gunther Nischek, Dormagen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 23, 1970, Ser. No. 31,408
Claims priority, application Germany, Apr. 29, 1969, P 19 21 738.0
Int. Cl. C08g 20/30
U.S. Cl. 260—75 N 11 Claims

High molecular weight linear polyester amide elastomers obtained by polycondensing amide groups containing dicarboxylic acid esters, optionally together with normal dicarboxylic acid esters, with linear aliphatic polyether diols. The elastomers are processable to obtain films and fibers.

3,660,357
POLY(LACTONEURETHANE) ADHESIVES

Edmond G. Kolycheck, Lorain, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 664,950, Sept. 1, 1967. This application Oct. 12, 1970, Ser. No. 80,156
Int. Cl. C08g 22/06
U.S. Cl. 260—77.5 AN 5 Claims

Polyurethanes prepared from poly(epsilon-caprolactones) having molecular weights from about 1800 to about 2200, less than one mol of an aliphatic glycol and certain aromatic diisocyanates form adhesive materials which are soft and tacky when heated but which on aging harden and crystallize to form tough, crystalline but flexible, bonding agents having good adhesive properties. The poly(lactoneurethanes) are particularly adaptable to providing articles adhered together with excellent structural stability.

3,660,358
PROCESS FOR PRODUCING POLYESTERS AND SHAPED ARTICLES RESPECTIVELY MADE FROM THESE POLYESTERS

Josef Hrach and Theodor Wimmer, Tyrol, Austria, assignors to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed Nov. 12, 1968, Ser. No. 775,176
Claims priority, application Austria, Nov. 21, 1967, 10,487/67; Dec. 1, 1967, 10,865/67
Int. Cl. C08f 17/013
U.S. Cl. 260—75 R 6 Claims

Polyesters of dicarboxylic acids and diols, more particularly, polyethylene terephthalate, are prepared by reacting the selected starting materials in the presence of a metallic catalyst consisting of (a) antimony, (b) at least one member selected from the group consisting of lead

and tin, and (c) an alkali metal in amounts of from 0.005 to 1% by weight based upon the amount of carboxylic acids in the process. These polyesters are particularly suitable for the production of shaped articles including fibers, filaments and films.

3,660,359

THERMOSET RESINS WITH HYDROXY ACRYLATE, METHACRYLONITRILE AND BLOCKED ISOCYANATE

Santokh S. Labana, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed June 5, 1970, Ser. No. 43,893
Int. Cl. C08q *22/06*
U.S. Cl. 260—77.5 CR **18 Claims**

Novel thermosetting resin powders which can be molded to form products characterized in tensile measurement, by high elongation-to-break, high tensile strength and modulus and a high glass transition temperature are prepared from a mixture of (a) a prepolymer formed by reacting (1) a hydroxy ester of acrylic or methacrylic acid and a C_2–C_3 diol with (2) methacrylonitrile or acrylonitrile or a mixture of the same, and (b) blocked di- or triisocyanate wherein the isocyanate groups are directly attached to an aromatic ring and deblock at temperatures in the range of 120° to 160° C.

3,660,360

WATER- AND OIL REPELLENCY AGENTS

Dilip K. Ray-Chaudhuri and Carmine P. Iovine, Somerset, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Filed June 24, 1970, Ser. No. 49,537
Int. Cl. C08f *15/38, 29/38, 37/00*
U.S. Cl. 260—78.5 E **12 Claims**

Fluoroalkyl - alkoxyalkyl acrylates and methacrylates comprising the reaction product of a perfluoroalkoxyalkyl alkanol and an acrylic or methacrylic acid reagent. The resulting monomers may, thereafter be homo- or copolymerized with a wide variety of conventional ethylenically unsaturated, i.e. vinyl, monomers, said polymeric materials imparting both water and oil repellency to a wide variety of substrates.

3,660,361

HIGHLY ORDERED AZO-AROMATIC POLYAMIDES

Hartwig C. Bach, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 789,072, Jan. 2, 1969. This application Sept. 28, 1970, Ser. No. 76,284
The portion of the term of the patent subsequent to Mar. 17, 1987, has been disclaimed
Int. Cl. C08g *20/20, 20/22*
U.S. Cl. 260—78 R **12 Claims**

Linear polyamides derived from aromatic diacid halides and diamines containing azo linkages and asymmetrical aromatic radicals have been found to have thermal, mechanical and electrical properties attractive for use of the polyamides in the manufacture of fibers, films and other shaped articles.

3,660,362

PRODUCTION OF POLYMERS HAVING LOW COLD FLOW PROPERTIES

Richard L. Smith and Carl A. Uraneck, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed June 18, 1970, Ser. No. 47,632
Int. Cl. C08g *23/00*
U.S. Cl. 260—79 **8 Claims**

A method of altering the cold flow properties of polymers by reacting linear metal-terminated polymers with cyclic aromatic disulfides and reacting the product thereof with oxygen or free radical generators.

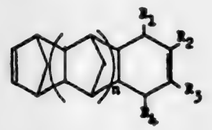
3,660,363

VULCANISABLE COPOLYMERS

Richard Gregory Foster and Paul Hepworth, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed July 20, 1970, Ser. No. 56,668
Claims priority, application Great Britain, July 22, 1969, 36,828/69
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.78 **12 Claims**

An amorphous high molecular weight vulcanisable copolymer of ethylene, at least one α-olefin having from 3 to 8 carbon atoms, and at least one polycyclic diene having the structure



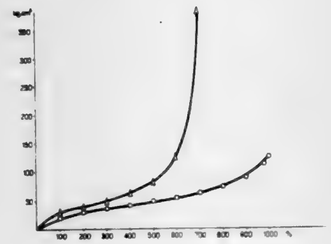
where *n* is a whole number of at least one and each of R_1, R_2, R_3 and R_4 is either a hydrogen atom or a monovalent hydrocarbyl group, or hydrocarbyl derivatives of said polycyclic diene.

3,660,364

ELASTIC FILMS, FIBERS AND OTHER MANUFACTURED ARTICLES BASED ON UNSATURATED OLEFINIC COPOLYMERS

Paolo Longi, Alberto Valvassori, and Francesco Greco, Milan, and Ermanno Bernasconi, Caronno Varesino, Varese, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Apr. 2, 1969, Ser. No. 812,663
Int. Cl. C08f *15/40, 5/00*
U.S. Cl. 260—80.78 **8 Claims**



These are disclosed elastic manufactured articles, including elastic fibers and films based on unsaturated, vulcanizable copolymers of ethylene, at least one branched alpha-olefin, hydrocarbon monomers containing at least two double bonds and, optionally, propylene, which copolymers are amorphous in the relaxed state but crystallizable by stretching. The copolymers must contain, by moles, 70–90% of polymerized ethylene, 1–29% of polymerized branched alpha-olefin, 0.05–3% of the polymerized hydrocarbon monomer containing at least two double bonds, and 0–28% of polymerized propylene. Methods for obtaining the copolymers using catalysts

based on vanadium compounds and metallorganic aluminum compounds, and for effectively cross-linking the copolymers are also disclosed.

3,660,365

PRODUCTION OF ALTERNATING COPOLYMERS OF BUTADIENE AND ACRYLONITRILE USING MANGANESE CHELATE, ZINC HALIDE AND MODIFIER

Akira Onishi, Koichi Irako, and Yoshihiro Hayakawa, Tokyo, Takeshi Shimomura, Kobe, and Koichi Iwami and Shoji Miyamoto, Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Oct. 28, 1969, Ser. No. 871,926
Claims priority, application Japan, Nov. 4, 1968, 43/79,877
Int. Cl. C08f *1/48*
U.S. Cl. 260—82.5 **6 Claims**

Alternating copolymers of a conjugated diene and a conjugated polar vinyl monomer, wherein the conjugated diene unit and the conjugated polar vinyl monomer unit are bonded substantially alternately, are produced by copolymerizing said conjugated diene with said conjugated polar vinyl monomer in the presence of a catalyst prepared from a component (A) of at least one metal chelate complex compound selected from the group consisting of metal chelate complex compounds having the general formula

$$MeL_n$$

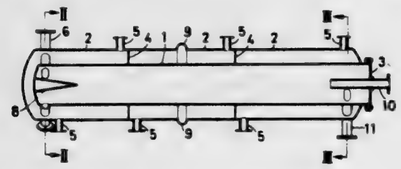
wherein Me represents manganese, cobalt or copper metal, *n* represents the valence of Me and L represents a ligand of 1,3-dicarbonyl compound and a component (B) of at least one zinc halide selected from the group consisting of zinc chloride and zinc bromide. Furthermore, the molecular weight of the alternate copolymer can be controlled and the gelation of the polymerization product can be inhibited by adding a modifier selected from the group consisting of thiol compounds and iodoform to the above polymerization reaction system.

3,660,366

POLYMERIZATION PROCESS

Tatsuo Horie, Tokyo, Tatsuo Fuchigami, Kawasaki-shi, and Mitsuo Okazawa, Yokohama-shi, Japan, assignors to Nippon Petrochemicals Co., Ltd., Tokyo, Japan

Filed Sept. 4, 1968, Ser. No. 757,390
Claims priority, application Japan, Sept. 8, 1967, 42/57,282, 42/57,441
Int. Cl. C08f *15/04*; C08d *3/02*
U.S. Cl. 260—85.3 **16 Claims**



A polymerization process in which the polymerization product is insoluble in the reaction mixture and the specific gravity of said product is smaller than that of the reaction mixture. In said polymerization reaction, the raw materials are fed into the reaction apparatus, so as to cause rotating current along the length of the apparatus, thus the lighter polymer is concentrated on the central position of the apparatus during the polymerization reaction and it is separated from the reaction mixture continuously. This apparatus can also be used for the reacted mixture after the reaction In order to separate the polymer in the mixture.

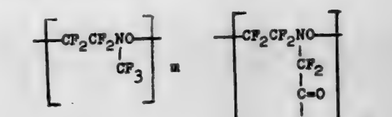
3,660,367

NITROSO POLYMERS

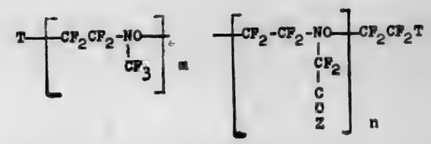
Nathan Mayes, Barrington, R.I., and Ronald Michaels, Boonton, N.J., assignors to Thiokol Chemical Corporation, Bristol, Pa.

No Drawing. Filed Nov. 13, 1968, Ser. No. 775,528
Int. Cl. C08f *3/24*
U.S. Cl. 260—92.1 **9 Claims**

A linear nitroso polymer has been provided by polymerizing monomers with pendant, convertible moieties which are crosslinkable. These monomers with the crosslinkable, pendant groups cannot be introduced into the polymer directly; hence, the contribution resides in the route of incorporating precursor moieties in the polymer backbone and then obtaining a polymer. The polymers with the convertible, pendant groups are derived from recurring units as represented by the general formulae:



or



wherein Z is a —O-(lower alkyl) group of 1 to 7 carbon atoms or chlorine; and T is a halogen, a perhaloalkyl, —NO, or —NO_2; and the ratio *m*:*n* is from 0:1 to 50:1. Liquid and solid polymers are provided as well as elastomers derived therefrom. A method for preparing and converting these monomers has also been disclosed.

3,660,368

HIGH POLYCHLOROPRENES

Chester Arthur Hargreaves II, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 27, 1967, Ser. No. 649,090
Int. Cl. C08f *1/10, 3/20*; C08d *3/14*
U.S. Cl. 260—92.3 **5 Claims**

Polychloroprenes which melt at temperatures of 80° C. and above. At least 95% of the chloroprene units of the polymer chain are trans-2-chloro-2-buten-1,4-ylene units and at least 95% of all 2-chloro-2-buten-1,4-ylene units in the polymer are in the head-to-tail sequence. The polychloroprenes are prepared by irradiating crystalline chloroprene at temperatures below —130° C.

3,660,369

METHOD OF PREPARING LINEAR POLYMERS OF CYCLOOLEFINS

Vitaly Abramovich Kormer, Ulitsa Zheleznovodskaya 62, kv. 2; Boris Davidovich Babitsky, Ulitsa Krasnogo Kursanta 7, kv. 9; Tatyana Lvovna Jufa, Ulitsa Mayakovskogo 3, kv. 23; and Irina Alexandrovna Poletaeva, Ulitsa III Internatsionala 74, kv. 212, all of Leningrad, U.S.S.R.

No Drawing. Filed Sept. 2, 1969, Ser. No. 854,733
Claims priority, application U.S.S.R., Sept. 6, 1968, 1,269,161; May 8, 1969, 1,326,641, 1,326,642
Int. Cl. C08f *7/00, 1/36*
U.S. Cl. 260—93.1 **5 Claims**

A method for the production of linear polymers of cyclomonoolefins which consists in the polymerization of

cyclomonoolefins in the temperature range of from —50° to +80° C. in the presence of a catalyst comprising π-complexes of metals of Groups IV–VIII of the Periodic System taken in combination with halides of elements of Groups III–VI of the Periodic System.

3,660,370

PRODUCTION OF POLYETHYLENE UNDER HIGH PRESSURE WITH METHYL ISOBUTYL KETONE PEROXIDE INITIATOR

Hans Gropper, Ludwigshafen, Kurt Stark, Heidelberg, and Helmut Pfannmueller and Friedrich Urban, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany

No Drawing. Filed Aug. 17, 1970, Ser. No. 64,649
Claims priority, application Germany, Aug. 28, 1969, P 19 43 698.7
Int. Cl. C08f 3/04, 1/60
U.S. Cl. 260—94.9 R 6 Claims

A process for polymerizing ethylene at pressures of more than 1000 atmospheres and at temperatures of from 150° to 400° C. in the presence of methyl isobutyl ketone peroxide. Polyethylene having a density of from 0.924 to 0.935 g./ccm. is obtained in higher yields than in conventional methods; it is used for the production of transparent film and sheeting.

3,660,371

UNSATURATED POLYESTER AND EPOXY-FUNCTIONAL GRADED-RUBBER PAINT AND PROCESS I

Olin B. Johnson, Livonia, and Santokh S. Labana, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,461
Int. Cl. C08g 45/14, 45/04, 15/00
U.S. Cl. 117—93.31 15 Claims

A radiation-curable paint which on a pigment and particulate filler-free basis consists essentially of vinyl monomers and a unique, alpha-beta olefinically unsaturated, rubber-comprising resin formed by reacting an alpha-beta olefinically unsaturated, monocarboxy terminated, polyester having an alpha-beta olefinically unsaturated dicarboxylic acid or anhydride as a constituent monomer thereof with an epoxy-functional, graded-rubber particle. The dispersion is applied to substrates as a paint film and cured thereon by exposure to ionizing radiation, e.g., an electron beam.

3,660,372

BIPHENYL CONTAINING DIAZONIUM FLUORIDE COMPOUNDS

Erwin F. Schoenewaldt, Watchung, and George G. Hazen and Richard F. Shuman, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed July 31, 1968, Ser. No. 748,922
Int. Cl. C07c 113/00
U.S. Cl. 260—141 1 Claim

The invention relates to various novel 5-(4-fluoro substituted phenyl) salicylic acid and derivatives thereof. These compounds are useful intermediates for preparing 5-(4-fluorophenyl) salicylic acids and derivatives thereof which latter compounds are useful anti-inflammatory agents. These compounds are prepared by decomposition of the intermediate diazonium fluorides.

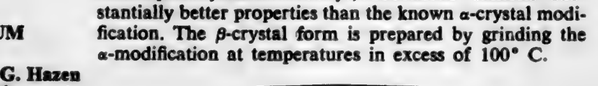
3,660,373

PHENYL-AZO-HYDROXYNAPHTHOIC ACID AMIDE PIGMENTS

Armand Roueche, Neu-Allschwil, Switzerland, assignor to Ciba Limited, Basel, Switzerland

No Drawing. Filed Nov. 24, 1969, Ser. No. 879,615
Claims priority, application Switzerland, Dec. 12, 1968, 18,513/68
Int. Cl. C07b 29/20; C07c 107/08
U.S. Cl. 260—203 6 Claims

Azo pigments of the formula



in which R_1 represents an aromatic radical, R_2 represents a naphthalene radical in which the azo, hydroxy and —CO— groups are in 1,2,3-position, R_3 represents an arylene radical, X represents a direct bond or a —CO— group, and R_4 represents a carbamide group, an acylamino group or an acyl or carbalkoxyalkyl radical when X represents a direct bond, and R_4 represents an alkyl or aryl radical when X represents a —CO— group. They are useful for coloring plastics and lacquers in orange to red shades.

3,660,374

AZO COMPOUNDS FROM ALKYL α-ANILINOTOLUATES

Max A. Weaver, Herman S. Pridgen, and Clarence A. Coates, Jr., Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Nov. 5, 1968, Ser. No. 773,656
Int. Cl. C09b 29/08, 29/24; D06p 3/52
U.S. Cl. 260—207 8 Claims

Azo compounds containing a phenyl, thiazolyl, benzothiazolyl, thiadiazolyl or thienyl diazo component and an N - alkoxycarbonylbenzyl - N - aralkylaniline coupling component are useful as dyes for hydrophobic textile materials such as polyester fibers on which the compounds exhibit improved build-up, excellent brightness and superior fastness properties such as fastness to light and resistance to sublimation.

3,660,375

β - CRYSTAL MODIFICATION OF 4,4' - BIS-(α - ANTHRAQUINONYLAMINOCARBONYL)-AZOBENZENE PIGMENT

Klaus Ehrhardt, Basel, Georg Geiger, Reinach, Basel-Land, and Fritz Kehrer, Basel, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Jan. 8, 1970, Ser. No. 1,338
Claims priority, application Switzerland, Jan. 14, 1969, 415/69
Int. Cl. C09b 67/00
U.S. Cl. 260—207.1 1 Claim

In pigment application, especially in the pigmentation of plastic materials, the β-modification of 4,4'-bis-(α-anthraquinonylaminocarbonyl)azobenzene exhibits substantially better properties than the known α-crystal modification. The β-crystal form is prepared by grinding the α-modification at temperatures in excess of 100° C.

3,660,376

N-ARYLIDENE ERYTHROMYCYLAMINES

Eddie H. Massey, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Continuation-in-part of application Ser. No. 878,935, Nov. 21, 1969. This application Sept. 30, 1970, Ser. No. 77,049
Int. Cl. C07c 47/18
U.S. Cl. 260—210 E 4 Claims

N-arylidene derivatives of erythromycylamine and of erythromycyl B amine having improved oral activity with concomitant decrease in side effects.

3,660,377

PRODUCTION OF RESINS FROM REDUCING SUGARS

Raoul Guillaume Philippe Walon, Brussels, Belgium, assignor to CPC International Inc.

No Drawing. Filed Oct. 10, 1969, Ser. No. 865,508
Int. Cl. C07c 95/04
U.S. Cl. 260—211 R 8 Claims

Covers a novel edible reducing sugar based resin having ion exchange capability. Also covers methods for producing said resin.

3,660,378

2-BENZYLTHIOINOSINE-5'-PHOSPHATE AND DERIVATIVES THEREOF

Kiyofumi Ishii, Ikeda, Jun Toda and Hisashi Aoki, Suita, and Yutaka Kuwada, Ashiya, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Feb. 20, 1969, Ser. No. 801,145
Claims priority, application Japan, Feb. 20, 1968, 43/10,711; Nov. 19, 1968, 43/84,775
Int. Cl. C07d 51/54
U.S. Cl. 260—211.5 R 4 Claims

The 2-benzylthioinosine-5'-phosphate has the ability for improving or enhancing the flavor of foods and beverages. Moreover, there is a significant synergistic action between the compound and monosodium glutamate. The compound is produced by phosphorylating 2-benzylthioinosine or 2-benzylthio-2',3'-isopropylideneinosine.

3,660,379

SYNTHETIC PENICILLINS

Shiro Morimoto, Kobe, Hiroaki Nomura, Osaka, Takeshi Fugono and Kihachiro Maeda, Hyogo, and Toshihiro Ishiguro, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Sept. 29, 1969, Ser. No. 862,018
Claims priority, application Japan, Sept. 28, 1968, 43/70,572
Int. Cl. C07d 99/16
U.S. Cl. 260—239.1 25 Claims

Synthetic penicillins of the general formula

wherein R_1 and R_2 are hydrogen, alkyl, cycloalkyl, aralkyl or unsubstituted or substituted phenyl, pyridyl, naphthyl or thienyl or alternatively, R_1 and R_2 together form a polymethylene group, and pharmaceutical salts thereof, as well as a process for the preparation thereof. These compounds are useful as antibacterial agents, and especially against Gram-positive and Gram-negative bacteria.

3,660,380

11-SUBSTITUTED 5,11-DIHYDRO-6H-PYRIDO[2,3-b][1,4]BENZODIAZEPIN-6-ONES

Gunther Schmidt, Robert Engelhorn, and Matyas Leitold, Biberach an der Riss, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhine, Germany

No Drawing. Filed Aug. 7, 1969, Ser. No. 848,345
Claims priority, application Germany, Aug. 20, 1968, P 17 95 183.6
Int. Cl. C07d 53/02
U.S. Cl. 260—239.3 10 Claims

11-aminoacetyl - 5,11 - dihydro-6H-pyrido[2,3-b][1,4] benzodiazepin-6-ones of the formula

wherein

R_1 is hydrogen or alkyl of 1 to 4 carbon atoms,

R_2 is hydrogen, halogen or methyl, and

R_3 and R_4 are each straight or branched alkyl of 1 to 5 carbon atoms or, together with each other and the nitrogen atom to which they are attached, camphidino or a 5- to 7-membered saturated monocyclic heterocyclic ring which may optionally comprise an oxygen or another nitrogen ring atom and/or may optionally have an alkyl of 1 to 4 carbon atoms, hydroxy-alkyl of 1 to 4 carbon atoms, benzyl or methyl-benzyl substituent attached to a ring atom,

and non-toxic, pharmacologically acceptable acid addition salts thereof, useful as inhibitors of stomach ulcers and stomach juice secretion, as well as antitussives and antiemetics.

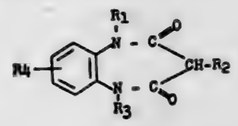
3,660,381

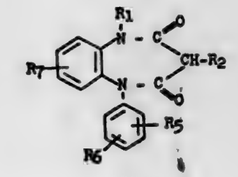
5-ARYL-1H-1,5-BENZODIAZEPINE-2,4-DIONES

Karl-Heinz Weber, Gau-Algesheim, Herbert Merz and Karl Zeile, Ingelheim am Rhein, Rolf Giesemann, Bingen, and Peter Danneberg, Ingelheim am Rhein, Germany, assignors to C. H. Boehringer Sohn, Ingelheim am Rhein, Germany

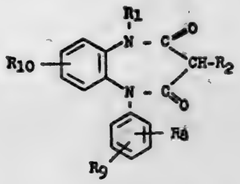
No Drawing. Filed July 10, 1969, Ser. No. 840,839
Int. Cl. C07d 53/04
U.S. Cl. 260—239.3 8 Claims

5-aryl-1H-1,5-benzodiazepine-2,4-diones of a formula selected from the group consisting of





and



wherein

R_1 is allyl, methylallyl, dimethylallyl, chloroallyl, cyclohexyl, cycloalkylmethyl, cycloalkylenylmethyl of 4 to 7 carbon atoms, phenyl, tolyl, xylyl, methoxyphenyl, dimethoxyphenyl, halophenyl, phenylalkyl of 7 to 8 carbon atoms, pyridyl or

—A—X

where

A is straight or branched alkylene of 1 to 4 carbon atoms, and

X is hydroxyl, alkoxy, acyloxy, dialkylamino of 2 to 4 carbon atoms, or a 5- to 6-membered nitrogen-containing heterocyclic ring linked to A through a ring nitrogen atom,

R_2 is hydrogen or methyl,

R_3 is naphthyl, pyrimidyl, thienyl, pyridyl, methylpyridyl or halopyridyl,

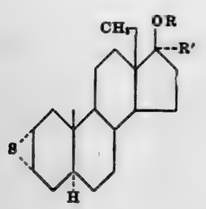
R_4 is hydrogen, methyl, methoxy, trifluoromethyl, cyano, halogen, lower alkanoyl or (lower alkoxy of 1 to 2 carbon atoms)-carbonyl,
R_5 is hydrogen, methyl, ethyl, methoxy, trifluoromethyl, cyano, nitro, halogen, lower alkanoyl or lower alkoxycarbonyl,
R_6 is hydrogen, methyl, ethyl, methoxy or halogen,
R_7 is cyano, lower alkanoyl or lower alkoxycarbonyl,
R_8 is cyano, nitro, lower alkanoyl or lower alkoxycarbonyl,
R_9 is hydrogen, methyl, ethyl, methoxy or halogen, and
R_{10} is hydrogen, methyl, methoxy, trifluoromethyl or halogen,
useful as psychosedative and anticonvulsives in warm-blooded animals.

3,660,382
18-METHYL-2α-3α-EPITHIO-5α-ANDROSTANE DERIVATIVES

Taichiro Komeno, Osaka-shi, Japan, assignor to Shionogi & Co., Ltd., Osaka, Japan

No Drawing. Filed Mar. 17, 1969, Ser. No. 807,916
Claims priority, application Japan, Mar. 18, 1968, 43/17,702
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.5 **2 Claims**

A compound of the formula



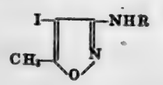
wherein R represents a hydrogen atom, a lower alkanoyl group or 1-lower alkoxycycloalkyl group and R′ is a hydrogen atom or lower alkyl group, has strong anti-estrogenic activity accompanied with lesser side effects such as androgenic and myogenic activities.

3,660,383
PRODUCTION OF IODOISOXAZOLE COMPOUNDS

Shinzaburo Sumimoto, Osaka-shi, Yasuo Makisumi, Amagasaki-shi, and Hideo Kano, Ibaraki-shi, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

No Drawing. Filed Aug. 6, 1969, Ser. No. 848,106
Claims priority, application Japan, Aug. 14, 1968, 43/57,834
Int. Cl. C07d *85/22, 85/24*
U.S. Cl. 260—239.9 **5 Claims**

3-(substituted or unsubstituted)amino-4-iodo-5-methylisoxazole derivatives of the formula:



wherein R represents hydrogen, p-(lower)alkanoylaminobenzenesulfonyl group, p-nitrobenzenesulfonyl group, (lower)alkanoyl group or (lower)alkoxycarbonyl group are prepared in very high yield with high purity by reacting 3-(substituted or unsubstituted)amino-5-methylisoxazole derivatives with a reagent mixture from iodine and chlorine in acetic acid or methanol, in the presence of a base.

3,660,384
5-[2-(5-NITRO-2-FURYL)VINYL]PICOLINOHYDROXAMIC ACID

Roland N. Johnson, Norwich, N.Y., assignor to The Norwich Pharmacal Company

No Drawing. Filed Mar. 16, 1970, Ser. No. 20,067
Int. Cl. C07d *99/04*
U.S. Cl. 260—240 A **1 Claim**

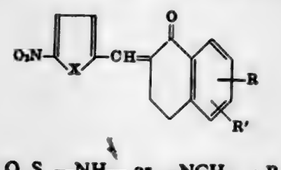
A new compound, 5-[2-(5-nitro-2-furyl)vinyl]picolinohydroxamic acid, is an antibacterial useful in combating *Shigella flexneri* and *Escherichia coli* infection in animals upon peroral administration.

3,660,385
2-(5-NITRO-2-FURFURYLIDENE)-1-TETRALONES

Rudolf Albrecht, Hans-Joachim Kessler, and Eberhard Schroder, Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

No Drawing. Filed July 16, 1970, Ser. No. 55,593
Claims priority, application Germany, July 19, 1970, P 19 37 630.8
Int. Cl. C07d *5/16, 27/22, 63/12*
U.S. Cl. 260—240 A **25 Claims**

2-(5-nitro-2-furfurylidene)-1-tetralones of the formula



wherein X is O, S, —NH— or —NCH_3—; R is a free or esterified hydroxy group, hydroxyalkoxy, acyloxyalkoxy, alkoxyalkoxy, dialkylaminoalkoxy, pyrrolidinoalkoxy, piperidinoalkoxy, morpholinoalkoxy, piperazinoalkoxy, acylamino, amino, alkylsulfonylamino, monoalkylamino, dialkylamino, carboxy, carbalkoxy or nitro; and R′ is a hydrogen atom, a halogen atom, an alkyl group, or a free, etherified or esterified hydroxy group, have anti-trichomonadal activity.

3,660,386
PYRIMIDINE DYESTUFFS

Jakob Benz, Oberwil, Basel-Land, and August Schweizer, Muttenz, Basel-Land, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 629,120, Apr. 7, 1967, which is a division of application Ser. No. 588,630, Oct. 21, 1966, which in turn is a continuation of application Ser. No. 813,681, May 18, 1959. This application Oct. 9, 1969, Ser. No. 865,214
Claims priority, application Switzerland, May 28, 1958, 59,953/58
Int. Cl. C07f *1/08*; C09b *47/04*
U.S. Cl. 260—242 **7 Claims**

Water-soluble phthalocyanine dyestuffs containing sulfonic acid and/or sulfonic acid amide group and at least one trihalopyrimidylamino group bound to a carbon atom of a sulfonic acid alkylamide or arylamide group.

3,660,387
1H-3,4-DIHYDRO-2,3-BENZOXAZINE DERIVATIVES

Giorgio Piffert and Pierfranco Schiatti, Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

No Drawing. Filed Dec. 24, 1968, Ser. No. 786,775
Claims priority, application Great Britain, Feb. 2, 1968, 5,502/68
Int. Cl. C07d *87/12*
U.S. Cl. 260—244 R **10 Claims**

The invention relates to benzoxazines having in the 3-position hydrogen, lower alkyl, dialkylaminoalkyl, aralkyl carbamoyloxyalkyl, alkyl substituted by a heterocyclic ring, hydroxyalkyl, acyloxyalkyl, acyl, amidino, carbamoyl, arylcarbamoyl or nitroso, the 6- or 7-position being substituted by halogen, nitro or amino. Various procedures are described for preparing the 3-unsubstituted-6(7)-substituted benzoxazines as well as the 3-substituted compounds, both by single step and multi-step introduction of substituents into the 3- and 6(7)-positions, and by ring closure reactions of ortho-disubstituted halogeno or nitro benzene. The compounds have anti-inflammatory activity and are active also on the central nervous system.

3,660,388
BIS-DIOXO-MORPHOLINE DERIVATIVES BIS[2,6 DIOXOMORPHOLINYL-(4)]PHENYLENES AND ALKYLENES

Joachim Dazzi, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 688,667, Dec. 7, 1967. This application Apr. 3, 1970, Ser. No. 25,591
Claims priority, application Switzerland, Dec. 14, 1966, 17,930/66
Int. Cl. C07d *87/42*
U.S. Cl. 260—246 B **8 Claims**

Certain bis-dioxo-morpholino derivatives in which the nitrogen atoms of the two morpholino nuclei are linked with each other via a bridge member which is an alkylene radical optionally interrupted by hetero atoms or by carbocyclic or heterocyclic radicals, or which is an arylene or cycloalkylene radical, are described as useful in the curing of epoxy groups-containing organic compounds. Their production comprises the reaction of a diimino-tetracarboxylic acid in which the two imino nitrogen atoms are linked by the same bridge member as defined above, with an anhydride of an organic monocarboxylic acid or a ketene.

3,660,389
10,11 - DIACYLOXY - 10,11-DIHYDRO-5-TERTIARY AMINO PROPYL - 5-HYDROXY-5H-DIBENZO[a,d] CYCLOHEPTENES

Howard B. Hucker, Horsham, and Marcia E. Christy, Perkasie, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Application Jan. 29, 1968, Ser. No. 723,964, now Patent No. 3,576,823, dated Apr. 27, 1971, which is a division of application Ser. No. 296,463, July 22, 1963, now Patent No. 3,390,179, dated June 25, 1968. Divided and this application June 22, 1970, Ser. No. 48,478
Int. Cl. C07d *87/46, 87/36*
U.S. Cl. 260—247.2 **15 Claims**

A cis or trans 3α,12β-dihydro-8H-dibenzo[3,4:6,7]cyclohepta[1,2-d]-1,3-dioxol-8-one is treated with a Grignard reagent, i.e., a tertiary aminopropylmagnesium halide, and the Grignard adduct obtained hydrolyzed to form the corresponding 5-hydroxy-5-(3-tertiary aminopropyl) derivative which is dehydrated to form the corresponding 5-(3-tertiary aminopropylidene) derivative. The resulting compound is then hydrolyzed to form the cis or trans 10,11 - dihydro-10,11-dihydroxy-5-(3-dimethylaminopropylidene) - 5H-dibenzo[a,d]cycloheptene. Such compounds may be demethylated to produce the corresponding N-methylaminopropylidene compound. The compounds are useful as antidepressants.

3,660,390
SUBSTITUTED 5-NITRO-2-FURYLAMIDOXIMES

Anne Mary Von Esch, North Chicago, and Aldo Joseph Crovetti, Lake Forest, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 640,343, May 22, 1967, which is a continuation-in-part of application Ser. No. 532,571, Mar. 8, 1966, which in turn is a division of application Ser. No. 314,849, Oct. 9, 1963, now Patent No. 3,272,828. This application Aug. 12, 1968, Ser. No. 751,706
Int. Cl. C07d *99/00, 5/16*
U.S. Cl. 260—247.2 **4 Claims**

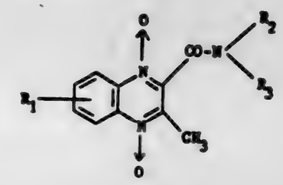
Compounds comprising disubstituted acyl amide oximes with one of the substituents being 5-nitro-2-furyl. These compounds are useful as antibacterial and antifungal agents.

3,660,391
2-METHYL - 3 - CARBOXYLIC ACID AMIDO-QUINOXALINE-1,4-DI-N-OZIDES AND THEIR PRODUCTION

Kurt Ley, Odenthal-Globusch, Ulrich Eholzer, Cologne-Stammheim, Roland Nast, Cologne-Buchheim, Karl Georg Metzger, Wuppertal-Elberfeld, and Dieter Fritsche, Wuppertal-Vohwinkel, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 2, 1968, Ser. No. 764,611
Claims priority, application Germany, Oct. 4, 1967, F 53,665
Int. Cl. C07d *51/78*
U.S. Cl. 260—247.5 R **20 Claims**

2-methyl-3-carboxylic acid-amido-quinoxaline - 1,4-di-N-oxides of the formula:

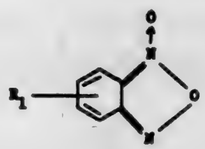


(I)

wherein:

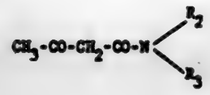
R_1 is hydrogen, lower alkyl, lower alkoxy or chlorine,
R_2 is hydrogen, straight or branched chain alkyl or straight or branched chain alkyl substituted by hydroxy, lower alkoxy, carbalkoxy, monoalkylamino or dialkylamino, and
R_3 is hydrogen, straight or branched chain alkyl, straight or branched chain alkyl substituted by hydroxy, lower alkoxy, carbalkoxy, monoalkylamino or dialkylamino, or when R_2 is hydrogen, cyclohexyl, or R_2 and R_3 together with the amide nitrogen atom form part of a 5- or 6-membered heterocyclic ring,

are useful for their antibacterial effect. These compounds may be produced, inter alia, by reacting a benzofuroxan of the formula:



(II)

with an acetoacetic acid amide of the formula:



(III)

wherein R_1, R_2 and R_3 are as above defined.

3,660,392

METHOD FOR PURIFYING TRIS(β-HYDROXYALKYL)ISOCYANURATES

Alexander Sadle, Morristown, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Nov. 12, 1970, Ser. No. 89,067
Int. Cl. C07d 55/38
U.S. Cl. 260—248 NS 2 Claims

An improved method for purifying tris(β-hydroxyalkyl)isocyanurates by recrystallizing from an azeotropic mixture of methanol and methyl ethyl ketone.

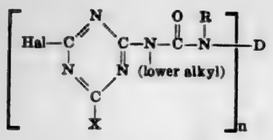
3,660,393

ANTHRAQUINONYL-TRIAZINES

Hans Ackermann, Bottmingen, and Herbert Seiler and Hubert Meindl, Riehen, Switzerland, assignors to Ciba-Geigy AG

No Drawing. Division of application Ser. No. 800,300, Nov. 8, 1968, which is a continuation of application Ser. No. 517,998, Jan. 3, 1966, which in turn is a continuation-in-part of application Ser. No. 380,677, July 6, 1964. This application May 7, 1970, Ser. No. 35,581
Int. Cl. C07d 55/46
U.S. Cl. 260—249 3 Claims

Anthraquinone dyestuffs of the formula



wherein

D is an anthraquinone dyestuff radical;



is connected to an aromatic ring carbon of D;
R is H or lower alkyl;
Hal is F, Cl or Br;
n is one of the integers 1 or 2 and
X is a monovalent electron-donor substituent,
selected from the group of lower alkoxy, phenoxy, halogen-substituted phenoxy, lower alkyl-substituted phenoxy, lower alkoxy-substituted phenoxy, lower alkylthio, phenylthio, halogen-substituted phenylthio, lower alkyl-substituted phenylthio, lower alkoxy-substituted phenylthio, lower alkylamino, di(lower)alkylamino, phenylamino, N-lower alkyl-N-phenylamino, N-lower alkyl-N-halogenphenylamino, N-lower alkyl-N-lower alkylphenylamino, N-lower alkyl-N-lower alkoxyphenylamino, piperidino or morpholino, halogen being chloro or bromo.

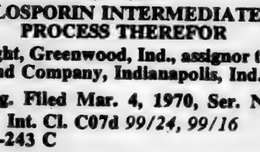
3,660,394

4,6-DIAMINO-1,2-DIHYDRO-ARYLOXY-1,3,5-TRIAZINES

Patrick Mamalis, Reigate, England, assignor to Vitamins Limited, London, England

No Drawing. Original application Dec. 5, 1968, Ser. No. 781,625. Divided and this application Jan. 23, 1970, Ser. No. 8,763
Int. Cl. C07d 55/20
U.S. Cl. 260—249.9 8 Claims

Compounds of the formula:



(I)

wherein:
Ar is a mono or poly nuclear aromatic ring system;
X is hydrogen or halogen;
Y is hydrogen or halogen;
Z is hydrogen or halogen;
R_1 is lower alkyl of 1 to 4 carbon atoms;
R_2 is hydrogen or lower alkyl of 1 to 4 carbon atoms or R_1 and R_2 may be linked to one another to form a spiro-cyclo-alkane moiety which includes the 2 carbon atoms of the triazine ring, or R_1 and R_2 may be linked together to form a lower alkane spiro-cyclo-alkane moiety including the 2 carbon atoms of the triazine ring, said spiro-cyclo-alkane moiety having 5 to 7 carbon atoms and said lower alkyl moiety having 1 to 4 carbon atoms,
or pharmaceutically acceptable non-toxic salts thereof have been found to be useful for their anti-malarial activity. They are administered in a general dosage range of 0.7 to 70 mg./kg. per day.

3,660,395

THIOETHER CEPHALOSPORIN COMPOUNDS

Ian G. Wright, Greenwood, and Gary V. Kaiser, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Mar. 4, 1970, Ser. No. 16,561
Int. Cl. C07d 99/24, 99/16
U.S. Cl. 260—243 C 19 Claims

2-thiomethyl- and 2-thiomethylene ethers of Δ^3-cephem - 4 - carboxylic acids, e.g., 3-acetoxymethyl-2-phenylthiomethylene-7-(2'-thienylacetamido) Δ^3-cephem-4-carboxylic acid, useful as antibiotics, esters of such acids which are useful as intermediates to make antibiotic compounds.

3,660,396

CEPHALOSPORIN INTERMEDIATES AND PROCESS THEREFOR

Ian G. Wright, Greenwood, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Mar. 4, 1970, Ser. No. 16,573
Int. Cl. C07d 99/24, 99/16
U.S. Cl. 260—243 C 12 Claims

2 - methylene- and 2-methyl - Δ^3 - cephalosporin esters, and sulfoxides therof; e.g., 2,2,2-trichloroethyl 7-phenoxyacetamido - 2 - methylene - 3 - methyl-Δ^3-cephem-4-carboxylate - 1 - oxide, as intermediates to new cephalosporin antibiotic substances.

3,660,397

IMIDAZO[4,5-b]PYRAZINES

James H. Jones, Blue Bell, and Edward J. Cragoe, Jr., Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Apr. 17, 1970, Ser. No. 29,674
Int. Cl. C07d 51/76
U.S. Cl. 260—250 R 20 Claims

Imidazo[4,5-b]pyrazines bearing a hydrogen or hydrocarbyl substituent in the two position are prepared by cyclization of a 2-amino-3-acylamino pyrazine.

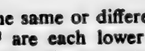
3,660,398

PREPARATION OF QUINOXALINE-DI-N-OXIDES

Kurt Ley, Leverkusen, and Ulrich Eholzer, Roland Nast, and Florin Seng, Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation of application Ser. No. 631,893, Apr. 19, 1967. This application Apr. 7, 1970, Ser. No. 24,422
Int. Cl. C07d 51/78
U.S. Cl. 260—250 R 9 Claims

Quinoxaline-di-N-oxides, having pharmacological properties and usable as intermediates for producing plant protection agents, produced by reacting in an organic diluent (e.g. at 20–100° C.) benzofurazane-N-oxide (optionally substituted with halo, alkyl, alkoxy, acyl, substituted acyl, amido, substituted amido, sulfonamido, and/or substituted sulfonamido) with a reagent composed of either (a) at least an equivalent quantity of both an organic carbonyl compound (e.g. linear or cyclo aliphatic, aryl, or heterocyclic carbonyl compound) with is optionally substituted and which contains the linkage



and a primary aliphatic amine or ammonia; or (b) at least an equivalent quantity of the corresponding Schiff's base to the reagent under (a).

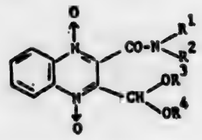
3,660,399

QUINOXALINE-DI-N-OXIDE-HYDROXY-LACTONE AND ITS PRODUCTION

Florin Seng, Cologne, and Kurt Ley, Odenthal-Glorbusch, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 16, 1970, Ser. No. 46,815
Claims priority, application Germany, July 10, 1969, P 19 34 888.0
Int. Cl. C07d 51/78
U.S. Cl. 260—250 R 9 Claims

Quinoxaline-di-N-oxide-hydroxy-lactone is produced by reacting quinoxaline-di-N-oxide of the formula:



wherein

R^1 and R^2 are the same or different and are lower alkyl, or R^1 and R^2 are each lower alkyl linnked together with the adjacent nitrogen atom to form a 5- or 6-membered heterocyclic ring,
R^3 and R^4 are the same or different lower alkyl moieties, or R^3 and R^4 are the same or different lower alkyl moieties linked together with the nitrogen atom to form a 5- or 6-membered heterocyclic ring,

in a diluent with at least the theoretically necessary amount of an inorganic or organic acid at a temperature of from about 0° C. to about 50° C. in the presence of at least the stoichiometrically necessary amount of water.

3,660,400

LOWER ALKYL 3-HYDROXY AND 3-MERCAPTOPYRAZINOATES

Edward J. Cragoe, Jr., Lansdale, and James H. Jones, Blue Bell, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application Nov. 17, 1966, Ser. No. 594,996, now Patent No. 3,472,848, dated Oct. 14, 1969. Divided and this application July 29, 1969, Ser. No. 845,890
Int. Cl. C07d 51/76
U.S. Cl. 260—250 R 5 Claims

Lower alkyl 3-hydroxy- and 3-mercapto-pyrazinoates and corresponding ethers and thioethers are prepared by diazotization of lower alkyl 3-aminopyrazinoates followed by treatment with water to give the 3-hydroxy compounds, or an alcohol to give the 3-ether compounds and with bromine and hydrogen bromide to give the 3-bromo compounds. The latter compounds are then converted into the 3-mercapto compounds by treatment with sodium sulfide and sulfur or into the 3-thio-ethers by treatment with an alkali metal mercaptide. The compounds are useful as intermediates for the preparation of the corresponding pyrazinoylguanidines which have utility as diuretic and saluretic compounds.

3,660,401

2-(HETEROCYCLIC SUBSTITUTED)QUINOXALINE-1,4-DIOXIDES

Gerald Berkelhammer, Princeton, and Peter Herman Gund, East Windsor, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Oct. 16, 1969, Ser. No. 867,070
Int. Cl. C07d 51/78
U.S. Cl. 260—250 R 10 Claims

This disclosure describes compounds of the class of 2-(heterocyclic substituted)quinoxaline-1,4-dioxides useful as antibacterial agents.

3,660,402

BENZAZOCINO QUINAZOLINES

Dietmar A. Habeck, Dover, and William J. Houlihan, Mountain Lakes, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Sept. 10, 1970, Ser. No. 71,280
Int. Cl. C07d 51/48
U.S. Cl. 260—251 A 2 Claims

Benzazocino quinazolines, e.g. 5,6,7,8-tetrahydro-14H-[1]benzazocino[2,1-b]quinazolin-14-one, prepared from anthranilic acids or esters thereof and novel substituted benzazo compounds, are useful as sedative-hypnotics.

3,660,403

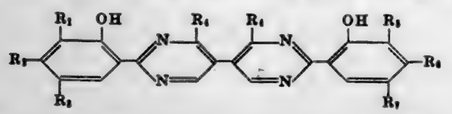
HALOPHENYLPYRIMIDINE CARBOXYLIC ACIDS

Tsung-Ying Shen, Gordon L. Walford, and Bruce E. Witzel, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed June 25, 1969, Ser. No. 836,647
Int. Cl. C07d 51/38
U.S. Cl. 260—251 R 4 Claims

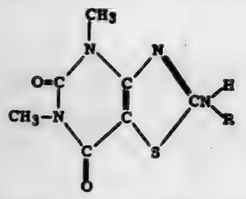
2-halophenyl-4-(or 5)-hydroxy-5(or 4)-pyrimidinecarboxylic acids and certain derivatives having anti-inflammatory activity are described.

3,660,404
U.V.-ABSORBING ORTHO-HYDROXYPHENYL SUBSTITUTED BIPYRIMIDYLS
Jan-Eric A. Otterstedt, Simrishamn, Sweden, and Richard Pater, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Feb. 24, 1969, Ser. No. 801,842
Int. Cl. C07d *51/36*
U.S. Cl. 260—256.4 R 7 Claims
Ultraviolet absorbing bipyrimidyls of the formula



where R_{1-3} and R_{5-7} are selected from hydrogen, chlorine, hydroxy, alkyl, alkoxy and acyloxy, and R_4 is hydrogen; useful to protect photodegradation-prone substrates; and process for preparing same by condensing selected amidines with a tetraformylethane in a solvent containing an acid-binding agent.

3,660,405
THIAZOLOPYRIMIDINES
Arthur Berger, Skokie, Ill., and Edeltraut E. Borgaes, Sindelfingen, Germany, assignors to Baxter Laboratories, Inc., Morton Grove, Ill.
No Drawing. Filed Aug. 13, 1969, Ser. No. 849,899
Int. Cl. C07d *51/46*
U.S. Cl. 260—256.5 R 6 Claims
Thiazolopyrimidines having the general formula:



wherein R is selected from the group consisting of lower alkyl having from 1 to 4 carbon atoms and allyl, for example, 4,6-dimethyl - 2 - n-propylaminothiazolo-[4,5-d]-pyrimidine-5,7,dione. These compounds are useful central nervous system anti-depressants.

3,660,406
2-CHLORO-7-HYDROXY-11-(1-PIPERAZINYL)DIBENZ[b,f][1,4]OXAZEPINES
Charles Frederick Howell, Upper Saddle River, N.J., and Eugene Newton Greenblatt, Rockland, N.Y., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Oct. 26, 1970, Ser. No. 84,221
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 TR 4 Claims
Preparation of 2-chloro-7-hydroxy-11-(4-substituted-1-piperazinyl)dibenz[b,f][1,4]oxazepines by several methods is described. These compounds are useful for their effects on the central nervous system such as tranquilizers and antidepressants.

3,660,407
PURIFICATION OF FLAVANTHRONE YELLOW PIGMENT
James W. Kay, Riegelsville, and Robert E. Norwood, Easton, Pa., assignors to Pfizer Inc., New York, N.Y.
No Drawing. Filed June 2, 1969, Ser. No. 829,700
Int. Cl. C07d *39/00*
U.S. Cl. 260—273 1 Claim
A process of purifying impure flavanthrone yellow pigment which utilizes extractants such as N,N'-dimethylacetamide, N,N'-dimethylformamide or dimethylsulfoxide.

3,660,408
BIS CYCLIC IMIDES OF 3-SUBSTITUTED 2,4,6-TRIIODOANILINES
James H. Ackerman, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 715,583, Mar. 25, 1968. This application July 14, 1969, Ser. No. 841,604
Claims priority, application Canada, Mar. 18, 1969, 46,086
Int. Cl. C07d *31/32*
U.S. Cl. 260—281 2 Claims
Mono and bis cyclic imides and anilic acids of 2,4,6-triiodoanilines bearing a substituted amino group in the 3-position are prepared by decarboxylation of the corresponding compounds bearing a carboxyl group in the 5-position. The products are useful as intermediates and as cholecystographic agents.

3,660,409
METHOD FOR MAKING ENOL ETHERS
Siegfried H. Schroeter, Schenectady, N.Y., assignor to General Electric Company
No Drawing. Filed Oct. 27, 1969, Ser. No. 869,892
Int. Cl. C07c *41/00*
U.S. Cl. 260—611 A 7 Claims
The pyrolysis of 3-alkoxyoxetanes, for example, 2,2-diphenyl-3-ethoxyoxetane, has been found to provide for the production of branched enol ethers, such as 1,1-diphenyl-2-ethoxyethylene. The branched enol ethers can be employed as fragrants and converted to branched aldehydes, ketones and polyalkoxyalkylenes.

3,660,410
N-ACYL-PARA-DIALKYLAMINOPHENYL-HYDRAZONES
Karl Heinz Büchel, Wuppertal-Elberfeld, Ferdinand Grewe, Burscheid, and Paul-Ernst Frohberger and Helmut Kaspers, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Nov. 13, 1969, Ser. No. 876,589
Claims priority, application Germany, Nov. 23, 1968, P 18 10 581.2
Int. Cl. C07c *103/42*
U.S. Cl. 260—293.76 7 Claims
N - acyl - para - dialkylaminophenyl - hydrazones, i.e. N - (4 - dialkylamino- and 4 - tetra to penta methyleneimino-substituted phenyl)-N-(alkanoyl, chloroalkanoyl, alkenoyl, carboalkoxy, benzoyl and carbophenoxy)-N'-[(acetyl and cyano)-(alkanoyl and carboalkoxy)-carbonyl]-hydrazones, or N-(4-dialkylamino-, 4-pyrrolidino- and 4-piperidino-substituted phenyl)-N-(alkylcarbonyl, chloroalkylcarbonyl, alkenylcarbonyl, alkoxycarbonyl, phenylcarbonyl and phenoxycarbonyl)-N'-[(methylcarbonyl and cyano)-(alkylcarbonyl and alkoxycarbonyl)-carbonyl]-hydrazones, which possess fungicidal properties and which may be produced by conventional methods.

3,660,411
ESTERIFICATION PROCESS
Joseph Levy, Paramus, and William Walker, Rutherford, N.J., assignors to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed June 15, 1970, Ser. No. 46,514
Int. Cl. C07d *29/24*
U.S. Cl. 260—293.81 10 Claims
Esterification of a benzoic acid with a tertiary amino alcohol by refluxing in an inert solvent and formic acid catalyst. In a specific embodiment, p-nitrobenzoic acid is esterified with diethylaminoethanol to prepare diethylaminoethyl p-nitrobenzoate.

3,660,412
PREPARATION OF TRITHIOCARBONATE ESTERS
Rudiger D. Haugwitz, Highland Park, N.J., assignor to Olin Corporation
No Drawing. Filed Jan. 27, 1970, Ser. No. 6,300
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 E 7 Claims
Carbon bisulfide is reacted with alkali metal hydroxide in dimethyl sulfoxide to form a solution of alkali metal trithiocarbonate and this solution is reacted with an organic halide reactive therewith to produce a trithiocarbonate ester. Trithiocarbonate esters are known to possess antifungal activity.

3,660,413
PHOSPHOROTHIOAMIDES
Lindley A. Cates, Houston, Tex., assignor to Research Corporation, New York, N.Y.
No Drawing. Filed Aug. 25, 1969, Ser. No. 852,945
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 K 6 Claims
Antibacterial phosphorothioamides are prepared by the reaction of phosphorothiocyanates with hydrazine or hydrazides.

3,660,414
CERTAIN 5-ARYL-2-AMINO-NICOTINONITRILES
Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Filed June 1, 1970, Ser. No. 42,539
Int. Cl. C07d *31/46*
U.S. Cl. 260—294.9 1 Claim
The invention discloses processes for the preparation of 5-aryl-2-amino-nicotinonitriles.

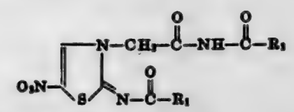
3,660,415
3-CYANO-2-SUBSTITUTED-5-ARYL-PYRIDINE DERIVATIVES
Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Filed June 1, 1970, Ser. No. 42,540
Int. Cl. C07d *31/46*
U.S. Cl. 260—294.9 12 Claims
The invention discloses pyridines substituted at the 2-position and also having an aryl substituent at the 5-position and cyano at the 3-position, e.g. [3-cyano-5-(p-chlorophenyl)-2-pyridyloxy]acetic acid ethyl ester and 5-phenyl-2-dimethylamino-ethylamino-nicotinonitrile. Such pyridine derivatives are useful as pharmaceutical agents, e.g. as anti-inflammatory agents. The compounds may be prepared by reacting a 2-halo-5-aryl-nicotinonitrile with the appropriate derivative of the substituent desired at the 2-position according to established procedures.

3,660,416
PREPARATION OF ALDEHYDES FROM ESTERS
Jaroslav Vit, Belle Mead, N.J., assignor to National Patent Development Corporation, New York, N.Y.
No Drawing. Filed Jan. 28, 1970, Ser. No. 6,565
Int. Cl. C07d *31/32*
U.S. Cl. 260—297 R 11 Claims
Organic esters are reduced to aldehydes by using sodium aluminum hydrides of the formula

$$NaAlH_x(OR_1)_{4-x}$$

at a low temperature, preferably in an ether or aromatic hydrocarbon, R_1 is ether lower alkoxy lower alkyl, lower dialkylamino lower alkyl, tetrahydrofurfuryl or pyranylmethyl. The reaction is carried out below 0° C. preferably −40 to −70° C.

3,660,417
CERTAIN 2-IMINO-5-NITROTHIAZOLINES
Peter John Islip, Hampton, England, assignor to Parke-Davis & Company, Detroit, Mich.
No Drawing. Filed Nov. 9, 1970, Ser. No. 88,169
Claims priority, application Great Britain, Mar. 11, 1970, 11,783/70
Int. Cl. C07d *91/26*
U.S. Cl. 260—306.7 6 Claims
New thiazoline compounds having the formula



where R_1 is lower alkyl, lower alkoxy, cyclopropyl, phenyl, or 2-thienyl, and R_2 is lower alkyl or cyclopropyl; and their production by reacting a thiazole with a 2-haloacetamide in the presence of a base or by reacting a 5-nitro-4-thiazoline-3-acetamide with a reactive carboxylic acid derivative in the presence of an acid catalyst. The compounds of the invention are useful as schistosomacides and trichomonacides.

3,660,418
CERTAIN 2,3,5,6-TETRAHYDROIMIDAZO[2,1-b] THIAZOLES
Robert E. Manning, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Continuation-in-part of application Ser. No. 841,186, June 19, 1969, which is a continuation of application Ser. No. 790,853, Jan. 13, 1969. This application Mar. 16, 1970, Ser. No. 20,111
Int. Cl. C07d *99/06*
U.S. Cl. 260—306.7 11 Claims
(2,6-substituted phenyl)thiazoles, e.g., 2-(2,6-dichlorophenyl)-5,6-dihydroimidazo[2,1-b]thiazole, are prepared by treating a substituted phenylaldehyde with a substituted thiourea. The compounds are useful as hypotensives.

3,660,419
DISUBSTITUTED-5-NITROIMIDAZOLES
Robert Gordon Shepherd, South Nyack, and Jay Donald Albright, Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Mar. 25, 1970, Ser. No. 22,699
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 4 Claims
The preparation of 1-lower alkyl-5-nitroimidazole-2-hydrazides by reacting a 1-loweralkyl-2-cyano-5-nitroimidazole with a hydrazine or salt thereof, is described. The compounds are useful as trichomonacides and as intermediates in the preparation of nitroimidazole-antiparasitic and antibacterial activity.

3,660,420
PROCESS FOR PREPARING IMIDAZOLE-BENZYLHISTIDINE DERIVATIVES
Monohar A. Tilak, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
No Drawing. Filed May 5, 1969, Ser. No. 822,007
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 4 Claims
Process for preparing im-benzyl-histidine derivatives by treating N-protected histidine with benzyl bromide and

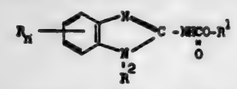
an acid scavenger in dimethylformamide or dimethylacetamide.

3,660,421
1-CARBAMOYL-2-CARBALKOXYAMINO-BENZIMIDAZOLES

Hans Osieka, Ludwigshafen, Karl-Heinz Koenig, Frankenthal, and Ernst-Heinrich Pommer, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Nov. 25, 1969, Ser. No. 879,937
Claims priority, application Germany, Dec. 2, 1968, P 18 12 100.1
Int. Cl. C07d 47/38
U.S. Cl. 260—309.2 3 Claims

New and valuable substituted benzimidazoles having the formula



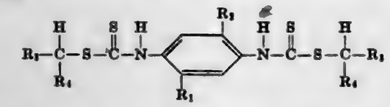
where R denotes halogen, nitro or alkyl, R^1 denotes an aliphatic radical, *n* denotes one of the integers 0, 1 and 2, R^2 deotes a carbamic acid radical or an ester radical or the radical of an acid amide and a process for controlling fungi and protecting objects against fungus attack with these compounds.

3,660,422
1,4-PHENYLENE-BIS-DITHIOCARBAMIC ACID ESTERS

Manfred Schorr, Frankfurt am Main, Walter Durckheimer, Hattersheim (Main), and Dieter Duwel, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed July 11, 1969, Ser. No. 841,111
Claims priority, application Germany, Aug. 3, 1968, P 17 95 057.1
Int. Cl. C07d 49/38
U.S. Cl. 260—309.2 1 Claim

Anthelmintically-active bis-dithiocarbamic esters of the formula



wherein R_1 and R_2 are hydrogen, halogen, alkyl having 1–6 carbon atoms, or alkoxy having 1–6 carbon atoms, R_3 is hydrogen or alkyl having 1–6 carbon atoms, and R_4 is 2-benzimidazole or 2-benzamidazole substituted with one or more halogen, lower alkyl, trifluoromethyl, lower alkoxy, nitro, sulfamido, or nitrilo groups. The esters, which are active against liver flukes for example, are prepared by reacting a salt of a corresponding bis-dithiocarbamic acid with a compound of the formula



wherein X is chlorine, bromine, or iodine.

3,660,423
2-(SUBSTITUTED BENZYL)METHYL-2-IMIDAZOLINES

Don V. Wysong, Midland, Mich., and Halbert C. White, Indianapolis, Ind., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 13, 1970, Ser. No. 11,286
Int. Cl. C07d 49/34
U.S. Cl. 260—309.6 5 Claims

2 - (substituted benzyl) - 2 - imidazoline compounds such as 2-(4-amino-3-chlorobenzyl)-2-imidazoline, and their pharmaceutically-acceptable salts such as the mono- and dihydrochlorides are prepared by classical procedures. The compounds are active as antidepressants.

3,660,424
3-PHENYL-7-[4'-CHLOROPYRAZOLYL-(1')]-COUMARINS

Guglielmo Kabas, Binningen, Basel-Land, and Reinhard Zweidler, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed June 16, 1969, Ser. No. 833,782
Claims priority, application Switzerland, June 26, 1968, 9,532/68
Int. Cl. C07d 49/18
U.S. Cl. 260—310 R 6 Claims

3 - phenyl - 7 - [4'-chloropyrazolyl-(1')]-coumarins which may bear further substituents especially at the 3'- and 5'-position of the pyrazolyl nucleus, are described as optical brighteners affording superior degree of whiteness and fluorescence number as well as better fastness to chlorite bleaching baths on such substrates as polyester and other polymeric organic materials. A preferred compound is 3-phenyl-7-[3'-methyl-4'-chloropyrazolyl-(1')]-coumarin. A method of brightening polymeric materials, e.g. fibers are films with the word compound as well as polymeric materials brightened therewith are also disclosed.

3,660,425
CERTAIN 5-AMINO-4-AROYLPYRAZOLES

Horace A. De Wald and Donald E. Butler, Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

No Drawing. Continuation-in-part of application Ser. No. 824,687, May 14, 1969. This application Mar. 30, 1970, Ser. No. 24,012
Int. Cl. C07d 49/20
U.S. Cl. 260—310 R 6 Claims

5-amino-4-arolypyrazole compounds, also substituted in the 1- and 3-position by lower alkyl groups, acid-addition salts thereof, and their production by (1) reacting a 4-aroyl-5-halopyrazole with ammonia or methylamine; (2) hydrolyzing a 4-aroyl-5-arylamidopyrazole; or (3) reacting a 5-amino-4-cyanopyrazole with an aryl organometallic compound. The compounds of the invention are useful as pharmacological agents that exert a depressant effect upon the central nervous system and as chemical intermediates.

3,660,426
PROCESS FOR THE PREPARATION OF 4-PYRAZOLIDINOLS

Albert Duncan Cale, Jr., Mechanicsville, and Herndon Jenkins, Richmond, Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

No Drawing. Filed June 25, 1969, Ser. No. 836,617
Int. Cl. C07d 49/02
U.S. Cl. 260—310 D 4 Claims

A novel process for preparation of 1,2-disubstituted-4-pyrazolidinols by the reaction of 1,2-disubstituted hydrazines and an epihalohydrin is described.

3,660,427
N-SULFATO-ALKYLSULFONAMIDE PHTHALOCYANINE DYESTUFFS

Gerhard Back, Loerrach, Germany, assignor to Ciba Limited, Basel, Switzerland

No Drawing. Filed Sept. 9, 1969, Ser. No. 856,471
Claims priority, application Switzerland, Sept. 24, 1968, 14,259/68
Int. Cl. C07d 27/76
U.S. Cl. 260—314.5 9 Claims

New phthalocyanine dyestuffs containing N-sulfato-alkylsulfonamide-groups with an aryl- or aralkyl radical

attached to the nitrogen atom. Valuable dyestuffs for dyeing nitrogenous textile materials pure and level shades having good general fastness properties.

3,660,428
PRODUCTION OF FORMYLMETHYLENE-PHTHALIMIDINES

Matthias Seefelder, Ludwigshafen, and Hans-Richard Mueller, Fussgoenheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed July 9, 1969, Ser. No. 840,512
Claims priority, application Germany, July 9, 1968, P 17 70 826.8
Int. Cl. C07d 27/50
U.S. Cl. 260—325 8 Claims

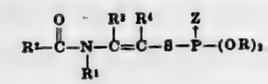
Production of formylmethylenephthalimidines by reaction of acetophenone-o-carboxylic amides with the reaction product of a formamide and an acid halide followed by hydrolysis of the reaction product. The formylmethylenephthalimidines are starting materials for the production of dyes, dyeing assistants, printing auxiliaries and pesticides.

3,660,429
β-AMIDO VINYL PHOSPHATES AND THEIR METHOD OF PREPARATION

Melancthon S. Brown, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Original application June 7, 1967, Ser. No. 644,063, now Patent No. 3,527,848. Divided and this application Nov. 10, 1969, Ser. No. 875,494
Int. Cl. C07d 27/08
U.S. Cl. 260—326.5 A 7 Claims

β-Amidovinyl thiophosphates of the formula



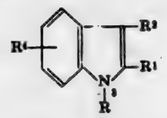
in which R is a hydrocarbyl radical, R^1 is a saturated aliphatic, cycloaliphatic or aryl radical, R^2, R^3 and R^4 are hydrogen, saturated aliphatic, cycloaliphatic or aryl radical, with the proviso that R^1 and R^2 may be joined to form an alkylene radical and Z is oxygen or sulfur. Compounds of this class are insecticidal and may be made by reacting an appropriate N-vinyl amide with a phosphorane sulfenyl halide.

3,660,430
2-SUBSTITUTED-3-ARYLINDOLES

Meier E. Freed, Philadelphia, Stanley C. Bell, Montgomery, and Peter H. L. Wei, Delaware, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Nov. 4, 1969, Ser. No. 874,047
Int. Cl. C07d 27/56
U.S. Cl. 260—326.16 4 Claims

The disclosure is directed to a method of preparation of 3-arylindoles containing certain electron withdrawing groups in the 2-position by alkylating a 2-aminobenzophenone and cyclizing the product to form an indole having the structure:



(I)

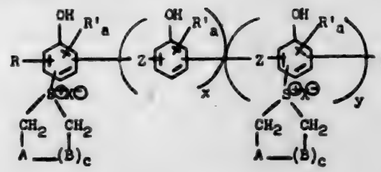
where R^1, R^2, R^3 and R^4 are as defined below. The disclosure is also directed to the intermediates and products of the process. The products are useful as central nervous system depressants in that they produce a calming effect in the host.

3,660,431
POLY(HYDROXYARYLPOLYMETHYLENE-SULFONIUM) ZWITTERIONIC MONOMERS AND SURFACE COATINGS THEREFROM

Melvin J. Hatch, Socorro, N. Mex., and Donald L. Schmidt and Hugh B. Smith, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 15, 1969, Ser. No. 866,762
Int. Cl. C07d 63/04, 65/04
U.S. Cl. 260—332.3 R 9 Claims

Poly(hydroxyarylpolymethylenesulfonium) salts (I), prepared by condensation of a polyphenolic resin with a cyclic sulfide, are converted into a sulfonium hydroxide inner salt (II), a reactive zwitterionic monomer. These zwitterionic monomers thermally polymerize to yield water-insoluble, thermoset resins useful as adhesives, coatings, films, and impregnants. Applied to non-porous surfaces, such as glass and wire, hard surface coatings with high impact resistance coupled with good water and chemical resistance are obtained.



I

3,660,432
RESOLUTION OF (±)(CIS-1,2-EPOXYPROPYL)-PHOSPHONIC ACID

Raymond A. Firestone, Fanwood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Apr. 14, 1969, Ser. No. 816,042
Int. Cl. C07f 9/38
U.S. Cl. 260—348 R 2 Claims

(—)(Cis-1,2-expoxypropyl)-phosphonic acid, a potent antibacterial agent, is separated from a racemic mixture of the free acids by a direct resolution technique.

3,660,433
PRODUCTION OF LACTONES

Jean Margaret Mallan and Edward Leo Kay, Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 866,726, Oct. 15, 1969. This application Sept. 18, 1970, Ser. No. 73,611
Int. Cl. C07d 5/06, 7/06
U.S. Cl. 260—343 10 Claims

Cyclic ketones are reacted with hydrocarbon hydroperoxides to produce lactones (corresponding to the ketones) and alcohols (corresponding to the hydroperoxides). Friedel-Crafts catalysts improve selectivities to the desired products. The lactones may be further reacted to produce lactams, and the alcohols may be dehydrated to olefins.

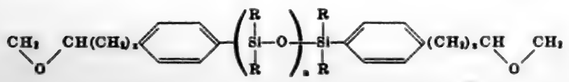
3,660,434
SILOXANE-CONTAINING EPOXIDE COMPOUNDS

William J. Patterson, Madison, Ala., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

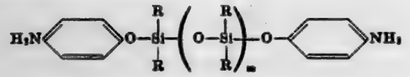
No Drawing. Original application Mar. 26, 1968, Ser. No. 715,975, now Patent No. 3,516,964, dated June 23, 1970. Divided and this application Jan. 27, 1970, Ser. No. 870,689
Int. Cl. C07f 7/08
U.S. Cl. 260—348 SC 12 Claims

Siloxane-containing epoxy polymers are prepared by reacting siloxane-containing epoxides with siloxane-con-

taining diamines. Both the epoxide, exemplified by the formula



and the diamine reactant



are characterized by their capability for inclusion of a controllable number of siloxane groups. The product polymers exhibit a low dielectric constant and other properties favorable to their use for electronic packaging applications. Methods for preparation of the reactant monomers are also disclosed.

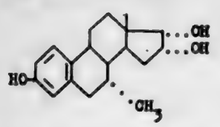
3,660,435

3,16α,17α-TRIHYDROXY-$\Delta^{1,3,5(10)}$-OESTRATRIENE

Georg Anner and Jaroslav Kalvoda, Basel, Switzerland, assignors to Ciba Corporation, Summit, N.J.

No Drawing. Filed Feb. 11, 1970, Ser. No. 10,648
Claims priority, application Switzerland, Feb. 27, 1969, 2,962/69
Int. Cl. C07c *169/20*
U.S. Cl. 260—397.5 **1 Claim**

The compound of the formula



Use: As oestrogenic agent or as agent for the inhibition of the gonadotropic function and ovulation or generally for controlling fertility.

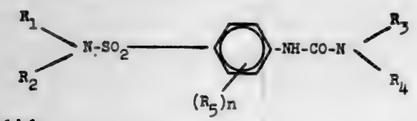
3,660,436

SULFAMOYLARYL UREAS

Otto Scherer, Bad Soden, Taunus, and Gerhard Horlein, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of application Ser. No. 651,709, July 7, 1967. This application June 9, 1970, Ser. No. 44,856
Claims priority, application Germany, July 7, 1967, F 49,708, F 49,709
Int. Cl. C07c *143/80;* **C07d** *29/34, 87/46*
U.S. Cl. 260—397.7 **7 Claims**

Compounds having desirable selective herbicidal activity are sulfamoyl ureas of the formula



in which

R_1 is alkyl of 1 to 4 carbon atoms;
R_2 is alkyl of 1 to 4 carbon atoms or methoxy; or
R_1 and R_2 together with the nitrogen on which they are substituted are pyrrolidino, piperadino or morpholino;
R_3 is methyl or ethyl;
R_4 is methyl, ethyl or methoxy;
R_5 is methyl, chloro, bromo or dichloro-difluoro-ethoxy;

and
n is 0, 1 or 2, n being at least 1 when R_1, R_2, R_3 and R_4 are all methyl.

3,660,437

PROCESS FOR PREPARING 9α-UNSUBSTITUTED 11β-CHLORO - 19-NOR STEROIDS OF THE ANDROSTANE OR PREGNANE SERIES

Leslie Stephenson and Margaret Elizabeth Hill, London, England, assignors to Glaxo Laboratories, Limited

No Drawing. Filed Jan. 15, 1970, Ser. No. 3,205
Claims priority, application Great Britain, Jan. 23, 1969, 3,971/69
Int. Cl. C07c *169/20, 169/18, 169/30*
U.S. Cl. 260—397.45 **20 Claims**

Process for preparing 9α-unsubstituted 11β-chloro-19-nor steroids of the androstane or pregnane series by reacting the corresponding 11α-hydroxy-19-nor steroid in an inert solvent with a source of positive chlorine, an anhydrous form of sulphur dioxide being present or added subsequently.

3,660,438

ALKYLHYDROXYPHENYLALKANOYL HYDRAZINES

Martin Dexter, Briarcliff Manor, N.Y., assignor to Ciba-Geigy Corporation, Greensburgh, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 811,664, Mar. 28, 1969. This application Apr. 13, 1970, Ser. No. 28,048
Int. Cl. C07c *103/22*
U.S. Cl. 260—404.5 **6 Claims**

Novel alkylhydroxyphenylalkanoyl-hydrazine compounds are prepared by reacting an ester of an alkylhydroxyphenylalkanoic acid or the corresponding alkanoic acid chloride with either hydrazine or an acyl hydrazide. The alkylhydroxyphenylalkanoyl-hydrazines are useful as stabilizers of organic materials which are subject to oxidative deterioration.

3,660,439

CATALYTIC PREPARATION OF CARBOXYLIC ACID ESTERS FROM OLEFINS, ALCOHOLS AND CARBON MONOXIDE IN THE PRESENCE OF KETONE PROMOTER

Raymond A. Schell, Berkley, Mich., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 671,110, Sept. 27, 1967. This application Mar. 20, 1970, Ser. No. 21,471
Int. Cl. C07c *51/14, 67/00*
U.S. Cl. 260—410.9 R **30 Claims**

A process is described for preparing carboxylic acid esters from olefins, alcohols and carbon monoxide using a combination of tin or germanium salt and a platinum salt as the catalyst and a ketone promoter.

Olefins having from 8 to about 24 carbon atoms are preferred reactants. Alkyl ketones having up to 11 carbon atoms are useful promoters.

The reaction rate is unexpectedly improved by the promoter.

3,660,440

NONADECAPENTA - 1,6,9,13,18-ENE-10-METHYL CARBOXYLATE AND THE PRODUCTION THEREOF

Gunther Wilke, Paul Heimbach, and Claus Dellichausen, Mulheim (Ruhr), Germany, assignors to Studiengesellschaft Kohle mbH, Mulheim (Ruhr), Germany

No Drawing. Filed Sept. 22, 1969, Ser. No. 860,073
Claims priority, application Germany, Sept. 27, 1968, P 17 93 503.4
Int. Cl. C07c *67/00, 69/52*
U.S. Cl. 260—410.9 R **9 Claims**

There is provided as a new compound nonadecapenta-1,6,9,13,18-ene-10-methyl carboxylate. This is prepared by reaction of methyl methacrylate with butadiene in the presence of zero-valent nickel or by reaction of butadiene with undecatri-1,5,10-ene-2-methyl carboxylate formed as an intermediate which may be isolated or not as desired.

3,660,441

REACTION OF AN ALDEHYDE WITH A CARBOXYLIC ACID

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Aug. 12, 1970, Ser. No. 63,313
Int. Cl. C08h *17/36*
U.S. Cl. 260—413 **8 Claims**

The invention comprises reacting an aldehyde and a carboxylic acid in a liquid reaction medium containing a Group VIII noble metal, preferably in complex with a biphyllic ligand, to produce an aldehyde containing the hydrocarbon radical of the reactant acid and a carboxylic acid containing the hydrocarbon radical of the aldehyde. A typical process comprises reacting ethanal with stearic acid to produce octadecanal. The invention has particular utility in converting lower aldehydes to higher and more valuable aldehydes.

3,660,442

ORGANOTIN MERCAPTOACID ESTERS AND THEIR METHOD OF PREPARATION

Jerome H. Ludwig, Shaker Heights, Ohio, assignor to Synthetic Products Company, Cleveland, Ohio

No Drawing. Filed Sept. 11, 1970, Ser. No. 71,353
Int. Cl. C07f *7/22*
U.S. Cl. 260—429.7 **14 Claims**

Pure or substantially pure condensation products of diorganotin bis (thioglycollate esters) which may be represented by the formula:

$$R_2Sn(SCH_2COO \cdot R')_2$$

wherein R and R' are monovalent hydrocarbon radicals. These condensation products are characterized by their freedom or substantial freedom from undesired organotin mercaptoacetates and other esters or alcohols.

A method of preparing organotin mercaptoacid esters by continuously passing a reaction mixture of a mercaptocarboxylic acid ester and organotin compound through a heat exchange zone and continuously withdrawing the desired condensation product from the zone. The method disclosed also provides for removal of by-product water.

3,660,443

PROCESS FOR THE ALKYLATION OF HALOGENATED SILICON AND TIN COMPOUNDS

Jean Boissieras, Lyon, and Bernard Delarue and Marcel Lefort, Rhone, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed May 28, 1968, Ser. No. 732,536
Claims priority, application France, May 31, 1967, 108,623
Int. Cl. C07f *7/22, 7/02*
U.S. Cl. 260—429.7 **10 Claims**

Silicon and tin derivatives containing halogen directly attached to silicon or tin respectively are alkylated by reaction with an alkyl zinc derivative in a hexaalkylphosphoryltriamide or an N,N-dialkylamide. The alkyl zinc derivative may itself be prepared by reaction of zinc with an alkyl halide in the presence of iodine or with an alkyl iodide in a hexaalkylphosphoryltriamide.

3,660,444

PROCESS FOR THE PRODUCTION OF PYROLYSATES AND THEIR USE AS STABILIZERS

Peter Kartschmaroff, Waldstrasse 6, Arlesheim, Basel-Land, Switzerland; Paul Moser, Hauensteinstrasse 108, Basel, Switzerland, and Kurt Berger, Grabenmattweg 9, Allschwil, Basel-Land, Switzerland

No Drawing. Filed July 16, 1970, Ser. No. 55,615
Claims priority, application Switzerland, July 31, 1969, 11,650/69
Int. Cl. C07f *15/04;* **C08f** *45/62*
U.S. Cl. 260—439 R **8 Claims**

Pyrolysates are produced by heating the nickel salts of phosphonic acid semiesters. The obtained pyrolysates are stabilizers for synthetic high-molecular materials.

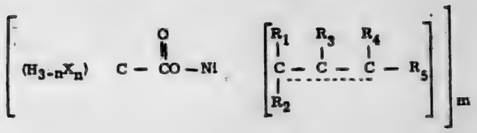
3,660,445

NICKEL π-ALLYL HALOGENOACETATES

Francois Dawans, Bougival, France, assignor to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil Malmaison, Hauts-de-Seine, France

No Drawing. Filed Aug. 19, 1968, Ser. No. 753,769
Claims priority, application France, Aug. 23, 1967, 118,816
Int. Cl. C07f *15/04*
U.S. Cl. 260—439 R **7 Claims**

The present disclosure is directed to nickel π-allyl halogenoacetates complying with the general formula:



wherein X is a halogen, n an integer from 1 to 3, R_1, R_2, R_3, R_4 and R_5, are selected from the group consisting of hydrogen, allyl, cycloalkyl, aralkyl and aryl, or at least two of R_1, R_2, R_3 and R_4 are part of a cycle, and m is an integer equal to 1 or 2. The compounds of the present disclosure are effective as catalysts in the polymerization of unsaturated organic compounds.

3,660,446

NICKEL MONO-ALKYLPHOSPHITES AND DERIVATIVES

Jonathan T. Carriel, Ridgewood, N.J., and Joseph F. Anzenberger, St. Louis, Mo., assignors to The International Nickel Company, Inc., New York, N.Y.

No Drawing. Continuation of application Ser. No. 537,010, Mar. 24, 1966. This application Mar. 14, 1969, Ser. No. 808,378
Int. Cl. C07f *15/04*
U.S. Cl. 260—439 R **5 Claims**

Directed to a class of nickel compounds generally formulated as $Ni[(OP)(OR)(OH)]_2$ and

$$L_2Ni[(OP)(OR)(OH)]_2$$

wherein R is an alkyl group containing from about 1 to about 12 carbon atoms and L is a ligand of the electron donor type coordinated to the nickel and to a method for preparing the compounds. The compounds have utility as nematocides.

3,660,447
PROCESS OF OXIDIZING ALUMINUM ALKYLS
Hoyt J. Cragg and Doyle A. Nolen, Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.
No Drawing. Filed July 18, 1969, Ser. No. 843,206
Int. Cl. C07f 5/06
U.S. Cl. 260—448 AD 12 Claims

Titanium tetrachloride and certain related materials are disclosed as being useful adjuvants for the oxidation of alkyl aluminum alkoxide materials to produce trialkoxy aluminum compounds.

3,660,448
REACTION PRODUCTS OF SILICON MONOXIDE AND ORGANIC COMPOUNDS HAVING ACTIVE HYDROGEN ATOMS AND METHODS OF MAKING THE SAME
Erich T. Schaschel, Toledo, Ohio, assignor to Owens-Illinois, Inc.
No Drawing. Filed Mar. 3, 1970, Ser. No. 16,234
Int. Cl. C07f 7/04, 7/08, 7/18
U.S. Cl. 260—448.2 N 18 Claims

Reaction products of silicon monoxide and active hydrogen containing organic compounds such as alcohols and amines are provided. The products, which are organo silicon polymers, are useful in coating compositions, for fillers in ceramic and plastic compositions and as stop-cock greases.

3,660,449
REACTION PRODUCTS OF SILICON MONOXIDE AND ACETYLENES AND METHODS OF PREPARING THE SAME
Erich T. Schaschel, Toledo, Ohio, assignor to Owens-Illinois, Inc.
No Drawing. Filed Mar. 3, 1970, Ser. No. 16,238
Int. Cl. C07f 7/08, 7/18
U.S. Cl. 260—448.2 D 18 Claims

An organo silicon polymer is prepared by the reaction of silicon monoxide and an organic compound containing a triple bond such as acetylene to provide a polymer that is useful as a lubricant, as a coating composition ingredient and as a filler for plastic compositions.

3,660,450
REACTION PRODUCTS OF SILICON MONOXIDE AND AROMATIC COMPOUNDS SUCH AS BENZENE AND METHODS OF MAKING THE SAME
Peter L. Timms, Bristol, England, assignor to Owens-Illinois, Inc.
No Drawing. Filed Mar. 3, 1970, Ser. No. 16,268
Int. Cl. C07f 7/08, 7/18
U.S. Cl. 260—448.2 D 17 Claims

An organo silicon polymer is prepared by the reaction of silicon monoxide and an aromatic compound such as benzene to provide a polymer that is useful as a lubricant, as an ingredient for a coating composition and as a filler for plastic compositions.

3,660,451
REACTION PRODUCTS OF SILICON MONOXIDE AND ORGANIC HALIDES AND METHODS OF MAKING THE SAME
Erich T. Schaschel, Toledo, Ohio, assignor to Owens-Illinois, Inc.
No Drawing. Filed Aug. 24, 1970, Ser. No. 66,577
Int. Cl. C07b 7/08, 7/12
U.S. Cl. 260—448.2 R 21 Claims

Organo silicon polymers are prepared by the reaction of silicon monoxide and an organic monohalide such as 1-chloro-butane to provide a polymer that is useful as a lubricant, stop-cock grease and as a filler for ceramic and plastic compositions.

3,660,452
SILOXANE AMINO HYDROXY SULFONATES
Edward Lewis Morehouse, New City, N.Y., assignor to Union Carbide Corporation
No Drawing. Filed Apr. 30, 1968, Ser. No. 725,524
Int. Cl. C07f 7/02
U.S. Cl. 260—448.2 N 8 Claims

This invention relates to novel siloxanes having a sulfonate group linked to silicon through an organic group having an amino nitrogen and a hydroxyl substituent. The novel siloxanes are surfactants useful as additives to aqueous liquids (such as aqueous protein fire fighting compositions) to promote foaming, as wetting agents for organic surfaces (such as polyethylene) and as sequestering agents for metals (such as copper). The novel siloxanes are produced by reacting a primary or secondary amine sulfonate with an epoxy-organosiloxane.

3,660,453
FLUOROSILICONE HYDRAULIC FLUIDS
Eugene D. Groenhof and Harry M. Schiefer, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.
No Drawing. Continuation-in-part of application Ser. No. 564,742, July 13, 1966. This application Jan. 10, 1969, Ser. No. 790,443
Int. Cl. C07f 7/02
U.S. Cl. 260—448.2 R 4 Claims

Fluorosilicone fluids of the formula



in which

R and R' are aralkyl radicals containing no more than 3 aliphatic carbon atoms are disclosed as improved hydraulic fluids. Exemplary of such a fluid is 3,3,3-trifluoropropylmethylpolysiloxane having a viscosity of 40 cs. at 77° F. which is endblocked with 2-phenylethyldimethylsiloxy units.

3,660,454
PROCESS OF MAKING AMINO SUBSTITUTED ORGANOSILICON COMPOUNDS AND THE COMPOUNDS MADE THEREBY
Gerald A. Gornowicz, Madison, Wis., and Samuel R. Wendel, Missoula, Mont., assignors to Dow Corning Corporation, Midland, Mich.
No Drawing. Filed Aug. 19, 1969, Ser. No. 851,486
Int. Cl. C07f 7/02
U.S. Cl. 260—448.8 R 5 Claims

Sulfur-substituted aminosilanes and siloxanes, and N-substituted aminosilanes and siloxanes are made by reacting silicon compounds having the group ≡SiR'SH with ethylene imine or N-substituted ethylene imines to give alkoxysilanes and siloxanes having the grouping

$$\equiv SiR'CH_2CH_2NHR''$$

The reaction is enhanced by the presence of an alcohol or zinc chloride. The products are useful as coupling agents between glass and phenolic resins.

3,660,455
PREPARATION OF ORGANIC PERCHLORATES
David M. Hoffman, Chester, Pa., assignor to Sun Oil Company, Philadelphia, Pa.
No Drawing. Filed Mar. 31, 1970, Ser. No. 24,390
Int. Cl. C07c 71/00
U.S. Cl. 260—453 R 20 Claims

Hydrocarbyl perchlorates are prepared by contacting certain kinds of feed reactants with perchloric acid in an emulsion comprising a strong sulfuric acid phase and an organic phase comprising an inert organic solvent. The feed reactants can be alkenes, cycloalkenes, alkanols, cycloalkanols, and certain aralkenes and aralkanols. The perchloric acid can be generated in situ in the mixture by reaction of a perchlorate metal salt with the sulfuric acid. The hydrocarbyl perchlorate products have utility as detonatable sensitizers for explosives and as alkylating agents.

3,660,456
STABILIZED ISOCYANATE COMPOSITION
Kenji Naito, Hiroshi Okudo, and Katsuhiko Ogino, Toyonaka, Michio Tanaka, Suita, Yoshio Kamatani, Osaka, Hiroshi Mukai, Suita, and Tatsuro Takeuchi, Ibaragi, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
No Drawing. Filed Dec. 24, 1968, Ser. No. 786,729
Claims priority, application Japan, Dec. 28, 1967, 43/84,199
Int. Cl. C07c 119/04
U.S. Cl. 260—453 SP 15 Claims

Organic isocyanates stabilized against deterioration or discoloration during storage by a stabilizing amount of any one of the following compounds:

(a) a substituted urea derivative of the formula X—NHCONH—Y wherein X is nitro, cyano, acetyl, chlorinated acetyl, thioacetyl, toluenesulfonyl or benzenesulfonyl and Y is hydrogen, phenyl, or n-butyl,
(b) a cyclic ureide compound selected from the group consisting of parabanic acid, barbituric acid, barbital, thiobarbital, phenobarbital, uracil, 5-methyluracil, isocyanuric acid, benzyl isocyanurate, dibenzyl isocyanurate, n-butyl isocyanurate, di-n-butyl isocyanurate, chlorisocyanurate, dichlorisocyanurate, orotic acid, orotic acid ethyl ester, orotic acid phenyl ester, butanimide, phthalimide, and o-benzoic sulfimide.
(c) a compound shown by the formulas:
R^1CXNHR^3
$R^2(CONHR^3)_2$
$(CONHR^3)_2$ or
$R^4SO_2NHR^3$
wherein X is O or S; R^1 and R^3, which may be the same or different, are alkyl groups having 1 to 4 carbon atoms, phenyl groups or hydrogen, and R^4 is an alkyl group having 1 to 4 carbon atoms or a phenyl group, said alkyl and phenyl groups which may be substituted by one or more chlorines, —NO_2, —CN, an alkyl having 1 to 2 carbon atoms or an alkoxy having 1 to 2 carbon atoms; and R^2 is a di-valent hydrocarbon residue selected from methylene, ethenylene and phenylene,
(d) sulfur and
(e) hydrogen sulfide.

3,660,457
5-CYANO-A-NORPREGNANE-2-ONE DERIVATIVES
Seymour D. Levine, North Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.
No Drawing. Original application June 19, 1968, Ser. No. 738,091, now Patent No. 3,526,642. Divided and this application May 14, 1970, Ser. No. 48,726
Int. Cl. C07c 121/46
U.S. Cl. 260—464 3 Claims

This disclosure relates to pregnanes having an oxygen atom in the 2-position and a cyano radical at the 5-position. These compounds possess anti-androgenic activity.

3,660,458
PROCESS FOR PREPARING AROMATIC ISOCYANATES FROM AROMATIC AZO AND/OR AROMATIC AZOXY COMPOUNDS
Samuel I. Trotz, Orange, Thomas J. Hurley, Jr., Madison, and Ehrenfried H. Kober, Hamden, Conn., assignors to Olin Mathieson Chemical Corporation
No Drawing. Filed Jan. 21, 1969, Ser. No. 792,836
Int. Cl. C07c 119/04
U.S. Cl. 260—453 PC 11 Claims

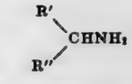
The process for preparing an organic isocyanate by reacting an organic azo and/or an organic azoxy compound with carbon monoxide in the presence of a noble metal based catalyst at an elevated temperature and elevated pressure.

3,660,459
BORATE QUATERNARY AMMONIUM COMPOUNDS DERIVED FROM BORATE ESTERS OF AMINO SECONDARY ALKANOLS
Graham K. Hughes, Hackettstown, N.J., assignor to Ashland Oil, Inc., Houston, Tex.
No Drawing. Original application May 16, 1966, Ser. No. 550,157, now Patent No. 3,465,026, dated Sept. 2, 1969. Divided and this application Apr. 23, 1969, Ser. No. 818,833
Int. Cl. C07c 141/04
U.S. Cl. 260—459 7 Claims

Quaternary ammonium salts of borate esters of 1-dialkylamino-2-alkanols are disclosed; such compounds having particular utility as fabric softeners and sanitizers.

3,660,460
PROCESS FOR PREPARING N,N-BIS-CYANOETHYLATED DERIVATIVES OF ALIPHATIC PRIMARY AMINE BRANCHED AT THE α-POSITION
Hideaki Munakata, Kazuo Watanabe, Akitada Osako, and Rintaro Urakabe, Shiga-ken, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Toyo Spinning Co., Ltd.)
No Drawing. Filed Aug. 6, 1969, Ser. No. 848,082
Claims priority, application Japan, Aug. 19, 1968, 43/59,348
Int. Cl. C07c 121/28, 121/46
U.S. Cl. 260—464 6 Claims

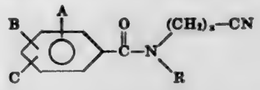
Process for preparing the N,N-bis-cyanoethylated derivative of an aliphatic primary amine branched at the α-position which comprises reacting an aliphatic primary amine of the formula:



wherein R' and R'' are each a lower alkyl group or are linked together to represent a lower alkylene group or its N-monocyanoethylated derivative with acrylonitrile in the presence of an acidic catalyst to give the corresponding N,N-biscyanoethylated compound, which is useful as the starting material in the production of an easily dyeable polyamide fiber.

3,660,461
N-CYCLOALKYL-N'-CYANOALKYL ALKOXYBENZAMIDES
William D. Roll, Toledo, Ohio, assignor to The University of Toledo, Toledo, Ohio
No Drawing. Filed May 5, 1969, Ser. No. 822,029
Int. Cl. A61k 27/00; C07c 121/78
U.S. Cl. 260—465 D 5 Claims

Simultaneously acting central nervous system (CNS) depressants and blood pressure depressors of the formula



wherein A, B, and C are selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, and halogen radicals at least one of which is an alkoxy or a halogen radical; wherein x is a whole number from one to three, and wherein R is selected from the group consisting of cycloaliphatic radicals containing between three and seven carbon atoms.

3,660,462

N-ACYL-DICYANOCARBONYL-PHENYL-HYDRAZONES

Karl Heinz Buchel, Wuppertal-Elberfeld, Ingeborg Hammann, Cologne, Gunter Unterstenhofer, Opladen, and Ferdinand Grewe, Burscheid, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 9, 1969, Ser. No. 883,631

Claims priority, application Germany, Dec. 12, 1968, P 18 14 252.4

Int. Cl. A01n 9/12, 9/20; C07c 121/78

U.S. Cl. 260—465 D **10 Claims**

N-acyl-dicyanocarbonyl-phenyl-hydrazones, i.e. 1-(α-cyano-α-cyano)-carbonyl-2-(alkyl, chloroalkyl, alkenyl, alkoxy, cycloalkyloxy, alkenyloxy, phenyl, phenoxy and dialkylamino)-carbonyl and thiocarbonyl-2-[(mono, and same and mixed di and tri, -chloro, -fluoro, -trifluoromethyl, -alkyl, -alkoxy, -nitro and -acetylamino)-phenyl]-hydrazones, which possess arthropodicidal, especially acaricidal and insecticidal, as well as fungicidal properties and which may be produced by conventional methods.

3,660,463

SYNTHESIS OF AMINOMETHYLENE-MALONONITRILE

Gerald Myer Jaffe, Verona, and William Richard Rehl, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of abandoned applications Ser. No. 406,591, Oct. 26, 1964, and Ser. No. 476,651, Aug. 2, 1965. This application Sept. 24, 1965, Ser. No. 490,105

Int. Cl. C07c 121/42

U.S. Cl. 260—465.5 **7 Claims**

Aminomethylenemalononitrile is prepared by condensing a salt of formamidine with malononitrile in the presence of a weak base, said weak base being present in an amount of least about 0.5 mole per mole of malononitrile.

3,660,464

TRI-IODINATED DIAMINOBENZOIC ACID DERIVATIVES

Jack Bernstein and Kathryn Alice Losee, New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed June 19, 1970, Ser. No. 47,908

Int. Cl. C07c 127/16

U.S. Cl. 260—470 **6 Claims**

This invention relates to new iodinated diaminobenzoic acid derivatives of the general formula



and to salts and lower alkyl esters of these compounds, which are useful as radiopaque agents.

3,660,465

ETHYNYLENE CONTAINING N-PHENYL CARBAMATES

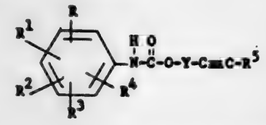
Don R. Baker, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 717,970, Apr. 1, 1968. This application Aug. 1, 1969, Ser. No. 846,920

Int. Cl. C07c 125/06

U.S. Cl. 260—471 C **2 Claims**

Compounds of the formula



in which R is
- (a) hydrogen,
- (b) alkyl,
- (c) nitro,
- (d) halo,
- (e) hydroxy,
- (f) alkoxy,
- (g) alkylthio, or
- (h) phenyl,

R^1 is
- (a) hydrogen,
- (b) alkyl,
- (c) nitro,
- (d) halo,
- (e) hydroxy, or
- (f) alkoxy,

R^2 is
- (a) hydrogen,
- (b) methyl,
- (c) halo, or
- (d) alkoxy,

R^3 is
- (a) hydrogen,
- (b) methyl, or
- (c) halo,

R^4 is
- (a) hydrogen,
- (b) methyl, or
- (c) halo,

Y is a divalent lower alkenyl, lower alkynyl or lower alkyl radical either straight or branched chain, and R^5 is an alkyl, cycloalkyl or alkenyl group and their use as acaricides and insecticides.

3,660,466

2,4,6-TRIIODOBENZOIC ACID DERIVATIVES

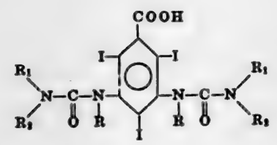
Jack Bernstein and Kathryn Alice Losee, New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed June 19, 1970, Ser. No. 47,903

Int. Cl. C07c 127/16

U.S. Cl. 260—471 R **5 Claims**

Compounds having the formula



(I)

where R and R_1 are hydrogen or lower alkyl, R_2 is lower alkyl, as well as salts and lower alkyl esters of these compounds are useful as diagnostic agents.

3,660,467

AROMATIC ESTERS OF ALIPHATIC DICARBOXYLIC ACIDS

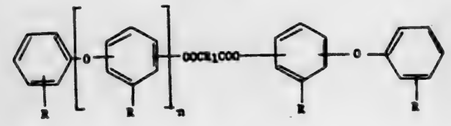
Patrick Gould, Woodham, near Weybridge, John Henry Alexander Row, Rochester, Kent, and Stanley George Rudston, West Molesey, England, assignors to The British Petroleum Company Limited

No Drawing. Continuation of application Ser. No. 382,964, July 15, 1964. This application Oct. 2, 1969, Ser. No. 866,077

Int. Cl. C07c 69/34

U.S. Cl. 260—479 S **10 Claims**

Phenoxy phenyl esters of carboxylic acids are provided which are employed as synthetic lubricants and heat transfer fluids and have the following general formula:



wherein:

R is a member selected from the group consisting of hydrogen atoms and alkyl groups having from 1–4 carbon atoms,

R_1 is a saturated divalent hydrocarbon group having from 2–14 carbon atoms, and

n is 0 or 1.

Furthermore, three methods of preparing the above esters are provided. The first method comprises a conventional esterification reaction of a phenolic reactant with one or more acids. The second method reacts the phenolic reactant or an alkali metal salt thereof with an acid halide. The third and last method trans-esterifies the phenolic reactant with a dimethyl ester.

3,660,468

CARBOXY-PERESTERS

Wilbur H. McKellin, Buffalo, N.Y., assignor to Pennwalt Corporation

No Drawing. Filed May 7, 1968, Ser. No. 727,379

Int. Cl. C07c 73/00

U.S. Cl. 260—488 F **7 Claims**

Certain compounds including a free carboxyl group and a perester group are efficient free radical generators for polymerization of monomers in aqueous medium. For example: Emulsion polymerization of styrene, vinyl chloride, and methyl methacrylate using t-butyl peroxymethylsuccinic acid and t-butyl peroxy-2-carboxybenzoate.

3,660,469

BIS-TRIIODOISOPHTHALAMIC ACID COMPOUNDS

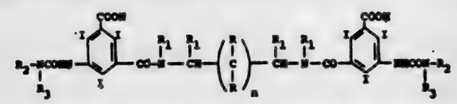
Jack Bernstein and Kathryn A. Losee, New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Aug. 4, 1969, Ser. No. 847,449

Int. Cl. C07c 103/24

U.S. Cl. 260—501.11 **9 Claims**

This invention relates to new bis-triiodoisophthalamic acid compounds having the formula



and to salts and lower alkyl esters of these compounds. These compounds are useful as radiopaque agents.

3,660,470

LIME SOAP DISPERSANTS AND COMPOSITIONS CONTAINING THEM

David Graham Spencer Hirst, Whitley Bay, England, assignor to The Procter & Gamble Company, Cincinnati, Ohio

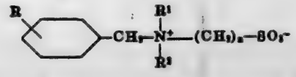
No Drawing. Filed Sept. 22, 1970, Ser. No. 74,496

Claims priority, application Great Britain, Oct. 1, 1969, 48,278/69

Int. Cl. C07c 143/14

U.S. Cl. 260—501.12 **6 Claims**

Alkylbenzyl di-lower alkylammonio alkane-1 sulfonates having the formula



wherein R is a straight or branched chain alkyl group having 8 to 24, preferably 10 to 18, carbon atoms; R^1 is an alkyl group having 1 to 6 carbon atoms; R^2 is an alkyl group having 1 to 6 carbon atoms; and n is an integer of from 1 to 4, preferably 2 or 3. These compounds have excellent scum-dispersant properties and are effective in solid, granular, bar, or liquid soap compositions to reduce lime-scum formation. Compositions comprising higher fatty acid soaps and the alkylbenzyl di-lower alkylammonio alkane-1 sulfonates are described. Desirable results are obtained when the ratio of soap to zwitterionic, by weight, is from 3:1 to 100:1.

3,660,471

PROCESS FOR PREPARATION OF SULPHONIC ACIDS

Toshimi Sawano, Osaka-fu, Hiroshi Koike, Takatsuki-shi, Naoji Kurata, Nishinomiya-shi, and Yukio Okuda, Toyonaka-shi, Japan, assignors to Nippon Shokubai Kagaku Kogyo Co. Ltd., Osaka, Japan

No Drawing. Filed Oct. 28, 1968, Ser. No. 771,371

Claims priority, application Japan, Nov. 4, 1967, 42/70,666

Int. Cl. C07c 143/02

U.S. Cl. 260—513 R **2 Claims**

A process for preparation of monosulphonic acids at high selectivity which comprises reacting straight-chain paraffinic hydrocarbons having 10 to 30 carbon atoms with sulphur dioxide and oxygen to produce the corresponding sulphonic acids, characterised in that the reaction is carried out under such conditions as to bring about a homogeneous reaction liquid phase, i.e., the concentration of sulphur dioxide in the reaction liquid phase being 7 to 23% by weight, the reaction temperature being 17 to 37° C., and the conversion of the straight-chain paraffinic hydrocarbon being 1 to 7%.

3,660,472

PROCESS FOR PREPARING LIGHT-COLORED, LONG-CHAIN OLEFIN SULFONATES

Kanji Majima and Kensuke Takei, Wakayama-shi, and Masayuki Oku, Kainan-shi, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

No Drawing. Filed Dec. 4, 1969, Ser. No. 882,277

Claims priority, application Japan Dec. 8, 1968, 43/88,787

Int. Cl. C07c 143/16

U.S. Cl. 260—513 **4 Claims**

Light-colored, long-chain olefin sulfonates are prepared by preliminarily treating long-straight-chain olefins (8–24 C.) with a small amount of SO_3 (0.5–20 mol percent based on the olefins) diluted with an inert gas and the resulting colored substances are removed. The remainder of the long-straight-chain olefins are treated with a larger amount of SO_3 (1.0–1.3 mols per 1 mol of olefin) diluted with an inert gas, the reaction product is neutralized and then hydrolyzed to obtain the light-colored, long-chain olefin sulfonates.

3,660,473
PREPARATION OF TRI- AND TETRAHALO-SUBSTITUTED AROMATIC COMPOUNDS
Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Apr. 28, 1969, Ser. No. 819,933
Int. Cl. C07c *63/10*
U.S. Cl. 260—515 A 10 Claims

Tri- and tetrahalo-substituted aromatic compounds are prepared by reacting a pentahalo-2,4-pentadienoic acid with an olefinic hydrocarbon at elevated temperatures and pressures to produce the desired compound. The trihalo-substituted aromatic compounds are exemplified by 1,2,3-trichlorobenzene and 2,3,4-trichlorobenzoic acid.

3,660,474
RESOLUTION OF AMMONIUM-N-ACETYL-DL-α-AMINOPHENYLACETATE AND PREPARATION THEREOF
Ichiro Chibata, Suita-shi, Shigeki Yamada, Toyonaka-shi, and Masao Yamamoto, Kyoto-fu, Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan
No Drawing. Filed Oct. 21, 1969, Ser. No. 868,229
Claims priority, application Japan, Mar. 28, 1969, 44/23,954
Int. Cl. C07c *103/32*
U.S. Cl. 260—518 R 16 Claims

Seed crystals of one optically active enantiomer of ammonium N-acetyl-DL-α-aminophenylacetate are added to a supersaturated solution of ammonium N-acetyl-DL-α-aminophenylacetate. Crystallization of said one optically active enantiomer results. The crystals are recovered. Alternatively, crystals of said one optically active enantiomer may be added to a hot solution of the N-acetyl-DL-α-aminophenylacetate to produce a supersaturated solution. The solution is then cooled to crystallize out said one optically active enantiometer. A combination of these two alternative procedures can be utilized. The recovered optically enantiomer ammonium N-acetyl-DL-α-aminophenylacetate can be reacted with an acid to produce optically active α-aminophenylacetic acid.

3,660,475
PHENOXYALKANOYLAMIDOOXYALKANOIC COMPOUNDS
Ralph P. Neighbors, Olathe, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.
No Drawing. Division of application Ser. No. 759,761, Sept. 13, 1968, now Patent No. 3,543,305, which is a continuation-in-part of application Ser. No. 668,180, Sept. 15, 1967, now Patent No. 3,520,674, which in turn is a continuation-in-part of application Ser. No. 374,813, June 12, 1964, now Patent No. 3,457,063. This application Jan. 21, 1970, Ser. No. 4,781
The portion of the term of the patent subsequent to May 26, 1984, has been disclaimed
Int. Cl. C07c *101/06*
U.S. Cl. 260—519 7 Claims

Both broadleaf weeds and common noxious grasses such as yellow and green foxtail are combated in fields of small grains such as wheat, barley and oats by use of phenoxyalkanoylaminooxyalkanoic acids and derivatives thereof, for example, 2 - phenoxypropanoylaminooxy acetic acid, formulated either as free acid or salts.

3,660,476
METHOD FOR THE PREPARATION OF TEREPHTHALIC ACID
Yataro Ichikawa, Gentaro Yamashita, and Yuichi Akachi, Iwakuni-shi, Japan, assignors to Teijin Limited, Osaka, Japan
Filed Oct. 30, 1968, Ser. No. 771,877
Int. Cl. C07c *63/02*
U.S. Cl. 260—524 R 5 Claims

An apparatus for continuous production of terephthalic acid from p-dialkylbenzene and molecular oxygen with high utilization ratio of said oxygen, which comprises a reactor with its bottom tapered downwards, the reactor being provided with a gas exhaust pipe at an upper part, an exit for the reaction product at the bottom portion, and a starting material feed pipe at a suitable position therebetween; a gas sparger for supplying molecular oxygen which opens into the reactor at the bottom portion; a draft tube with open top and bottom, which is positioned above the gas sparger; and a gas distributor for dispersing the molecular oxygen into the reactor, which is positioned above and appropriately spaced from the draft tube; furthermore the reactor being provided with a heating and/or cooling means for maintaining the reaction material in the reactor at a temperature of 80–150° C.; whereby p-dialkylbenzene, an aliphatic mono-carboxylic acid and a heavy metal catalyst, are supplied from the starting material feed pipe, and at least a part of the molecular oxygen is supplied from the gas sparger.

3,660,477
OXIDATION OF POLYALKYL-SUBSTITUTED AROMATICS IN ALKALINE MEDIA
Dieter H. Otterbach, Haddonfield, and John W. Porter, Brooklawn, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed July 2, 1969, Ser. No. 838,689
Int. Cl. C07c *63/02*
U.S. Cl. 260—524 R 12 Claims

One alkyl group of polyalkyl-substituted aromatic compounds is selectively oxidized to a carboxyl group with molecular oxygen in the presence of aqueous alkali metal bicarbonate and a catalytic amount of iodine and iodide ions at a temperature of about from 160 to 230° C., the pH of the reaction mixture being less than about 10, and said reaction mixture containing sufficient bicarbonate to neutralize carboxyl groups as they are formed.

3,660,478
CYCLIC RECRYSTALLIZATION PROCESS
John Nasser, New Canaan, Conn., assignor to Mobil Oil Corporation
Continuation-in-part of application Ser. No. 576,754, Sept. 1, 1966. This application Mar. 7, 1969, Ser. No. 805,187
Int. Cl. C07c *51/42, 51/48*
U.S. Cl. 260—525 18 Claims

Continuous cyclic leaching and/or recrystallization of a slurry of an excess of solid terephthalic or another benzene carboxylic acid in a saturated solution thereof in a solvent (acetic acid) at an elevated temperature level (285–580° F.) wherein slurry recirculating in a loop system is alternately cooled 1 to 20° F. to recrystallize 1 to 10% of the solute and similarly heated elsewhere to dissolve an equivalent amount of solids in 10 or more heating-cooling cycles by recirculating the slurry in a ratio of at least 10:1 based on the amount of treated slurry being withdrawn continuously. Direct or indirect heat transfer may be used for either heating or cooling, as unheated charge slurry may provide direct cooling or the charge may be preheated for direct heating of the recirculating slurry; also the product slurry may be cooled and then recycled to the loop as a direct coolant.

3,660,479
PRODUCTION OF UNSATURATED ALDEHYDES AND ACIDS
John A. Ondrey, Tyler, Tex., and Harold E. Swift, Gibsonia, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Aug. 15, 1969, Ser. No. 850,628
Int. Cl. C07c *51/32*
U.S. Cl. 260—530 N 10 Claims

A method of oxidizing propylene and isobutene to the corresponding unsaturated aldehydes and acids and for oxidizing the unsaturated aldehydes of propylene and isobutene to the corresponding unsaturated acids by the vapor phase reaction with molecular oxygen in the presence of a catalyst of cobalt molybdate promoted with a composition of lead, tellurium and oxygen. Propylene is converted to acrolein and acrylic acid and acrolein is converted to acrylic acid.

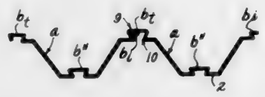
3,660,480
CATALYST FOR THE OXIDATION OF OLEFINS TO UNSATURATED ALDEHYDES AND UNSATURATED ACIDS
Gianfranco Pregaglia, Milan, Marco Agamennone, Novara, Nicola Santangelo, Milan, and Guglielmo Matzuzi, Novara, Italy, assignors to Montecatini Edison S.p.A., Donegani, Milan, Italy
No Drawing. Filed May 14, 1968, Ser. No. 728,877
Claims priority, application Italy, May 16, 1967, 16,133/67
Int. Cl. C07c *57/04, 47/22*
U.S. Cl. 260—533 N 9 Claims

Propylene and isobutene are oxidized in vapor phase to unsaturated aldehydes and unsaturated acids by means of a catalyst essentially constituted by a monophase system based on molybdenum anhydride the crystalline lattice of which is altered due to the random substitution of some of the molybdenum atoms by atoms of a metal Ms selected from nickel, manganese and cobalt, the atomic ratio Ms/Mo being equal to 1:9.

3,660,481
PROCESS FOR THE PREPARATION OF CARBOXYLIC ACIDS
Jacques Boichard, Irigny, Rhone, and Bernard Brossard, Michel Gay, and Raymond Janin, Lyon, Rhone, France, assignors to Rhone-Poulenc S.A., Paris, France
Filed Oct. 22, 1968, Ser. No. 769,664
Claims priority, application France, Oct. 25, 1967, 125,843
Int. Cl. C07c *53/08, 51/16*
U.S. Cl. 260—533 R 3 Claims

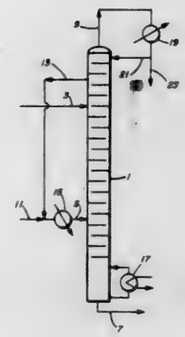
Mixtures of aliphatic carboxylic acids consisting mainly of acetic and propionic acids, with some oxalic acid, are obtained by oxidising 1-butene, alone or with 2-butene, with nitric acid.

3,660,482
JOINT FOR SHEET ELEMENTS
Eduardo Delfin Elizalde, Esmeralda 135, Buenos Aires, Argentina
Filed May 16, 1969, Ser. No. 825,185
Claims priority, application Argentina, May 28, 1968, 214,388, 214,389
Int. Cl. E04d *1/06, 1/34*
U.S. Cl. 52—537 10 Claims



A structure formed of at least two sheet elements, each having a joining section, with the joining section of the first element superposed over the joining section of the second element. The joining section of the first element has an open substantially complete and uniformly cross-sectioned longitudinally extending channel whose inner maximum width is greater than the opening of the channel insert and the joining section of the second element has a channel insert at least partially received in the channel of the first element to form an assembly of the elements. A clamping plate is positioned in the channel of the assembled elements to provide transverse clamping pressure between the wall of the channel insert and the walls of the channel of the first element. The clamping plate is a generally oblong body formed with two diagonally opposed rounded off corners, the greatest width of the plate not exceeding the width of the opening of the channel and the length of the plate being greater than the maximum inner width of the channel of the assembly before the plate is positioned in the channel, the plate providing the transverse clamping pressure when the length of the plate extends transversely of the channel of the assembly.

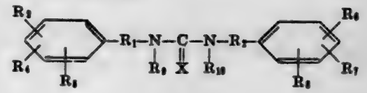
3,660,483
SEPARATION OF FORMIC ACID FROM ACETIC ACID
Charles C. Hobbs and John A. Bedford, Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.
Filed Oct. 2, 1969, Ser. No. 863,166
Int. Cl. C07c *51/44*
U.S. Cl. 260—541 2 Claims



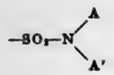
Formic acid is removed from a crude liquid comprising predominantly acetic acid and formic acid by passing the liquid downwardly through a stripping column within which the liquid, at an elevated temperature, is contacted countercurrently with an upwardly-flowing vapor comprising a lower alkanol or a lower alkyl acetate which has a boiling point lower than that of acetic acid. Within the column the formic acid reacts with the alkanol or alkyl acetate to form the corresponding alkyl formate which is removed as vapor from the head of the column. From the base of the column there is withdrawn a purified acetic acid having a formic acid content lower than that of the crude mixture fed into the head of the column.

3,660,484
ARYL UREAS, A PROCESS FOR THEIR PREPARATION AND AGENTS CONTAINING THEM
Henry Martin and Dieter Duerr, Basel, and Rudolf Hitz, Muttenz, Switzerland, assignors to Ciba Limited, Basel, Switzerland
No Drawing. Continuation of application Ser. No. 513,551, Dec. 13, 1965. This application Oct. 2, 1969, Ser. No. 863,769
Claims priority, application Switzerland, Dec. 17, 1964, 16,314/64
Int. Cl. C07c *157/00*
U.S. Cl. 260—552 R 3 Claims

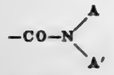
Ureas of the formula



wherein R_1 and R_2 each represents a linear or branched alkylene radical which may be hydroxylated and which contains 1 to 4 carbon atoms, and either R_1 or R_2 may be a direct N—phenyl bond; R_3 to R_8 are identical or different and represent hydrogen or halogen atoms, or alkyl, alkoxy or alkylthio groups, or the groups —CF_3, —CN, NO_2, SCN,



or



(where A and A' represent hydrogen atoms or lower alkyl groups) with the proviso that at least one of the substituents R_3 to R_8 is a trifluoromethyl group, and wherein R_9 and R_{10} represent hydrogen atoms or lower alkyl groups and X stands for an oxygen atom or a sulphur atom. These ureas are capable of killing off a variety of harmful organisms; for example, they have an insecticidal, acaricidal, bactericidal, fungicidal, molluscicidal and herbicidal effect.

3,660,485

FLUORENE-9-CARBOXYLIC ACID HYDRAZIDES

John W. Cusic, Skokie, and Chung Hwai Yen, Chicago, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Oct. 5, 1970, Ser. No. 78,278

Int. Cl. C07c *103/19*

U.S. Cl. 260—558 H **4 Claims**

Hydrazides of 9-aminoalkyl fluorene-9-carboxylic acid are described herein. Generally, these compounds are obtained by the reaction of the appropriate ester with hydrazine. The compounds are useful against bacteria, helminths, fungi, and algae. In addition, they are antiarrhythmic agents.

3,660,486

DIPHENYL AMINE UREA DERIVATIVES

Kurt Thiele, Frankfurt am Main, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of application Ser. No. 656,073, July 26, 1967. This application Dec. 15, 1969, Ser. No. 885,311

Int. Cl. C07c *127/00*

U.S. Cl. 260—533 A **6 Claims**

Diphenyl amine derivatives of the formula



wherein each of R^1 and R^2 can be hydrogen, halogen, hydroxy, lower alkyl or lower alkoxy and R^3 is lower alkyl or alkenyl of up to 6 carbon atoms; pyridyl; phenyl or pyridyl substituted with halogen, hydroxy, amino, lower alkoxy or lower alkyl; lower alkoxy with 1 to 6 carbon atoms; mono and dialkyl amino groups wherein alkyl is of 1 to 6 carbon atoms in which the alkyl groups can be closed, if desired, with another heteroatom to a 5, 6 or 7 membered ring as in pyrrolidone, piperidine morpholine, piperazine and homopiperazine and any primary amino groups present can, if desired, be acylated with low molecular weight organic acids such as the alkanoic acids or derivatives of carbonic acid and their acid addition salts. The compounds have good anti-inflammatory, analgesic and anti-pyretic action.

3,660,487

N-(ALKYL) ALKANESULFONAMIDOPHENETHANOLAMINES

Aubrey A. Larsen and Robert H. Uloth, Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

No Drawing. Filed Oct. 2, 1969, Ser. No. 863,388

Int. Cl. C07c *143/74*

U.S. Cl. 260—556 A **27 Claims**

A new class of sympatholytic phenethanolamines with N-(alkyl)alkanesulfonamido and hydroxy aromatic substituents has been synthesized. The substances are pharmacologically active adrenergic blocking agents. A preferred compound is 2'-hydroxy-5'-[1-hydroxy-2-(1-phenoxy - 2 - propylamino)propyl]-N-methylmethanesulfonanilide which effectively suppresses both alpha and beta adrenergic stimulation.

3,660,488

2-HALO-ALKYLENE- AND -CYCLOPENTYLENE-2-AMINO-PROPANE 1,3-DIOLS

Raymond L. Cobb, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed July 16, 1965, Ser. No. 472,733

Int. Cl. C07c *87/02, 91/16, 95/02*

U.S. Cl. 260—584 **9 Claims**

2-amino-2-halohydrocarbyl-1,3-propanediols are prepared by reacting tris(hydroxyhydrocarbyl)methylamine with an aldehyde to form a bicyclo reaction product, halogenating said reaction product and hydrolyzing the product of the halogenation reaction to form the corresponding amino- and halo-substituted alkanediols. The substituted alkanediols of the invention are useful as starting compounds for the preparation of 2-amino-2-mercaptoalkyl-1,3-propanediols which are compounds having known antiradiation activity.

3,660,489

NOVEL CARANONE DERIVATIVES, PERFUME COMPOSITIONS CONTAINING SAME AND PROCESS FOR THEIR PREPARATION

Dietmar Lamparsky, Wangen-Dubendorf, and Peter Schudel, Grut, near Wetzikon, Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

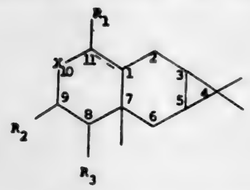
No Drawing. Filed Oct. 2, 1968, Ser. No. 764,636

Claims priority, application Switzerland, Oct. 11, 1967, 14,296/67

Int. Cl. C07c *49/36, 49/54*

U.S. Cl. 260—586 R **13 Claims**

The disclosure is concerned with odorant compositions which are characterized in that they contain novel, olfactorily-desirable compounds of the general formula:



wherein R_1, R_2 and R_3 represent hydrogen atoms or lower alkyl groups, X signifies a CO, CHOH, CHOAc, CH_3 or =CH group (double bond directed towards C_9), Ac denoting the acyl residue of a lower alkanecarboxylic acid, and

signifies a C—C single or double bond.

The invention is also concerned with the novel compounds of general Formula I as well as processes for the manufacture thereof.

3,660,490

TRANS-OCTAHYDRO - 4a - LOWER ALKYL-5-(t-BUTOXY OR BENZYLOXY) - 2 - OXO-1-(4-SUBSTITUTED - 3 - OXOBUTYL)-1-NAPHTHALDEHYDES

Marians Los, Trenton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application June 4, 1964, Ser. No. 372,690, now Patent No. 3,446,849. Divided and this application Jan. 6, 1969, Ser. No. 789,366

Int. Cl. C07c *49/54, 45/00, 47/44*

U.S. Cl. 260—586 R **2 Claims**

This disclosure describes compounds of the class of trans-1,2,4a,5,6,7,8,8a-octahydro-4a-lower alkyl-5-(t - butoxy or benzyloxy)-2-oxo-1-(4-substituted-3-oxobutyl)-1-naphthaldehydes useful as intermediates in the synthesis of biologically active steroid moieties.

3,660,491

METHOD FOR PREPARING UNSYMMETRICAL KETONES BY COBALT CATALYZED DECARBOXYLATION OF ACIDS

Hubert H. Thigpen and John C. Trebellas, Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed May 15, 1969, Ser. No. 825,080

Int. Cl. C07c *49/76, 49/80*

U.S. Cl. 260—592 **7 Claims**

Preparation of an alkyl aryl ketone by reacting an aromatic acid with an aliphatic acid in the presence of a cobalt ion catalyst.

3,660,492

SYNTHESIS OF DIISOPROPYL KETONE

Harold W. Tompkins, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed July 22, 1969, Ser. No. 843,784

Int. Cl. C07c *49/06, 47/04*

U.S. Cl. 260—593 **5 Claims**

Diisopropyl ketone is produced by passing 2,2,4-trimethyl-1,3-pentanediol over activated alumina catalyst at a temperature in the approximate range 650–975° F. and at approximately 1–6 volumes of feed to volume of catalyst per hour. A product purity of 98 weight percent or better is obtained.

3,660,493

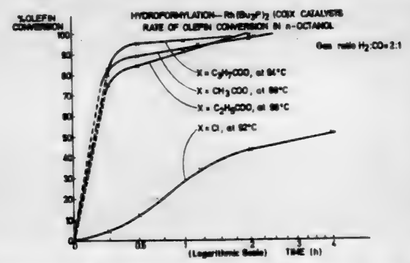
HYDROFORMYLATION PROCESS

Peter Johnson, Chertsey, and Malcolm John Lawrenson, Eastcote, Ruislip, England, assignors to The British Petroleum Company Limited, London, England

Filed Oct. 17, 1967, Ser. No. 675,842

Int. Cl. C07c *45/10*

U.S. Cl. 260—604 HF **14 Claims**



Alcohols and/or aldehydes are formed by reacting olefins with carbon monoxide and hydrogen in the presence of a monovalent rhodium complex having a carboxylate ligand. Trialkyl phosphines are preferred complexing ligands. Alcoholic solvents aid the reaction which may be carried out at atmospheric pressure.

3,660,494

CARBORANE PREPARATION FROM BORANES

Jerome F. Ditter, Covina, Eugene B. Klusmann, West Covina, and Robert E. Williams, La Canada, Calif., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Sept. 23, 1970, Ser. No. 74,851

Int. Cl. C07f *5/02*

U.S. Cl. 260—606.5 B **5 Claims**

An efficient method of synthesizing higher weight closo-carboranes by heating smaller molecular weight carboranes (5 borons or less per atom) with one of the smaller molecular weight boranes.

3,660,495

PROCESS FOR PREPARING HYDROXYMETHYLATED PHOSPHINES

Kingso Chingtsung Lin, Newark, Ohio, assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Dec. 10, 1969, Ser. No. 883,990

Int. Cl. C07f *9/02*

U.S. Cl. 260—606.5 P **7 Claims**

Primary and secondary phosphines as well as phosphine itself react with formaldehyde to produce hydroxymethylated tertiary phosphines at a temperature between about 20–130° C. at about atmospheric to slightly elevated pressures. The reaction procedes smoothly to afford a product of excellent purity in nearly quantitative yields.

3,660,496

PREPARATION OF SULFIDES AND SULFOXIDES

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Oct. 16, 1969, Ser. No. 867,886

Int. Cl. C07c *149/16, 147/14*

U.S. Cl. 260—607 A **11 Claims**

Organic sulfur-containing compounds and particularly organic sulfoxides or sulfides are prepared by condensing thionyl chloride with an olefinic hydrocarbon in the presence of a free radical generating catalyst to prepare organic sulfoxides or sulfides depending upon the temperature which is utilized during the reaction.

3,660,497

DODECYLETHER METHYL SULFIDES

Hill M. Priestley, North Bergen, and James H. Wilson, Demarest, N.J., assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 869,985, Aug. 25, 1969, which is a continuation-in-part of application Ser. No. 647,333, June 20, 1967, which is a continuation-in-part of application Ser. No. 365,487, May 6, 1964, which in turn is a continuation-in-part of applications Ser. No. 725,505, Apr. 1, 1958, and Ser. No. 60,546, Oct. 5, 1960. This application Mar. 13, 1970, Ser. No. 19,484

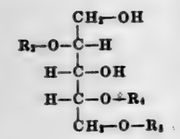
Int. Cl. C07c *149/10*

U.S. Cl. 260—609 A **3 Claims**

There are disclosed in the specification novel sulfides which are dodecyl acetonyl sulfide, dodecyloxyethyl methyl sulfide, and dodecyloxyethoxyethyl methyl sulfide, useful in the preparation of suds-stabilizing sulfoxides.

3,660,498
PENTOL DERIVATIVES
Alberto Rossi, Oberwil, Switzerland, assignor to Ciba Corporation, Summit, N.J.
No Drawing. Filed June 27, 1969, Ser. No. 837,316
Claims priority, application Switzerland, July 5, 1968, 10,065/68
Int. Cl. C07c *43/20*
U.S. Cl. 260—611 A 10 Claims

D-arabitol compounds of formula



(I)

wherein each of the residues R_2, R_4 and R_5 denotes an optionally substituted hydrocarbon residue, as well as O-acyl derivatives thereof show antiinflammatory effects.

3,660,499
ARYL 3-IODOPROPARGYL FORMALS
Kanjiro Kobayashi, Nishinomiya, Takashi Uyama, Kobe, Hideo Suzuki, Amagasaki, and Hiroshi Shirai, Suita, Japan, assignors to Nagase & Co., Ltd., Osaka, Japan
No Drawing. Filed Mar. 3, 1970, Ser. No. 16,255
Claims priority, application Japan, Mar. 3, 1969, 44/16,355; May 7, 1969, 44/35,455
Int. Cl. C07c *43/30*
U.S. Cl. 260—613 D 8 Claims

Iodized formal compounds of the formula

$$ArOCH_2OCH_2C{\equiv}CI$$

wherein Ar is a phenyl, naphthyl or nitrogen-containing aromatic group substituted or not with alkyl, halogen or nitro group(s) are bactericidal and fungicidal agents.

3,660,500
PREPARATION OF 2,2'-DINITROBENZHYDROLS
Goetz E. Hardtmann, Florham Park, and Bruno S. Huegi, Caldwell, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Filed Dec. 31, 1969, Ser. No. 889,673
Int. Cl. C07c *29/00*
U.S. Cl. 260—613 R 7 Claims

Disclosed is preparation of 2,2'-dinitrobenzhydrols involving a two single phase low temperature process in which a 2-bromonitrobenzene is reacted with phenyllithium to obtain a 1-lithio-2-nitrobenzene which is then reacted with an o-nitrobenzaldehyde to obtain the 2,2'-dinitrobenzhydrol.

3,660,501
METAL-ORGANIC COMPOUNDS
Aina Lisbeth Abramo, Rolf Bjorklund, Bernt Borretzen, Knut Gunnar Olsson, and Bertil Sundbeck, Malmo, Sweden, assignors to AB Ferrosan, Malmo, Sweden
No Drawing. Filed Dec. 22, 1969, Ser. No. 887,336
Claims priority, application Great Britain, Dec. 24, 1968, 61,474/68
Int. Cl. C07c *43/22*
U.S. Cl. 260—613 D 7 Claims

The present invention relates to new metal-organic compounds derived from halogenated phenols. The main idea of the invention is that the phenol group of the metal-organic compounds of the invention is protected by an acetal group and that the halogen has been reacted to form a conventional metal-organic compound. The metal-organic compounds of the invention are especially adapted to be used in syntheses to introduce a phenol group into a molecule. The main advantage is that the protecting group in the form of an acetal group very easily can be removed in a subsequent conversion to form the free phenol or the phenol esters.

3,660,502
HALOGEN-CONTAINING POLYOLS AND POLYURETHANES PREPARED THEREFROM
Leslie Catron Case, 14 Lockeland Road, Winchester, Mass. 01890
No Drawing. Filed May 13, 1968, Ser. No. 728,824
Int. Cl. C07c *43/30*
U.S. Cl. 260—615 A 10 Claims

Novel polyols having a substantial halogen content and having good thermal stability are prepared by the reaction of hemiacetals or hemiketals of lower aliphatic halogenated aldehydes or ketones, and monoepoxides. These halogen-containing polyols are further reacted to prepare flame-resistant polyurethane compositions.

3,660,503
PREPARATION OF PRIMARY ALCOHOLS
Herman S. Bloch, Skokie, and George R. Lester, Park Ridge, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Continuation-in-part of application Ser. No. 833,787, June 16, 1969, which is a continuation-in-part of application Ser. No. 579,499, Sept. 15, 1966. This application Aug. 18, 1970, Ser. No. 64,812
Int. Cl. C07c *31/02, 37/00*
U.S. Cl. 260—617 H 11 Claims

Hydrocarbonaceous compounds such as n-paraffins, branched-chain paraffins, and certain cycloparaffins can be converted to primary alcohols by treatment with hydrogen peroxide as the sole hydroxylating agent in the presence of a catalyst containing a Group VIII metal such as nickel composited on kieselguhr. In this way n-pentane can be converted to 1-pentanol.

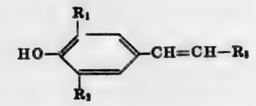
3,660,504
PROCESS FOR MANUFACTURE OF ALCOHOLS
Kenzo Oda, Osaka, Yukio Okuda, Toyonaka-shi, Naoji Kurata, Nishinomiya-shi, Kazuo Koshida, Ashiya-shi, and Masatoshi Tsuchino, Osaka, Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan
No Drawing. Continuation-in-part of application Ser. No. 595,606, Nov. 21, 1966. This application Nov. 19, 1969, Ser. No. 878,242
Claims priority, application Japan, Apr. 22, 1965, 40/71,489
Int. Cl. C07c *29/00*
U.S. Cl. 260—617 H 4 Claims

Process for the manufacture from saturated aliphatic or alicyclic hydrocarbons of corresponding alcohols by the liquid phase oxidation method with the use of molecular oxygen-containing gas, characterized in that the oxidation is carried out in the presence of a catalyst selected from the group consisting of boric acids, boric acid anhydride and mixtures thereof, and a promoter selected from ammonia, ammoniacal basic compounds, and compounds which generate ammonia on heating.

3,660,505
HINDERED ALKENYL PHENOLS FROM QUINONE METHIDE
William H. Starnes, Jr., Baytown, Tex., assignor to Esso Research and Engineering Company
No Drawing. Filed Aug. 27, 1969, Ser. No. 854,359
Int. Cl. C07c *37/06*
U.S. Cl. 260—619 R 7 Claims

The hindered alkenyl phenols having the following structure are useful as antioxidants for hydrocarbons and

especially for polyolefins such as polypropylene and are produced by the reaction of a quinone methide with an alkyl or aralkyl Grignard reagent, oxidizing the newly formed 4-alkyl- or aralkylphenol with basic ferricyanide to produce a new quinone methide, and then reacting the quinone methide with a tertiary amine or a trialkylphosphine to produce the following structure:



where

R_1 and R_2 are alkyls having 1 to 8 carbon atoms, preferably a tertiary alkyl; and
R_3 is selected from the group consisting of alkyl and aryl.

3,660,506
CONVERSION OF OLEFINS
Robert L. Banks and Joseph R. Kenton, Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Continuation of application Ser. No. 678,499, Oct. 27, 1967, which is a continuation-in-part of application Ser. No. 627,668, Apr. 3, 1967. This application Jan. 26, 1970, Ser. No. 6,045
Int. Cl. C07c *3/20*
U.S. Cl. 260—666 11 Claims

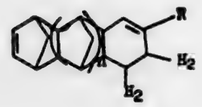
Olefins are converted by contact with a combined catalyst comprising an olefin reaction catalyst and a double bond isomerization catalyst.

3,660,507
CONVERSION OF OLEFINS
Robert E. Reusser, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Continuation of application Ser. No. 627,669, Apr. 3, 1967. This application Jan. 12, 1970, Ser. No. 1,969
Int. Cl. C07c *3/10*
U.S. Cl. 260—666 A 11 Claims

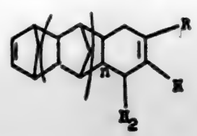
Olefins are converted into other olefins having different molecular weights by contact with a catalyst active for disproportionating propylene into ethylene and butene and with magnesium oxide which has been treated with carbon monoxide, nitric oxide, hydrogen or an olefinic or a paraffinic hydrocarbon at elevated temperature.

3,660,508
POLYCYCLIC COMPOUNDS AND COPOLYMERS DERIVED THEREFROM
Edward Charles Dart, Richard Gregory Foster, and Paul Hepworth, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Aug. 21, 1970, Ser. No. 66,139
Claims priority, application Great Britain, Sept. 3, 1969, 43,585/69
Int. Cl. C07c *13/28, 13/54*
U.S. Cl. 260—666 PY 18 Claims

A polycyclic diene having the structure



mixtures thereof with a polycyclic diene having the structure

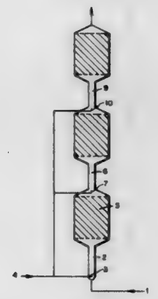


where R is a hydrocarbyl group and *n* is zero or an integer, derivatives of said dienes in which one or more of the cyclic carbon atoms other than those forming part of a carbon-carbon double bond in an endomethylene bridged ring and those indicated as carrying hydrogen atoms carries a further hydrocarbyl substituent group, a process for their preparation and vulcanisable olefin copolymers derived therefrom.

3,660,509
PREPARATION OF CYCLIC ALKENES
Robert P. Arganbright, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.
No Drawing. Filed Aug. 11, 1969, Ser. No. 849,934
Int. Cl. C07c *13/16*
U.S. Cl. 260—666 A 10 Claims

A cyclic alkene can be prepared by the intramolecular reaction of an unconjugated diolefin over a supported Group VI–B or VII–B metal oxide; for example, 1,7-octadiene reacts with itself when passed over MoO_3 on alumina to give cyclohexene and ethylene at 96 percent conversion and 90 percent selectivity (based on 1,7-octadiene feed and cyclohexene product respectively).

3,660,510
CATALYTICALLY DEHYDROGENATING ALKYLATED AROMATIC HYDROCARBONS
Hubert Kindler and Winfried Single, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
Filed Mar. 30, 1970, Ser. No. 24,035
Claims priority, application Germany, Apr. 3, 1969, P 19 17 279.3
Int. Cl. C07c *15/10*
U.S. Cl. 260—669 18 Claims



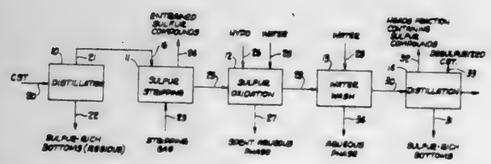
Method of catalytically dehydrogenating an alkylated aromatic hydrocarbon having at least two carbon atoms in a side-chain to a vinylaromatic hydrocarbon by rapidly passing through a catalyst zone a feedstock which has been heated to the reaction temperature and has been obtained by mixing a preheated mixture containing the alkylated aromatic hydrocarbon and optionally steam and optionally the vinylaromatic hydrocarbon with steam heated to a temperature above the temperature of reac-

tion. The preheated mixture has a temperature of from 400° to 620° C. and the steam heated to above the reaction temperature has a temperature of from 820° to 1,100° C. and the resulting feedstock has a blend temperature of from 550° to 700° C., the time taken for mixing the preheated mixture with the heated steam being less than 0.1 second while the residence time of the resulting feedstock between the mixing point and the point of entry into the catalyst zone is less than 0.2 second. The products are important monomers and comonomers.

3,660,511
FLUORODIAZADIENES AND PROCESS OF MAKING
Paul H. Ogden, Oakdale Township, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Continuation-in-part of application Ser. No. 577,192, Sept. 6, 1966. This application Apr. 3, 1967, Ser. No. 627,607
Int. Cl. C07c *119/00*
U.S. Cl. 260—566 R **14 Claims**

Trifluoromethylimino terminated compounds useful as dehydrating agents, crosslinking agents and ultraviolet light filters and process for making by isomerizing perfluoro-α,ω-bisazomethines in the presence of ionic fluoride.

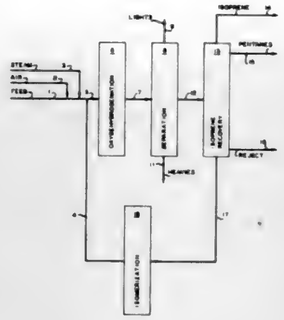
3,660,512
PROCESS FOR REMOVING SULFUR FROM CRUDE SULFATE TURPENTINE OR DISTILLATE FRACTION THEREOF
Clayton B. Hamby, Charles W. Barrett, and John M. Derfer, Jacksonville, Fla., assignors to SCM Corporation, Cleveland, Ohio
Filed Apr. 13, 1970, Ser. No. 27,578
Int. Cl. C07c *13/00, 27/02*
U.S. Cl. 260—675.5 **9 Claims**



Crude sulfate turpentine or distillate fraction thereof is desulfurized while simultaneously retarding chlorination of the organic components therein. The stock for treatment is mixed with an aqueous dispersion of hypochlorite containing not substantially more than about 10% available chlorine and having a pH from 10.1 to 10.6 until maximum desulfurization has occurred consistent with acceptable limited increase in organic chloride. The resulting desulfurized raffinate phase is separated from the aqueous phase, washed with water, and recovered.

3,660,513
ISOPRENE FROM MIXTURE OF C_5-PARAFFINS AND OLEFINS BY ONE-STEP OXIDATIVE DEHYDROGENATION WITH ISOMERIZATION OF RECYCLE n-AMYLENES
Joseph W. Davison, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Jan. 8, 1970, Ser. No. 1,433
Int. Cl. C07c *5/18*
U.S. Cl. 260—680 E **12 Claims**

Isoprene is prepared from a stream composed of mixed C_5 aliphatics, including both normal and branched, saturated and unsaturated, components, by selectively oxidatively dehydrogenating only the isoolefins within the mixed C_5 stream. The isoprene produced is recovered, while

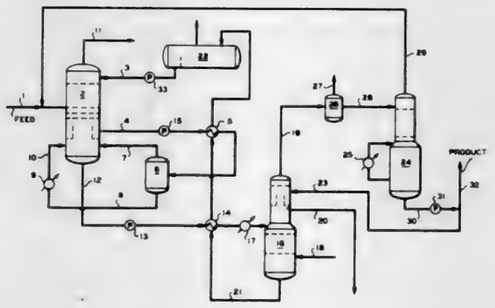


the remainder of the stream is separated into pentanes and n-amylenes, the latter being skeletally isomerized and recycled to selective dehydrogenation.

3,660,514
OXIDATIVE DEHYDROGENATION PROCESS AND CATALYST
Robert S. Cichowski, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Aug. 6, 1970, Ser. No. 61,830
Int. Cl. C07c *5/18*
U.S. Cl. 260—680 E **7 Claims**

Alkenes, alkylpyridines and alkylaromatics are dehydrogenated by contact with oxygen in the temperature range of 750 to 950° F. in the presence of a catalyst comprising iron phosphate promoted by rhenium.

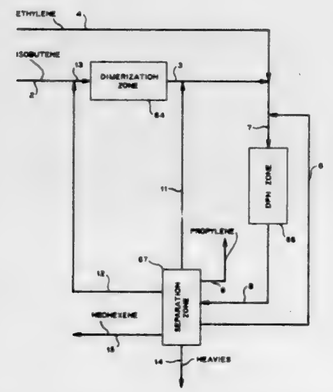
3,660,515
HYDROCARBON PURIFICATION
Ronald S. Rogers, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed July 28, 1969, Ser. No. 845,287
Int. Cl. C07c *7/00, 11/16*; C10g *21/00*
U.S. Cl. 260—681.5 R **10 Claims**



A method of separating a butene-containing stream of impurities such as oxygen, nitrogen and oxides of carbon by employing an absorption oil in which a portion of the absorption oil is recycled through a flash drum and reintroduced into the absorber, a portion of the impurities

being recycled back to the absorber from the final stripper to minimize butane losses.

3,660,516
NEOHEXENE FROM ISOBUTENE AND ETHYLENE
Donald L. Crain and Robert E. Reusser, Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed Apr. 15, 1970, Ser. No. 28,661
Int. Cl. C07c *3/62*
U.S. Cl. 260—683 D **6 Claims**



Neohexene is prepared from isobutene and ethylene by dimerizing the isobutene to diisobutylene and subjecting the diisobutylene to ethylene cleavage by way of an olefin disproportionation reaction.

3,660,517
CONVERSION OF OLEFINS
Robert E. Reusser and Donald L. Crain, Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed Nov. 6, 1969, Ser. No. 874,147
Int. Cl. C07c *3/62*
U.S. Cl. 260—683 D **1 Claim**

2,3-dimethylbutene is produced by contacting isobutylene with catalyst comprising a mixture of tungsten oxide on silica and magnesium oxide. Ethylene can be added to permit the production of neohexene.

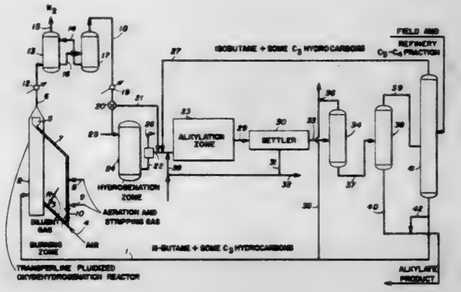
3,660,518
PROCESS UTILIZING π BASE AROMATIC MODIFIED CATALYST FOR WAX PRODUCTION
Neville L. Cull, Baker, and Roby Bearden, Jr., and Joseph K. Mertzweiller, Baton Rouge, La., assignors to Esso Research and Engineering Company
No Drawing. Filed Dec. 5, 1968, Ser. No. 781,614
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D **12 Claims**

An ethylene growth process for obtaining reaction product mixtures rich in linear C_{22} to C_{200} wax range olefins, especially linear alpha olefins of the C_{40} to C_{100} carbon number range. An ethylene oligomerization reaction is conducted in a diluent in the presence of an oligmerization catalytic mixture consisting of a transition metal halide and an organoaluminum halide, previously modified by treatment with a pi base compound, particularly a pi base aromatic compound, to yield said wax range without substantial production of high molecular weight polymers. Pressures and temperatures are selected to maintain a molar ratio of ethylene to product olefins sufficient to minimize copolymerizable of the product olefins.

3,660,519
PROCESS FOR PRODUCING HIGHER OLEFINS
Takaaki Arakawa, Iwakuni, and Yoshikuni Sato, Yamaguchi-ken, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan
No Drawing. Filed Aug. 14, 1970, Ser. No. 63,904
Claims priority, application Japan, Aug. 20, 1969, 44/65,314
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D **10 Claims**

C_6–C_{20} olefins having high linearity are obtained at high selectivity by oligomerizing ethylene at a temperature of −30° C. to +50° C. in a solvent in the presence of a catalyst, the catalyst being prepared by (a) reacting at least one titanium compound such as titanium tetrachloride with at least one organic electron donor such as acetone, acrylonitrile or triethyl phosphine, (b) adding to the reaction product an aluminum alkyl halide containing more than 1.5 and not more than 2.9 bonded halogen atoms per atom of aluminium, such as ethyl aluminium dichloride, and (c) adding at least one organosulfur compound such as ethyl mercaptan or diphenyl disulfide to the resulting mixture. These olefins are useful as the materials of plasticizers and detergents.

3,660,520
INTEGRATED OXYDEHYDROGENATION AND ALKYLATION PROCESS
Charles E. Hemminger, Peapack, N.J., assignor to Esso Research and Engineering Company
Filed Feb. 18, 1970, Ser. No. 12,224
Int. Cl. C07c *3/52, 3/54*
U.S. Cl. 260—683.43 **7 Claims**



A saturated C_3–C_4 hydrocarbon feed is dehydrogenated with an oxygen-containing gas and a fluidized catalyst, such as, bismuth phosphate on activated alumina, vanadium oxide or bismuth oxide, to form C_3 and C_4 monoolefins. The olefin fraction is then alkaylated with isoparaffin and a catalyst, such as H_2SO_4, HF or zeolites. The olefin fraction may be hydrogenated prior to alkylation to convert any butadiene formed in the dehydrogenation reaction to butene.

3,660,521
POLYMERIC COMPOUNDS
John Robert Dann, William Frank Fowler, Jr., and Susan Cook Gross, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Nov. 28, 1969, Ser. No. 880,896
Int. Cl. C08g *17/08*
U.S. Cl. 260—75 S **15 Claims**

This invention relates to polymers containing units of thio-substituted polycyclic compounds and to processes of making said polymers. In one aspect, polymers of this

invention provide very useful materials for making synthetic plastic lenses having desirable optical properties. In another aspect, these compounds are useful in photographic emulsions.

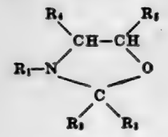
3,660,522

MODIFIED HIGH MOLECULAR WEIGHT POLYAMIDES WITH HIGH AFFINITY FOR ACID DYES

Joachim Schneider, Krefeld-Uerdingen, Karl-Heinz Hermann and Hans Rudolph, Krefeld-Bockum, and Gunter Nawrath, Dormagen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Jan. 28, 1970, Ser. No. 6,582
Claims priority, application Germany, Feb. 1, 1969, P 19 05 099.8
Int. Cl. C08g 20/38
U.S. Cl. 260—78 L 1 Claim

Modified high-molecular weight polyamides having chemically incorporated therein 0.01 to 10% by weight of an oxazolidine of the general formula



wherein

R_1 represents a C_1 to C_{20} aliphatic radical selected from the group consisting of an unsubstituted radical and a substituted radical containing functional groups inert to polyamides, a cycloaliphatic or a benzyl radical,

R_2 and R_3, which may be different or not, each represents hydrogen or a C_1 to C_{20} radical selected from the group consisting of an aliphatic, cycloaliphatic, aromatic, araliphatic, substituted aliphatic, substituted cycloaliphatic, substituted aromatic and substituted araliphatic radical, said substituted radicals containing functional groups inert to polyamides,

or R_2 and R_3, together with the carbon atom to which they are attached, form a carbocyclic or heterocyclic ring, and

R_4 and R_5, which may be different or not, each represents hydrogen or a methyl, ethyl or a phenyl radical; are provided which polyamides show an improved affinity for acid dyes.

3,660,523

ALUMINUM PRIMER CONTAINING EPOXIDE RESIN AND ISOCYANATE TERMINATED URETHANE PREPOLYMER

John R. Grawe, Metairie, La., and Raymond J. Bissig, Des Plaines, Ill., assignors to Desoto, Inc., Des Plaines, Ill.

No Drawing. Filed Feb. 25, 1970, Ser. No. 14,197
Int. Cl. C08g 45/12
U.S. Cl. 260—830 P 17 Claims

Organic solution primers intended for application to a clean aluminum surface which enable the primed surface to be more securely bonded are provided by reacting a resinous polyepoxide with an isocyanate-terminated polyurethane. The polyurethane is a reaction product of excess organic diisocyanate and diol having a molecular weight up to amout 200, the molar ratio of diisocyanate to diol being in the range of 1.2:1 to 1.75:1 so that from 60 to 90% of the isocyanate functionality of the diisocyanate is consumed by reaction to produce the isocyanate-terminated polyurethane. The polyepoxide used has an epoxy equivalency of at least 1.4, and an hydroxy equivalency in the range of .75 to 1.9, and is reacted with the polyurethane with the hydroxy functionality of the polyepoxide being in the range of 2:1 to 4:1 with respect to the isocyanate functionality of the polyurethane.

3,660,524

MOLD ARTICLES AND COATING BASED ON ORGANOPOLYSILOXANES

Ignaz Bauer, Rudolf Riedle, and Siegfried Nitzsche, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany

No Drawing. Original application Feb. 7, 1968, Ser. No. 703,549, now Patent No. 3,578,490, dated May 11, 1971. Divided and this application Aug. 5, 1970, Ser. No. 61,513
Claims priority, application Germany, Nov. 15, 1967, W 45,165
Int. Cl. C08g 47/04, 47/10, 31/30
U.S. Cl. 260—825 4 Claims

A method for preparing organosiloxane resin coatings and molded articles consists of admixing a siloxane resin containing at least one alkenyl or cycloalkenyl group per 10 silicon atoms with an organoaminosilane or organoaminosilazane and a peroxide curing agent and heating the mixture to the range from 100° to 220° C. for 1 to 24 hours to secure a tack-free product.

3,660,525

GRAFT COPOLYMER OF EPOXY MONOMER ONTO A RUBBER POLYMER LATEX AND A VINYL CHLORIDE RESIN

Testuyo Kawahara, Yokosuka, Japan, assignor to The Japanese Geon Company Ltd., Tokyo, Japan

No Drawing. Filed Sept. 24, 1970, Ser. No. 75,297
Claims priority, application Japan, Sept. 26, 1969, 44/76,198, 44/76,199; June 20, 1970, 45/62,768, 45/62,769
Int. Cl. C08g 45/04
U.S. Cl. 260—836 17 Claims

A graft copolymer obtained by polymerizing 50–150 parts by weight of monomeric mixture consisting of 95–15 weight of an aromatic vinyl compound, 0–35 weight percent of a vinyl cyanide compound and 0–80 weight percent of a methacrylic ester, along with 0.01–10 parts by weight of an unsaturated olefinic compound having a three-membered epoxy group, in the presence of 100 parts by weight of a diene type rubbery polymer latex (as the rubber portion).

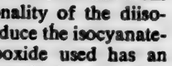
3,660,526

ADHESIVE COMPOSITION CONTAINING A VINYL ESTER RESIN AND AN ACRYLIC ESTER OF TETRAHYDROFURFURYL ALCOHOL OR DIHYDRODICYCLOPENTADIENOL

Bernd Wegemund, Hilden-Rhineland, and Gunter Tauber, Dusseldorf-Holthausen, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Filed Mar. 30, 1970, Ser. No. 23,957
Claims priority, application Germany, Apr. 24, 1969, P 19 20 830.1
Int. Cl. C08g 45/04
U.S. Cl. 260—837 R 3 Claims

Adhesive compositions hardenable under exclusion of oxygen comprising liquid esters of methacrylic and acrylic acids which harden under exclusion of oxygen, an organic percompound selected from the group consisting of organic hydroperoxides having from 3 to 18 carbon atoms and organic peroxides whose half life decomposition temperature after 10 hours is greater than 85° C., and at least 10% by weight of an epoxide-group-free reaction product from a glycidyl ether of a polyhydric phenol and an acid of the formula



wherein R' is a member selected from the group consisting of hydrogen, lower alkyl and halogen, said reaction product having a molecular weight of between about 300 and 2500. Said compositions form a high tensile shear strength adhesive bond.

3,660,527

METHOD OF THE SOLUTION POLYMERIZATION OF ACRYLONITRILE

Hiroshi Sakai, Zenzi Izumi, and Hideji Kitagawa, Iyo-gun, Satosi Hamada, Matsuyama, and Masakuni Hoshina, Iyo-gun, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

No Drawing. Filed June 15, 1970, Ser. No. 46,542
Int. Cl. C08f 3/76, 15/22
U.S. Cl. 260—85.5 9 Claims

A method wherein, in carrying out the solution polymerization of either acrylonitrile singly or a mixture consisting of at least 70 mol percent thereof and at least one polymerizable vinyl compound, in a polymerization solvent consisting predominantly of a dialkyl sulfoxide, using a polymerization initiator of the azo compound type, the polymerization is effected in the presence, as a discoloration inhibitor, of at least one compound of the group consisting of the inorganic acid salts and organic acid salts of beta-hydroxyethylhydrazine and beta-cyanoethylhydrazine. These discoloration inhibitors not only demonstrate a satisfactory discoloration preventive effect but also bring about an improvement in the polymerization speed and degree of polymerization of the resulting polymer.

3,660,528

UNSATURATED POLYESTER RESINS, METHOD OF THEIR PRODUCTION AND APPLICATION

Alla Elisbarovna Kostenko, Komsomolsky prospekt 8, kv. 56; Valentina Vasilievna Karpukhina, Ulitsa Lishchanskaya 31b, kv. 51; and Valentina Petrovna Tovpyaga, Ulitsa Donetskaya 44a, kv. 33, all of Severodonetsk Luganskoi Oblasti, U.S.S.R.; Gila Naumovich Freidlin, Prospekt Lenina 135, kv. 59; and Ary Artemovich Adamov, Prospekt Leninа 135, kv. 71, both of Tula, U.S.S.R.; and Lidia Fedotovna Berezhnaya, Ulitsa Kalinina 15, kv. 10, Severodonetsk Luganskoi Oblasti, U.S.S.R.

No Drawing. Filed Feb. 12, 1970, Ser. No. 11,005
Int. Cl. C08f 21/00, 43/00
U.S. Cl. 260—861 10 Claims

A method of producing unsaturated polyester resins that contain terminal vinyl groups in the polymer chain, that set without additional introduction of a cross-linking monomer, with the formation of polymers featuring high thermostability and mechanical strength; the method residing in condensing polyhydric alcohols with unsaturated acids or anhydrides thereof, or with mixtures of saturated and unsaturated acids or anhydrides thereof, with the introduction directly at the polycondensation stage of at least one divinyl ester of aliphatic dicarboxylic acids of the formula

$$CH_2{=}CHOOC(CH_2)_nCOOCH{=}CH_2$$

where n ranges from 3 to 8, said resins being used as a basis for preparing various laminated plastics, adhesives, varnishes and compounds.

3,660,529

REINFORCEMENT OF PLASTICS WITH SUSPENSION EMULSION INTERPOLYMERS

Frank O. Groch, Irvington, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Feb. 16, 1970, Ser. No. 11,851
Int. Cl. C08f 37/18
U.S. Cl. 260—876 R 25 Claims

Rigid plastics are reinforced by admixture with a plurality of rubber-containing interpolymer particles which are prepared by the suspension polymerization of a vinyl monomer, such as vinyl chloride, in the presence of an aqueous emulsion of particles comprising a hard inner core of a polymer having a glass transition temperature (Tg) above about 25° C. and an outer layer comprising a crosslinkable rubber having a Tg of less than about 25° C. The resulting reinforced plastics display excellent physical properties.

3,660,530

BLENDS OF ETHYLENE POLYMERS WITH POLYETHYLENE-POLYBUTENE-1 BLOCK COPOLYMERS HAVING IMPROVED STRESS CRACK RESISTANCE

Louis D. Hoblit and Carl P. Strange, Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 514,119, Dec. 15, 1965. This application Aug. 28, 1968, Ser. No. 755,831
Int. Cl. C08f 29/04, 29/10
U.S. Cl. 260—876 10 Claims

Blends of ethylene polymers having improved stress crack resistance comprising a high density, high molecular weight polyethylene and a copolymeric constituent containing as an essential ingredient at least one block copolymer of polyethylene and a polymer of butene-1. A method for the preparation thereof which comprises (1) polymerizing ethylene to high density, high molecular weight polyethylene in the presence of a heterogeneous catalyst system, such as a mixture of triisobutyl aluminum and titanium tetrachloride, and a molecular weight control agent, such as hydrogen; (2) withdrawing a major part of the resulting polymer slurry from the polymerization zone; (3) introducing a gaseous alpha-olefin, such as butene-1, into the remaining portion of the still catalytically active polymer slurry and polymerizing the resulting mixture to obtain a block copolymer of polyethylene and a polymer of butene-1; and (4) admixing the withdrawn polymer slurry with the remaining polymer slurry.

3,660,531

THERMOPLASTIC RESIN BLEND OF POLYPHENYLENE OXIDE WITH BUTADIENE-CONTAINING POLYMERS

Robert L. Lauchlan, Granger, and Gray A. Shaw, South Bend, Ind., assignors to Uniroyal, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 741,193, June 28, 1968. This application June 4, 1969, Ser. No. 830,472
Int. Cl. C08f 29/12, 41/12
U.S. Cl. 260—876 B 51 Claims

Blends of thermoplastic polyphenylene oxide resin (which optionally contains an alkenyl aromatic polymer such as a styrene polymer) with butadiene homopolymers and copolymers are characterized by an unusually useful combination of properties, particularly low temperature melt processability in combination with high impact strength and flexural strength.

3,660,532

CASTABLE ELASTOMERS AND THEIR MANUFACTURE

Byron H. Werner, Akron, and Robert A. Hayes, Cuyahoga Falls, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Jan. 30, 1970, Ser. No. 7,271
Int. Cl. C08f 21/02
U.S. Cl. 260—861 24 Claims

A polyester diol or a polyether diol or other diol is reacted with a monomeric unsaturated anhydride or acid chloride to produce a terminally unsaturated adduct hav-

ing a molecular weight of 2,000 to 20,000. On polymerization of this prepolymer with styrene or other vinyl monomer a castable, vulcanized elastomeric resin is obtained.

3,660,533
FLAME-RESISTANT BLOCK COPOLYMERS
William O. Drake and Donnie G. Brady, Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Filed July 29, 1970, Ser. No. 59,347
Int. Cl. C08f 37/00, 45/00
U.S. Cl. 260—878 B 6 Claims

Ethylene-propylene block copolymers are rendered flame-resistant by incorporation therein of a flame-retardant system consisting of a mixture of brominated and chlorinated bis(cycloalkenyl) compounds and antimony trioxide.

3,660,534
PROCESS FOR CONTROLLING MELT FLOW OF RUBBER-MODIFIED POLYMERS
Frederick E. Carrock, Paramus, and Kenneth W. Doak, Wyckoff, N.J., and Alfred J. Ackerman, Mentor, Ohio, assignors to Dart Industries Inc., Los Angeles, Calif.
No Drawing. Continuation-in-part of application Ser. No. 632,194, Apr. 20, 1967. This application July 9, 1970, Ser. No. 53,699
Int. Cl. C08f 15/04
U.S. Cl. 260—880 R 3 Claims

The melt flow of rubber-modified polystyrene, ABS and the like is controlled by contacting polymerizable vinyl monomers with a chelating agent such as ethylenediaminetetraacetic acid and a mercaptan chain regulator such as tertiary dodecyl mercaptan in the presence of water and polymerizing the resulting mixture.

3,660,535
PROCESS FOR THE PRODUCTION OF ALKENYL AROMATIC POLYMERS CONTAINING A REINFORCING POLYMER THEREIN
Charles R. Finch and Jerold E. Kuntzsch, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Continuation-in-part of application Ser. No. 848,708, Aug. 8, 1969. This application Sept. 23, 1970, Ser. No. 74,846
Int. Cl. C08f 15/04
U.S. Cl. 260—880 12 Claims

In a stratifying polymerization method for the preparation of styrene-type polymers polymerized in the presence of a reinforcing agent such as rubber, substantial control of the characteristics of the end product as well as particle size of the rubber is obtained by employing varying degrees of recirculation in an initial stage of a continuous polymerization.

3,660,536
PROCESS FOR MANUFACTURE OF POLYMERS OF CONJUGATED DIENES
Satoshi Ayano, Naka-gun, Kanagawa-ken, and Seizo Yabe, Yokohama-shi, Japan, assignors to Japan Gas-Chemical Company, Inc., Tokyo, Japan
No Drawing. Filed Dec. 27, 1968, Ser. No. 787,618
Claims priority, application Japan, Dec. 29, 1967, 43/84,844
Int. Cl. C08d 1/32; C08f 15/04
U.S. Cl. 260—880 R 6 Claims

A process for the manufacture of polymers of conjugated dienes which comprises polymerizing anion-polymerisable hydrocarbons of the conjugated diene series in a non-polar solvent in the presence of a catalytic amount of an adduct of lithium and hydrocarbon, said adduct being prepared by reacting metallic lithium with a polycyclic aromatic hydrocarbon having 10–30 carbon atoms in an aliphatic ether, removing from the reaction product insoluble matter, adding to the obtained solution 1–10 moles, per mole of the lithium in the solution, of an ethylenically unsaturated hydrocarbon selected from the group consisting of conjugated diene hydrocarbons, vinyl-substituted aromatic hydrocarbons and vinylidene-substituted aromatic hydrocarbons, and thereafter substantially removing the aliphatic ether from the resulting solution.

3,660,537
GRAFT COPOLYMERS CONTAINING ALLYL METHACRYLATE AND DIETHYLAMINOETHYL METHACRYLATE
Michael Fryd, Broomall, Pa., and Ying K. Lee, Cherry Hill, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Jan. 28, 1970, Ser. No. 6,571
Int. Cl. C08f 15/16, 15/18
U.S. Cl. 260—885 7 Claims

Graft copolymers having a backbone which is a copolymer composed of monomer

(1) units of the esters of acrylic acid (AA) and methacrylic acid (MMA)
(2) allyl methacrylate (AMA) units, and optionally
(3) diethylaminoethyl methacrylate (DEAM) units

and polymeric graft segments composed of monomer units of 2-ethyl hexyl acrylate (2-EHA) and/or butyl acrylate (BA).

3,660,538
HEAT-RESISTANT COMPOSITION COMPRISING CHLORINATED POLYVINYL CHLORIDE AND COPOLYMER OF METHYL METHACRYLATE AND ALPHAMETHYL STYRENE
Toshiharu Matsumiya, Kawasaki-Nishi, Japan, assignor to Tokuyama Sekisui Kogyo Kabushiki Kaisha, Osaka-shi, Japan
No Drawing. Filed June 1, 1970, Ser. No. 42,577
Claims priority, application Japan, June 24, 1969, 44/49,846
Int. Cl. C08f 29/24
U.S. Cl. 260—899 4 Claims

The present invention relates to a method for improving the heat resistance of chlorinated polyvinyl chloride resins by adding a copolymer of methyl methacrylate and α-methyl styrene to the polyvinyl chloride, and to a heat resistant resin composition formed of a blend of 80–97 parts of chlorinated polyvinyl chloride resin and correspondingly 20–3 parts of a copolymer of methyl methacrylate and α-methyl styrene.

3,660,539
PROCESS COMPRISING REACTION WITH ELEMENTAL PHOSPHORUS AND REACTION PRODUCT THEREOF
Chisung Wu, New Brunswick, N.J., assignor to Union Carbide Corporation, New York, N.Y.
No Drawing. Original application Feb. 15, 1966, Ser. No. 527,492. Divided and this application May 21, 1969, Ser. No. 826,676
Int. Cl. C07f 9/02, 9/28, 9/40
U.S. Cl. 260—920 6 Claims

Organophosphorus compositions produced by reacting (a) elemental phosphorus, (b) an epoxide or an episulfide, and (c) an alcohol or a mercaptan, in the presence of a catalytic quantity of a base, are further reacted with an aldehyde to convert substantially all of the phosphinous hydrogen in said organophosphorus compositions

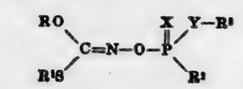
to hydroxymethyl (including substituted-hydroxymethyl) groups. The aldehyde-modified compositions can be oxidized to convert trivalent phosphorus to pentavalent phosphorus. The subject compositions and their oxidized derivatives can be reacted with ethylene oxide to form surfactants or with drying oil acids to form surface compositions.

3,660,540
O-LOWER ALKYL-O-(2 - CARBISOPROPOXY-PHENYL) PHOSPHORIC ACID DIESTER AMIDES
Wolfgang Hofer, Wuppertal-Elberfeld, Gerhard Schrader, Wuppertal-Cronenberg, and Ingeborg Hammann, Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed May 26, 1970, Ser. No. 40,736
Claims priority, application Germany, June 13, 1969, P 19 30 216.0
Int. Cl. C07f 9/12; A01n 9/36
U.S. Cl. 260—941 9 Claims

O-lower alkyl-O-(2-carbisopropoxyphenyl) phosphoric acid diester amides wherein the amide group may be mono-substituted with a lower alkyl radical, which possess arthropodicidal, especially acaricidal and insecticidal, properties and new methods for their preparation.

3,660,541
OXIMINO PHOSPHATES AND PHOSPHONATES
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.
No Drawing. Filed Apr. 6, 1970, Ser. No. 26,070
Int. Cl. C07f 9/16; A01n 9/36
U.S. Cl. 260—944 3 Claims

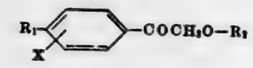
Compounds having the formula



in which X is oxygen or sulfur; Y is oxygen or sulfur; R is alkyl; R^1 is alkyl; R^2 is alkyl or alkoxy and R^3 is (1) phenyl, or (2) mono-, di- or tri-substituted phenyl wherein the substituent is (a) nitro or (b) halogen, and their use as insecticides, and acaricides are disclosed. Also, the intermediates for preparing the compounds and a method for preparing the intermediates are disclosed.

3,660,542
ALKYLBENZOYLCARBINOL PHOSPHATE ESTERS
Haruhiko Adachi, Kobe, and Takuichi Miki, Amagasaki, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
No Drawing. Original application Oct. 30, 1967, Ser. No. 679,206. Divided and this application Dec. 11, 1969, Ser. No. 889,785
Int. Cl. A01n 9/36; C07f 9/08
U.S. Cl. 260—946 10 Claims

Alkylbenzoylcarbinol esters of the formula

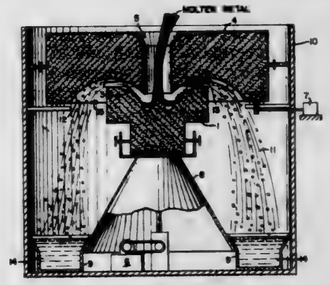


wherein R_1 is a hydrocarbon residue having from 3 to 10 carbon atoms, R_2 is an acyl of a carboxylic acid having up to 10 carbon atoms or an inorganic radical derived from an inorganic polybasic acid by the removal of OH therefrom, and X is hydrogen or halogen attached in ortho- or meta-position to the group R_1 in the benzene ring, have hypothermic or anti-inflammatory activity with low toxicity to mammals.

3,660,543
S-2-HYDROCARBYLTHIO-ALKYL ESTERS OF THIOPHOSPHORUS ACIDS
Wolfgang H. Mueller, Elizabeth, Warren A. Thaler, Matawan, and Alexis A. Oswald, Mountainside, N.J., assignors to Esso Research and Engineering Company
No Drawing. Filed Mar. 4, 1969, Ser. No. 805,115
Int. Cl. C07f 9/16; A01n 9/36
U.S. Cl. 260—948 14 Claims

Neutral S-2-hydrocarbylthioalkyl esters of thiophosphorous acids are prepared through the displacement reaction of a 2-hydrocarbyl-2-hydrocarbylthioethyl halide alone or in admixture with the corresponding isomeric secondary halide compound with a diorgano thiophosphate, thiophosphonate or thiophosphinate salt. The displacement reactions are conducted at moderate temperatures and pressures, preferably in the presence of a polar diluent. The preferred thiophosphorus acid salt reactants are salts of dialkyl dithiophosphoric acids and dialkyl monothiophosphoric acids. The preferred halide reactants are 2-alkyl-2-alkylthioethyl chlorides alone or in combination with 1-alkyl-2-alkylthioethyl chlorides. The compounds derived from the displacement reactions possess particularly good pesticidal activity.

3,660,544
PROCESS FOR PRODUCING SIZED FERROALLOY PARTICLES
Claude Frank Young and Charles Martin Offenhauer, Niagara Falls, N.Y., assignors to Union Carbide Corporation, New York, N.Y.
Filed Apr. 15, 1970, Ser. No. 28,594
Int. Cl. B01j 2/14
U.S. Cl. 264—8 7 Claims



A process for disintegrating a stream of molten ferroalloy into solidified spheroidal to spherical configurations for use as additives in metal producing furnace operations or the like.

3,660,545
METHOD OF CENTRIFUGALLY CASTING THIN EDGED CORNEAL CONTACT LENSES
Otto Wichterle, Prague, Czechoslovakia, assignor to Ceskoslovenska Akademie Ved
Continuation of application Ser. No. 810,072, Jan. 31, 1969, which is a division of application Ser. No. 318,627, Oct. 24, 1963, which in turn is a continuation-in-part of application Ser. No. 229,727, Oct. 10, 1962. This application Nov. 4, 1970, Ser. No. 86,942
Claims priority, application Czechoslovakia, Dec. 27, 1961, 7,654/61
The portion of the term of the patent subsequent to Oct. 29, 1985, has been disclaimed
Int. Cl. B29d 11/00
U.S. Cl. 264—1 8 Claims

A corneal contact lens is made by polymerizing a catalyzed mixture of acrylates and/or methacrylates of polyhydric alcohols with a water miscible solvent in a mold

cavity having a spherically concave bottom surface and being rotated about an axis perpendicular to that surface at a speed to produce an exposed concave surface of the

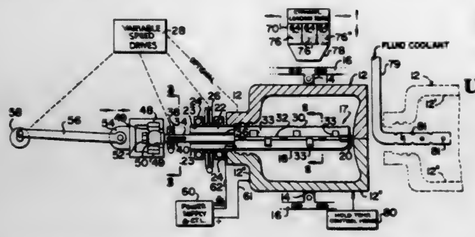


polymerization mixture, which is sufficiently different from a paraboloid shape because of surface tension effects to have a center effective as a corrective lens.

3,660,546
PROCESS FOR THE PREPARATION OF BLACK POWDER
Kjell Lövold, Nittedal, Norway, assignor to Norsk Spraengstofindustri A/S, Oslo, Norway
Filed Feb. 4, 1970, Ser. No. 8,540
Int. Cl. C06b *21/02*
U.S. Cl. 264—3 C **5 Claims**

The present invention relates to a process for the preparation of meal black powder from the raw materials potassium nitrate, sulphur and activated carbon, wherein the raw materials are mixed and simultaneously ground and pulverized under continuous introduction into a jet mill of known construction. The invention also relates to the further processing of the meal black powder, comprising compacting, disintegration, sieving and polishing the obtained black powder granules, wherein the polishing is carried out in a similar jet mill and pulverized graphite is blown into the mill for further polishing of the powder granules.

3,660,547
ELECTROSTATIC MOLDING PROCESS
Herbert S. Ruekberg, Highland Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Original application Oct. 21, 1965, Ser. No. 499,893, now Patent No. 3,478,387, dated Nov. 18, 1969. Divided and this application June 2, 1969, Ser. No. 839,764
Int. Cl. B26b *5/04*
U.S. Cl. 264—24 **22 Claims**



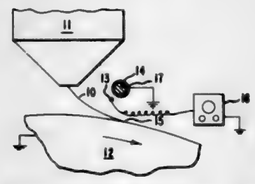
A method for producing containers wherein a charged comminuted material is introduced into a channel having a similar charge. The channel is positioned within a mold having a potential of opposite charge. The material is agitated in the channel to assist in the electrostatic distribution of the material in the mold. The temperature of the mold is controlled to fuse the deposited material in the form of a container and in the fused container is removed from the mold. The method may be used for the fabrication of plastic containers, fiber reinforced containers and foamed wall containers.

3,660,548
METHOD FOR CONTINUOUSLY PRODUCING FOAMED PANELS HAVING UNIFORM PROPERTIES
Hiroshi Komada, Akashi, and Kuniyasu Nakamura, Hyogo, Japan, assignors to The Toyo Rubber Industry Co., Ltd., Osaka, Japan
Continuation-in-part of abandoned application Ser. No. 408,006, Nov. 2, 1964. This application June 11, 1969, Ser. No. 832,393
Claims priority, application Japan, Nov. 6, 1963, 38/59,997
Int. Cl. B29d *27/04*
U.S. Cl. 264—47 **5 Claims**



A method for continuously producing foamed plastic panels having uniform properties by feeding a pair of sheets of flexible facing materials continuously downwardly into a space between two downwardly running conveying means through the upper end of the space, joining the side edges of the two sheets of facing material to form a tubular container, and running the conveying means to convey the foaming liquid material and the facing materials downwardly, whereby panels having flexible sheet material on both surfaces and a foam core are produced from the lowest end of the conveying means.

3,660,549
ELECTROSTATIC PINNING OF DIELECTRIC FILM
William E. Hawkins, Circleville, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of application Ser. No. 823,810, May 12, 1969. This application Mar. 23, 1970, Ser. No. 21,694
Int. Cl. B29d *7/02*
U.S. Cl. 264—22 **12 Claims**



A process for electrostatically pinning a moving dielectric web to a roll which comprises establishing a potential difference between a pinning wire and a second electrode independent of the roll, and preferably surrounding at least the first electrode with a gas in which a specific minimum current can be generated.

3,660,550
DRAWING OF THERMOPLASTIC SYNTHETIC LINEAR POLYMERIC THREAD AND LOCALIZING THE NECK PORTION OF THE THREAD
Hendrinus Sempel, Arnhem, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.
Filed Oct. 7, 1969, Ser. No. 864,453
Claims priority, application Netherlands, Oct. 8, 1968, 6814351
Int. Cl. B29c *17/02*; B29d *23/13*; G01k *13/06*; G01n *25/00*
U.S. Cl. 264—40 **3 Claims**



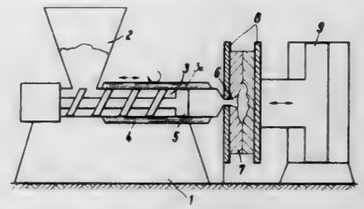
A process for drawing a thermoplastic synthetic linear polymeric thread which comprises feeding the thread to a drawing zone; subjecting the thread to an axial load in the drawing zone whereby the thread necks down and is permanently deformed to form a neck portion therein; localizing the neck portion of the thread in the drawing zone and discharging the thread from the drawing zone. The neck portion in the thread is localized by measuring the temperature of the thread at the point where the neck portion is desired to be positioned, and when the neck portion moves away from its desired position, by changing at least one process parameter that affects the position of the neck in response to the temperature measurement so that the neck portion is caused to return to its desired position. Also an apparatus for carrying out this process and the resulting drawn thread are disclosed.

3,660,551
METHOD OF IMPROVING PROPERTIES OF POLYOLEFIN SHEET
Rinnosuke Susuki, Tokyo, Hiroshi Hoshi, Narashino-shi, Jiro Saito, Tokyo, Humio Ito, Ishikawa-shi, and Keiichi Murakami, Sendai-shi, Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan
No Drawing. Filed Dec. 15, 1969, Ser. No. 885,341
Claims priority, application Japan, Dec. 21, 1968, 43/93,777; Dec. 23, 1968, 43/93,871; May 13, 1969, 44/36,188
Int. Cl. B29d *7/14, 27/00*; C08 *47/22*
U.S. Cl. 264—49 **5 Claims**

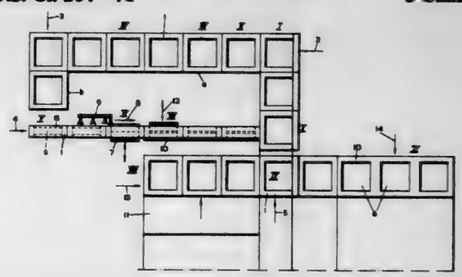
A method of improving the properties of polyolefin sheet characterized by the steps that: a polyolefin resin such as polyethylene, polypropylene or a copolymer of ethylene and propylene containing calcium sulfite or polyvinyl acetate together with said calcium sulfite is subjected to calendering or extrusion molding to form a sheet and the sheet is subjected to treatment with an inorganic acid or an aqueous solution of phosphate.

3,660,552
PROCESS OF MANUFACTURING CROSS-LINKED MOLDED ARTICLES
Eberhard Hinz, Neu Isenburg, Helmut Kaufer, Metzkausen, and Reiner Theobald, Frankfurt, Germany, assignors to Vereinigte Deutsche Metallwerke AG, Frankfurt am Main, Germany
Filed Mar. 19, 1970, Ser. No. 21,061
Claims priority, application Germany, Mar. 25, 1969, P 19 15 033.5
Int. Cl. B29f *1/08*
U.S. Cl. 264—68 **7 Claims**

Improved process of forming cross-linked thermoplastic polymer molded articles by mixing the thermoplastic and a suitable free radical initiating cross-linking agent, both in solid form, at a temperature below the actuation temperature of the free radical generator and below the heat plasticization temperature of the thermoplastic polymer; injecting such mixture through a nozzle into a preheated mold under such conditions as to heat the molding material mixture passing through the nozzle to a temperature which is above the activation temperature of the free radical generator and above the melting point of the thermoplastic polymer; and holding the molding material mixture in the mold at a temperature and for a time sufficient to at least initiate cross-linking and formation of said molded article.



3,660,553
METHOD FOR MANUFACTURING ARTICLES FROM A HARDENING SUBSTANCE
Dirk Kalkman, Krimpen aan den Ijssel, Netherlands, assignor to N.V. Machinefabriek Gebr. Kalkman, Krimpen aan den Ijssel, Netherlands
Filed Aug. 21, 1969, Ser. No. 851,917
Claims priority, application Netherlands, Aug. 22, 1968, 6811992
Int. Cl. B28b *11/08*
U.S. Cl. 264—71 **5 Claims**



A method of manufacturing concrete tiles on a production line basis. Molds with removable bottom plates are filled and packed with concrete. The molds are then tilted to a vertical position where the bottom plate is removed while an additional plate is placed on the other side. The mold is then returned to a horizontal position on top of the newly added plate and the mold frame is removed leaving the desired tile shape to set.

3,660,554
PROCESS FOR THE PREPARATION OF SHAPED MATERIALS OF AMIDOVINYL COMPOUND-GRAFTED AROMATIC POLYESTERS
Takayuki Okamura, Kurashiki, Japan, assignor to Kurashiki Rayon Co., Ltd., Kurashiki, Japan
No Drawing. Filed July 15, 1969, Ser. No. 841,979
Claims priority, application Japan, July 17, 1968, 43/50,331
Int. Cl. D01f *7/06*; B29c *25/00*
U.S. Cl. 264—78 **7 Claims**

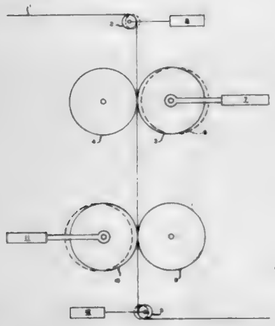
A process for the preparation of an amidovinyl compound-grafted shaped material of aromatic polyester, which comprises heating a shaped material of aromatic polyester at a temperature of 60–150° C., while keeping it in contact with a solvent containing at least one amido-

vinyl compound, the solvent being such that the solubility of the amidovinyl compound therein is 0.1–50 g. per 100 cc. at 45° C., and the degree of swelling of the shaped material with the solvent is 0.5–20% at 60° C.

3,660,555
METHOD OF BONDING NONWOVEN TEXTILE FABRICS

Cloral O. Rains, Bartlesville, Okla., and Donald M. McCord, Greenville, S.C., assignors to Phillips Petroleum Company

Filed Mar. 6, 1969, Ser. No. 804,770
Int. Cl. B29d *7/14*
U.S. Cl. 264—126 **8 Claims**



A batt of fibers containing at least some thermoplastic fibers arranged in either ordered or random orientation is bonded into a coherent batt by passing the batt through the nip of two pairs of rollers comprising one heated roller and one cool roller, the heated rollers being on opposite sides of said batt.

3,660,556
PROCESS FOR PRODUCING POLYVINYL ALCOHOL FILAMENTS

Tadao Ashikaga and Susumu Kousaka, Kurashiki, Japan, assignors to Kurashiki Rayon Co., Ltd., Kurashiki, Japan

No Drawing. Filed July 23, 1969, Ser. No. 844,174
Claims priority, application Japan, July 26, 1968, 43/53,230
Int. Cl. D01f *7/00*
U.S. Cl. 264—185 **5 Claims**

A process for producing polyvinyl alcohol filaments of circular cross-section excelling in drawability which comprises using as a spinning solution an aqueous polyvinyl alcohol solution of 10–30 weight percent concentration containing 1–5 weight percent, based on the polyvinyl alcohol, of a water-soluble boric acid compound, the pH of said solution being adjusted to 3–5, and spinning said aqueous polyvinyl alcohol solution from circular spinning holes into an aqueous coagulating bath containing 20–100 grams per liter of an alkali hydroxide and 100–180 grams per liter of sodium sulfate, the pH of said bath being adjusted to 13.5–14.

3,660,557
POLYESTER PRODUCT

Walter J. Smith, Hopewell, Va., and John R. Bukey, Pottstown, Pa., assignors to The Firestone Tire & Rubber Company

No Drawing. Continuation of application Ser. No. 743,637, July 10, 1968, which is a division of application Ser. No. 483,318, Aug. 27, 1965. This application Nov. 12, 1970, Ser. No. 89,027
Int. Cl. D01d *5/12*
U.S. Cl. 264—210 **3 Claims**

By incorporating by melt-blending certain diamides in predominantly polyester fiber-forming compositions, the fibers, filaments, yarn, cord, strapping and the like produced therefrom may be drawn at a draw ratio exceeding the draw ratio at break for the base polymeric material. The tensile strength of the product, as a result of the drawing operation, is greater than is obtainable from the base polymeric material. N,N'-ethylene bis-stearamide is a particularly suitable diamide for this purpose.

3,660,558
DETERMINATION OF CAPACITATION OF SPERM EMPLOYING A FLUORESCENT FORM OF TETRACYCLINE

Ronald J. Ericsson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

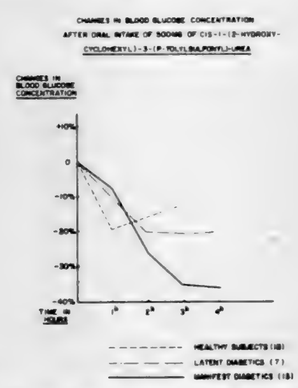
No Drawing. Continuation-in-part of application Ser. No. 639,318, May 18, 1967. This application May 11, 1970, Ser. No. 36,446
Int. Cl. G01n *31/22*
U.S. Cl. 424—7 **4 Claims**

A complex of mammalian sperm with an effective amount of a fluorescent form of a tetracycline for imparting to the complex fluorescence during absorption of ultraviolet or ultraviolet-blue light is used in a method of diagnosing sperm capacitation. The method consists essentially of placing the complex in the mammalin uterus in vivo for a period of from about 2 to about 8 hours, removing the complex from the uterus, and determining the presence or absence of fluorescence in the removed complex.

3,660,559
DIAGNOSTIC METHOD

Herbert Alfred Buckert, Basel, and Eckehard Lorch, Reinach, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed June 22, 1970, Ser. No. 48,227
Int. Cl. G01n *31/00, 33/16*
U.S. Cl. 424—9 **5 Claims**



A method for the detection of diabetes utilizing cis-1 - (2 - hydroxycyclohexyl) - 3 - (p-tolylsulfonyl)-urea is described.

3,660,560
1-p-CHLOROPHENYL - 1,3,3-TRIMETHYL-1,3-PROPANE-DIOL OR THE TREATMENT OF DEPRESSIVE STATES

Raymond Valette, Paris, France, assignor to Albert Rolland S.A., Paris, France

No Drawing. Application Aug. 2, 1968, Ser. No. 749,574, which is a continuation-in-part of application Ser. No. 262,849, Mar. 5, 1963. Divided and this application Nov. 20, 1970, Ser. No. 91,529
Int. Cl. A61k *27/00*
U.S. Cl. 424—343 **3 Claims**

This invention relates to a pharmaceutical composition containing in association with a physiologically inert carrier from 1 to 95% by weight of 1-p-chlorophenyl-1,3,3-trimethyl-1,3-propane-diol, as an active ingredient.

3,660,561
HAIR SPRAY

Thomas H. Shepherd, Hopewell, and Francis E. Gould, Princeton, N.J., assignors to National Patent Development Corporation, New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 567,856, July 26, 1966, now Patent No. 3,520,949, Ser. No. 650,259, June 30, 1967, and Ser. No. 654,044, July 5, 1967. This application is also a division of application Ser. No. 743,626, July 10, 1968. This application Sept. 9, 1970, Ser. No. 70,889
Int. Cl. A61k *7/10*
U.S. Cl. 424—47 **10 Claims**

A hair straightening and/or hair setting formulation is prepared by adding a hydrophilic acrylate or methacrylate to an appropriate cosmetic formulation.

3,660,562
METHOD AND COMPOSITIONS FOR IMPROVING FEED EFFICIENCY OF RUMINANTS

George M. Grass, Jr., Phoenixville, Roger C. Parish, King of Prussia, and John E. Trei, Malvern, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed June 24, 1970, Ser. No. 49,558
Int. Cl. A23k *1/175*
U.S. Cl. 424—78 **9 Claims**

Compositions and a method of improving feed efficiency of ruminant animals by inhibiting methanogenesis in the rumen utilizing encapsulated or coated volatile liquid or solid hydrocarbons having at least two halo atoms and from one to six carbon atoms. Preferred compounds to be used as the active ingredient are chloroform, carbon tetrachloride, methylene chloride and hexachloroethane.

3,660,563
WATER SOLUBLE ENTRAPPING OF A DRUG

Francis E. Gould, Princeton, and Thomas H. Shepherd, Hopewell, N.J., assignors to National Patent Development Corporation, New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 567,856, July 26, 1966, now Patent No. 3,520,949, Ser. No. 650,259, June 30, 1967, and Ser. No. 654,044, July 5, 1967. This application is also a division of application Ser. No. 833,182, June 13, 1969, now Patent No. 3,576,760. This application Sept. 9, 1970, Ser. No. 70,941
Int. Cl. A61k *9/00*
U.S. Cl. 424—81 **4 Claims**

Materials are entrapped in water soluble hydroxyalkyl acrylate or methacrylate polymers to provide ready sources of the material by the deletion of water. Thus, there can be entrapped drugs, pesticides, flavoring agents and fragrances.

3,660,564
INTERFERON INDUCTION

Masahiko Yoneda, Kobe, Hideaki Yaoi, Nara, Makoto Kida and Shinobu Matsuda, Osaka-fu, and Hideo Shirafuji, Kyoto-fu, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Dec. 23, 1969, Ser. No. 887,779
Claims priority, application Japan, Dec. 24, 1968, 43/94,828
Int. Cl. A61k *27/00*
U.S. Cl. 424—85 **13 Claims**

A method for inducing interferon formation in vivo and in vitro. To a host or a tissue culture is administered a double-stranded complex of (a) heteropolynucleotide essentially consisting of inosinic acid and guanylic acid as its nucleotide units and (b) homopolynucleotide essentially consisting of cytidylic acid as its nucleotide unit, the heteropolynucleotide (a) being of a sedimentation constant falling within the range from about 2S to about 15S in terms of Svedberg units, and the ratio of the average number of the inosinic acid units therein being from about 0.7 to about 20 per unit of the guanylic acid.

3,660,565
RUBELLA VACCINE AND METHOD

Stanley A. Plotkin, Philadelphia, Pa., assignor to The Wistar Institute, Philadelphia, Pa.

No Drawing. Filed Apr. 17, 1968, Ser. No. 721,926
The portion of the term of the patent subsequent to Dec. 1, 1987, has been disclaimed
Int. Cl. C12k *5/00, 7/00*
U.S. Cl. 424—89 **1 Claim**

A rubella vaccine, capable of inducing immunity in humans, without spread to contacts and with reduced nasopharyngeal excretion of virus, is prepared by passing rubella virus in WI–38 human diploid lung fibroblasts.

3,660,566
EXTRACTION OF LIPID AND CELLULAR FRACTIONS FROM THE STRATUM CORNEUM OF ANIMAL SKIN

Leonard J. Vinson, Glen Rock, and Thomas Masurat, Fort Lee, N.J., assignors to Lever Brothers Company, New York, N.Y.

Continuation of application Ser. No. 351,010, Mar. 11, 1964. This application June 12, 1969, Ser. No. 835,895
Int. Cl. A61k *11/00*
U.S. Cl. 424—95 **4 Claims**

A method for extracting stratum corneum from epidermis and separating it into a lipid-rich fraction and a cellular fraction is described as well as compositions of matter containing said lipid fraction and cellular fraction.

3,660,567
LATERIOMYCIN F

Eiji Higashide, Takarazuka, Toru Hasegawa, Osaka, Motoo Shibata, Toyonaka, Toyokazu Kishi, Nara, Setsuo Harada, Suita, and Komei Mizuno, Osaka-fu, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 3, 1967, Ser. No. 627,772
Claims priority, application Japan, Apr. 2, 1966, 41/20,858; Apr. 20, 1966, 41/25,406
Int. Cl. A61k *21/00*
U.S. Cl. 424—122 **1 Claim**

Lateriomycin F, produced by incubating a Lateriomycin F-producing strain of *Streptomyces griseoruber* in a culture medium at a temperature of about 25° C. to 35° C. under aerobic conditions until Lateriomycin F is accumulated in the culture broth and recovering thus accumulated Lateriomycin F therefrom, is useful as a disinfectant, in the treatment of Staphylococcus infections, and as an antibiotic in the treatment of experimental tumors.

3,660,568
ANTI-INFLAMMATORY SUBSTANCE, ZYGOSPORIN A, AND PRODUCTION THEREOF

Shohei Hayakawa and Takashi Matsushima, Amagasaki-shi, Hitoshi Minato, Toyonaka-shi, and Katsumi Hirose, Nishinomiya-shi, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

No Drawing. Filed Mar. 25, 1968, Ser. No. 715,913
Int. Cl. A61k *21/00*
U.S. Cl. 424—122 **7 Claims**

An anti-inflammatory agent, zygosporin A, is prepared by aerobically culturing a zygosporin-producing strain of

Zygosporium masonii or of *Zygosporium mycophilum* in an aquous nutrient medium, and recovering the accumulated agent from the fermentation broth. The antiinflammatory agent is advantageously administered orally or subcutaneously.

3,660,569
PROCESS FOR SEPARATING MOENOMYCIN
Ulrich Schacht, Bad Soden, Taunus, Rudolf Tschesche, Rottgen, and Ingolf Duphorn, Villip, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Nov. 30, 1965, Ser. No. 510,689
Claims priority, application Germany, Dec. 10, 1964, F 44,660
Int. Cl. A61k *21/00*
U.S. Cl. 424—124 **1 Claim**

Three components of Moenomycin having molecular weights of 68,000 to 70,000, practically identical infrared spectra and elementary analyses, and a method for separating said components from pure Moenomycin.

3,660,570
TREATMENT FOR HEART WORM MICROFILARIAE
Marguriette N. Davis, Rte. 2, P.O. Box 356, Theodore, Ala. 36582
No Drawing. Continuation-in-part of application Ser. No. 541,901, Mar. 21, 1966. This application Sept. 24, 1968, Ser. No. 762,152
Int. Cl. A61k *27/00*
U.S. Cl. 424—147 **5 Claims**

An aqueous composition useful for treating animals for heart worm microfilariae prepared by reacting in an aqueous medium, tobacco, Epsom salts, hydrated lime, sulfur, ferrous sulfate and turpentine.

3,660,571
DISEASE CONTROL COMPOSITION FOR SILKWORMS
Reijiro Kodama, Kyoto-fu, Yugoro Nakasuji, Toyonaka, and Kosaku Imanishi, Tokyo, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
No Drawing. Filed Mar. 26, 1969, Ser. No. 810,802
Claims priority, application Japan, Mar. 28, 1968, 43/20,288; June 12, 1968, 43/40,491
Int. Cl. A61k *27/00*
U.S. Cl. 424—181 **10 Claims**

Silkworm diseases, and more especially flacherie, are controlled by a composition consisting essentially of silkworm feedstuff and a minor but effective amount of triphenylmethane dyestuff with or without a minor amount of macrolide antibiotic and of fructosazine.

3,660,572
INSECTICIDAL COMPOSITION
Ludwig Friedrich Emmel, Bergen-Enkheim, Germany, and Dieter Kaeding, Binningen, Switzerland, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Oct. 24, 1969, Ser. No. 869,381
Claims priority, application Germany, Nov. 7, 1968, P 18 07 567.7
Int. Cl. A01n *9/36*
U.S. Cl. 424—200 **1 Claim**

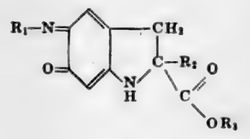
Novel pesticidal compositions are described containing 4 - (O,O - dimethylphosphoryl)-5-chloro-bicyclo-[3,2,0]-heptadiene-1,4 in admixture with

(a) 1 - phenyl-3-(O,O-diethyl-thionophosphoryl)-1,2,4-triazole or with
(b) O,O-dimethyl - (1 - hydroxy-2,2,2-trichloroethyl)-phosphonic acid ester, or with
(c) O,O-dimethyl-S - (3,4 - dihydro - 4 - oxo - 1,2,3-benzotriazine - 3 - yl methyl)-dithiophosphoric acid ester, or with
(d) O,O-dimethyl-S - (5 - methoxy-1,3,4-thiadiazole-2-(3H)-one-3-yl-methyl)-dithiophosphoric acid ester.

The compositions are effective in low concentrations against a large number of pests, especially insects, mites and acarids.

3,660,573
STABLE AMINOCHROME-LIKE COMPOUNDS RESULTING FROM MILD OXIDATION OF DOPA AND REACTION WITH KETONIC REAGENTS
Norman Barsel, 133—17 Francis Lewis Blvd., Laurelton, N.Y. 11413
No Drawing. Filed Feb. 26, 1968, Ser. No. 707,987
Int. Cl. A61k *27/00*
U.S. Cl. 424—232 **3 Claims**

Stable aminochrome-type structures of the general formula



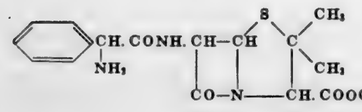
where R_1—N results from reaction of 5-keto group of aminochrome with nitrogen-containing reagent selected from the group consisting of hydroxylamine, hydrazine, parahydrazine benzoic acid, parahydrazine salicylic acid, methyl phenyl hydrazine, nitro-phenyl hydrazine, phenyl hydrazine, semicarbazide, thiosemicarbazide and isonicotinic acid hydrazine, R_2 is a member of the group consisting of hydrogen and methyl, and R_3 is a member of the group consisting of hydrogen, alkali metal and ammonium, prepared by oxidizing β-(3,4-dihydroxy phenyl alanine) under mild conditions with an agent selected from the group consisting of alkali metal ferricyanide in alkali bicarbonate buffer and alcoholic silver oxide under acidity and temperature conditions to minimize decomposition and produce a clear solution, separating any precipitates which form to maintain this clear solution whereby an aminochrome-type structure is formed, adjusting the pH to 2 to 4, and adding a nitrogen-containing reagent which reacts with the 5-keto group present in the aminochrome-type structure. The compounds of the formula are useful as acid-base indicators and certain of the compounds are useful as central nervous system stimulants and anti-hypertensive agents.

3,660,574
METHOD OF CONTROLLING FERTILITY EMPLOYING QUINGESTANOL ACETATE
Edel Berman, Morristown, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.
No Drawing. Filed Sept. 11, 1969, Ser. No. 857,215
Int. Cl. A61k *27/00*; **C07c** *169/00*
U.S. Cl. 424—238 **1 Claim**

A method is described for controlling the incidence of pregnancy. The method comprises the oral ingestion, by fertile women of child-bearing age within twenty-four hours after coitus, of a pharmaceutical composition containing, as the sole active ingredient, from about 0.5 mg. to about 1.0 mg., and preferably, from about 0.5 mg. to about 0.8 mg., of quingestanol acetate.

3,660,575
ESTERS OF α-AMINOBENZYLPENICILLIN IN DOSAGE UNIT FORM
Erling Knud Frederiksen, Holte, and Wagn Ole Godtfredsen, Vaerlose, Denmark, assignors to Lovens kemiske Fabrik Produktionsaktieselskab, Ballerup, Denmark
No Drawing. Filed Sept. 26, 1968, Ser. No. 763,010
Claims priority, application Great Britain, Sept. 29, 1967, 44,535/67; Oct. 5, 1967, 45,600/67; Oct. 23, 1967, 48,127/67; Nov. 10, 1967, 51,358/67; Dec. 6, 1967, 55,489/67; Jan. 3, 1968, 499/68; Mar. 22, 1968, 14,041/68; Mar. 29, 1968, 15,312/68
Int. Cl. A61k *21/00*
U.S. Cl. 424—271 **4 Claims**

The invention relates to a pharmaceutical composition having antibacterial activity, and to the composition in dosage unit form for use in the treatment of infectious diseases, comprising, as an active ingredient a new ester of α-aminobenzylpenicillin of the general formula:



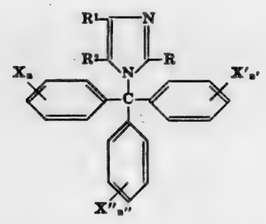
(I)

in which *n* is an integer from 0 to 5, and A is an unsubstituted or substituted aliphatic, alicyclic, aromatic, or heterocyclic radical, or a salt of such ester with a pharmaceutically acceptable acid, and an atoxic, pharmaceutically acceptable carrier, the quantity of the active ingredient in a dose being between 100 mg. and 800 mg.

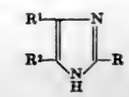
The invention also relates to a method of treating patients suffering from infectious diseases with the dosage units in question, administering from 500 to 5000 mg. per day of the active component.

3,660,576
N-TRITYL-IMIDAZOLES FOR TREATING FUNGAL INFECTIONS
Karl H. Buchel, Leverkusen, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Original application Sept. 9, 1968, Ser. No. 758,594. Divided and this application May 11, 1970, Ser. No. 36,396
Claims priority, application Germany, Sept. 15, 1967, F 53,504
Int. Cl. A61k *27/00*
U.S. Cl. 424—273 **10 Claims**

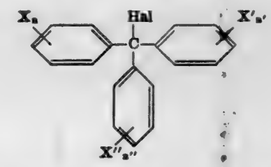
N-trityl-imidazoles and salts thereof of the formula:



wherein R, R^1 and R^2 are hydrogen, lower alkyl or phenyl, or R^1 and R^2 together form an anellated benzene ring,
X, X′ and X″ are alkyl of 1 to 12 carbon atoms or an electro-negative moiety, and
n, *n*′ and *n*″ are an integer from 0 to 2, or pharmaceutically acceptable acid salts thereof may be produced by reacting a silver salt or alkali metal salt of an imidazole of the formula:



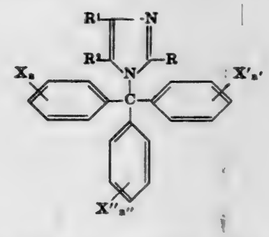
with a trityl halide of the formula:



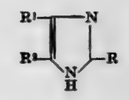
wherein the substituents are as above defined and Hal is halogen. These compounds are useful as antimycotics.

3,660,577
N-TRITYL-IMIDAZOLES AS ANTIFUNGAL AGENTS
Karl-Heinz Buchel, Leverkusen, Erich Regel, Wuppertal-Kronenberg, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Sept. 9, 1968, Ser. No. 758,594
Claims priority, application Germany, Sept. 15, 1967, F 53,504
Int. Cl. A61k *27/00*
U.S. Cl. 424—273 **36 Claims**

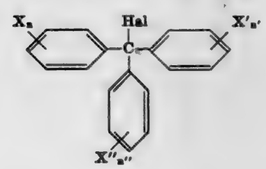
N-trityl-imidazoles and salts thereof of the formula:



wherein R, R^1 and R^2 are hydrogen, lower alkyl or phenyl, or R^1 and R^2 together form an anellated benzene ring,
X, X′ and X″ are alkyl of 1 to 12 carbon atoms or an electro-negative moiety, and
n, *n*′ and *n*″ are an integer from 0 to 2, or pharmaceutically acceptable acid salts thereof may be produced by reacting a silver salt or alkali metal salt of an imidazole of the formula:



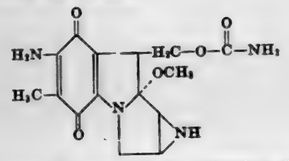
with a trityl halide of the formula:



wherein the substituents are as above defined and Hal is halogen. These compounds are useful as antimycotics.

3,660,578
MITOMYCIN C
Toju Hata, Tokyo, Hideo Kamada, Obe-shi, Shigetoshi Wakaki, Tokyo, Shiro Kudo, Sakai-shi, Keitaro Tomioka, Yokkaichi-shi, Hirofuto Marumo, Shizuoka-ken, Eturo Kato, Hofu-shi, and Motoaki Shimizu, Yokkaichi-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., and Kitasato Kenkyusho (Shadan Hojin), both of Tokyo, Japan
Continuation of application Ser. No. 295,031, July 15, 1963, which is a continuation-in-part of application Ser. No. 121,178, June 30, 1961, which in turn is a continuation-in-part of application Ser. No. 726,189, Apr. 3, 1958. This application Aug. 13, 1968, Ser. No. 752,203
Claims priority, application Japan, Apr. 6, 1957, 32/8,456
Int. Cl. A61k 21/00
U.S. Cl. 424—274 13 Claims

A therapeutically active compound designated Mitomycin C having the formula



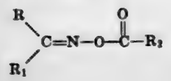
This compound is prepared by culturing *Streptomyces caespitosus* in a liquid nutrient medium.

3,660,579
DERIVATIVES OF ACETIC ACID IN COMPOSITIONS AND METHODS FOR THE ALLEVIATION OF HYPERLIPEMIA
Rudolf G. Griot, Florham Park, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Application Nov. 13, 1967, Ser. No. 682,647, which is a continuation-in-part of application Ser. No. 560,874, June 27, 1966. Divided and this application June 15, 1970, Ser. No. 57,424
Int. Cl. A61k 27/00
U.S. Cl. 424—308 22 Claims

This disclosure relates to derivatives of acetic acid, e.g., bis(p-chlorophenoxy)acetic acid isopropyl ester. These compounds are useful as hypocholesteremics/hypolipemics.

3,660,580
USE OF CERTAIN OXIME ESTERS IN CONTROLLING FUNGI UPON CELLULOSIC MATERIALS
Don R. Baker, Pinole, Calif., assignor to Stauffer Chemical Company, New York, N.Y.
No Drawing. Continuation of application Ser. No. 649,023, June 26, 1967. This application Nov. 24, 1969, Ser. No. 873,727
Int. Cl. A61l 13/00
U.S. Cl. 424—327 8 Claims

Method of inhibiting the growth of fungi upon cellulosic materials by applying thereto an effective amount of the compound having the formula



in which R and R_1 are independently selected from the group consisting of alkyl having from 1 to 4 carbon atoms, haloalkyl having from 1 to 4 carbon atoms, alkenyl having from 2 to 6 carbons, aryl and nuclear substituted derivatives thereof in which the substituents are selected from the group consisting of halogen, nitro and lower alkyl, R_2 is a radical selected from the group consisting of alkyl having from 1 to 10 carbon atoms; haloalkyl having from 1 to 10 carbon atoms; alkenyl having from 2 to 4 carbon atoms; and $—NHR_3$ in which R_3 is a radical selected from the group consisting of alkyl having from 1 to 10 carbon atoms; haloalkyl having from 1 to 10 carbon atoms; aryl and nuclear substituted derivatives thereof in which said substituents are selected from the group consisting of halogen, nitro and lower alkyl; alkenyl having from 2 to 6 carbon atoms; and

in which R_4 is a member selected from the group consisting of alkyl having from 1 to 12 carbon atoms and haloalkyl having from 1 to 4 carbon atoms.

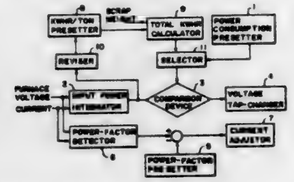
3,660,581
THERMALLY DEVELOPABLE DIAZOTYPE PRINTING PAPER AND COMPOSITION THEREFOR
Robert M. Levy, Kalamazoo, Mich., assignor to Allied Paper Incorporated, Kalamazoo, Mich.
No Drawing. Filed Apr. 23, 1969, Ser. No. 818,824
Int. Cl. C03c 1/60, 1/58
U.S. Cl. 96—91 7 Claims

Diazo compositions containing critical proportions of dicyandiamide and thiourea as the thermal developing agents together with alkali acid sulfate stabilizer compounds, for use in forming thermally developable photo diazo printing paper are disclosed. These diazo printing papers are characterized by good image density, long shelf-life and good chemical stability.

3,660,582
PRODUCTION OF FLAME-RETARDANT SPUN-FORMED MATERIAL
Joseph DiPietro, Alma, and John Heaton Todd, St. Louis, Mich., assignors to Michigan Chemical Corporation, St. Louis, Mich.
No Drawing. Filed Mar. 27, 1969, Ser. No. 811,216
Int. Cl. C09k 3/28; D06m 13/26
U.S. Cl. 117—136 4 Claims

Spun-formed material such as spun-bonded polyester non-woven fabric is rendered flame retardant or self-extinguishing by treatment with an aqueous solution of a water soluble polyhaloalkyl ester of phosphoric acid in which the halogen is bromine or chlorine, and in which the alkyl radical contains two through six carbon atoms; for example, the ammonium salt of bis (2,3-di-bromopropyl) phosphate. If the phosphate ester is not sufficiently water soluble and does not readily form water soluble salts, an aqueous emulsion can be used; for example, an oil in water emulsion of tris (2,3-dibromopropyl) phosphate.

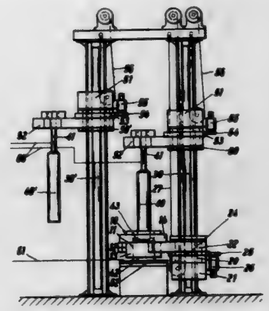
3,660,583
AUTOMATIC RAPID MELTING SYSTEM AND ITS APPLICATION FOR ARC FURNACE
Haruo Takanasi, Kasugai; Sadaie Sone, Kuwana, and Isamu Eguchi, Nagoya, all of Japan, assignors to Daido Seiko Kabushiki Kaisha, Minami-ku, Nagoya-shi, Ai hi-ken, Japan
Filed Mar. 17, 1970, Ser. No. 20,248
Claims priority, application Japan, Mar. 17, 1969, 44/20175
Int. Cl. F27b 11/10
U.S. Cl. 13—12 1 Claim



An electric power supply program is set for controlling a steel making arc furnace. According to this program, a steel melting period is divided into a plurality of successive melting sections in each of which a predetermined total of electric power is to be supplied to the arc furnace at an optimum power level. The electric power which is actually consumed is integrated during each of said melting sections. Power level is switched from the optimum power level programed for one of said melting sections to that programed for the next section when the amount of electric power consumption actually integrated in said one melting section becomes equal to the predetermined total of electric power programed for said one melting section, thereby a melting electric power is supplied to the arc furnace at the optimum power level programed for said next melting section. A power factor program is also set. According to this power factor program, a melting electric power is to be supplied to the arc furnace with a predetermined power factor to provide an optimum length of arc for each of said melting sections. The power factor is maintained at the predetermined optimum value for each of said melting sections by controlling the current into the arc furnace by use of the deviation of the actual power factor from the power factor programed for the section. Moreover, the total electric power Y which is necessary in melting the charge of steel material is tentatively determined. First electric power Y_1 which is consumed for each of a plurality of definite, ever increasing periods from the beginning of melting operation is determined and second electric power Y_1 per unit time consumed just before the end of each of said definite periods is determined. The value X of remaining period of time which is expected to be taken before the termination of the melting operation is estimated from the following equation, $X = (y - Y_1)/Y_1$, and the value of X is indicated at every estimation to inform the operator of the remaining period of time from the end of each of said definite periods to the termination of the melting operation.

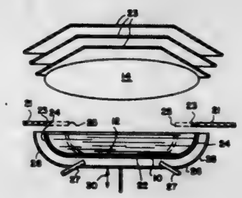
3,660,584
HOLDING MEANS FOR ELECTRODES, MOLDS, BASE PLATES AND THE LIKE IN AN ELECTROSLAG REMELTING INSTALLATION
Wolfgang Holzgruber, and Otmar Kleinhagauer, both of Kapfenberg, Austria, assignors to Gebr. Boehler & Co., Kapfenberg, Austria
Filed June 15, 1970, Ser. No. 46,439
Claims priority, application Austria, June 17, 1969, A5710/69
Int. Cl. H05b 3/60; B22d 27/02; H05b 7/12
U.S. Cl. 13—14 3 Claims

In an installation for electroslag remelting of metals and, in particular, steel, a rigid and fixedly mounted column on which holding means is slidably vertically mounted. The vertical movement of the holding means along the column is controlled by a cable and winch arrangement mounted on



the column. The holding means comprise a guide member slidably mounted on the column and clamping means operatively mounted on the guide member.

3,660,585
FROZEN SHELL METAL MELTING MEANS
Robert D. Waldron, 5620 N. 69th Place, Paradise Valley, Ariz.
Continuation-in-part of application Ser. No. 733,719, May 31, 1968, now abandoned. This application June 24, 1970, Ser. No. 49,332
Int. Cl. H05b 3/66
U.S. Cl. 13—25 14 Claims

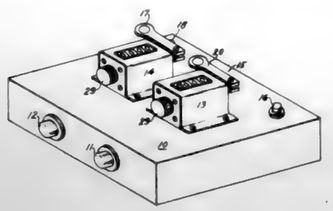


A frozen shell metal melting means comprising a crucible which is substantially shallow in depth compared to its relatively greater horizontal dimension and heating means disposed above said crucible adapted to melt metal therein; and means at the bottom of said crucible to permit radiation of heat therefrom in sufficient amount to maintain a frozen shell of metal in contact with the bottom of said crucible.

3,660,586
TEACHING AND TESTING APPARATUS
Bertram J. Hilbert, 1826 Chew St., Allentown, Pa.
Filed Aug. 3, 1970, Ser. No. 60,344
Int. Cl. G09b 5/00
U.S. Cl. 35—48 R 6 Claims

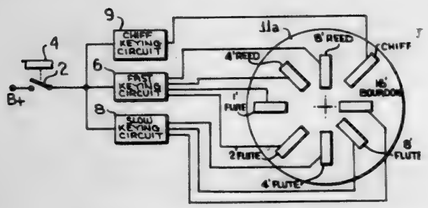
Apparatus for aiding in teaching and/or testing wherein means is provided for operation by the instructor for reward-

ing or penalizing for a correct or incorrect response, respectively, and counting said responses simultaneously with said



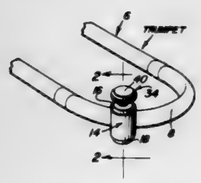
reward or penalty and having means for bypassing the counting means.

3,660,587
ELECTRONIC ORGAN KEYING CIRCUITS
Daniel W. Martin, Cincinnati, Ohio, assignor to D. H. Baldwin Company, Cincinnati, Ohio
Filed Mar. 23, 1970, Ser. No. 21,811
Int. Cl. G10h *3/06*
U.S. Cl. 84—1.18 **4 Claims**



In a keyed-photocell type electronic organ, two or more photocells are keyed with a single, make-brake switch via two or more respective RC keying circuits having onset and/or decay times corresponding to the tone colors and/or pitches desired. Each keying circuit may control both a first photocell corresponding to a relatively low-pitched, fast-starting tone and a second photocell corresponding to a relatively high-pitched, slow-starting tone.

3,660,588
MUSICAL INSTRUMENT WATER VALVE
Jesse L. Richardson, Ft. Lauderdale, Fla., assignor to Federal Operating Co.
Filed May 22, 1969, Ser. No. 826,830
Int. Cl. G10d *7/10*
U.S. Cl. 84—397 **8 Claims**



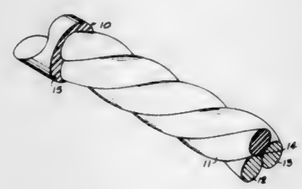
A simplified two-part needle-type valve for use in lieu of the spring-biased lever-type water key now on all brass wind instruments such as, for example, trumpets, cornets, trombones, alto and baritone horns and the like. Both parts can be manufactured on automatic screw machines. The exteriorly recessed ported body can be soft-soldered to the instrument slide or tubing in communication with the customary water (saliva) eliminating orifice. To operate, merely turn the finger-grip and either open or close the conical valve at will.

3,660,589
WATERTIGHT DISC COAXIAL CABLE
Ludwik Jachimowicz, Elizabeth, and Jerzy A. Olszewski, Bayonne, both of N.J., assignors to General Cable Corporation, New York, N.Y.
Filed Sept. 29, 1969, Ser. No. 861,792
Int. Cl. H01b *11/18*
U.S. Cl. 174—28 **7 Claims**



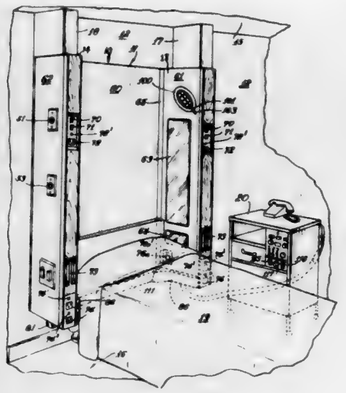
A coaxial cable consists of a plurality of discs of a dielectric synthetic resin material that bonds to metal bonded to an elongated metal center conductor respectively at spaced intervals therealong. A tubular metal outer conductor encloses the discs and is bonded thereto so that the discs define a plurality of separate watertight compartments. An inner tubular sheath of a synthetic resin may be between, and bonded respectively to, the inside of the outer conductor and the discs. Also, a layer of synthetic resin may be bonded around the exterior of the outer tubular conductor.

3,660,590
ELECTRO-OPTICAL FLUIDIC TRANSFER CONDUIT
James E. Conant, 710 Peachtree St. N.E., Atlanta, Ga.
Filed Nov. 23, 1970, Ser. No. 91,622
Int. Cl. F16l *11/12*; **H01b** *7/00*; **G02b** *5/16*
U.S. Cl. 174—47 **6 Claims**



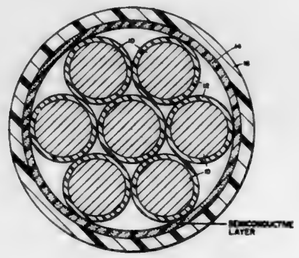
A transfer conduit capable of transmitting one or a combination of energy signals of varying characteristics. The transfer conduit is constructed of a series of filaments which are uniformly twisted along the length thereof in close contacting relationship to define therebetween an axially fluid flow passageway. The term "twisted" is meant to include braiding, entwining, or the like. A coating of impervious material is provided around the outer exposed surface of the twisted filaments for sealing the same against leakage and for securing the lengths of the twisted filaments in the twisted state. Certain of the filaments are constructed of a material which is capable of transmitting light signals therethrough. Certain other of the filaments are constructed of a material capable of transmitting electrical signals therethrough. The fluid flow passageway defined between the twisted filaments is capable of transmitting a fluid signal.

3,660,591
HOSPITAL IN-PATIENT SERVICE CORE MODULE
John R. Schultz; John W. Heidecher; John M. Sharer; James S. Adams, all of Batesville, Ind., and Frank M. Damico, Cincinnati, Ohio, assignors to Hill Rom Company, Inc., Batesville, Ind.
Filed Oct. 26, 1970, Ser. No. 83,762
Int. Cl. A47b *83/00*; **A61g** *7/06*
U.S. Cl. 174—70 R **21 Claims**



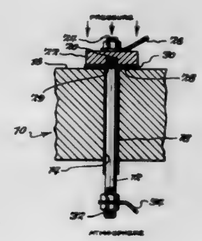
A factory constructed, equipped with electrical and gas equipment, wired, tested and enclosed patient care core module arranged to be mounted upon the headwall of a patient's room in a hospital. The mounting of the module is simply accomplished and after the module is secured on the wall, the electric and gas supply leads are connected externally of the enclosure to complete the installation.

3,660,592
ANTI-CORONA ELECTRICAL CONDUCTOR
Robert W. Anderson, Burlington, Vt., assignor to Haveg Industries, Inc., Wilmington, Del.
Continuation-in-part of application Ser. No. 795,399, Jan. 9, 1969, now abandoned , which is a continuation-in-part of application Ser. No. 587,531, Oct. 18, 1966, now abandoned. This application Feb. 27, 1970, Ser. No. 14,988
Int. Cl. H01b *7/18*
U.S. Cl. 174—114 R **16 Claims**



An electrical conductor assembly made up of a plurality of electrical conductor strands connected in electrical parallel each of which is provided with a continuous uninterrupted layer of insulation material. The plurality of the insulated electrical conductor strands are encompassed in an electrical conductive layer which is a fluorocarbon resin having randomly dispersed therein an electrical conductor material such as graphite in discrete particulate form. The graphite is present in amounts of 0.5 to 75 percent based on the weight of the fluorocarbon resin. This electrical conductive layer is floating with respect to ground. Alternatively, the conductive layer is grounded at relatively higher voltages. Surrounding this electrical conductive layer is an insulating support coating.

3,660,593
PRESSURE VESSEL POWER LEAD-THROUGH
Arnold Gordon Bowles, Warren, Pa., assignor to National Forge Company, Irvine, Pa.
Filed Dec. 22, 1970, Ser. No. 100,652
Int. Cl. H01b *17/26*
U.S. Cl. 174—152 R **4 Claims**



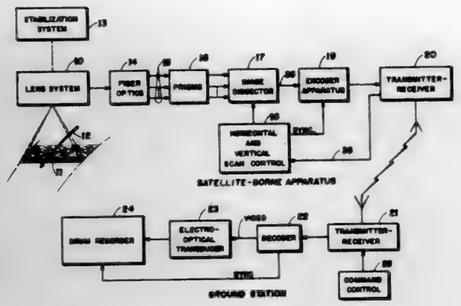
An electrode for use in supplying power to equipment within a sealed vessel capable of containing fluid under pressure wherein an electrically conductive rod encased in an insulating material passes through the vessel wall to the interior of the vessel and has a boss member fitted upon its interior end. The boss member bears the outward load caused by the pressurized fluid and is supported by the inner surface of the vessel wall. The boss member is electrically insulated from the vessel wall by an insulating disc. The boss is made of conducting material and has an electrical terminal affixed to it. The boss member is substantially larger in cross-sectional area than the cross-sectional area of the conducting rod. Concentric with the disc and between the vessel wall and the boss member is an O-ring seal to prevent the escape of the pressurized fluid through the conducting rod passage in the vessel wall.

In some embodiments a second boss member is interposed between the insulating disc and the vessel wall inner surface to prevent any flexing motions of the vessel wall from being transmitted to the insulating disc.

3,660,594
LINE-SCAN TELEVISION SYSTEM EMPLOYING SPECTRUM ANALYSIS
Lawrence B. Marsh, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Mar. 14, 1969, Ser. No. 807,228
Int. Cl. H04n *9/04*, *9/06*
U.S. Cl. 178—5.2 R **17 Claims**

A line-scan television system adapted to be mounted aboard a satellite or similar vehicle for televising an object, such as the Earth or some other heavenly body, as the satellite orbits. A lens system views an elongated image swath perpendicular to the sub-orbital track and produces an elongated slit of light which, in turn, is divided into parallel image segments by suitable fiber optics. A plurality of prisms then spectrally disperse each of the image segments onto the photosensitive input surface of a suitable camera tube, such as an image dissector. This input image raster is then electronically scanned to generate corresponding output video information which is transmitted to a ground receiving station for image reproduction purposes. Scan control circuitry associated with the camera tube enables the spectrally

dispersed image segments to be scanned to provide either a variable contrast control for black and white reception, as selected by a remote command signal, or to permit full-color

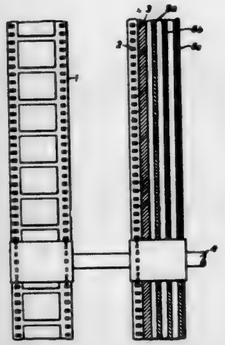


television reception. The picture reproduction equipment at the ground station is time synchronized with the scanning of the spectrally dispersed input image segments at the camera tube.

3,660,595
METHOD AND SYSTEM FOR CORRECTING COLOR ERRORS IN COLOR FILM DURING TELEVISION TRANSMISSION

Burkart Brenbach; Alfred Eisinger; Hans Horneff, and Heinrich Zahn, all of Darmstadt, Germany, assignors to Fernseh GmbH, Darmstadt, Germany

Filed Aug. 4, 1969, Ser. No. 848,768
Claims priority, application Germany, Aug. 8, 1968, P 17 62 714.4
Int. Cl. H04n *5/48, 9/53*
U.S. Cl. 178—5.2 A 13 Claims

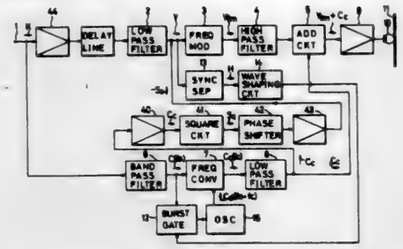


Correction signals for correcting color errors are entered onto elongated signal carrier means moving synchronously with a color film, by an operator during viewing of the film prior to transmission. During transmission the correction signals are derived from the elongated signal carrier means and applied to the color matching units normally present. Each of these units affects the transmission of a particular color signal in response to the correction signals. The amplitudes of the color signals may be decreased, and further the contrast and black level may also be corrected.

3,660,596
RECORDING AND REPRODUCING SYSTEM FOR COLOR VIDEO SIGNAL

Toshihiko Numakura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 15, 1970, Ser. No. 37,692
Claims priority, application Japan, Jan. 26, 1970, 45/6857
Int. Cl. H04n *1/22*
U.S. Cl. 178—5.2 14 Claims

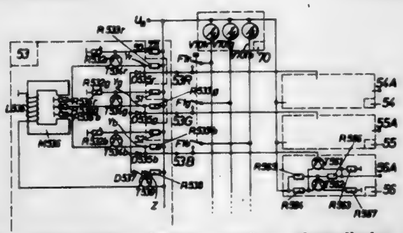


A composite color video signal may be magnetically recorded by separating the luminance and chrominance signals, frequency-modulating the luminance signal on a carrier, and frequency-shifting the chrominance signal such that the bands of the frequency-modulated luminance signal and the frequency-converted chrominance signal do not overlap. The two signals are then combined and magnetically recorded with the frequency-converted chrominance signal amplitude modulating the frequency-modulated luminance signal. To avoid a beat interference between a harmonic, particularly the second harmonic of the carrier of the frequency-converted chrominance signal and the luminance signal, there is provided a compensation signal which is an integral multiple of the frequency of the carrier of the frequency-converted chrominance signal, and which is phase-shifted with respect to said carrier so that, when the compensation signal is added to the luminance signal either before frequency-modulation in the recording operation, or after demodulation of the frequency-modulated luminance signal in the reproducing operation, the described beat interference is avoided. By avoiding the beat interference the amplitude of the frequency-converted chrominance signal relative to the amplitude of the frequency-modulated luminance signal, as recorded, can be made large with resulting good signal-to-noise ratio of the reproduced chrominance signal.

3,660,597
METHOD AND APPARATUS FOR SCANNING AND SENSING COLORED PATTERNS

Hans Joachim Stock, Freiburg im Breisgau, Germany, assignor to Franz Morat GmbH, Stutgart-Vaihingen, Germany

Original application Dec. 27, 1967, Ser. No. 694,032, now Patent No. 3,578,897. Divided and this application Nov. 12, 1970, Ser. No. 88,724
Claims priority, application Germany, Dec. 27, 1966, 7218725
Int. Cl. G03f *3/08*
U.S. Cl. 178—5.2 A 15 Claims

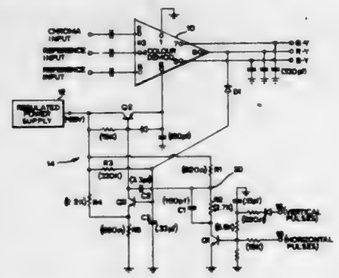


Three photosensitive elements, such as photodiodes, one for each of the colors red, green and blue, scan, point-by-point, and sense the colors of a pattern. The voltages corresponding to the three colors are so amplified substantially an equal amount that the voltage corresponding to the brightest of the colors is raised to a fixed value of that is independent of the color brightness.

3,660,598
DC REGULATING BLANKING INSERTION CIRCUIT AND COLOR MATRIX CIRCUIT

Sotos M. Theodoulou, Toronto, Ontario, Canada, assignor to Clairtone Sound Corporation Limited, Rexdale, Ontario, Canada

Filed May 18, 1970, Ser. No. 38,376
Claims priority, application Canada, May 12, 1970, 082,511
Int. Cl. H04n *9/50*; H03b *3/02*; H04b *1/16*
U.S. Cl. 178—5.4 SD 11 Claims

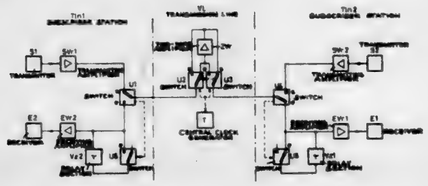


In a color television set, blanking pulses are superimposed on the supply voltage to the color demodulator, resulting in blanking pulses at the color difference outputs. The DC level at the tips of the blanking pulses at the outputs is detected and used to control the supply voltage, to regulate the quiescent DC level at the outputs to a known value. The color demodulator outputs feed drive amplifiers connected to the electron guns of the set. Adjustable tracking resistors feed the Y signal to the drive amplifiers, and since the potentials in the drive amplifiers are accurately known when no signal is present (because of the regulated bias supplied from the color demodulator), a service switch is provided to establish a reference potential which in effect cancels the effects of the tracking resistors when the guns are to be adjusted for coincident cutoff. Hence the guns can be adjusted for coincident cutoff with the tracking resistors rendered ineffective, and then the reference potential is removed and the tracking resistors are adjusted for grey tracking, the two adjustments having no effect on each other.

3,660,599
METHOD OF AND CIRCUIT ARRANGEMENT FOR PICTURE TRANSMISSION USING MULTIPLEX TECHNIQUES

Heinz Wiedmann, Moglingen, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed June 29, 1970, Ser. No. 50,748
Int. Cl. H03a *7/08*; H04a *7/14*
U.S. Cl. 178—6 2 Claims

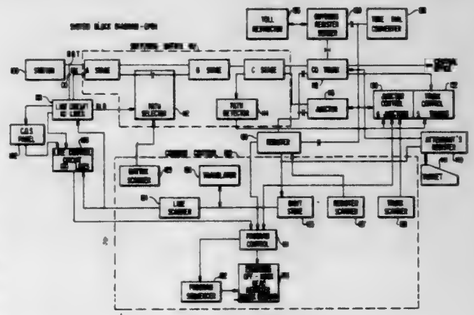


The method and circuit arrangement for transmitting video pictures over a telephone line using time division multiplex techniques. Signals are sent in both directions on the line, and the transmitted signals are stored in a delay section at the receiving end until a full picture has been received. Each picture is divided into two partial pictures or images, each capable of transmission within a discrete pulse or time slot. The partial picture received during one time slot is stored until the second partial picture is received during a subsequent time slot, thereby completing the picture. The complete picture may then be released from the receiving end to suitable picture processing or display equipment.

3,660,600
PATH FINDING SYSTEM FOR MULTI-STAGE SWITCHING MATRIX

Ernest O. Lee, Jr., Fairport, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed May 15, 1970, Ser. No. 37,772
Int. Cl. H04q *3/54*
U.S. Cl. 179—18 EA 30 Claims

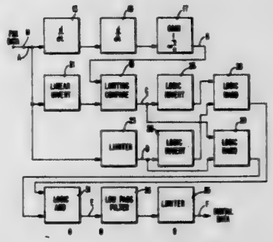


System for obtaining a free path through a multi-stage switching matrix from a marked input to one of a plurality of junctors or trunks at an output of the network wherein scanning is provided at the outputs of the first stage switch which includes the marked input, the inputs of all third stage switches are monitored to detect the scanning signals on available lines, and the availability of the required junctors or trunks is then correlated to the monitored information at the third stage inputs so as to simultaneously allot a junctor or trunk and select a free path connectable thereto.

3,660,601
FREQUENCY DETECTION SYSTEM

Donald R. Dobson, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 10, 1970, Ser. No. 44,960
Int. Cl. H04l *15/24*
U.S. Cl. 178—88 7 Claims



A system for detecting frequency shift keying information on a real time basis independent of the amplitude of the

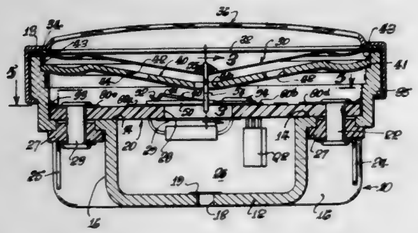
input FSK signal. The second derivative of the input voltage waveform signal which is in exact phase with the input signal is obtained. The gain of the differentiated voltage signal is controlled so that when the input signal has a frequency below predetermined frequency, the magnitude o2 the differentiated voltage signal will be less than the magnitude of the input voltage signal at all points except zero; and when the input signal exceeds the predetermined frequency, the magnitude of the differentiated voltage signal exceeds that of the input voltage signal. The input signal and the gain controlled differentiated signal are magnitude compared and an output signal representative of the result of the comparison and hence of the frequency of the input signal is supplied. A low pass filter introducing minimal signal delay is utilized to remove possible logic silvers at the time when both signals are zero and when there is an input frequency change.

3,660,602

MICROPHONE CARTRIDGE WITH AMPLIFIER

Paul Thompson, Cedar Rapids, Iowa, assignor to Conrac Corporation, New York, N.Y.

Filed June 1, 1970, Ser. No. 42,378
Int. Cl. H04c *17/02*
U.S. Cl. 179—1 A **3 Claims**



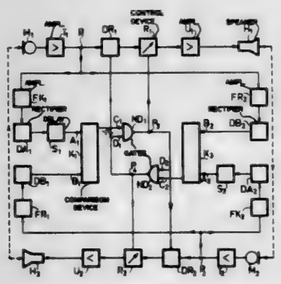
The microphone of the invention obtains damping from a perforated baffle closely adjacent the diaphragm with fabric covering the perforations, and from resistive structures behind the baffle. The piezoelectric transducer element is mounted directly on a circuit board which also carries all electronic components of a preamplifier circuit.

3,660,603

SPEECH-CONTROLLED BILATERAL AMPLIFIER

Bjorn Andersen, Oslo, Norway, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 28, 1969, Ser. No. 853,881
Claims priority, application Norway, Aug. 29, 1968, 3369/68
Int. Cl. H03g *3/24*
U.S. Cl. 179—1 VC **9 Claims**



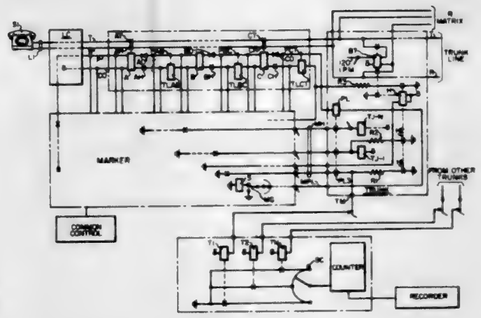
A speech-controlled bidirectional amplifier that includes first and second transmission channels each with a control member controlled by speech signals derived at control points preceding the control member. First and second comparison devices responsive to the levels of the speech signals control a third comparison device that in turn controls the attenuation level of the control members. The amplifier is arranged so that in the rest condition both control members provide a high signal attenuation. When speech signals are transmitted through one channel, the other channel is cut-off. However, an interrupt facility is provided whereby a speech signal above a given level in the cut-off channel will cause the apparatus to switch over so that the cut-off channel is opened and the previously open channel is then cut-off.

3,660,604

METERING SYSTEM FOR TANDEM SWITCHED CALLS

Lucas Bruglemans, Antwerp, Belgium, assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed June 5, 1970, Ser. No. 43,886
Int. Cl. H04m *15/26*
U.S. Cl. 179—8 A **4 Claims**



A crosspoint switching exchange includes a metering scheme for selectively metering traffic through trunk circuits used to access a plurality of exchanges via a tandem exchange. The trunk circuit includes a pair of contact sets, one set operated during the interval of pulling up the crosspoint matrix path to the trunk circuit and the other set operated by the path hold relay. These contacts respectively operate and hold a metering relay in the metering equipment which then has only to scan this relay to determine the total usage for a particular exchange via this trunk group of circuits.

3,660,605

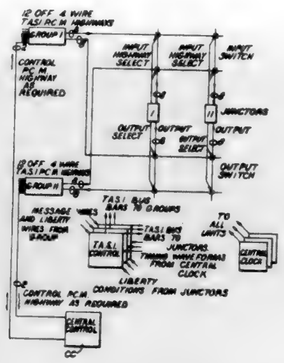
PULSE CODE MODULATION SWITCHING SYSTEM UTILIZING TASI

Frederick Henry Rees, London, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 15, 1970, Ser. No. 28,593
Int. Cl. H04j *5/00*
U.S. Cl. 179—15 AS **2 Claims**

A telecommunication switching system is provided in which communication connections are set up in a time division multiplex (TDM) manner to convey intelligence by pulse code modulation (PCM). The system utilizes time assigned signal interpolation (TASI) techniques so that during

a silent period in a communication connection the communicatees can be disconnected from the multiplex highway,



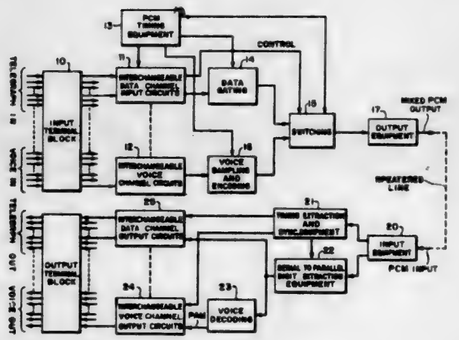
and can be re-connected to said highway whenever a new burst of intelligence commences from either communicatee.

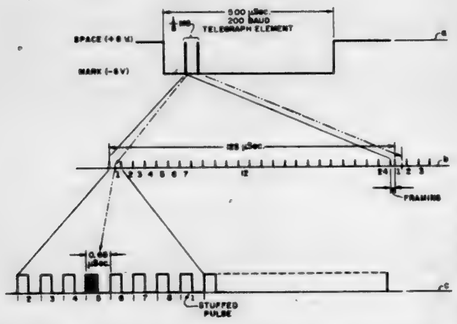
3,660,606

METHOD AND APPARATUS FOR TIME DIVISION MULTIPLEX TRANSMISSION OF DATA AND VOICE SIGNALS

Russell G. De Witt, Berkeley Heights, N.J., assignor to The Western Union Telegraph Company, New York, N.Y.

Filed Apr. 28, 1970, Ser. No. 32,616
Int. Cl. H04j *3/16*
U.S. Cl. 179—15 BA **12 Claims**





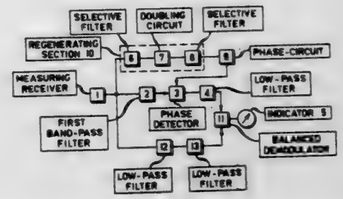
Disclosed is a method for TDM transmission of binary data signals, such as telegraph signals, including the steps of: sampling the data signals at a rate to provide a plurality of samples such as 5 to 40 samples over the time interval associated with each digit of the binary data signals, serially coding the samples to provide a TDM signal representing the sampled data signals, and transmitting the serially coded TDM signal over a transmission medium. Also disclosed is a preferred apparatus for transmitting a variable number of data and voice signals which includes a crystal oscillator for providing a 1.544 megabit timing signal, a digit generator, a channel counter providing a channel count for every eight digits and providing 24 channel counts as the transmission format, interchangeably removable voice and data input circuits for occupying the channels of transmission with either voice or data inputs, wherein the data input circuits include sampling gates for transmitting a plurality of samples of the data signals so that the transmission digit rate is essentially independent of the digit rate of the input data signals. The voice input circuits include conditioning and wiring provisions to be interchangeable with the data input circuits. Also included are voice encoding means to provide a voice output PCM signal, and switching means for switching the output to transmit the serially coded TDM signal during the occurrence of data carrying channels, and for switching the output to transmit the PCM voice signal during the occurrence of voice carrying channels. The apparatus also includes wiring means to each channel station of the apparatus so that the channel station can interchangeably accept either voice or data input circuits to occupy its channel of transmission. A receiving apparatus is also disclosed employing features similar to the transmitting apparatus to provide for flexible two-way communication to handle a variable number of voice and data signals.

3,660,607

APPARATUS AND METHOD FOR DETECTING PHASE DEVIATION OF A PILOT SUBCARRIER IN STEREOPHONIC MULTIPLEX BROADCASTING

Zdenek Mack, Prague, Czechoslovakia, assignor to TESLA, narodni podnik

Filed Apr. 1, 1970, Ser. No. 24,648
Claims priority, application Czechoslovakia, May 16, 1969, 3486-69
Int. Cl. H04h *5/00*
U.S. Cl. 179—15 BT **7 Claims**

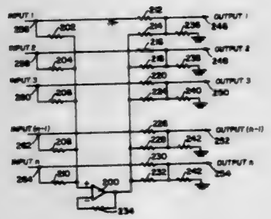


Method and apparatus for detecting both the magnitude and direction of any deviation in the pilot-subcarrier wave by conventionally separating the pilot carrier, regenerating and shifting its resultant signal by 90° and comparing it with a signal derived from the multiplex signal to produce a signal indicative of the magnitude of deviation. Simultaneously a reference signal is obtained from the original multiplex signal which is in phase with the comparison signal. The deviation signal and the reference signal are then demodulated to produce a directional voltage.

3,660,608
MEANS FOR REDUCING CROSS TALK IN MULTIPLEXED CIRCUITRY

Charles R. Moose, Jr., Canoga Park, Calif., and James L. Jenkins, Baltimore, Md., assignors to The Bunker-Ramo Corporation, Canoga Park, Calif.

Filed Nov. 29, 1968, Ser. No. 779,726
Int. Cl. H04j 3/10
U.S. Cl. 179—15 AN 21 Claims

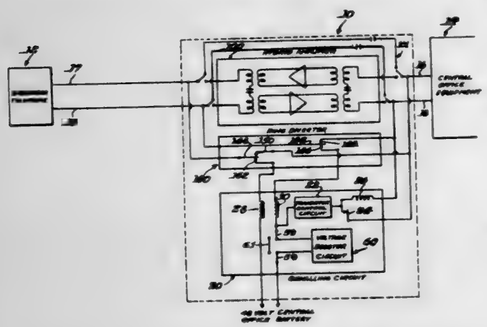


A means for eliminating cross talk between multiplexed communication channels when such channels use a common phase-shifted "pseudo-random noise" sequence as a carrier. The cross talk is canceled, in each channel, by adding (or subtracting) a weighted sum of signals in all channels to the signal in that channel, either at the transmitting station or at the receiving station.

3,660,609
SUBSCRIBER LONG LINE EXTENDER

Hubert J. Tremblay, Roselle, and Frank V. Mellien, Jr., Lombard, both of Ill., assignors to Communications Systems Corporation, Morton Grove, Ill.

Filed Aug. 22, 1969, Ser. No. 852,203
Int. Cl. H04m 1/76; H04g 1/30
U.S. Cl. 179—16 F 13 Claims



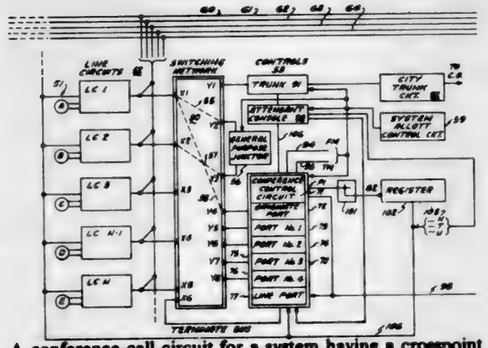
A subscriber long line extender for use in the subscriber loop of a telephone network to extend the operating limits for the subscriber lines connecting a subscriber telephone to the central office equipment and the central office voltage source comprising a signalling circuit which is operably connected to brake the subscriber line and further operable in response to the current generated by the subscriber telephone being placed in an off-hook condition to provide closed circuit to the central office equipment indicative of the off-hook condition of the subscriber telephone and independent of any impedance in the subscriber loop.

A second auxiliary feature of the subscriber long line extender provides for a hybrid amplifier to be used in conjunction with the above signalling circuit to enable simultaneous two-way transmissions between the subscriber telephone and the central office equipment, and an isolating means connected between the hybrid amplifier and the signalling circuit to prevent interaction between the signalling and amplification functions.

3,660,610
CONFERENCE CALL CIRCUIT

Alfred M. Hestad, Chicago, and Stanley E. White, Crestwood, both of Ill., assignors to International Telephone and Telegraph Corporation

Filed Apr. 24, 1970, Ser. No. 31,641
Int. Cl. H04m 3/56
U.S. Cl. 179—18 BC 7 Claims

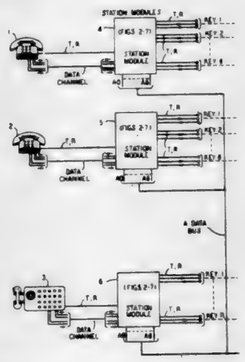


A conference call circuit for a system having a crosspoint switching network of the end-marking type. The circuit allows a private conversation to be held between the calling station and a called station in a "progressive" conference through the use of a voice gate within a conference access circuit individual to the calling and called stations. When the private conversation is to be terminated, the voice gates are switched by a signal such as the flashing of a hook switch. Meet-me conferences and attendant switched conferences are also possible.

3,660,611
PROGRAM CONTROLLED KEY TELEPHONE SYSTEM FOR AUTOMATIC SELECTION OF A PRIME LINE

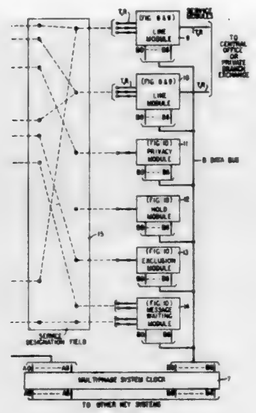
Dieter John Henry Knollmann, Guttenberg, N.J.; Robert Forcier Metz, and Howard Lloyd Reynolds, both of Boulder, Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 5, 1970, Ser. No. 43,916
Int. Cl. H04m 1/00
U.S. Cl. 179—18 ES 12 Claims



A program controlled key telephone system which includes line modules and station modules for providing the interface

circuitry between PBX/CO lines and stations is disclosed. System functions are controlled by a multiphase clock which generates a reiterative list of binary coded signals based on a

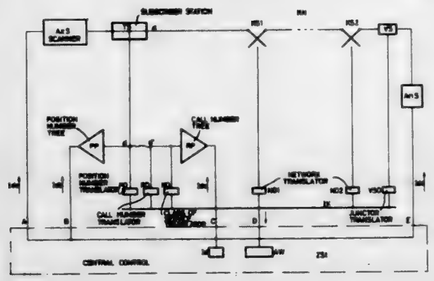


master program. The system is arranged to control the connection of a prime line or previously connected line to each station set going off-hook without depressing a key.

3,660,612
COMMON CONTROL TELEPHONE SWITCHING SYSTEM EMPLOYING ADDED DATA WIRE

Heinz Schluter, Korntestheim, and Hilmar Schoenmeyer, Stuttgart, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation of application Ser. No. 635,873, May 3, 1967, now abandoned. This application June 29, 1970, Ser. No. 56,088
Claims priority, application Germany, May 11, 1966, St 25 370
Int. Cl. H04m 3/38
U.S. Cl. 179—18 D 3 Claims

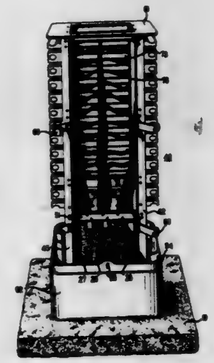


Subscriber circuits and junctors are interconnected through data wires via a switching network. In addition to the normal speech wires from the subscriber lines, a separate data wire is provided. This added data transmission wire is used to transmit information through a data wire connection within the network. The data wires receive identifying pulses from a central control through connecting facilities. The data wires are connected to a common information channel via translators. All data concerning an identified connection, as e.g. subscriber number, class-of-service, position number or addresses of the participating switching multiples and the type and number of the junctor are made available over the common information channel to the central control facilities for evaluation.

3,660,613
SERVING AREA CONNECTOR

Francis Joseph Mullin, Baltimore, and Raymond Bolton Ramsey, Towson, both of Md., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 21, 1971, Ser. No. 108,360
Int. Cl. H04q 1/00
U.S. Cl. 179—98 7 Claims

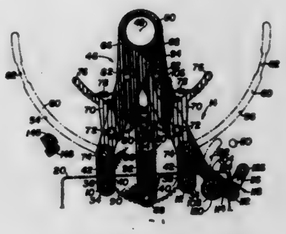


This disclosure describes multipair telephone cable connection apparatus for cross-connecting between a large number of pairs from a feeder cable to pairs of distribution cables. The connector typically is used in above-ground exchange area locations, operating in a system in which it is the only necessary interconnection point for about 500 subscribers. The closure is characterized by a square cross section, three vertical working faces, and an open side. Two of the working faces, opposite each other, mount quick-connect blocks to which distribution pairs are permanently terminated. The third face uses similar connector blocks to terminate pairs from the feeder cable. All cables enter through the closure base and pass through its interior. Jumpers are affected only on the exterior faces, and are arranged easily without becoming unmanageable.

3,660,614
DRIVE FOR TAPE GUIDES OF TAPE TRANSPORT

William W. Swain, Mountain View, and Richard A. Hathaway, Saratoga, both of Calif., assignors to Cartridge Television, Inc., New York, N.Y.

Filed June 26, 1970, Ser. No. 50,245
Int. Cl. G11b 5/52, 23/08
U.S. Cl. 179—100.2 T 20 Claims



Apparatus for moving a pair of tape guides of a tape transport of the type having a rotary head assembly. The guides are adapted to be received within a tape cartridge positioned adjacent to the rotary head assembly and to pull a stretch of tape out of the cartridge and about a portion of the arcuate

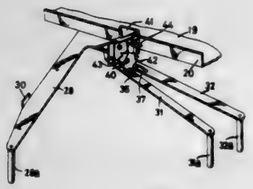
path of travel of the heads of the assembly. The apparatus includes a pair of arms having drag links pivotally mounted thereon which mount the tape guides. Each drag link has means thereon for properly positioning the same relative to the head path each time the drag link moves its tape guide into an operative position.

3,660,615

TAPE LOOP FORMING MECHANISM FOR USE WITH A TAPE RECORD/PLAYBACK MECHANISM

Yuuichi Kanamaru, Saitama-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 6, 1970, Ser. No. 61,618
Claims priority, application Japan, Jan. 24, 1970, 45/6484
Int. Cl. G11b *15/60, 15/66;* B65h *23/26*
U.S. Cl. 179—100.2 T **10 Claims**



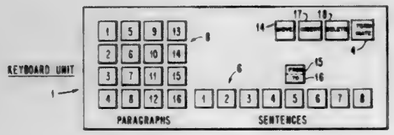
A ratchet mechanism is used to separate rotatable and longitudinally movable tape guiding fingers in a video tape recorder. The fingers withdraw the magnetic tape from a tape cassette, form it into a loop and place it around a rotating drum having magnetic tape heads therein.

3,660,616

DICTATING AND TRANSCRIBING SYSTEMS FEATURING RANDOM SENTENCE ARRANGEMENT WITH RECOGNITION AND LOCATION OF SENTENCES IN A PREFERRED SEQUENCE

Ronald V. Davidge, and Robert A. Kolpek, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1970, Ser. No. 50,577
Int. Cl. G06f *7/00;* G11b *27/08*
U.S. Cl. 179—100.2 MD **4 Claims**



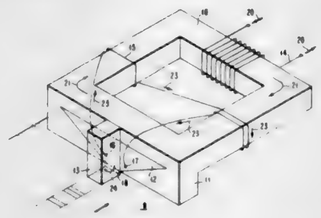
The invention concerns a dictating system capable of the random recording and arrangement of audio segments, means for digitally recording the positions of such segments after the completion of such arrangement either upon an additional medium or upon the recording medium in a separate track or tracks reserved for such purposes or in locations corresponding to each audio segment giving the location of the next audio segment as defined by the arrangement, or for transmitting such information over a wire or wireless channel; and also concerns a transcription device for use with the above system, either capable of reading such digital information into memory before the beginning of the transcription process or capable of reading information giving the location of the next audio segment as defined by the arrangement during the transcription process, and having means for accessing audio segments on the medium recorded by the above system in the order of the arrangement.

3,660,617

LOW PROFILE SINGLE-TURN MAGNETIC RECORDING HEAD WITH READ/WRITE WINDING COUPLED TO SINGLE TURN WINDING

Jacob John Hagopian, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,632
Int. Cl. G11b *5/20*
U.S. Cl. 179—100.2 C **9 Claims**



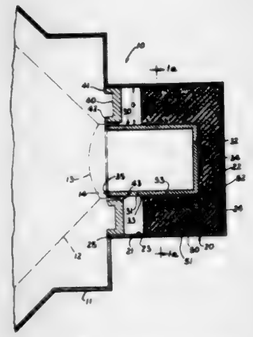
A low profile, single-turn magnetic head with integral transformer coupling between a read/write winding and the single-turn winding. The flux from the transformer action is at right angles to the flux in the magnetic path for the single turn.

3,660,618

MAGNETIC ASSEMBLY FOR LOUDSPEAKER

Stanley F. White, 466 East Vallette, Elmhurst, Ill.

Filed Oct. 1, 1970, Ser. No. 77,246
Int. Cl. H04r *9/04*
U.S. Cl. 179—115.5 R **25 Claims**



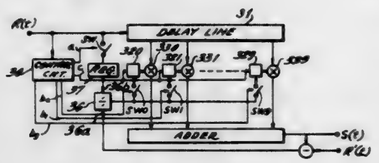
A loudspeaker having a cup-shaped outer pole piece and an inner pole piece which is telescoped within it and separated from it both axially and radially to provide a cup-shaped space between the two. In the space and in intimate contact with the opposed surfaces of the pole pieces is a cup-shaped insert of permanently magnetic material in the form of magnetic particles suspended in an inert binder. The inert binder is preferably formed of elastomeric material such as synthetic rubber or resilient plastic with a snug or slightly interfering fit so that the elements may simply be pressed together to assemble them. The permanently magnetic material is magnetized during fabrication, prior to, or following, assembly, being polarized so that the surfaces presented to the two pole pieces are of opposite polarity. The invention resides in part in the method used in assembling the parts together. In an aspect of the invention the magnetic insert is of composite construction using adjacent portions of magnetic material polarized at right angles. In another aspect of the invention the insert includes an annulus which is formed of a bar of elastomeric material bent in a circular shape incident to assembly.

3,660,619

METHOD AND APPARATUS FOR ECHO CANCELLATION IN TELEPHONE NETWORKS UTILIZING TWO-WIRE/FOUR-WIRE EQUIPMENT

Seibi Chiba, and Tadahiro Sekimoto, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Nov. 19, 1969, Ser. No. 877,887
Claims priority, application Japan, Nov. 21, 1968, 43/86006; Jan. 21, 1969, 44/4540
Int. Cl. H04b *3/20*
U.S. Cl. 179—170.2 **5 Claims**



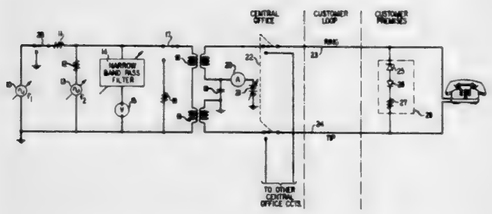
Method and apparatus for cancelling echos in two-wire/four-wire equipment utilized in telephone networks wherein, upon the detection of a non-speech interval, the signal appearing in the sending path of the four-wire circuit is divided by the signal in the receiving path of the four-wire network present at the same time to generate a transfer function. The transfer function is multiplied by the leakage signal in the sending path of the four-wire circuit to form a product. The transfer function (quotient signal) is stored after formation thereof to be utilized during succeeding equally spaced time intervals to form a transfer function during each such time interval, which succeeding transfer functions are stored in suitable registers. The signal in the receiving path is coupled to a multi-tapped delay line, wherein it is utilized to form a product with each of the transfer functions so formed and associated with each output of the multi-tapped delay line. All of the products are summed to form a resultant signal which is subtracted in a different circuit which receives the leakage signal in the sending path of the four-wire network to initially provide the signal utilized to form the transfer functions at each of the equally spaced time intervals and which is ultimately utilized to subtract the leakage signal from the signal appearing in the sending path of the four-wire circuit to cancel talkers' echo.

3,660,620

TRANSMISSION MEASUREMENT WITH A TWO-COMPONENT SIGNAL

Luther G. Schimpf, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 10, 1969, Ser. No. 883,785
Int. Cl. H04b *3/46*
U.S. Cl. 179—175.3 **3 Claims**



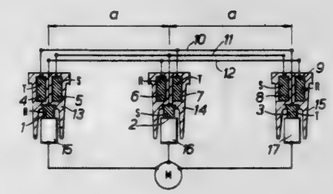
A system for measuring the transmission loss in a telephone customer's loop. A diode network is connected at the customer's premises across the loop. At the central office two alternating current signals are impressed on the loop. One signal is a low frequency, high amplitude signal used to switch the diode network alternately into its conducting and nonconducting states, thus causing the modulation of the second high frequency, low amplitude signal. The sum or the difference frequency is filtered out and measured at the central office.

3,660,621

PLANT FOR AC POWER SUPPLY TO A DEVICE MOVABLE ALONG A TRACK

Asbjorn Moen, Hasselbokken 21 A, Oslo, 7, Norway

Filed Mar. 23, 1970, Ser. No. 21,753
Claims priority, application Norway, Mar. 26, 1969, 1256/69
Int. Cl. B60m *1/00*
U.S. Cl. 191—2 **4 Claims**



For AC power supply to a device movable along a track, such as an electrically powered crane, the invention provides a compensated conductor system for each phase by placing, close to each contact rail, additional conductors of other phases are provided extending along the track in close but insulated relation to said contact and rail electrically connected to the remaining rails of said other phases at intervals along the track, whereby voltage drops are minimized and the power factor is improved.

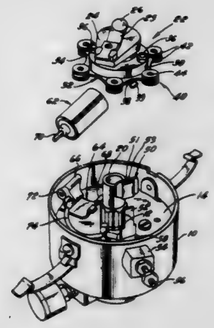
For each rail with adjacent conductors and appurtenant insulation, composite section units are provided.

3,660,622

DISTRIBUTOR FOR INTERNAL COMBUSTION ENGINE WITH IMPROVED ADJUSTABLE ROTOR CONTACT ASSEMBLY

Anthony A. Machado, 559 Bee Street, Meriden, Conn.

Filed Apr. 16, 1971, Ser. No. 134,713
Int. Cl. H01h *19/10*
U.S. Cl. 200—19 A **9 Claims**



A distributor for internal combustion engine having a rotor of a non-conducting material mounted on a grounded distributor shaft. A metal point support plate is adjustably sup-

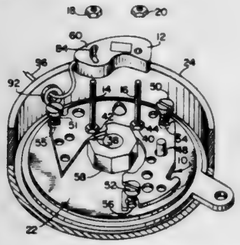
ported on the rotor and has a plurality of rotary contact points mounted thereon. Advantageously a stationary contact is mounted on the distributor for successive engagement by the rotary contact points, the stationary point having an arcuate contact surface for rolling engagement by the rotary contact points. Metallic fasteners releasably hold the rotor on the distributor shaft and ground the plate to the shaft. The distributor has a condenser, a stationary point, and a rotor with the rotary contact points which are releasably mounted in the distributor for convenient manual replacement.

3,660,623

DISTRIBUTOR SENSOR ADAPTOR

Louis A. Bevacqua, Des Plaines, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed May 17, 1971, Ser. No. 143,829
Int. Cl. H01h *19/00*
U.S. Cl. 200—19 R 5 Claims



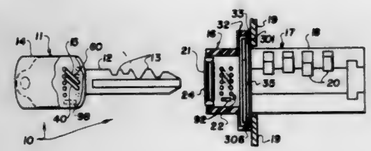
Apparatus for connecting a sensor used in a contactless ignition system in the distributor of a vehicle including an adaptor plate with breakaway portions for fitting the plate to different types of internal combustion engine distributor housings. The timing sensor is connected to the adaptor plate in a spaced relation to the distributor cam. The adaptor plate in turn is connected to an advance plate within the distributor housing utilizing connecting means originally used to connect the breaker points to the advance plate.

3,660,624

ELECTRICAL KEY FOR IGNITION SYSTEMS

George Bell, 420 Fairview Avenue, Fort Lee, N.J.

Continuation-in-part of application Ser. No. 875,334, Nov. 8, 1969. This application Feb. 12, 1970, Ser. No. 10,917
Int. Cl. E05b *17/00*; H01h *27/08*
U.S. Cl. 200—44 2 Claims



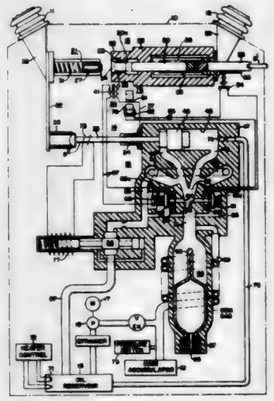
An electrical key for vehicular ignition systems having ignition system adapters that are irremovably interposed between a predetermined number of spark plug cable receptacles and their distributor contacts. The adapters being of two types, a normally open contact type that is activated by the electrical key and a normally closed contact type not affected by the electrical key. The electrical key including an electrical coded key element working in conjunction with an electrical coded key adapter, when the key element is inserted therein, to produce an electrical continuity in the vehicular ignition system. The key adapter also having wound-up means which will reject the key element when the key is in the "off" position while when rotated in the "on" position will be held in place to cause current to flow through the coded electrical circuitries to the spring loaded solenoid of the system adapters in starting the vehicular engine.

3,660,625

SYNCHRONOUS-TYPE CIRCUIT BREAKER HAVING TWO INDEPENDENTLY-OPERABLE MECHANISMS

Laird R. Allen, Jr., Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 23, 1970, Ser. No. 5,180
Int. Cl. F15c *3/02*; H01h *33/30*
U.S. Cl. 200—148 J 10 Claims



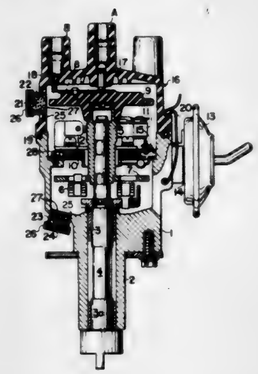
A fluid amplifier is utilized to operate the secondary or synchronous contacts of a circuit breaker having main or non-synchronous contacts and secondary or synchronous contacts, which are connected in parallel-circuit relation when the breaker is closed. The operation of the fluid amplifier is controlled by repulsion coil actuated valves. The energization of the repulsion coils is so controlled by current responsive means and by a synchronous control device that the secondary contacts are opened just prior to a current zero after the opening of the main contacts of the breaker. Compressed gas stored in an accumulator supplies energy for open-reclose-open-reclose operation of the secondary contacts if necessary.

3,660,626

SEALED TYPE CURRENT INTERRUPTING DEVICE

Seiichi Kawamura, Hitachi; Isamu Arano, Katsuta, and Fumito Nakajima, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 20, 1970, Ser. No. 13,071
Claims priority, application Japan, July 23, 1969, 44/57690
Int. Cl. H01h *9/04*
U.S. Cl. 200—168 G 5 Claims



A sealed type current interrupting device for vehicles comprising electrode members for making and breaking current,

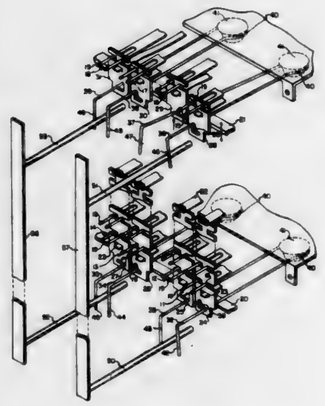
a catalyst column containing a catalyst for decomposing ozone generated between said electrode members, and a casing member for sealing said electrode members and said catalyst column, whereby said electrode members and said catalyst column are substantially isolated from the outer atmosphere.

3,660,627

ACTUATORS WITH TORSION ARMS FACILITATING PRESELECTION IN CROSSBAR SWITCHES

Clifford Edward Symes, Hanover Park, Ill., assignor to Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed Sept. 30, 1970, Ser. No. 76,839
Int. Cl. H01h *67/26*, *63/33*
U.S. Cl. 200—175 4 Claims



In typical crossbar switches, selection operators move flexible fingers to restricted areas within openings of selected operate cards, and subsequent operation of hold actuators against the fingers operate the selected cards. According to this disclosure, the ends of the flexible fingers that are to be engaged by operated selection operators are bent to function as levers that are rotated quite readily as a result of the twist of the long portions of the flexible fingers. The torsional spring characteristic provided by the levers permits the selection operators to operate fully during preselection without requiring much more than normal operating force.

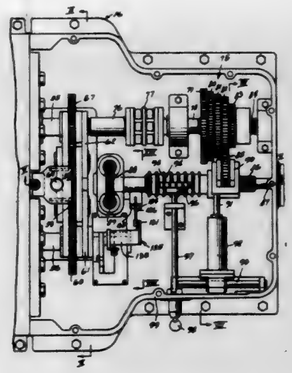
3,660,628

ELECTRIC ARC MACHINING APPARATUS FOR MANUFACTURING DIES AND ROLLS

Michael E. Celovsky, Bloomfield Hills, Mich., assignor to Industrial Tool Engineering Company, Detroit, Mich.

Filed Sept. 18, 1969, Ser. No. 859,123
Int. Cl. B23p *1/12*
U.S. Cl. 219—69 V 13 Claims

An apparatus for electric arc machining grooves in a pair of rolls spaced in side-by-side relationship. The rolls are mounted in the machine to have their axes generally parallel. Adjacent rolls are rotated as an electrode is moved therebetween to form grooves in the circumferential surfaces thereof. Shafts which support the rolls are movable toward or away from each other to accommodate larger or smaller rolls on the machine. A transmission is driven directly from one of the movable shafts. The transmission through a gear rack arrangement moves the electrodes vertically between the rolls. By means of the transmission, the speed of movement of the electrode can be varied to accommodate different diameter rolls. The lateral movement between the rolls with respect to the fixed transmission is accommodated by means of a parallel displacement coupling which couples the transmission to the associated roll supporting shaft.

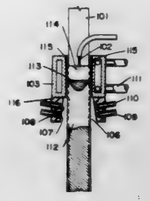


3,660,629

METHOD AND DEVICE FOR WELDING HIGH TENSILE STRENGTH STEEL OF HIGHER STRENGTH

Tuneo Nakai, Takatsuki; Akira Ando, Takarazuka; Setsuo Minehisa, Itami; Shunsuke Kaneko, Neyagawa; Yoshinori Shiraki, Sakai; Tatuo Inui, Osaka; Hiroyuki Nakazima, Ashiya, and Naotugu Tsunaga, Sakai, all of Japan, assignors to Hitachi Shipbuilding & Engineering Co., Ltd., Osaka-shi, Nishi-ku, Japan

Filed Jan. 2, 1970, Ser. No. 154
Int. Cl. B23k *9/18*, *25/00*
U.S. Cl. 219—73 10 Claims

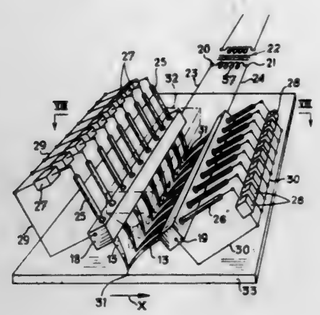


At first to execute a welding of high tensile strength steel of more than 60 kg/mm² an electro-slag welding technique is adapted.

While said electro-slag welding being operated, deposited metal near the molten weld metal and the base metal portion near thereto in hot state are subjected to high speed cooling by liquid so that they may be quenched, thereby to transform the bond structure into a structure comprising martensite and lower bainite or preferably into a martensitic structure.

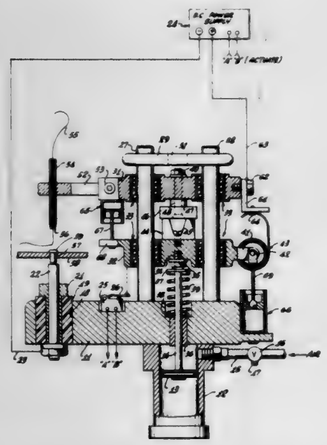
And then by tempering, said structure comprising martensite and lower bainite is changed into a structure comprising tempered martensite and tempered lower bainite and said martensitic structure is changed into a tempered martensitic structure.

3,660,630
HIGH TEMPERATURE HEATING
Jean A. F. Sunnen, Waterloo, and Henry R. P. J. Schoumaker, Bruxelles, both of Belgium, assignors to La Soudure Electrique, Procedes Arcas, Andertecht, Belgium
Filed Mar. 23, 1970, Ser. No. 21,936
Claims priority, application Belgium, Mar. 31, 1969, 72146
Int. Cl. B23k *9/04*
U.S. Cl. 219—76 **4 Claims**



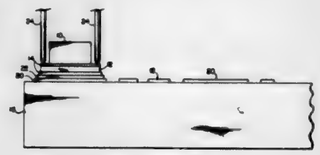
A process and device for high temperature heating of objects having extended surfaces. At least one group of separated plasmas jets is used which are created by a high current circulating between sets of cathodes and an anode having orifices with which the cathodes cooperate.

3,660,631
DUAL PRESSURE WELDING MACHINE
Larry R. Conley, Simi, Calif., assignor to Accra-Point Arrays Corp., Chatsworth, Calif.
Filed June 16, 1970, Ser. No. 46,770
Int. Cl. B23k *9/28, 11/10*
U.S. Cl. 219—78 **23 Claims**



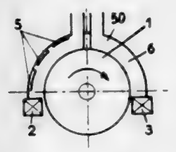
A dual pressure welding machine employing a magnetic connection to secure a first and higher pressure to cold flow or mechanically separate the insulation from a wire to be welded from the interfaces between an electrode, the wire and a terminal to which the wire is to be welded. When the magnetic connection is broken a second and lower welding pressure is applied from the electrode to the wire and terminal by means of a spring which may be a constant-force spring applying the same pressure regardless of its extended length or which may be an extension spring whose pressure increases with its extended length so that the welding pressure may be adjusted. The machine includes a pair of carriages connected together by the magnetic connection and the spring, with one carriage carrying the electrodes and the other moveable by either a pneumatic or manual operator.

3,660,632
METHOD FOR BONDING SILICON CHIPS TO A COLD SUBSTRATE
Charles Z. Leinkram, Bowie, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed June 17, 1970, Ser. No. 47,071
Int. Cl. B23k *1/02, 1/04*
U.S. Cl. 219—85 **10 Claims**



A method for bonding silicon chips to a cold substrate including the steps of mounting the chip on a gold plated Kovar tab; placing a solder preform on a gold lane of the substrate, positioning the tab on the solder preform, and passing a welding pulse through the Kovar tab to melt and reflow the solder preform.

3,660,633
DEVICE FOR THE STERILIZATION OF AMPOULES
Andre Fernand Meder, Saint-Louis, France, and Max Rudolf Jaeggi, Basel, Switzerland, assignors to Constr. Metalliques et Mecaniques EUGENE MEDER S.A., Saint-Louis, France
Filed Dec. 11, 1968, Ser. No. 782,909
Claims priority, application France, Dec. 11, 1967, 131733
Int. Cl. H05b *7/18*
U.S. Cl. 219—388 **12 Claims**

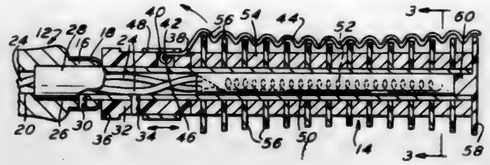


Device for the sterilization of ampoules comprising a rotatable drum, means for maintaining ampoules in position comprising at least one pair of wires maintained under tension on said drum, and sterilizing means for sterilizing ampoules held by said wires.

3,660,634
APPARATUS FOR TREATING NATURAL AND SYNTHETIC HAIR
Howard L. Scott, Philadelphia, Pa., assignor to The Fidelity Bank
Filed Aug. 14, 1970, Ser. No. 63,837
Int. Cl. H05b *3/00*; A45d *1/18, 24/10*
U.S. Cl. 219—222 **3 Claims**

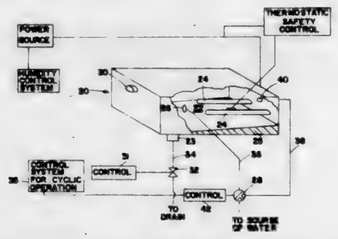
A tool for straightening or otherwise setting natural or synthetic hair in a selected condition, said tool comprising a cylindrical heating means surrounded by a heat-conducting bushing and having radially extended, spaced-apart, heat-insulating discs projecting outwardly therefrom. The discs are arranged in spaced parallelism with each other to accommodate individual portions of strands of hair so that these

portions are separated from each other by said discs and retained in full contact with the heat-conducting bushing. A sinusoidal spring retainer strip is pivotally connected to the tool so that it is pivotally movable from a clamping position adjacent the parallel edges of the discs to a release position



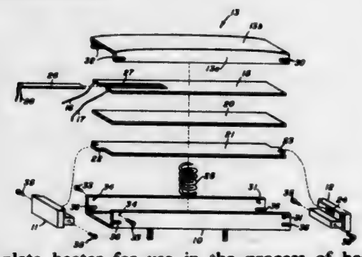
remote therefrom. The spring retainer strip is preferably pivotally connected to a guard means positioned between the cylindrical heating means and a heat-insulating handle connected to the heating means, said guard means comprising a sleeve surrounding the cylindrical heating means between the handle and the plurality of discs.

3,660,635
HUMIDIFICATION SYSTEM
Ralph C. Liebert, Worthington, Ohio, assignor to Liebert Corporation, Columbus, Ohio
Filed Nov. 12, 1970, Ser. No. 88,887
Int. Cl. F22b *1/28*
U.S. Cl. 219—273 **10 Claims**



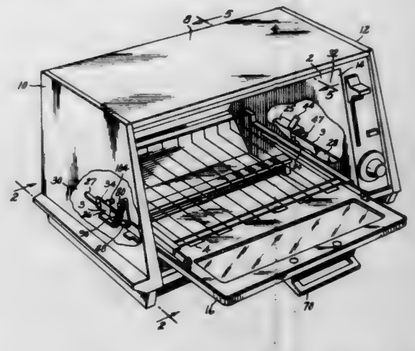
A method and apparatus for humidification characterized by a battery of low density stainless steel heaters which provide a band of radiant energy that evaporates water in an absolutely pure state without solids. An electronic control system provides automatic flushing, cleaning and fill cycles. The cleaning cycle includes the introduction of a spray of relatively cold water directed onto the heaters and the side walls of the reservoir to prevent the accumulation of deposits on the heaters and to clean precipitated solids from the walls of the reservoir.

3,660,636
PLATE HEATER
Adolf F. Beckert, St. Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Mar. 3, 1971, Ser. No. 120,579
Int. Cl. F28f *3/00*
U.S. Cl. 219—388 **6 Claims**



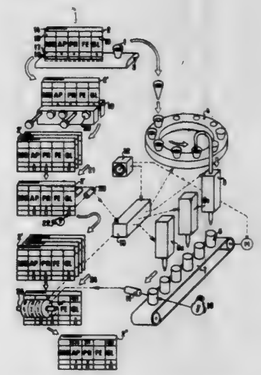
A plate heater for use in the process of heat treating travelling synthetic yarns with easily replaceable wear plate.

3,660,637
ELECTRIC OVEN TOASTER DOOR OPERATING MECHANISM
Lawrence L. Grove, Allentown, Pa., assignor to General Electric Company
Filed Mar. 10, 1971, Ser. No. 122,718
Int. Cl. A21b *3/02*
U.S. Cl. 219—413 **6 Claims**



An electric oven toaster construction wherein a unique door holding mechanism is provided for securely holding a door in its closed position. A spring loaded bifurcated lever is moved behind an abutment for holding the door closed, and the lever is removed from the abutment when the door is moved to its opened position. The door holding mechanism may also be arranged as a door stop for permitting a toaster oven door to be automatically partially opened at the end of a cooking cycle.

3,660,638
AUTOMATIC ANALYZING APPARATUS FOR LIQUID SPECIMENS
Rudolf Oberli, Grubenstrasse 9, CH-4900 Langenthal, Switzerland
Filed Aug. 24, 1970, Ser. No. 66,469
Claims priority, application Switzerland, Aug. 28, 1969, 13028/69
Int. Cl. G01n *29/02, 33/16*; G06k *7/10*
U.S. Cl. 235—61.6 R **6 Claims**



Method and apparatus for performing at least one chemical and/or physical analysis on a specimen, characterized in that an origin record associated with each specimen is marked with a machine-readable code that is operable to activate selected ones of a series of analyzing stations in timed relation to the transport of the specimen therethrough. According to a first embodiment, inspection means are provided

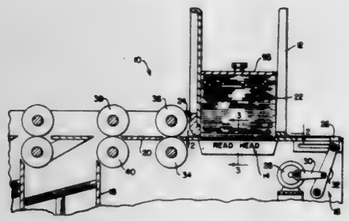
for measuring a physical property of the specimen following passage through said station, whereupon this measured property is then recorded directly on the origin record. In accordance with a second embodiment, a number of copies are made of the origin card corresponding to the number of analyses to be performed, whereupon the properties measured by said inspection means for each station are recorded on the said copies, respectively.

3,660,639

HIGH-SPEED CARD READER

John W. Cassel, Hatboro, Pa., assignor to The National Cash Register Company, Dayton, Ohio

Filed Feb. 2, 1970, Ser. No. 7,649
Int. Cl. G06k 7/02; H01h 35/24
U.S. Cl. 235—61.11 J 1 Claim



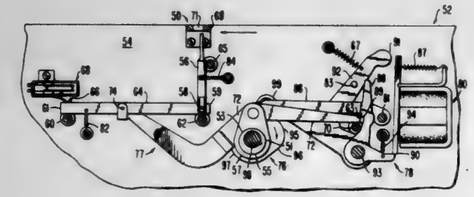
A high-speed card reader including a card feed hopper with a reading station being located directly beneath the hopper and aligned therewith. Because the reading station is aligned with the hopper, the lowermost card in a stack of cards in the hopper can be read while positioned at the bottom of the stack. After being read, the lowermost card is removed by a picker blade, and the next card is read while positioned at the bottom of the stack. All the holes in the card are read simultaneously at the reading station, which is air-operated.

3,660,640

RECORD SENSING MECHANISM

Paul L. Terbrueggen, Grosse Pointe Farms, and Georg K. Casparl, Plymouth, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Original application June 12, 1968, Ser. No. 736,488, now Patent No. 3,556,396, dated Jan. 19, 1971. Divided and this application Mar. 26, 1970, Ser. No. 30,612
Int. Cl. G06k 7/04
U.S. Cl. 235—61.11 C 6 Claims



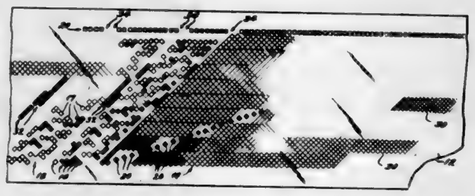
The disclosure embodies a record processing tool and includes mechanism for activating the tool to detect a code hole in a record medium. The tool is activated by a lever selectively pivoted about one of two opposite-acting fulcrums by cyclically operable means, selection being dependent on the retraction of one of the fulcrums.

3,660,641

CODED DATA STORAGE MEDIUM

Joseph L. Levasseur, St. Louis, Mo., assignor to Simcom Corporation, High Ridge, Mo.

Filed Oct. 30, 1969, Ser. No. 872,595
Int. Cl. G06k 19/06; G11b 5/78; G06k 7/10; G11b 5/25
U.S. Cl. 235—61.12 N 19 Claims



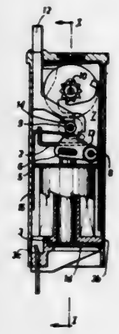
A coded data storage medium including a film strip having a particular form and arrangement of optically detectable images position encoded thereon.

3,660,642

IMPULSE COUNTER

Jean Jullien-Davin, Valence, France, assignor to Crouzet, Paris, France

Filed Mar. 10, 1970, Ser. No. 18,046
Claims priority, application France, Mar. 14, 1969, 6907796
Int. Cl. G06m 1/30
U.S. Cl. 235—92 C 2 Claims



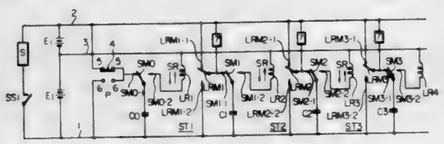
An electromagnetically operated impulse counter comprising a casing, numeral wheels disposed within said casing and freely mounted on a bearing shaft, releasable transmission means for operatively interconnecting said wheels, heart cams associated with said wheels and provided with a control lever for resetting the counter to zero, an electromagnet rigidly fixed to said frame, a moving armature for cooperating with said electromagnet at each current impulse, an escapement anchor which is pivotally coupled to said armature, the first numeral wheel being provided with a toothed escape wheel for cooperating with said escapement anchor which is so shaped as to permit the free rotation of the first numeral wheel and of the escape wheel when said anchor is brought by the zero resetting control lever into a position located between the two end positions thereof.

3,660,643

SHIFT REGISTER CIRCUIT

Mikio Matsumoto, Ashiya; Kenji Terada, Suita, and Mitsuru Matsunaga, Neyagawa, all of Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

Continuation-in-part of application Ser. No. 769,320, Oct. 21, 1968. This application Mar. 11, 1971, Ser. No. 123,333
Claims priority, application Japan, Oct. 31, 1967, 42/69578
Int. Cl. H03k 23/25
U.S. Cl. 235—92 J 4 Claims



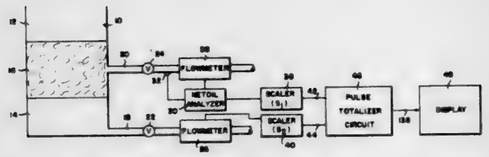
Shift register circuits in which each register stage comprises a magnetic lutch relay and a capacitor adapted to be coupled to a movable contact of said relay through a double-throw transfer switch, two stationary contacts of said relay being connected respectively to a reference potential and a first power source of a first potential, coil of said relay having one end connected to a second power source of a second potential lower than said first potential and the other end adapted to be coupled to the capacitor in the immediately preceding stage through the double-throw transfer switch in the immediately preceding stage.

3,660,644

SYSTEM FOR SUMMATION TOTALIZING FOR NET OIL ANALYZERS AND FLOW ANALYZERS

Jack Hammond, and Charles L. Boyd, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Dec. 29, 1969, Ser. No. 888,651
Int. Cl. G06m 3/12; B65g 51/36
U.S. Cl. 235—92 PL 7 Claims



Method and apparatus for determining the total volume of water extracted from an oil/water separator by summing, without any loss of pulses due to the coincidence thereof, the pulses generated by a flowmeter in the free water knockout conduit with the pulses generated by a net oil analyzer indicative of water flow in the oil/water emulsion conduit.

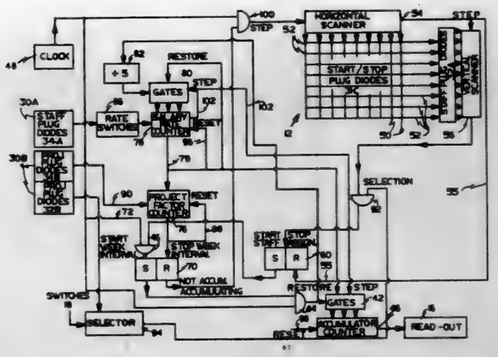
3,660,645

CALCULATING DISPLAY BOARD

Charles P. Locht, New York; William O. Harden, Chappaqua; Matthew J. Lavell, Wantagh; Stanley M. Kos, E. Northport, and Robert A. Pace, Jericho, all of N.Y., assignors to Advanced Computer Techniques Corporation, New York, N.Y.

Filed May 21, 1970, Ser. No. 39,482
Int. Cl. G06f 7/39, 7/385, 15/24
U.S. Cl. 235—152 48 Claims

A display board incorporating an electronic digital calculator. The board is designed to display certain data concerning projects undertaken and the length of time various staff members are assigned thereto; and the calculator responds to the data displayed by computing a numerical project cost quantity. In addition to the displayed data, the calculator takes into account additional data relating to the various overhead factors pertaining to respective projects, and the various salary rates paid to staff members assigned to these



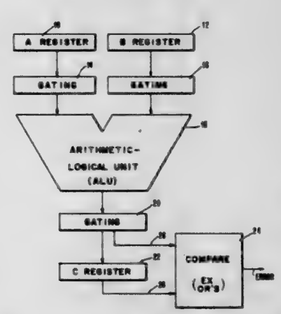
projects. Selector switches permit particular projects and time periods to be included in or excluded from the cost calculation.

3,660,646

CHECKING BY PSEUDODUPLICATION

Richard H. Minero, deceased, late of Raleigh, N.C. (by John Q. Beard, administrator); Anthony J. Anello; Robert G. Furey, and Lubos R. Paloucek, all of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 22, 1970, Ser. No. 74,340
Int. Cl. G06f 11/00
U.S. Cl. 235—153 6 Claims



An error detection system is described which detects errors by performing a given arithmetic or logical operation using one data path followed by the performing of the same arithmetic or logic operation using a different data path. The results of the two arithmetic or logical operations are then compared, the failure of the two results to be identical indicating failure of a component used in the performance of the arithmetic or logical operation.

3,660,647

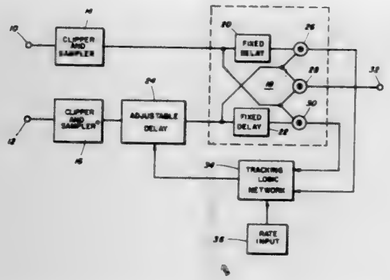
AUTOMATIC SIGNAL DELAY TRACKING SYSTEM

Cabell N. Pryor, Jr., Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 24, 1969, Ser. No. 887,832
Int. Cl. G06f 15/34, 11/00
U.S. Cl. 235—181 8 Claims

A system for varying the relative time delay between two broadband input signals consisting of an adjustable time

delay coupled to one of two input channels of a two point clipper correlator. The correlator includes a plurality of cross-coupled exclusive OR gates which generate output signals only when the correlation functions of both channels



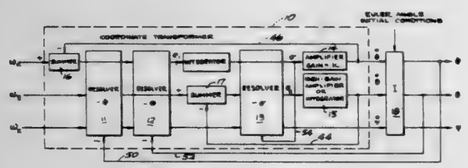
correspond. Decisions made in the correlator at each sample time are used to vary the adjustable delay, to provide automatic tracking of the peak of the cross-correlation function between the input signals.

3,660,648

ANGULAR RATE COORDINATE TRANSFORMER

Jack Kuipers, Grand Rapids, Mich., assignor to Northrop Corporation, Palos Verdes, Calif.

Filed Oct. 15, 1969, Ser. No. 866,637
Int. Cl. G06g *7/22, 7/78*
U.S. Cl. 235—186 **5 Claims**



Apparatus for converting signals representing rates of change of the angular position of a body with respect to its own axes to Euler angle rates of change utilizing three resolvers and two feedback paths so as to avoid practical difficulties equivalent to the "gimbal-lock" problem in the gyroscope art.

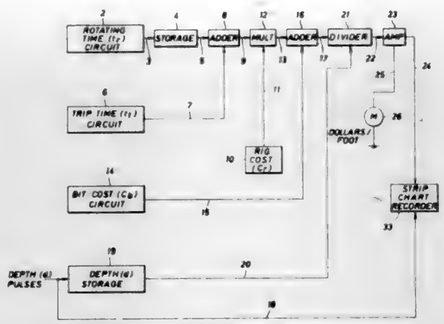
3,660,649

APPARATUS AND METHOD FOR COMPUTING DRILLING COSTS

Ralph E. Gilchrist, Houston, and Morton E. Brown, San Antonio, both of Tex., assignors to Tenneco Oil Company, Houston, Tex.

Filed Sept. 28, 1970, Ser. No. 75,864
Int. Cl. G06g *7/48*; E21b *45/00*
U.S. Cl. 235—193 **14 Claims**

Apparatus and method for computing the cost per unit length of borehole drilled by a drilling apparatus, as for example, the cost per foot of borehole drilled. First signals representative of incremental lengths of an interval of borehole depth drilled and a second signal representative of the accumulated cost incurred in drilling the interval of depth are generated and used to generate a third signal representative of average cost of operating the drilling apparatus during the interval of depth. The third signal may be read out and may be graphically recorded as a function of the depth drilled during the interval.

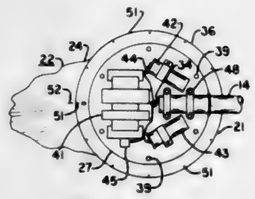


3,660,650

LUMINAIRE MOUNTING ASSEMBLY AND LIGHTING METHOD

Harold A. Van Dusen, Jr., South Milwaukee, Wis., assignor to McGraw-Edison Company, Milwaukee, Wis.

Filed Feb. 12, 1971, Ser. No. 115,024
Int. Cl. F21s *1/10, 3/10, 13/10*
U.S. Cl. 240—25 **10 Claims**



A luminaire assembly has an array of six luminaires mounted at the top of a high pole, and each of the luminaires has a preselected asymmetrical lighting pattern that is rotatably controllable by rotation of a lower optical assembly mounted on an upper main support housing. Rotation indexing mass on the assembly and housing indicate the relative position of the assembly to the housing to enable simply accomplished rotatable alignment of the overall lighting pattern.

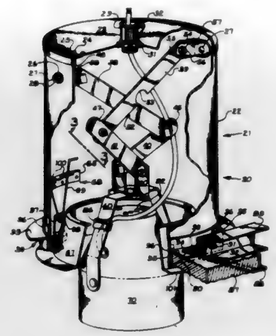
3,660,651

ADJUSTABLE LIGHT FIXTURE

Earl F. Miles, Jr., Indianapolis, Ind., assignor to Indy Lighting, Inc., Indianapolis, Ind.

Filed July 29, 1970, Ser. No. 59,152
Int. Cl. F21s *1/04*
U.S. Cl. 240—73 BJ **3 Claims**

An adjustable light fixture recessible in a ceiling for directing light at various angles toward an object. A shade having an electric light bulb is suspended within a housing by a pair of multi-membered arms. Each arm is adjustable for moving the shade vertically. The shade is rotatably mounted to a handle for allowing the shade and bulb to pivot 180° about the horizontal mounting axis. The handle is rotatably



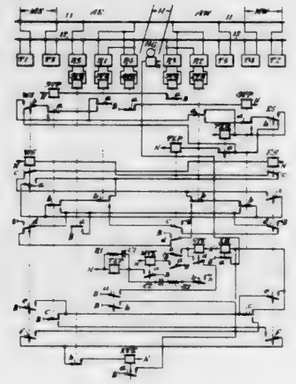
mounted to a U-shaped bracket fastened to the pair of arms allowing the shade and bulb to rotate about a vertical axis. Stops are provided to prevent tangling of the electric wires.

3,660,652

HIGHWAY CROSSING SIGNAL SYSTEM

Crawford E. Staples, Edgewood, and William A. Jacobs, Churchill, both of Pa., assignors to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Apr. 27, 1970, Ser. No. 31,909
Int. Cl. B61l *1/06*
U.S. Cl. 246—125 **7 Claims**



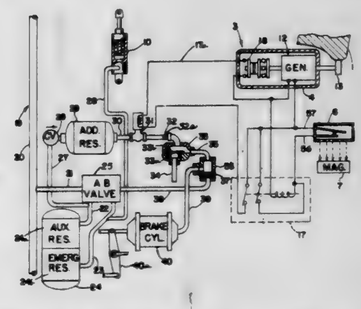
Two overlay track circuits without insulated joints are installed in the track approaching the highway crossing, overlapped to provide a speed measuring section at the distant end of the approach track and an approach control section extending to the crossing, but with all apparatus except track transmitters at the crossing. Detection of a train only in the measuring section actuates a set of timing relays, one for each selected speed range slower than maximum speed. Completion of the shortest timing period energizes a repeater relay having a basic slow release period which is extended by the successive completion of other timing periods. Entry of a maximum speed train into the approach control section immediately actuates the warning signal but operation is delayed for the established release period of the repeater relay for slower trains to obtain relatively uniform warning times. Two direction train operation doubles the required track circuits but uses only one set of timing relays when the same speed ranges are applicable.

3,660,653

RAILROAD CAR SPEED CONTROL MECHANISM

William H. Peterson, Homewood, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed June 5, 1970, Ser. No. 43,902. The portion of the term of the patent subsequent to Aug. 18, 1987, has been disclaimed.
Int. Cl. B61l *3/12*
U.S. Cl. 246—182 B **13 Claims**
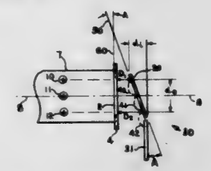


A railroad car speed control device including a car wheel-driven generator, a generator-operated solenoid valve and centrifugal switch being energized by a ground-mounted magnet for operating the air brakes in accordance with vehicle speed wherein a positive pressurehead is maintained on a pneumatic motor to keep the generator away from the car wheel, the generator wheel being provided with a shock-resistant flexible connection, a magnetic responsive reed switch having magnetic flux collecting means to be acted upon by a ground-mounted magnet for completing the generator circuit and wherein there is provided a novel shuttle valve arrangement for selectively sending the brake air pressure by way of the conventional AB valve or by way of the additional reservoir.

3,660,654

MASS SPECTROMETER HAVING MEANS COMPENSATING ELECTRON TRANSIT TIME ACROSS THE CATHODE OF THE ELECTRON MULTIPLIER

Donald C. Damoth, Rochester, N.Y., and William H. Shriner, Blanchester, Ohio, assignors to The Bendix Corporation

Filed Sept. 15, 1969, Ser. No. 858,058
Int. Cl. H01j *39/34*
U.S. Cl. 250—41.9 TF **2 Claims**



To improve the resolution of a mass spectrometer the emissive surface of the cathode for the electron multiplier is precisely angled with respect to the plane perpendicular to the axis of the ion focusing tube so that all ions of the same mass which pass through that plane at the same time impinge on those portions of the cathode surface closest to and farthest from the dynode cause electrons secondarily emitted therefrom to impinge upon the dynode at substantially the same time. This shortens the duration of the mass spectrum signals making it easier to distinguish one mass-spectrum line from another in the 200–500 amu range.

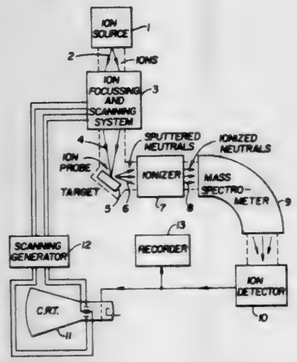
3,660,655
ION PROBE WITH MEANS FOR MASS ANALYZING NEUTRAL PARTICLES SPUTTERED FROM A SPECIMEN

Ian Robert Michael Wardell, Rugby, England, assignor to Associated Electrical Industries Limited, London, England

Continuation of application Ser. No. 703,600, Feb. 7, 1968, now abandoned. This application Sept. 8, 1969, Ser. No. 871,794

Int. Cl. H01j *37/26, 39/34;* B01d *59/44*

U.S. Cl. 250—41.9 SB 25 Claims



In micro-analyzer apparatus of the kind in which material to be analyzed is arranged as a target of an ion probe and ionized particles obtained from the target are analyzed in a mass spectrometer, accuracy of analysis is improved by analyzing not secondary ions sputtered from the target but neutral atoms which are collected and passed to the mass spectrometer through an ionizer. Several possible forms of ionizer for ionizing the sputtered neutrals are also disclosed.

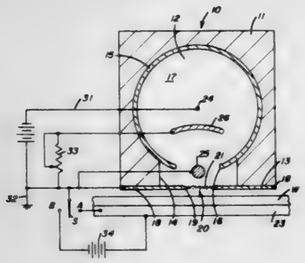
3,660,656
LIGHT LOCK FOR CORONA DEVICE

Lee F. Frank, and George W. Alley, II, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 26, 1970, Ser. No. 66,947

Int. Cl. G03g *15/02*

U.S. Cl. 250—49.5 ZC 12 Claims



A device having corona discharge means for generating a flow of ions arranged within a chamber that is part of a dielectric housing and is provided with an elongated opening extending to the side of the housing positionable adjacent the surface of a moving sheet or web of dielectric or photosensitive material to be treated. The opening is covered with a metal screen or a small diameter rod can be arranged relative to the opening. The chamber is lined with an electrically conductive shield. The opening is of sufficient length so that it will extend across and beyond the side edges of the sheet or web that will be moved with respect thereto. Between the corona discharge means and the metal screen, an electrically conductive and biased steering rod is arranged to direct the flow of ions from said corona discharge means through said opening. An electrically conductive and biased plate is arranged between the corona discharge means and the steering rod to shape the electrical field established relative to the surface of the material to focus the flow of ions toward the screen and to prevent irradiation from said corona discharge means from passing through said opening and damaging the material being treated. The device can be used with either an AC or DC source of potential applied to the corona discharge means depending upon the type of material being treated.

3,660,657
ELECTRON MICROSCOPE WITH MULTI-FOCUSING ELECTRON LENS

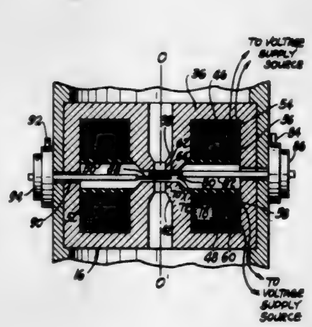
Kenneth A. Brookes, Standon, Ware, Herts, England, assignor to Associated Electrical Industries Limited, London, England

Filed Nov. 25, 1969, Ser. No. 879,877

Claims priority, application Great Britain, Nov. 26, 1968, 56,067/68

Int. Cl. H01j *37/26*

U.S. Cl. 250—49.5 D 10 Claims



An electron lens having two pole pieces spaced along a lens axis so as to define a gap between the pole pieces, coil means associated with the pole pieces for, upon being energized, exciting the pole pieces to deflect an electron beam in a manner such that the beam intersects the lens axis at a plurality of points and thereby defining a plurality of focal points along the lens axis when the electron beam emerges parallel to the lens axis. The electron lens also includes an adjustable support means for positioning an object to be imaged.

3,660,658
ELECTRON BEAM DEFLECTOR SYSTEM

Hubert Leboutet; Jean Jaouen, and Jeanne Aucouturier, all of Paris, France, assignors to Thomson-CSF

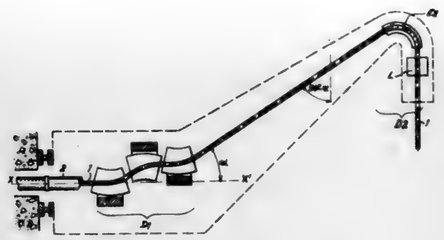
Filed Mar. 4, 1970, Ser. No. 16,529

Claims priority, application France, Mar. 12, 1969, 6906976

Int. Cl. G01n *23/00*

U.S. Cl. 250—49.5 D 4 Claims

A magnetic system for deflecting the beam in an electron accelerator, comprising two sets of electromagnets which deflect the beam through a total angle of 90° and are located within in a single mounting, pivotally mounted about the axis of the entry beam.



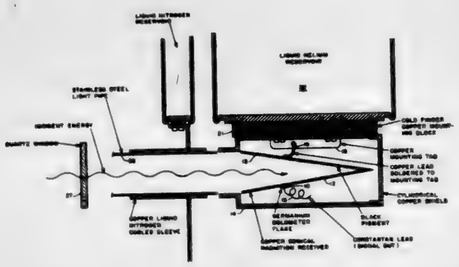
3,660,659
BLACK SUBMILLIMETER RADIATION DETECTOR

Wesley L. Eisenman; Douglas C. Arrington, both of Riverside; Richard L. Bates, San Diego; James D. Merriam, Del Mar, and Donald L. Stierwalt, El Cajon, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Feb. 3, 1971, Ser. No. 112,157

Int. Cl. G01j *1/02, 1/16*

U.S. Cl. 250—83.3 H 4 Claims



A radiation detector, as a standard reference for determining the spectral response of any detectors in the submillimeter wavelength region, comprising a conical radiation receiver whose inner surface is coated with black pigment and having a bolometer flake of gallium doped germanium soldered to its outer surface substantially midway, between its base and apex, and a cooled light pipe for introducing radiant energy into the interior of the receiver.

3,660,660
ACTUATOR FOR BUCKY DIAPHRAGMS

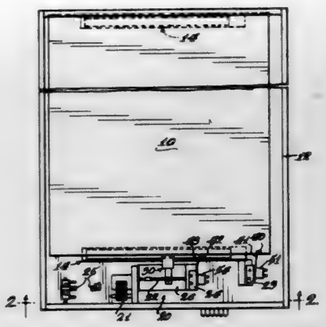
John R. Pearson, Aurora, and Glenn J. Johnson, Oswego, both of Ill., assignors to Mellquist Mfg. Co., Inc., Aurora, Ill.

Filed Mar. 21, 1969, Ser. No. 809,196

Int. Cl. G03b *41/16*

U.S. Cl. 250—62 9 Claims

Actuator for moving a diaphragm grid over photographic film during an X-ray exposure to screen secondary radiations from the film, comprising a drive shaft having thereon a pair of coextensive intersecting helical grooves of opposite hand which merge at their ends to form an endless track, a follower on the grid engaged in said track, and means for rotating said shaft for reciprocating said follower along said track thereby to move said grid over the film.



3,660,661
BALLISTIC JOULE METER FOR MEASURING A PULSE OF INFRARED RADIATION

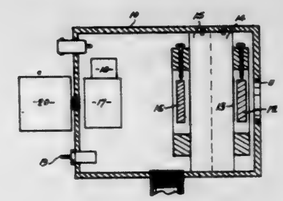
Jean L. Lachambre, Charlesbourg, Quebec, Canada, assignor to Her Majesty the Queen in right of Canada as represented by the Minister of National Defence of Her Majesty's Canadian Government

Filed Aug. 28, 1970, Ser. No. 65,590

Claims priority, application Canada, Aug. 29, 1969, 060,797

Int. Cl. G01k *3/00*

U.S. Cl. 250—83.3 H 2 Claims



There is disclosed a ballistic joule meter containing an absorber having a sufficiently low absorption factor that energy is transmitted beyond the face of the absorber and is absorbed throughout the volume thereof. The temperature rise due to the absorption of the pulse of radiation is measured by a thin wire electrical resistance thermometer. In order to cancel out ambient effects a reference absorber is also provided in the apparatus which is not exposed to the incident radiation and the energy is measured by measuring the temperature difference between the reference and operative absorber the temperature difference being measured with a bridge circuit.

3,660,662
X-RAY APPARATUS FOR MEASURING PAPER WEB MOISTURE AND THE LIKE

Heikki Paakkila, Jyvaskyla, Finland, assignor to Valmet Oy, Helsinki, Finland

Filed Apr. 1, 1969, Ser. No. 811,852

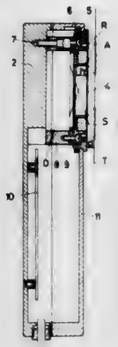
Claims priority, application Finland, Apr. 3, 1968, 926/68

Int. Cl. G01t *1/16*

U.S. Cl. 250—83.3 D 7 Claims

A pick-up is provided for a measuring device used to measure the moisture content, the filler content or the content of

coating material of a paper web or the like. The measuring takes place by the X-ray fluorescence method. The pick-up has a radiation source which is ring-shaped and is located on the same side of the paper web as the detector which is located behind the radiation source. The invention is particularly characterized by the provision of a ring-shaped radiation shield placed between the radiation source and the window of the detector. The dimensions of the radiation shield are so selected that a flat-top maximum is produced in a characteristic curve indicating the dependence of the measuring signal from the distance between the radiation source and the backing material, other characteristics remaining constant.

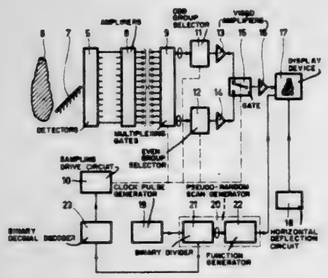


3,660,663

RADIATION DETECTION SYSTEM USING PSEUDO-RANDOM REVERSIBLE SCANNING TECHNIQUES

Leslie Henry Guildford, Haywards Heath, and Richard Frank Mitchell, Cambridge, both of England, assignors to U.S. Philips Corporation

Filed May 2, 1969, Ser. No. 821,407
Claims priority, application Great Britain, May 8, 1968, 21,788/68
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 H **22 Claims**



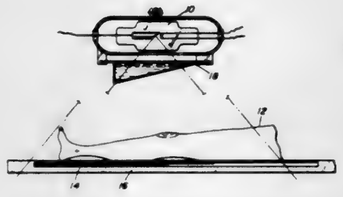
An imaging system including means for scanning a linear array of detectors across the scene to viewed field by field, consecutive fields being scanned in opposite directions. Every picture element of the scene is reproduced once during a frame, which is made up of at least two fields and preferably an integral multiple of two. The system also includes means for sampling the detectors in a pseudo random pattern. The sampled signals are multiplexed and displayed on a CRT having an electron beam that is deflected in synchronism with the sampling pattern. Each field is divided into a non-integral number of vertical areas.

3,660,664

WEDGE FOR VARYING CROSS-SECTIONAL INTENSITY OF BEAM OF PENETRATING RADIATION

Robert P. Pasmeg, 732 Connors Lane, Stratford, Conn.

Filed May 11, 1970, Ser. No. 36,249
Int. Cl. H01j *5/16*
U.S. Cl. 250—86 **2 Claims**



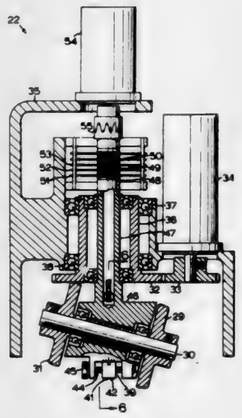
For use with an X-ray source, a wedge for distributing the intensity of radiation over an object area comprises a wedge-shaped enclosure partially filled with a radiation-opaque liquid. The enclosure is adapted for mounting on an X-ray tube head so as to be tiltable therewith thereby to alter the effective angle of incline of the "liquid wedge" and consequently its filtering characteristic.

3,660,665

PHOTOCELL CONTROLLED PATTERN TRACER

Ronald J. Luker, Hamilton, Ontario, Canada, assignor to Westinghouse Canada Limited

Filed May 5, 1970, Ser. No. 34,721
Claims priority, application Canada, July 13, 1969, 055,983
Int. Cl. G05b *1/01*
U.S. Cl. 250—202 **4 Claims**



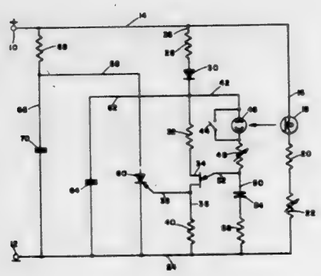
A friction drive and steering mechanism for a pattern tracing machine, such mechanism including a drive wheel frictionally engaging a drive surface and steerable about an axis intersecting the drive surface at a point displaced from the point of engagement of the drive wheel with the surface, and a photo-optical tracing head arranged to view an area on the drive surface close to said steering axis and means for steering the viewed area about the steering axis in such a manner that a line is maintained between a point in the viewing area and the axis parallel to a tangent to the pattern in the viewing area.

3,660,666

RADIATION SENSITIVE ELECTRONIC TIME DELAY SWITCH

Alvin E. Hendrickson, Chula Vista, Calif., assignor to Hadrian J. Liberatore, San Diego, Calif.

Filed May 18, 1970, Ser. No. 38,259
Int. Cl. H01j *39/12*
U.S. Cl. 250—206 **6 Claims**



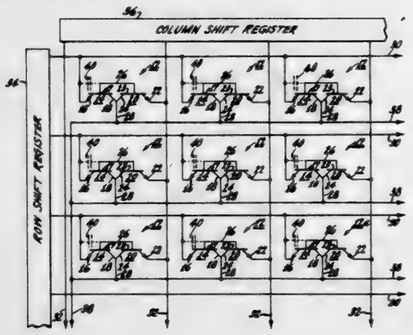
The charge rate of a charging capacitor is controlled by the resistance of a photocell that is in turn controlled by the flashing rate of a flashing light, and the charge level of the charge capacitor energizes a uni-directional device that biases an SCR device to the ON condition closing a DC power circuit. The flashing rate of the flashing lamp is adjustable to establish a charge rate of the charge capacitor.

3,660,667

IMAGE SENSOR ARRAY IN WHICH EACH ELEMENT EMPLOYS TWO PHOTOTRANSISTORS ONE OF WHICH STORES CHARGE

Paul Kessler Weimer, Princeton, N.J., assignor to RCA Corporation

Filed June 22, 1970, Ser. No. 48,032
Int. Cl. H01j *35/12*; H01l *11/00, 15/00*
U.S. Cl. 250—209 **9 Claims**



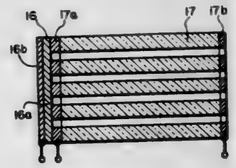
An image sensor array of photodetector elements, with two phototransistors at each element. Each phototransistor has emitter, base, and collector regions, with PN junctions between the regions serving as photodetectors which integrate incident light flux. The inherent capacitance of the emitter-base junction of one phototransistor is substantially greater than the inherent capacitance of the other junctions, to provide capacitance for charge storage during the period between incident light and sampling. The emitter-base junction of the second phototransistor serves as a switch when the element is sampled, to provide an electrical output representative of the integrated light. The video output may be derived from the collector regions or from either of the emitter regions.

3,660,668

IMAGE INTENSIFIER EMPLOYING CHANNEL MULTIPLIER PLATE

Adolph J. Wolski, Morton Grove, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Sept. 25, 1969, Ser. No. 860,931
Int. Cl. H01j *31/50*
U.S. Cl. 250—213 VT **6 Claims**



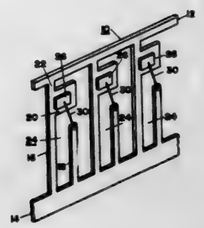
A photocathode in response to an incident light image develops a corresponding electron image which is accelerated and focused upon the input of a channel multiplier plate. The input of that plate is covered with a layer of a material having the property of transmission secondary electron multiplication, hereafter referred to as TSEM. Secondary electrons developed in that material in response to the incident electron image enter the channel multiplier where they are further multiplied and, finally, are focused on a phosphor screen where conversion to a light image takes place.

3,660,669

OPTICAL COUPLER MADE BY JUXTAPOSITION OF LEAD FRAME MOUNTED SENSOR AND LIGHT EMITTER

Lawrence A. Grenon, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Apr. 15, 1970, Ser. No. 28,585
Int. Cl. H01j *5/02, 39/12*
U.S. Cl. 250—217 S **5 Claims**

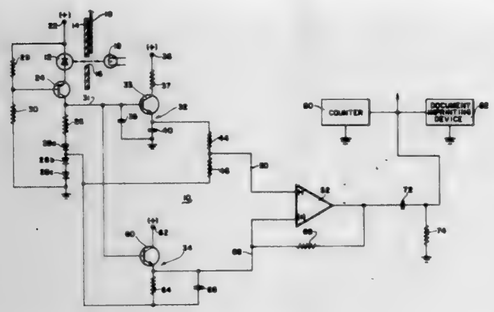


An inexpensive encapsulated coupled pair of elements, one of which is a light emitter and the other of which is a light sensor, comprise an encapsulated optical coupler, and the method of making them is disclosed.

3,660,670
DOCUMENT DETECTING AND COUNTING APPARATUS

Dwight Thomas Howard, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 21, 1970, Ser. No. 99,866
Int. Cl. G01n 21/30
U.S. Cl. 250—219 DC 5 Claims



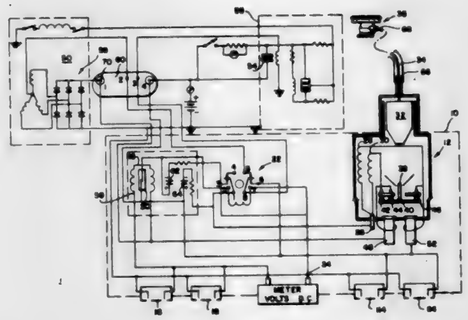
Apparatus is disclosed for detecting and counting the number of documents which move into a predetermined location along a path. The apparatus includes a photosensitive device disposed adjacent the predetermined location and adapted to receive incident illumination at a first level of brightness when a document is absent from the location and at reduced brightness level when the document moves into the location. The photosensitive device has a parameter, the magnitude of which varies as a function of the brightness level of incident illumination. The apparatus further includes a first amplifier stage which is electrically coupled to the photosensitive device, and is adapted to produce and store a first reference voltage at a level which is a function of the level of brightness of incident illumination received by the photosensitive device when the document is absent from the predetermined location; and a second amplifier stage adapted to produce a second reference voltage at a level which is a function of the instantaneous brightness level of illumination incident on the photosensitive device. The apparatus further includes an operational amplifier which produces an output which is a function of variations between the levels of the reference voltages, and a high pass filter which is coupled to the operational amplifier and adapted to produce a pulse when a document moves into the predetermined location, and a counter which in response to each pulse keeps a record of the number of documents which have moved past the predetermined location.

3,660,671
ELECTRIC POWER TAKEOFF SYSTEM

Edwin R. Peterson, 3109 Bogus Basin Rd., Boise, Idaho

Continuation-in-part of application Ser. No. 8,853, Feb. 5, 1970. This application July 20, 1970, Ser. No. 56,546
Int. Cl. H02p 9/04
U.S. Cl. 290—1 10 Claims

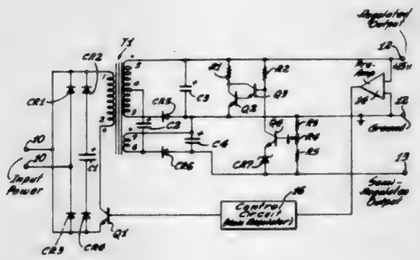
An electric power takeoff system for operative association with electric output devices such as alternators or generators driven by an engine such as providing motive power for vehicles of different types, stationary engines and other types of power plant apparatus. The electric power takeoff system operates to provide operating power for operating electrical appliances, battery charging and welding attachments, directly therefrom, the appliances and attachments operating on DC current in voltage ranges from 1 to 220 volts DC. The system includes a means of adjusting electric output by changing the rpm of the engine driving the alternator, so as to match voltage requirement on appliances being operated, or combination thereof, the functions being performed through the system and automatically operable upon actuation of an appliance switch when connected into the system and engine speed, and therefore electric power output, will be automatically established upon actuation of the appliance. The system includes an automatic, electromagnetic working solenoid functioning to increase engine speed and also change circuitry to provide a fail safe system to preclude endangering an alternator, regulator or electrical system associated with the engine. A fail safe circuitry is provided to accommodate operating the system for battery charging in voltage ranges of 1–220 volts DC and polarity protection is incorporated within the on-off switch circuitry in the event of improper hookup to a battery being charged. The system also incorporates a safe and simple hook-up feature for quick association with a vehicle system incorporating such an engine providing pre-assembled and connected wiring.



3,660,672
POWER SUPPLY DUAL OUTPUT

James K. Berger, Sherman Oaks, and Bruce L. Wilkinson, Torrance, both of Calif., assignors to Pioneer Magnetics, Inc., Santa Monica, Calif.

Filed Feb. 25, 1971, Ser. No. 118,661
Int. Cl. H02m 7/24
U.S. Cl. 307—17 5 Claims

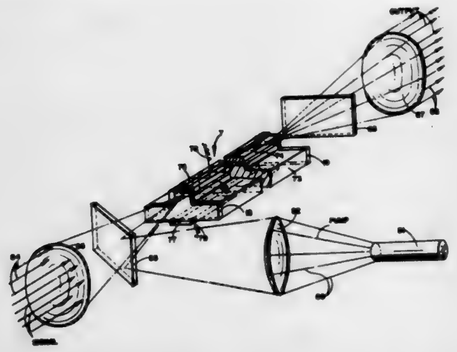


A power supply is provided which produces a plurality of separate unidirectional output voltages of different degrees of regulation as determined by the requirements of the equipment energized thereby. The power supply includes a transformer and a regulating network, and it produces a first regulated unidirectional potential output; and the power supply also includes a circuit for obtaining at least one additional regulated unidirectional potential output from the same transformer and regulator.

3,660,673
OPTICAL PARAMETRIC DEVICE

Dean B. Andersen, Whittier, Calif., assignor to North American Rockwell Corporation

Continuation of application Ser. No. 605,443, Dec. 28, 1966. This application Apr. 16, 1970, Ser. No. 31,814
Int. Cl. H03f 7/00
U.S. Cl. 307—88.3 11 Claims

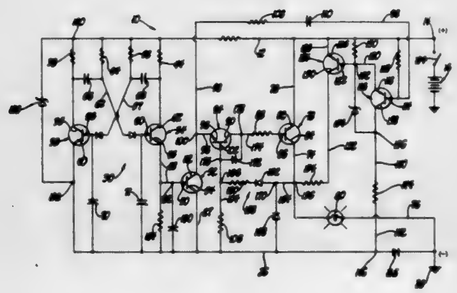


An optical parametric device is described which may be used as an amplifier, oscillator, or frequency converter, and which is operable in the infrared or visible spectral regions. The device utilizes a dielectric optical waveguide or tuned cavity, which structure may comprise the depletion layer of a semiconductor junction, the dielectric material of which exhibits nonlinear susceptibility. An intense, appropriately oriented, optical pump induces a non-linear electric polarization in the material of the dielectric structure. Traveling wave or discrete circuit parametric interaction occurs within the structure between the pump and an input signal. Under appropriate conditions, oscillation, amplification, and/or frequency conversion may be obtained.

3,660,674
TRANSISTOR FLASHER WITH PREHEAT CIRCUIT FOR LAMP LOAD

John F. Bolinger, Michigan City, Ind., assignor to Meridian Industries, Inc., Southfield, Mich.

Filed June 22, 1970, Ser. No. 48,322
Int. Cl. H02h 7/20; H05b 37/02
U.S. Cl. 307—202 4 Claims

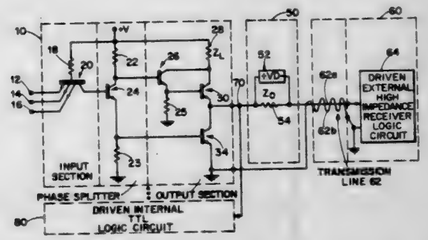


A flasher circuit has a power transistor controlling a circuit with a load therein; a multivibrator produces a timing signal applied to a second transistor for pulsing and turning "on" a related third control transistor which is effective in response thereto to apply a relatively small current flow to the load to preheat the load before application of the full current; additional semiconductor means, sensitive to a voltage signal or loss thereof in the load circuit due to the occurrence of a short, are effective for preventing the power transistor from being made conductive.

3,660,675
TRANSMISSION LINE SERIES TERMINATION NETWORK FOR INTERCONNECTING HIGH SPEED LOGIC CIRCUITS

John R. Andrews, Jr., Framingham, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 5, 1970, Ser. No. 34,675
Int. Cl. H03k 19/36
U.S. Cl. 307—288 17 Claims



A series termination network interconnects high speed logic circuits in a transmission line system for transmitting binary ONE and binary ZERO information. When the logic circuit drives the transmission line to a high voltage state, a first impedance branch of the termination network applies a voltage whose magnitude approximates one half of the magnitude of voltage which defines a binary "ONE." When the logic circuit switches the line to a low voltage state, corresponding to a binary ZERO, the network through a second impedance branch terminates the line in its characteristic impedance.

3,660,676
CIRCUIT ARRANGEMENT FOR CONVERTING SIGNAL VOLTAGES

Werner Fleischhammer, Braunthal, and Friedrich-Karl Kroos, Soecking, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

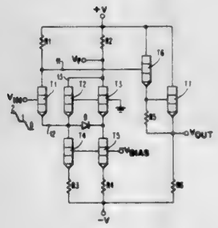
Filed Dec. 15, 1970, Ser. No. 98,267
Claims priority, application Germany, Jan. 7, 1970, P 20 00 401.7
Int. Cl. H03k 19/12
U.S. Cl. 307—208 5 Claims



A logic signal level converter circuit arrangement for connecting the output of a saturated type logic circuit to the input of an unsaturated logic circuit, in which at least one input signal terminal is connected via a respective rectifying junction to a common point that is connected via a resistor to a first supply voltage terminal, the common point being connected via a further rectifying junction to the base of an emitter-follower transistor whose collector is connected to

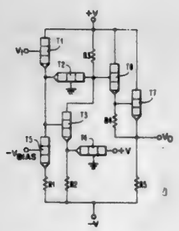
said first supply voltage terminal via a resistor, the emitter of said emitter follower transistor being connected to the base and collector of a multi-emitter transistor which has one emitter connected to a point of fixed potential and a second emitter connected to a second supply voltage terminal of polarity opposite to that of said first supply terminal via a voltage divider consisting of two resistors connected in series and having their junction connected to an output terminal.

3,660,677
INTERCHANGER 1 CIRCUITS
Gerald A. Maley, Fishkill, and James L. Walsh, Hyde Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 5, 1971, Ser. No. 113,000
Int. Cl. H03k *19/08, 19/40*
U.S. Cl. 307—209 **11 Claims**



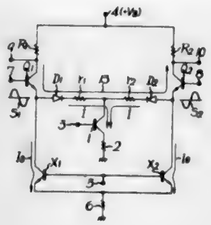
A ternary logic circuit provides the Interchanger 1 logic function whereby for an input of levels 0, 1 or 2 there arises an output with levels 2, 1 or 0, respectively. A transistor current switch has two current paths only one of which includes a load impedance, the other current path bypassing the load impedance. A current source provides two units of current. Either none, one or both of the current units flow in the load impedance to provide the respective output levels, depending upon the input signal.

3,660,678
BASIC TERNARY LOGIC CIRCUITS
Gerald A. Maley, Fishkill, and James L. Walsh, Hyde Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 5, 1971, Ser. No. 112,898
Int. Cl. H03k *19/08, 19/40*
U.S. Cl. 307—209 **10 Claims**



Basic ternary logic circuits provide all 27 single-variable ternary logic functions. Each of two current switches comprises a pair of transistors. Each transistor has an emitter connected to a respective one of a pair of current sources. The collector of one transistor of each current switch is connected to a load impedance and the collector of the other transistor is connected to a power supply. The input is at the base of one of the current switch transistors. The signal at the junction of the load impedance and the collectors is transmitted to the output by an emitter follower.

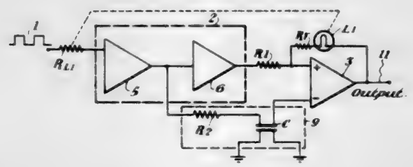
3,660,679
TRANSISTOR CIRCUIT
Yoshio Ishigaki, and Hajime Shinoda, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Apr. 24, 1970, Ser. No. 31,536
Claims priority, application Japan, May 1, 1969, 44/34194
Int. Cl. HO3k *5/01*
U.S. Cl. 307—231 **7 Claims**



A transistor circuit having a pair of transistors connected in the manner of a differential amplifier connection and a pair of diodes respectively connected with the transistors, which diodes constituting a series connection between the pair of transistors.

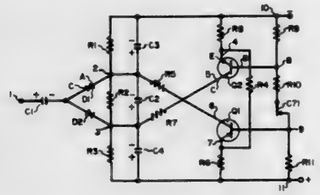
A control element is connected between the pair of diodes in order to give switching operation to the diodes.

3,660,680
FAIL-SAFE DUTY CYCLE CHECKING CIRCUIT
Reed H. Grundy, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.
Filed Sept. 23, 1970, Ser. No. 74,787
Int. Cl. H03k *5/18*
U.S. Cl. 307—234 **20 Claims**



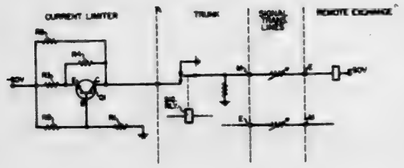
This invention relates to a fail-safe duty cycle checking circuit comprising an amplifier circuit having a first input for receiving a square wave of fixed peak to peak amplitude and a second input for receiving a signal proportional to the duty cycle of the square wave, and an output, a feedback loop connected between the output and first input for providing an upper and a lower hysteresis level which levels shift upward or downward in accordance with the duty cycle of the square wave, the shifting of the hysteresis levels too far upward or too far downward rendering the amplifying circuit incapable of producing an output, and a photosensitive device having a radiant energy source connected in the feedback loop for monitoring its condition. The photosensitive device also has a photopositive resistive element connected to the first and second inputs of the amplifier circuit to assume a high impedance condition whenever the radiant energy source emits no radiant energy thereby rendering any square wave input incapable of producing an output from the amplifying circuit.

3,660,681
SIGNAL TRANSMISSION SYSTEM WITH A VARIABLE LEVEL CLIPPING CIRCUIT
Noel Vlaeminck, Antwerp, Belgium, assignor to Automatic Electric Laboratories, Inc., Northlake, Ill.
Original application Jan. 29, 1968, Ser. No. 701,264, now Patent No. 3,562,745. Divided and this application Mar. 26, 1970, Ser. No. 30,615
Int. Cl. H03k *5/08*
U.S. Cl. 307—237 **1 Claim**



A multifrequency signaling system transmitter having a circuit to clip the multifrequency pulse data signals at a variable level to minimize transients generated upon switching signal sources on and off the transmission line. The clipping level is determined by the voltage applied across a pair of diodes by an exponentially varying voltage of charging or discharging capacitors, varying from a completely short-circuited state when the diodes are conducting in series, to the maximum value of the signal when the diodes are non-conductive. The charging or discharging of these capacitors is controlled by a pair of transistors that are switched by an external circuit applying the signal to the line.

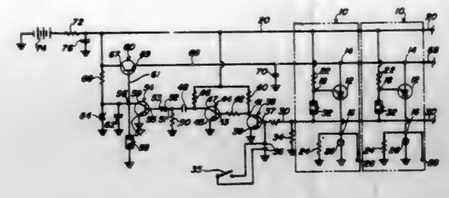
3,660,682
CURRENT LIMITING CIRCUIT
Todd H. Gartner, Franklin Park, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Feb. 1, 1971, Ser. No. 111,217
Int. Cl. H03k *5/08*
U.S. Cl. 307—237 **2 Claims**



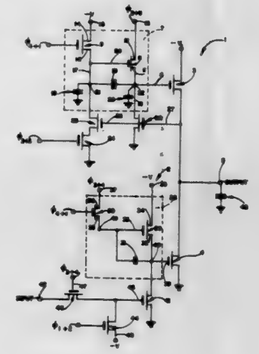
The disclosure includes a transistor connected in the signal applying path of a telephone trunk circuit. The transistor is connected into a circuit configuration of resistors to operate as a voltage controlled "negative-resistance" shunted by the resistors which absorb the excess power during adverse line conditions. The overall voltage-current circuit characteristics very closely approximate the traditional ballast lamp.

3,660,683
MULTIPLE CHOICE SELECTOR DEVICE
William Wangard, Maywood, Ill., assignor to Walter E. Heller & Company, Chicago, Ill.
Filed May 11, 1970, Ser. No. 36,258
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 K **11 Claims**

Electronic gating circuits are provided to yield closed current paths upon actuation of associated momentary contact switches. An erasing circuit is also energized upon actuation of a momentary contact switch to cause electronic gating circuits previously placed in the closed current path condition to be returned to an open circuit condition. Continued actuation of more than one momentary contact switch during operation of the erasing circuit will prevent the gating circuits associated with the actuated switches from being placed in an open circuit condition.



3,660,684
LOW VOLTAGE LEVEL OUTPUT DRIVER CIRCUIT
Clarence W. Padgett, and Robert W. Polkinghorn, both of Huntington Beach, Calif., assignors to North American Rockwell Corporation
Filed Feb. 17, 1971, Ser. No. 116,050
Int. Cl. H03k *3/26*
U.S. Cl. 307—270 **3 Claims**

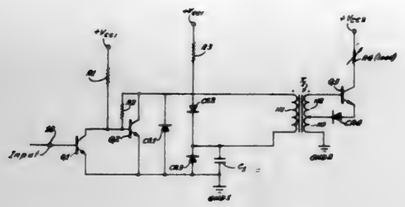


The output is precharged to a voltage level slightly in excess of the threshold voltage level of the field effect transistors implementing the driver circuit. A bootstrap circuit is used for decreasing the time required to drive the output to the voltage level. A feedback circuit from the output disables the bootstrap circuit for limiting the output voltage level and for reducing additional power consumption in the circuit after the output has been driven to the required voltage level. An input evaluation circuit changes the output voltage level or permits it to remain unchanged as a function of the input voltage level.

3,660,685
PULSE GENERATING TRANSFORMER CIRCUIT
James K. Berger, Sherman Oaks, Calif., assignor to Pioneer Magnetics, Inc., Santa Monica, Calif.
Filed Feb. 25, 1971, Ser. No. 118,704
Int. Cl. H03k *5/00*
U.S. Cl. 307—260 **6 Claims**

A pulse generating transformer circuit is provided for producing a series of uni-polar pulses of variable amplitude

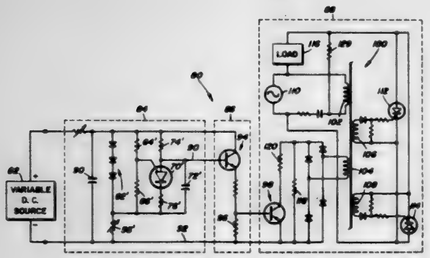
and duration, and in which the transformer is reset between successive pulses within a time independent of the product of the amplitude and duration of the individual pulses produced by the circuit. In this way, there is no limitation of the rapidity with which the successive pulses produced by the circuit may follow one another. The circuit of the invention achieves its desired purpose by connecting a winding of the transformer in parallel with a capacitor to form a resonant circuit which is effective for one half-cycle.



3,660,686
RAMP GENERATOR AND VARIABLE DUTY-CYCLE SWITCHING CIRCUIT

Nicholas G. Muskovac, Rockville, Md., assignor to Vectrol, Inc., Rockville, Md.

Filed Apr. 29, 1970, Ser. No. 32,806
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 N 19 Claims

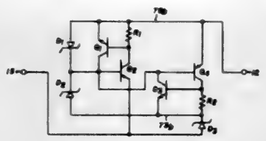


A low noise level adjustable solid state circuit for controlling the power reaching a load. A sawtooth ramp generator is powered by a DC analog control voltage and delivers a signal to the primary control winding of a square loop core transformer, the secondary winding of which controls the operation of a pair of solid state thyristor switches. The ramp generator, in one embodiment produces a sawtooth signal which is variable in amplitude and which rides on top of a variable DC voltage level and, in another embodiment, produces a sawtooth signal of constant amplitude and which rides on top of a variable DC voltage level. The secondary winding of the transformer provides gating signals to the thyristor switches only when the trailing edges of the gate pulses occur within the half-cycle of positive anode bias.

3,660,687
HYSTERESIS-FREE BIDIRECTIONAL THYRISTOR TRIGGER

William H. Saham, III, and Taras Shepelavy, both of Syracuse, N.Y., assignors to General Electric Company

Filed Feb. 12, 1971, Ser. No. 114,934
Int. Cl. H03k *3/31*, *17/66*, *17/68*
U.S. Cl. 307—252 B 6 Claims

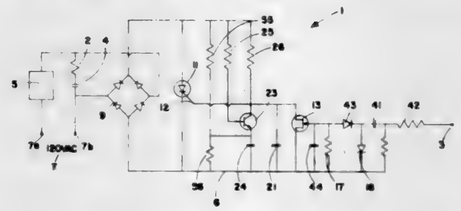


A semiconductor monolithic integrated trigger control circuit for low hysteresis firing of bidirectional thyristors is provided having a non-symmetrical voltage-current characteristic.

3,660,688
STATIC SWITCH

Robert W. Evans, and Stuart P. Jackson, both of Columbus, Ohio, assignors to Delta Venture, Columbus, Ohio

Filed Dec. 7, 1970, Ser. No. 95,767
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 W 6 Claims



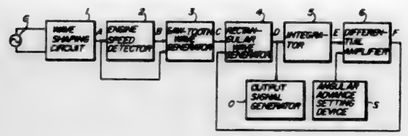
A touch switch circuit is disclosed for connecting a load to a source of AC potential in response to operator contact with a touch probe. A normally nonconducting SCR is in series connection with a load and source of AC potential. Means are present for clamping the gate of the SCR below its normal turn-on level, and for removing the said clamp in response to operator contact with said touch terminal whereby to fire said SCR and activate said load.

3,660,689
TIMING SIGNAL GENERATING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Kazuo Oishi; Tokuhiro Kurebayashi; Noriyoshi Ando; Noboru Yamamoto, and Hiroshi Yoshida, all of Kariya, Japan, assignors to Nippondenso Kabushiki Kaisha, Aichi-ken, Japan

Continuation-in-part of application Ser. No. 36,767, May 13, 1970, now abandoned. This application Sept. 8, 1970, Ser. No. 70,453
Claims priority, application Japan, May 14, 1969, 44/37278; Sept. 9, 1969, 44/71362; 44/71365
Int. Cl. H03k *5/00*, *17/00*; F02p *1/00*
U.S. Cl. 307—269 25 Claims

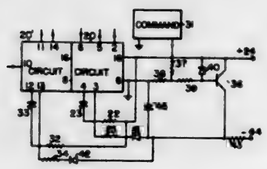
A timing signal generating system for internal combustion engines having a wave shaping circuit generating a pulse signal in response to an output signal generated by a signal generator at a fixed rotational angle of the engine. A sawtooth wave having a fixed magnitude is generated by a sawtooth wave generator in synchronism with the pulse signal and is reset at a fixed angular reference point. A rectangular wave whose on-off ratio is related to a preset signal from an angular advance setting device or from a setting voltage generator is derived from the saw-tooth wave and is integrated. A timing output signal is derived from the rectangular wave. The integrated output of the rectangular wave which is linearly related to the ignition or fuel injection timing and the preset signal from the angular advance setting device are compared and the resulting difference signal is fed back to means for generating the rectangular wave. This arrangement provides for a constant check on whether or not the ignition or fuel injection timing agrees with the preset signal, thus determining the ignition or fuel injection timing accurately without being affected by changes in external conditions.



3,660,690
ELECTRICAL ADJUSTMENT OF TIME-CONSTANT APPARATUS

Charles Theodore, Huntington Beach, Calif., assignor to LTV Ling Altec, Inc., Anaheim, Calif.

Filed Nov. 9, 1970, Ser. No. 87,689
Int. Cl. H03k *3/10*
U.S. Cl. 307—293 2 Claims



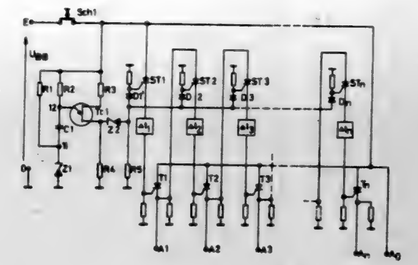
An auxiliary circuit for adjusting the time-constant of electrical apparatus, such as that of a relaxation oscillator having resistor-capacitor time-constant circuit elements. The adjustment is maintained while an electrical adjusting signal is present. This biases a transistor into conduction and places a second resistor in parallel with the basic resistor of the time-constant circuit, thereby reducing the time-constant. Alternate embodiments selectively allow plural adjustments, also adjustment of plural separate electrical devices.

3,660,691
INTERVALOMETER

Bozilius Glawischkoff, Munich; Gebhard Krieg, Germering; Wolfgang Weidmann, and Adolf Weiss, both of Munich, all of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed Nov. 9, 1970, Ser. No. 87,817
Claims priority, application Germany, Dec. 11, 1969, P 19 62 259.4
Int. Cl. H03k *4/00*
U.S. Cl. 307—293 9 Claims

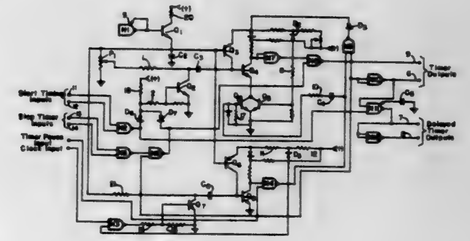
Intervalometer with a uni-junction transistor in the interval timer. For the triggering of a series of intervalometer outputs there is provided only a single interval timer, said latter utilizing a capacitor therein. A Zener diode is connected between the capacitor and the ground connection and a resistor is connected from a point between the capacitor and the Zener diode to the positive potential. Switching thyristors triggered by suitably arranged control thyristors are triggered in parallel through suitable time delay elements for energizing the outputs.



3,660,692
ELECTRONIC INTERVAL TIMER

Peter G. Bartlett, Davenport, Iowa, assignor to Struthers-Dunn, Inc., Pitman, N.J.

Filed Nov. 9, 1970, Ser. No. 88,014
Int. Cl. H03k *17/28*
U.S. Cl. 307—293 8 Claims

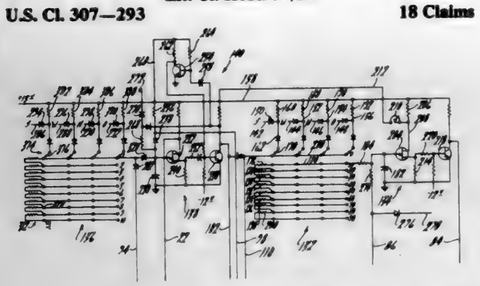


An electronic interval timer employing integrated circuits and providing a high degree of accuracy in timing. The timer comprises a first timing circuit which demarcates the preselected interval to be timed, and a second short-term interval timer which times successive short, fixed intervals each of which is a submultiple of the preselected interval. Clock pulses are applied to the short-term timer, and each such clock pulse causes it to go through its short-term timing operation. A timing capacitor included in the first timing circuit undergoes a change in the amount of charge stored thereon only during each interval timed by the second timer. Consequently, a predetermined number of successive operations by the second timer must occur to vary the charge on said capacitor from a preselected initial amount to a predetermined final level representative of the completion of timing. Since the frequency of operation of the short-term timer is controlled by the clock pulses, a very high degree of timing accuracy is obtained. The timer includes means which ensures that the change in the amount of charge on the short-term timer is always the same, even for substantial variations in temperature and supply voltage. Provision is made for resetting the timer at any time and also for interrupting the timing in such a manner that the amount of time already demarcated by the timer is stored and only the remainder of the pre-set interval is timed when timing is once again initiated.

3,660,693
ANALOG TENS AND UNITS TIMER WITH SOURCE SYNCHRONIZATION

James F. Markey, Detroit, Mich., assignor to Weltronic Company, Southfield, Mich.

Filed Oct. 1, 1970, Ser. No. 77,234
Int. Cl. H03k 17/28
U.S. Cl. 307—293 18 Claims

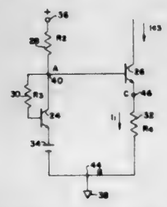


A timing system for use in conjunction with a welding system, wherein the timing system consisting of separate tens and units counters, the counters being electronically controlled to select the tens counter prior to the selection of the units counter. A system is provided for generating synchronizing pulses and a bistable circuit, in the form of a flip flop, is utilized to switch from the tens counter to the units counter upon completion of the tens count.

3,660,694
CURRENT SOURCE

Paul G. Lucas, Sudbury, Mass., assignor to Gordon Engineering Company, Wakefield, Mass.

Filed Sept. 25, 1970, Ser. No. 75,573
Int. Cl. H03k 17/00
U.S. Cl. 307—296 6 Claims



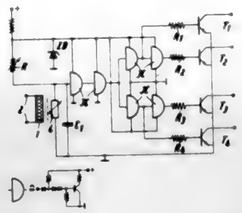
A first resistor is connected between the collector and base of a first transistor of a matched pair and a second resistor is connected in the emitter circuit of a second transistor of the matched pair. The impedance of the first resistor is equal to the impedance of the second resistor. The first resistor is provided for increasing the emitter current of the second transistor to compensate for loss in the base current of the second transistor due to the finite and changing beta characteristics of the transistors.

3,660,695
CONTACTLESS RELAY

Karl Schmitt, Achern, Germany, assignor to Gehap Gesellschaft Handel and Patentverwertung GmbH & Co. KG, Achern, Germany

Filed Oct. 5, 1970, Ser. No. 77,848
Claims priority, application Germany, Oct. 8, 1969, P 19 50 687.7; Oct. 21, 1969, P 20 28 187.2; June 9, 1970, P 19 52 818.8
Int. Cl. H03k 17/00
U.S. Cl. 307—309 11 Claims

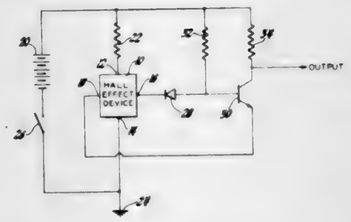
A contact free relay having an electromagnetic control circuit and one or more electronic switching circuits disposed in the magnetic field of the electromagnetic control circuit, wherein the contact free elements are controlled by the magnetic field. The contact free elements are magnetic responsive resistors connected to one or more controllable semiconductors and mounted within the exciting coil field between one or more ferromagnetic yoke plates.



3,660,696
HALL EFFECT SWITCHING DEVICE

Albert D. Rittmann, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of application Ser. No. 850,554, Aug. 15, 1969, now abandoned. This application Jan. 14, 1970, Ser. No. 2,861
Int. Cl. H01c 7/16
U.S. Cl. 307—309 1 Claim

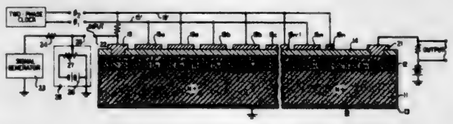


A Hall effect switching circuit including a Hall effect device having two input contacts and two output contacts. A source of electric power is connected across the two input contacts, and one of the output contacts is connected to the emitter of a transistor and the other output contact is connected to the base of the transistor through a diode. A resistor connects the base of the transistor to a terminal of the source of electric power.

3,660,697
MONOLITHIC SEMICONDUCTOR APPARATUS ADAPTED FOR SEQUENTIAL CHARGE TRANSFER

Carl Neil Berglund, Plainfield, and Harry Joseph Boll, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Feb. 16, 1970, Ser. No. 11,447
Int. Cl. H01l 17/00, 11/14
U.S. Cl. 307—304 8 Claims

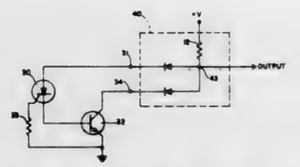


The invention is a form of monolithic semiconductor apparatus adapted for the storage and manipulation of electronic signals representing information. Basically, the apparatus includes a plurality of spaced localized zones of one type semiconductivity adjacent the surface of a semiconductive bulk portion of the other type conductivity. A plurality of localized electrodes, registered in one-to-one correspondence with the localized zones, are disposed over a dielectric layer covering the semiconductive portions. Each of the electrodes is delimited in lateral extent so as to extend over substantially all of the space between a pair of closest zones and over a substantial portion of only one of that pair of zones so that the capacitance between the electrode and the zone over which it extends is substantially greater than the capacitance between that electrode and the other zone of that pair of zones. Signals in the form of varying deficiencies of majority carriers are stored temporarily in the localized zones and are gated sequentially from one zone to the zone next adjacent upon application of two-phase clock pulses to alternate electrodes. Constant background pulses upon which signals are superimposed are circulated to reduce distortion.

3,660,698
PHOTO-SCR CARD READER CIRCUITS

John C. Schlesselbauer, Southampton, Pa., assignor to Peripheral Dynamics, Inc., Norristown, Pa.

Filed Feb. 3, 1970, Ser. No. 8,287
Int. Cl. G06k 7/10; H03k 3/42, 19/14
U.S. Cl. 307—311 1 Claim

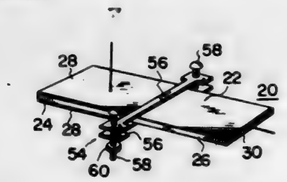


In a card reader compatible with electronic data processing equipment, electronic sensing circuits are disclosed which utilize photo-silicon controlled rectifiers in cooperation with logic circuitry. A photo-SCR rear sensor having binary memory is provided comprising a photo-SCR in series with one branch of a logic gate, with another branch connected to a reset pulse generator. An automatic reset sensor comprises a photo-SCR with its cathode in series with the base of a transistor, the anode of the photo-SCR being in series with a first branch of a logic gate and the collector of the transistor being in series with a second gate.

3,660,699
SUPPORTING MEANS FOR PIEZOELECTRIC TRANSFORMERS

Yasunobu Sakurai, Kawasaki; Hideo Sato; Masao Shimizu, both of Tokyo, and Keiji Inoue, Yokohama, all of Japan, assignors to Denki Onkyo Company, Limited, Tokyo, Japan

Filed July 29, 1970, Ser. No. 59,289
Claims priority, application Japan, Aug. 6, 1969, 44/61936; Sept. 9, 1969, 44/71149; Sept. 29, 1969, 44/92315
Int. Cl. H01v 7/00
U.S. Cl. 310—9.4 5 Claims



In a piezoelectric transformer comprising a ceramic body in the form of an elongate plate of piezoelectric material with one half polarized in the direction of thickness and the remaining half in the longitudinal direction, a pair of input electrodes secured to the opposite sides of said one half and an output electrode secured to the end surface of the remaining half, there is provided supporting means including means for mechanically clamping and supporting the piezoelectric transformer at at least one of the transverse line nodes of the longitudinal mechanical vibrational movement thereof which support permits free longitudinal vibrations while suppressing undesirable vibrating modes.

3,660,700
MAGNETOHYDRODYNAMIC GENERATOR

Sol Aisenberg, Natick, and Kuo Wei Chang, Lexington, both of Mass., assignors to Space Sciences Incorporated, Waltham, Mass.

Filed June 10, 1970, Ser. No. 44,973
Int. Cl. H02n 4/02
U.S. Cl. 310—11 5 Claims

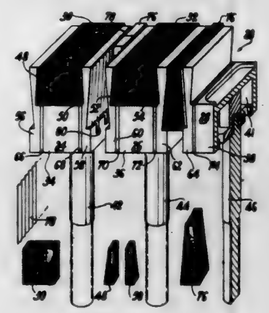


An electrodeless magnetohydrodynamic generator utilizes a stream of plasma pulses. The train of plasma pulses is caused to flow along an electrically insulated channel in the generator. Within the channel is established a magnetic field shaped to provide a component that is radial with respect to the longitudinal flow of the plasma. The plasma interacts with the shaped magnetic field to establish a pulsating magnetic field in the generator channel. A multi-turn coil is inductively coupled to the pulsating magnetic field and obtains AC power as the output of the generator.

3,660,701
COMPOSITE WALLS FOR MHD-GENERATOR DUCTS

Henri Blattmann, Igny; Jean Javelaud, Chilly-Mazarin, and David Yerouchalmi, Le Mesnil-Saint-Denis, all of France, assignors to Commissariat R L'nergie Atomique, Paris, France

Filed Mar. 18, 1971, Ser. No. 125,634
Claims priority, application France, Mar. 25, 1970, 7010732
Int. Cl. H02n 4/02
U.S. Cl. 310—11 8 Claims



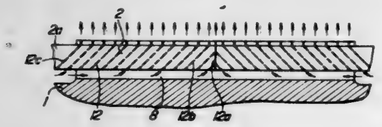
The composite wall is constituted by an assembly of identical main elements each comprising at least one ceramic

block which is fitted in a metallic support. The main elements are assembled together by means of trapezoidal prismatic spacer members which are fabricated from insulating refractory ceramic material and placed between corrugated stainless steel sheets which permit a circulation of coolant gas in contact with the main elements.

3,660,702
DIRECT-COOLED ROTOR FOR ROTARY ELECTRIC MACHINES

Tatsuo Kishino, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 4, 1971, Ser. No. 140,206
Claims priority, application Japan, May 11, 1970, 45/39319
Int. Cl. H02k 1/32
U.S. Cl. 310—61 4 Claims

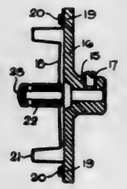


A direct-cooled rotor for rotary electric machines in which the rotor coils are formed with radial vents to allow cooling gas to flow out therethrough for direct cooling of the coils, said vents being radially defined by the coils in such a manner that in the axially central portions of the rotor body they extend uprightly outward and in the rest of the rotor body they extend inclinedly toward the central holes, some inclined vents adjacent each central hole communicating at one ends to said central hole in a herringbone pattern, so that the rotor can be evenly cooled across the lengths of coils set in the rotor body.

3,660,703
CENTRIFUGAL GOVERNOR SPEED CONTROL FOR ELECTRIC MOTORS

Philip Henry Evans, Stourbridge, England, assignor to Glenborn Engineering Limited, c/o Conyers, Dill & Pearman, Bank of Bermuda Bldg., Hamilton, Bermuda

Filed June 29, 1970, Ser. No. 50,827
Claims priority, application Great Britain, July 4, 1969, 33724/69
Int. Cl. H02k 11/00
U.S. Cl. 310—68 E 10 Claims

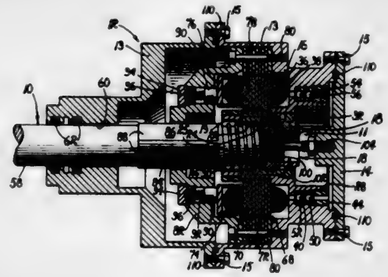


The specification discloses a speed control for an electric motor of the type including a centrifugal governor in which the governor comprises a rigid backing plate secured to the armature spindle of the motor and extending radially on opposite sides of the spindle and a flexible strip secured at its ends to the outer end parts of the backing plate and having weighted portions at or close to its extremities and an abutment part at its mid-point which engages means to open and close the contacts to the electric motor. The contacts may comprise a fixed contact and a movable contact, the movable contact being provided on the one arm of a two-armed lever which is pivotally mounted about an axis intermediate the two arms and the fixed contact member being mounted on a further arm pivoted about a further axis and adjustable in position relative to the movable contact by means of a manually operated cam to permit adjustment of the speed of the motor.

3,660,704
BALL-SCREW LINEAR ACTUATOR

Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Gerald S. Perkins, Altadena, Calif.

Filed July 31, 1970, Ser. No. 59,893
Int. Cl. H02k 7/06
U.S. Cl. 310—80 7 Claims

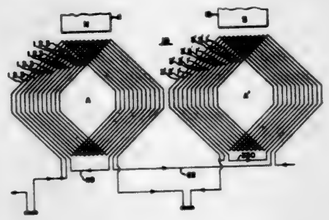


A compact, linear actuator particularly suited for use aboard a space craft and the like, characterized by an elongated output shaft operatively supported, in an hermetically sealed housing, for rectilinear reciprocation and circumscribed by a ball-screw and nut assembly which operatively is driven through an electrically energizable, reversible motor concentrically coupled with the nut of the ball-screw and nut assembly, whereby selected rectilinear motion is imparted to the shaft as the motor selectively is energized. A particular feature of the actuator resides in the concentricity of the nut and motor which enhances compactness of the actuator and the efficiency of its operation.

3,660,705
POLYPHASE GENERATOR WINDINGS

David M. Willyoung, Scotia, N.Y., assignor to General Electric Company

Filed Apr. 24, 1970, Ser. No. 31,496
Int. Cl. H02k 3/00
U.S. Cl. 310—198 3 Claims

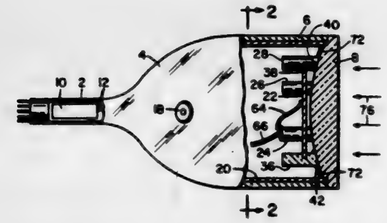


Each phase of a polyphase armature winding is constituted by a pair of phase belts, each belt consisting of three segments of the winding. The first and third segments in each belt are connected in series with one another and the remaining segment is series-connected with a corresponding segment of the opposite phase belt. Each phase is thus constituted by three separate circuits, but only a single connection ring per phase is necessary to connect segments laying on opposite sides of the armature.

3,660,706
MEANS FOR SECURING PLANAR MEMBER TO CATHODE RAY TUBE FACEPLATE

David R. Steinberg, and William T. Sutton, both of Raleigh, N.C., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 16, 1970, Ser. No. 89,769
Int. Cl. H01j 29/02, 29/20, 31/08
U.S. Cl. 313—64 10 Claims



A planar member such as a phosphor coated fiber optic plate, having a thermal coefficient of expansion that is incompatible with that of a cathode ray tube faceplate, is accurately supported a precise distance from the inner surface of the faceplate by a plurality of glass posts having slots in which the peripheral portion of the fiber optic plate is disposed. A spring contact member affixed to at least one glass post applies a holding force to the fiber optic plate and makes electrical contact between the plate and a conductive coating on the inside of the tube envelope.

3,660,707
ELECTRON BEAM DISCHARGE DEVICE HAVING IMPROVED ELECTRON GUN STRUCTURE

Edward T. Rate, Jr., Owensboro, Ky., assignor to General Electric Company

Filed Jan. 15, 1970, Ser. No. 3,051
Int. Cl. H01j 29/74, 29/02
U.S. Cl. 313—86 1 Claim

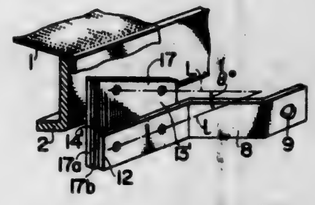


A cathode ray tube is provided having a gun comprising a cathode, grid, focusing electrodes, and deflection electrodes constructed as a cage assembly with mica spacers between the electrodes to insulate the electrodes from one another and to accurately position the gun in a constant diameter portion of the tube.

3,660,708
SHADOW MASK SUPPORT MEANS FOR A COLOR TELEVISION IMAGE TUBE

Hiroto Nakamura, Takatsuki; Ken-ichi Doi, Kobe; Akira Sato, Takatsuki, and Yushin Sazaki, Amagasaki, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Mar. 16, 1970, Ser. No. 19,945
Claims priority, application Japan, Mar. 19, 1969, 44/21834; 44/21833
Int. Cl. H01j 29/06, 29/02, 31/20
U.S. Cl. 313—85 S 2 Claims

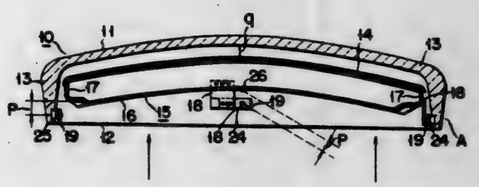


In a shadow mask support means comprising a bi-metal piece having one end secured to a shadow mask frame with the other end left free, and a leaf spring secured at one end to said free end of the bi-metal piece and extending therefrom toward a pin provided on a side wall of a face panel, the improvement residing in that a metallic plate portion disposed between said frame and said spring is so arranged that it is displaced due to thermal deflection of the bi-metal at the end adjacent to said pin by an amount smaller than the displacement at the opposite end.

3,660,709
COLOR TELEVISION TUBE HAVING SHADOW MASK SUPPORT STUDS UNEQUALLY SPACED FROM SCREEN

Hitoshi Imamura, Kanagawa-ken, and Keiji Katakura, Tokyo, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Dec. 8, 1970, Ser. No. 96,116
Claims priority, application Japan, Dec. 8, 1969, 44/115693
Int. Cl. H01j 29/02, 31/20
U.S. Cl. 313—85 S 6 Claims



The color television receiving tube of the present invention comprises a rectangular cylindrical panel having an outwardly curved rectangular face plate and two longer side plates and two shorter side plates so fitted to the periphery of the face plate as to project toward the funnel-shaped portion with the free flat edges of said side plates disposed in the same plane; a mask including a rectangular cylindrical frame member received in the cylindrical panel and formed of two longer side plates and two shorter side plates, of which at least said longer sides are outwardly curved at the top toward the face plate and a perforated member provided with numerous electron beam apertures and fixed to the cylindrical frame member at a prescribed space from the inner surface of the face plate; a plurality of support pins fixed in the inner wall of at least three of the adjacent projecting side plates of the cylindrical panel; and a plurality of elastic support mem-

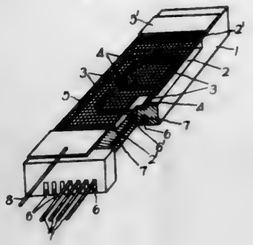
bers elastically fitted to the side plates of the cylindrical frame member facing the corresponding support pins so as to be detachably engaged with said support pins, thereby maintaining the perforated member at a prescribed spacing from the inner wall of the face plate, wherein the support pins are positioned nearer to the free flat edges of the side plates of the cylindrical panel arranged in the same plane as compared with those edges of the side plates of the frame member which face said free flat edges, and the support pins embedded in the longer side plates of the cylindrical panel are more spaced from the plane defined by the free flat edges of all the side plates of the cylindrical panel than the pins fitted to the shorter side plates of said panel.

3,660,710

DISPLAY DEVICE HAVING CATHODES AND LEAD WIRES DISPOSED IN GROOVED BASE PLATE FOR POSITIVE INSULATION THEREBETWEEN

Kiyoshi Sasaki, and Satoshi Watanabe, both of Tokyo, Japan, assignors to Okaya Denki Sangyo Kabushikikaisha, Shibuya-ku, Tokyo, Japan

Original application May 31, 1968, Ser. No. 733,660. Divided and this application Apr. 1, 1970, Ser. No. 31,456
Claims priority, application Japan, Sept. 30, 1967, 42/83305
Int. Cl. H01j *61/66*
U.S. Cl. 313—109.5 3 Claims



A display device having a heat-proof insulating base plate having formed therein on one side a plurality of grooves, a plurality of cathodes disposed in the grooves in a manner not to project out from the surface of the base plate, an anode common to the cathodes and a transparent glass tube envelope having enclosed therein all the elements mentioned above, and a method of sealing the glass tube envelope by the use of infrared ray absorbing glass of low melting point.

3,660,711

XENON LAMP

Horace Edward Stanyon; Kenneth Buckley Robinson, and Eric John George Beeson, all of London, England, assignors to Thorn Lighting Limited, London, England

Filed Mar. 17, 1970, Ser. No. 20,173
Claims priority, application Great Britain, Mar. 19, 1969, 14,525/69
Int. Cl. H01j *61/36*
U.S. Cl. 313—220 3 Claims

A high pressure xenon discharge lamp whose envelope has tubular portions extending from an enlarged central portion, the ends of the tubular portions being sealed by internal metal shells closed at their inner ends, in which the electrode rods are embedded in glass stems whose outer ends are attached to the tubular portions of the envelope and whose inner ends are spaced from the tubular portions, allowing the tubular portions to be of sufficient diameter for the lamp to be supported from the ends of the tubular portions while



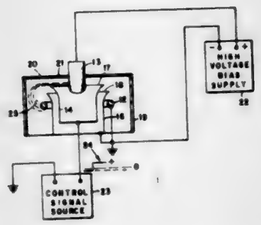
avoiding excessive thickening of the walls of the tubular portions.

3,660,712

ELECTRODE STRUCTURE FOR CONTROLLING ELECTRON FLOW WITH HIGH TRANSMISSION EFFICIENCY

Lloyd Mancebo, Livermore, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Dec. 9, 1970, Ser. No. 96,416
Int. Cl. H01j *1/46, 21/10*
U.S. Cl. 313—307 5 Claims



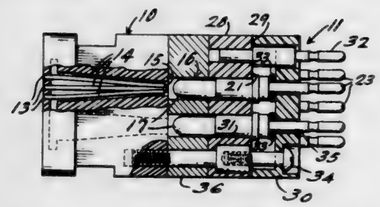
Electrode structure for controlling flow of electrons from a cathode to an anode, characterized by the absence of electrodes in the flow path whereby electron flow is substantially unimpeded by physical structure and proceeds with high transmission efficiency. The structure is such as to establish an electron accelerating field and associated flow path between cathode and anode which bulges outwardly about an interposed control electrode and is thus not physically intercepted by same. By virtue of the high efficiency of electron transmission, the electrode structure may be advantageously incorporated in an X-ray tube to provide X-ray pulses of increased intensity. In addition, the transmission characteristic in conjunction with the capability of the bulging field to enable the use of relatively small control voltages to govern electron flow render the electrode structure particularly well suited to the attainment of a high amplification factor in a high power amplifier tube for voltage regulation or switching applications.

3,660,713

LAMP ASSEMBLY HAVING TERMINAL PINS FOR ENGAGING EXTERNAL CIRCUIT CONNECTORS

Warren A. Leslie, and Rudolf Weinhart, both of Inglewood, Calif., assignors to Master Specialties Company, Costa Mesa, Calif.

Filed July 13, 1970, Ser. No. 54,166
Int. Cl. H01j *5/48, 5/50*
U.S. Cl. 313—318 17 Claims



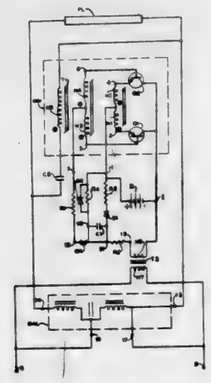
An assembly for mounting a plurality of lamps in readout devices, illuminated switches, indicators, and the like. In one embodiment, each lamp is electrically connected to a flanged base and to a terminal pin insulated from and projecting from the base. The lamps are positioned in openings through a conductor carrying lamp mounting plate. The lamp terminal pins, and a common terminal connected to the conductor on the mounting plate, project through openings in a base plate which is releasably attached to the mounting plate for changing the lamps. In a second embodiment, lamps having conventional flanged bases are positioned in openings in the mounting plate and headed terminal pins are mounted in the base plate such that the pin heads contact the lamps. In both embodiments, a plurality of elastomeric rings, one placed on each terminal pin, are compressed between the lamps, or the terminal pin heads, and the base plate to urge the lamp base flanges into electrical contact with the conductor on the lamp mounting plate. The terminal pin openings in the base plate are slightly enlarged so that the terminal pins can move to a small extent to align with an external circuit connector.

3,660,714

EMERGENCY LIGHTING SYSTEM

Edward A. Chandler, Bois des Filion, Quebec, Canada, assignor to Tenelux Limited, Bois des Filion, Province of Quebec, Canada

Filed Apr. 6, 1970, Ser. No. 25,879
Claims priority, application Canada, Apr. 8, 1969, 048,143
Int. Cl. H05b *41/14*
U.S. Cl. 315—86 9 Claims



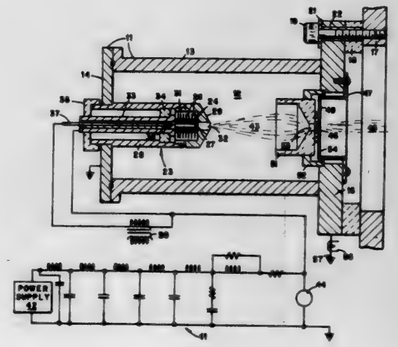
An emergency lighting system for electric discharge lamps utilizing an AC – DC inverter to supply emergency power and having a normally non-conductive switching element in the feedback circuit of the inverter which enables the inverter upon failure of line power.

3,660,715

ION SOURCE WITH MOSAIC ION EXTRACTION MEANS

Richard F. Post, Walnut Creek, Calif., assignor to The United States of America as represented by the U.S. Atomic Energy Commission

Filed Aug. 18, 1970, Ser. No. 64,720
Int. Cl. H05h *1/00*
U.S. Cl. 315—111 7 Claims



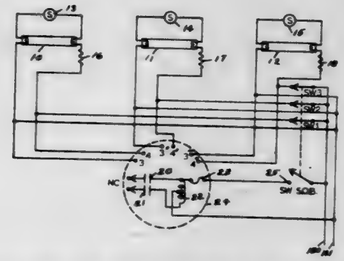
An ion source including means for producing a directed stream of ionized gas or plasma wherein a polycellular channeled mosaic element is positioned to transect the path traversed by the plasma so that a potential sheath is established in the plasma. The channel diameter is made less than the Debye length of the ions in the plasma wherefor the ions are accelerated out of the plasma, pass through the channels of the mosaic element and emerge as an ion beam on the other side of the matrix.

3,660,716

FLUORESCENT LIGHTING CIRCUIT

Fred B. Gorton, 7350 North Shore Drive, Erie, Pa.

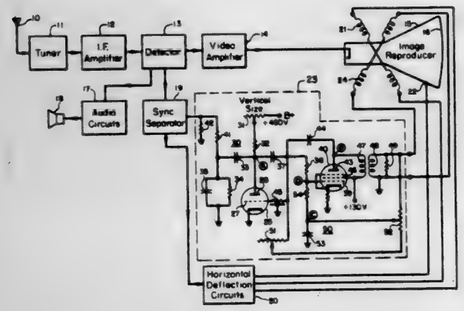
Filed Sept. 24, 1969, Ser. No. 860,554
Int. Cl. H05b *37/00*
U.S. Cl. 315—187 1 Claim



The specification discloses a circuit for starting a plurality of fluorescent lamps. The ordinary fluorescent lamp requires a heavy inductance, usually referred to as a ballast, for starting the lamps. The ballast is heavy and expensive. A lightweight resistance could be substituted for the ballast, if a simple means could be found to start the lamp. The present invention uses a single transformer to supply a higher voltage of, for example, 180 volts, for starting and a switching arrangement for switching the transformer from lamp to lamp.

After the lamps are started they are switched onto a standard line voltage of 120 volts, for example. Thus, a single transformer is required to light a number of lamps.

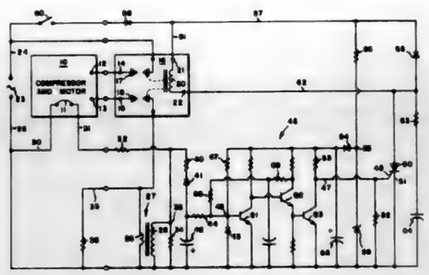
3,660,717
TELEVISION DEFLECTION CIRCUIT FOR DISTORTION CORRECTION
Matthew J. Elgroth, Elk Grove Village, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Nov. 3, 1969, Ser. No. 873,255
Int. Cl. H01j 29/70
U.S. Cl. 315—27 GD 2 Claims



A vertical deflection circuit for a television receiver that utilizes a flat face picture tube in which the radius of curvature of the face is greater than its distance from the deflection center of the scanning yoke. The circuit includes an oscillator and a first wave shaping network for developing a modified sawtooth sweep signal having a flattened trailing portion. A vertical output tube, in response to this modified signal, develops an output signal having a polarity opposite that of the input sawtooth. A feedback circuit couples the output signal to the input of the oscillator and also applies it to a second wave shaping network which includes an integrating circuit for deriving a signal having a parabolic component. The modified sawtooth and the parabolic component are combined to develop an S-shaped signal having modified slope portions at both extremities. The S-shaped signal is utilized as the control signal for the vertical output tube which supplies energizing currents, that are replicas of the S-shaped signal, to the deflection yoke thereby reducing the writing speed of the beam at opposite extremities of its scansion to offset distortion in the raster attributable to the disparity between the screen radius of curvature and the location of the yoke's center of deflection.

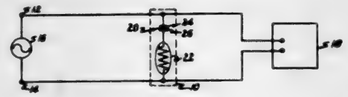
3,660,718
AUTOMATICALLY RESETTING MOTOR PROTECTION CIRCUIT RESPONSIVE TO OVERCURRENT AND OVERTEMPERATURE
Balthasar H. Plackaers, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed June 8, 1970, Ser. No. 44,499
Int. Cl. H02h 7/08, 3/10
U.S. Cl. 317—13 B 9 Claims

A protection system for hermetic compressors which senses the current being drawn by the compressor motor, and the condition of the motor as a function of a safety switch means which is enclosed within the system or motor. A locked rotor current overload causes immediate operation of the electronics to disconnect the motor from the line. A slowly rising unsafe condition, which is sensed by the opening of the safety switch means, also removes the motor from the line. The electronic circuitry has a time delay discharge network that prevents reclosing the electrical contactor until a



sufficient delay has existed for pressures in the compressor system to fall to a safe level.

3,660,719
TRANSIENT SUPPRESSION SYSTEM
Aime J. Grenier, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Aug. 26, 1970, Ser. No. 66,934
Int. Cl. H02h 3/22
U.S. Cl. 317—16 6 Claims

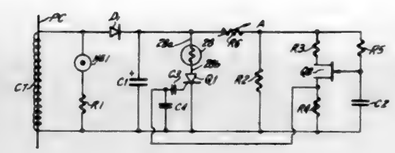


An electrical protective system is disclosed for selectively shunting potentially harmful, temporary, high voltage electrical signals, such as transient signals, from a circuit being protected. The system includes a normally non-conductive, voltage breakdown device, such as a spark gap device, connected in shunt with the input of the circuit to be protected. In response to the occurrence of a transient signal of a preselected voltage level, the spark gap device is rendered conductive and an electrical arc is established thereacross in order to provide a shunt path for the transient signal. In addition, an energy dissipating means is serially connected to the spark gap device for initially dissipating the energy of the transient signal and for then limiting the current passing through the spark gap device subsequent to the establishment of the electrical discharge so as to permit rapid extinguishment thereof upon the expiration of the transient signal.

3,660,720
AUTOMATIC GROUNDING SWITCH
Ralph W. Samm, Greensburg, E. Robert Perry, Scottdale, and David S. Dodge, Greensburg, all of Pa., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.
Filed Oct. 20, 1970, Ser. No. 82,310
Int. Cl. H02h 3/08
U.S. Cl. 317—16 7 Claims

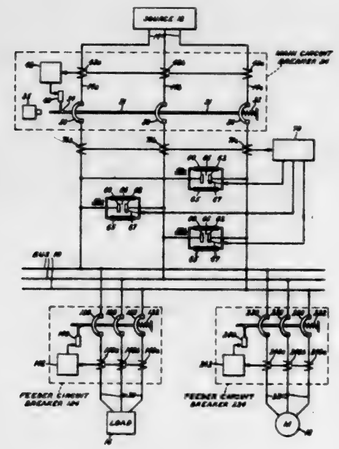
Designed for use with electrically grounded power distribution systems, the switch is operable with replaceable propellent cartridges in association with a current limiting fuse. Upon receipt of an electrical signal indicating the presence of an overcurrent fault, a small surge of energy is provided to fire the cartridge and, in turn, propel its plunger into direct

contact with a "hot" terminal of the switch, establishing a conducting path to ground. The magnitude of the resulting



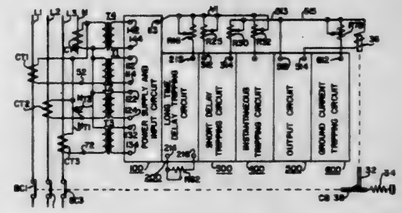
short circuit currents to ground are limited by the current limiting fuse.

3,660,721
PROTECTIVE EQUIPMENT FOR AN ALTERNATING CURRENT POWER DISTRIBUTION SYSTEM
Leslie L. Baird, Swarthmore, Pa., assignor to General Electric Company
Filed Feb. 1, 1971, Ser. No. 111,236
Int. Cl. H02h 3/08
U.S. Cl. 317—16 8 Claims



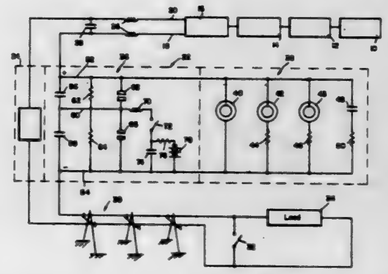
Protective equipment for an electric power distribution system comprising a bus, a supply circuit connected to the bus through a main circuit breaker, and feeder circuits connected to the bus through feeder circuit breakers. Should a high current fault occur on a feeder circuit, a short circuit is quickly established on the supply circuit on the bus side of the main breaker by means of a triggered vacuum gap device, which is triggered into conduction in response to the fault. This short circuit diverts current from the fault, thereby reducing the interrupting duty on the feeder breaker and enabling it to open on feeder faults producing fault current exceeding its interrupting capacity. After the feeder breaker has opened and before the main breaker can open, the triggered vacuum gap is returned to its normally non-conducting state, thus allowing power from the supply circuit to be restored to the bus.

3,660,722
CIRCUIT BREAKER INCLUDING IMPROVED GROUND FAULT PROTECTIVE DEVICE
John T. Wilson, Beaver, and Joseph C. Engel, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 7, 1970, Ser. No. 35,516
Int. Cl. H01h 47/18
U.S. Cl. 317—18 R 12 Claims



A circuit breaker including separable contacts, an operating means for opening and closing the contacts, and a protective relay device for detecting ground faults in an alternating current system when the ground current in the system being protected increases above a predetermined level which for certain values of line currents in the protected system varies with the line currents in the associated system. A current transformer is arranged to provide the energy or power necessary for the output of the device and also to provide a first signal which varies with the ground current in the system and other means is provided for deriving a second signal from the associated system which varies with the line current in the system for with the highest line current in the system with said protective device arranged to respond to both of said signals.

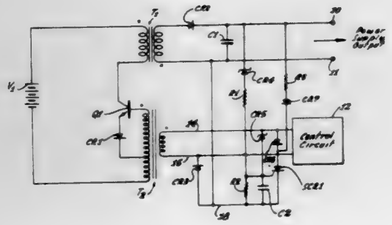
3,660,723
CURRENT TRANSFER CIRCUIT AS PART OF HIGH VOLTAGE DC CIRCUIT
Michael A. Lutz, Los Angeles, and Willis F. Long, Thousand Oaks, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Mar. 9, 1971, Ser. No. 122,395
Int. Cl. H02j 7/22
U.S. Cl. 317—11 C 16 Claims



The current transfer circuit transfers current in a high voltage DC circuit breaker from an in-line switching device which carries the current in normal conduction to a shunt current interrupter which is capable of increasing the breaker impedance to break the high voltage DC circuit. The current transfer device employs first and second serially connected in-line switches, the first of which has a serially connected precharged capacitor, switch, and inductor paralleled thereabout to force commutate the first in-line switch to

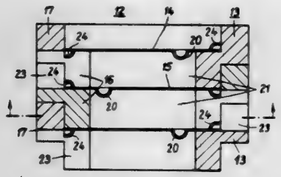
transfer current to the shunt current interrupter. The first switch and the forced commutation equipment need only be of sufficient voltage rating to withstand the initial conduction voltage across the shunt current interrupter. Opening of the second switch isolates the first switch and the forced commutation equipment from the line voltage.

3,660,724
POWER SUPPLY PROTECTIVE CONTROL
James K. Berger, Sherman Oaks, Calif., assignor to Pioneer Magnetics, Inc., Santa Monica, Calif.
Filed Mar. 18, 1971, Ser. No. 125,546
Int. Cl. H02h 3/20
U.S. Cl. 317—16 3 Claims



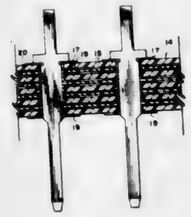
An improved protective circuit provided by which a silicon controlled rectifier (SCR), or equivalent device, is switched into circuit with a power supply in the presence of excessive output voltage, so as to protect the electronic equipment which is normally energized by the power supply. The protective circuit of the invention is such that the silicon controlled rectifier is not subjected to excessive currents so that it need not be excessively large, and no heat sink is required in conjunction with the silicon controlled rectifier.

3,660,725
OVERVOLTAGE ARRESTERS
Werner Jakust, and Gert Schiele, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany
Filed Sept. 4, 1970, Ser. No. 69,625
Claims priority, application Germany, Sept. 9, 1969, P 19 46 413.2
Int. Cl. H02h 9/06
U.S. Cl. 317—68 5 Claims



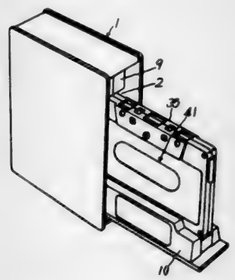
In an overvoltage arrester with an enclosed spark gap assembly of electrode disks and intermediate spacers of annular shape, at least one electrode of a pair has an excentrically located projection directed towards the other electrode of the pair and thereby defines in the ring space of the annular spacer a spot of initial response. The annular spacer has a lateral opening at a peripheral locality substantially opposite the excentric projection. The opening extends from the inner periphery through the spacer to the outer periphery thereof and has a small width in the peripheral direction as compared with the total extent of the periphery.

3,660,726
MULTI-LAYER PRINTED CIRCUIT BOARD AND METHOD OF MANUFACTURE
John Preston Ammon, Dallas, Tex., and Frederick T. Inacker, Huntington Valley, both of Pa., assignors to Elfab Corporation
Filed Oct. 12, 1970, Ser. No. 79,854
Int. Cl. H05k 1/14
U.S. Cl. 317—101 CM 22 Claims



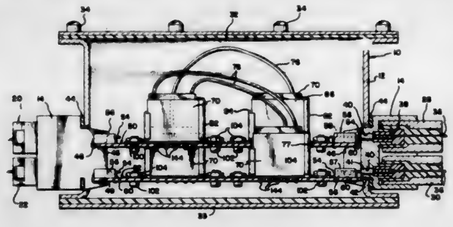
A multi-layer printed circuit board is constructed by sandwiching a thin insulating sheet between adjacent ones of a plurality of double-sided printed circuit boards. Each of the individual boards is formed with conventional plated-through holes electrically connecting the printed circuitry on opposite sides of the boards. The holes are located on the boards so that when the boards are stacked the holes on adjacent boards are in axial alignment. The individual boards are formed into a single multi-layer board by press fitting a conductive contact down into each one of the axially aligned holes. Frictional engagement of the contacts with the plated walls of the holes mechanically joins the boards into a single unitary structure and connects each one of the axially aligned conductive holes to form an electrical interconnection between the circuitry printed upon each one of the boards.

3,660,727
BULK ERASER WITH PERMANENT MAGNET FLUX PRODUCED OBLIQUELY TO CASSETTE MOVEMENT
Shigemasa Obira, Kanagawa-ken; Hisashi Hanzawa, and Hisaya Narita, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Oct. 9, 1969, Ser. No. 870,482
Claims priority, application Japan, Oct. 16, 1968, 43/75398; 43/90195; 43/90196
Int. Cl. H01f 13/00
U.S. Cl. 317—157.5 7 Claims



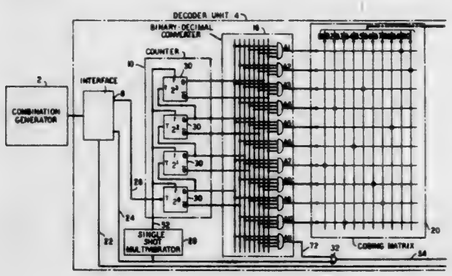
A bulk eraser for a recorded magnetic medium, the eraser consisting of a housing having a passage for the recorded magnetic medium and magnet means arranged adjacent said passage.

3,660,728
APPARATUS FOR SELECTIVELY INTERCONNECTING THE CONDUCTORS OF A PLURALITY OF MULTI-CONDUCTOR CABLES
Clyde Thomas Carter, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Sept. 30, 1970, Ser. No. 76,720
Int. Cl. H05k 7/10; H02b 1/20
U.S. Cl. 317—118 18 Claims

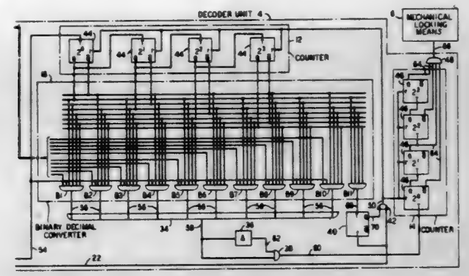


A system for selectively interconnecting the conductors of a plurality of multi-conductor cables, comprising a pair of printed circuit boards disposed in substantially parallel, spaced apart relationship, one side of each of the boards having conductors thereon which extend to the edge portions thereof. The multi-conductor cables have connectors on the ends thereof which are connected to the edge portions of the boards so that the conductors in the cables are electrically connected to the conductors on the boards. A plurality of terminal junction modules are mounted on the other sides of the boards and have contact terminals extending through the boards and electrically connected to the conductors on the boards. Interconnection conductors having contact terminals on their ends are selectively mated with the terminals of the junction modules to thereby selectively interconnect the cable conductors. One of the boards has openings therein through which the modules mounted on the other board extend so that all of the modules are accessible from one side of the boards.

3,660,729
ELECTRONIC COMBINATION LOCK SYSTEM
Charles Fitzhugh James; Ralston Hodges Robertson, Jr., and Merville Lee Warnock, all of Indianapolis, Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jan. 11, 1971, Ser. No. 105,406
Int. Cl. E05b 49/00
U.S. Cl. 317—134 24 Claims

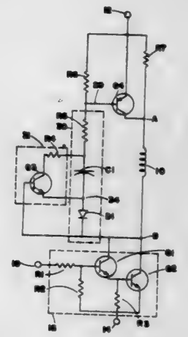


An electronic combination lock system comprises a decoder unit having a built-in combination. An external combination generator transmits a combination into the decoder unit to energize a lock operating means which operates a locking bar to lock or unlock the enclosure. The decoder



recognizes a combination only if it has the correct number, sequence, and spacings of digits.

3,660,730
SOLENOID DRIVE CIRCUIT
Edwin E. Mason, Harrisburg, Ohio, assignor to Design Elements Inc.
Filed Dec. 16, 1970, Ser. No. 98,627
Int. Cl. H01h 47/32, 47/04
U.S. Cl. 317—148.5 10 Claims

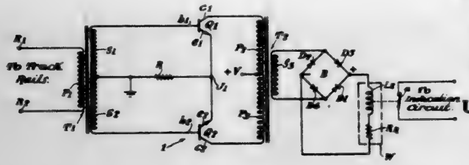


A circuit for initially applying an unusually large drive voltage to a solenoid coil and for subsequently reducing the applied voltage during the travel of the solenoid plunger. The solenoid coil is serially connected to a first transistor circuit operating as an on-off switch and also is serially connected to a second transistor circuit operating to variably control the voltage applied to the solenoid. A capacitor-charge timing circuit controls the variable transistor and thereby gradually reduces the voltage applied to the solenoid.

3,660,731
FAIL-SAFE PULSATING PEAK DETECTION CIRCUIT
John O. G. Darrow, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.
Filed Feb. 18, 1970, Ser. No. 12,297
Int. Cl. H01h 47/32
U.S. Cl. 317—148.5 R 15 Claims

This disclosure relates to a fail-safe peak detector for detecting the presence of pulsating input signals and for providing an output signal which is proportional to the peak values of the input signals. The detector includes an amplifier hav-

ing its input transformer coupled to the input signals and having its output transformer coupled to a bridge rectifier which



is coupled to the coil of an electromagnetic relay which in turn controls an electrical contact of an indicating circuit.

3,660,732

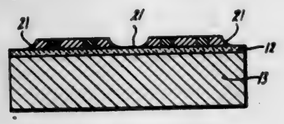
SEMICONDUCTOR STRUCTURE WITH DIELECTRIC AND AIR ISOLATION AND METHOD

David Frank Allison, Los Altos, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Continuation of application Ser. No. 776,427, Nov. 18, 1968, now abandoned. This application Feb. 8, 1971, Ser. No. 113,628

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R 7 Claims





Semiconductor structure having devices formed in a very thin layer of monocrystalline silicon with the devices being dielectrically and air isolated from each other.

3,660,733

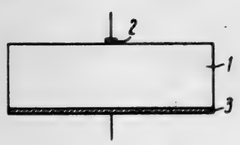
HOMOGENEOUS SEMICONDUCTOR WITH INTERRELATED ANTIBARRIER CONTACTS

Fernando Zhosevich Vilf, Istrinskaya ulitsa 5 korpus 2, kv. 9, and Alexandr Pavlovich Lysenko, Kheroshevskoe shosse 5 korpus 6, kv. 10, both of Moscow, U.S.S.R.

Filed Oct. 29, 1969, Ser. No. 872,291

Int. Cl. H01l *5/02*

U.S. Cl. 317—234 6 Claims



A semiconductor device comprising a homogeneous semiconductor crystal and two antibarrier contacts, the area of one of which is smaller than that of the other and the diameter is smaller than the distance between the contacts and is limited in absolute value lying within 1 to 100 microns. This device can perform various functions, such as an oscillator, or a currector or a switch.

3,660,734

BOND TYPE DIODE UTILIZING TIN-DOPED GALLIUM ARSENIDE

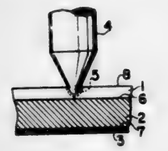
Shinya Iida, Hino-shi; Hitoshi Sato, Nishitama-gun, and Yutaka Takeda, Nakano-ku, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 9, 1969, Ser. No. 856,451

Claims priority, application Japan, Sept. 9, 1968, 43/64258

Int. Cl. H01l *11/00, 15/00*

U.S. Cl. 317—235 R 7 Claims



A bond type diode which is composed of gallium arsenide doped with tin within the range of 1×10^{16} to 5×10^{17} atoms/cm^3, preferably about 3×10^{17} atoms/cm^3, of a gold wire containing zinc welded onto a portion of a surface of the tin-doped gallium arsenide, and of an electrode in ohmic contact with the tin-doped gallium arsenide at a portion different from the welded portion.

3,660,735

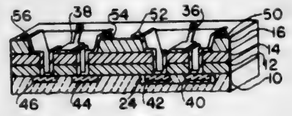
COMPLEMENTARY METAL INSULATOR SILICON TRANSISTOR PAIRS

John D. McDougall, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Sept. 10, 1969, Ser. No. 856,747

Int. Cl. H01l *19/00*

U.S. Cl. 317—235 R 3 Claims



A complementary metal-insulator-silicon transistor pair of the field effect type with self-registered gates is produced by introducing doped regions into limited areas of a semiconductive body by ion beam implantation through insulative films overlying the surface of the semiconductor, followed by temperature annealing in order to repair radiation damage caused by the ion beam implantation. Ion bombardment enhanced etching of a Si_3N_4 layer is used to simplify opening of electrical contact areas.

ERRATUM

For Class 317—735 see:
Patent No. 3,660,819

3,660,736

PROCESS FOR THE PRODUCTION OF HIGH-EFFICIENT ELECTRETS

Yurike Igarashi, and Haruko Kakutani, both of Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Chuo-ku, Tokyo, Japan

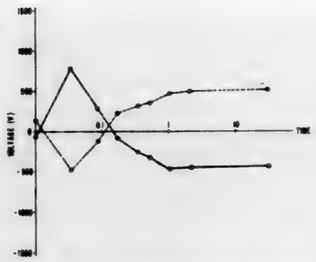
Filed Mar. 10, 1971, Ser. No. 122,870

Claims priority, application Japan, Mar. 10, 1970, 45/19723

Int. Cl. H01g *7/02*

U.S. Cl. 317—262 F 5 Claims

By heat-treating a polymer-type electret that has been subjected to a polarization treatment at temperatures lower than the melting point of the polymer but higher than the glass transition point of the polymer, an unstable hetero-charge



component and the homo-charge component can be reduced and a stable hetero-charge can be sustained.

3,660,737

MAGNETIC ESCAPEMENT

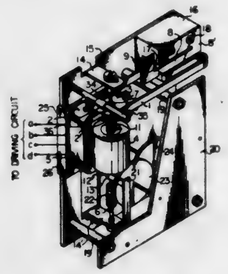
Satoshi Sakai, Hirakata; Kenzo Shirakawa, and Norio Shimizu, both of Neyagawa, all of Japan, assignors to Matsushita Electric Works, Limited, Osaka, Japan

Filed Oct. 27, 1970, Ser. No. 84,324

Claims priority, application Japan, Nov. 15, 1969, 44/108697; Nov. 18, 1969, 44/92339; Nov. 21, 1969, 44/93753

Int. Cl. H02k *29/00*

U.S. Cl. 318—138 6 Claims



A magnetic escapement including a rotor driven by an external force, and escape wheel made of a magnetic material and having along its periphery radially extending magnetic teeth, said escape wheel being coupled through a coil spring to the rotor, and an oscillator having a magnetic pole piece secured at the end of one of its tines and coupled magnetically to the escape wheel teeth. The oscillator is preferably formed in a W-shape and supported at a point near its center of gravity for extension parallel to the plane of the escape wheel, and its pole piece being magnetically coupled to that tooth of the escape wheel which is farthest from the supporting point. A driving circuit of a constant output for the rotor is provided, which includes a compensating transistor and a temperature compensating element for eliminating load and temperature variations.

3,660,738

DIRECT CURRENT CONTROL CIRCUIT

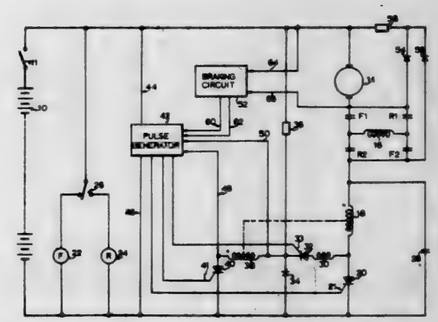
Albert W. Anderson, and Charles E. Konrad, both of Roanoke, Va., assignors to General Electric Company

Filed Sept. 21, 1970, Ser. No. 73,741

Int. Cl. H02p *29/02*

U.S. Cl. 318—138 19 Claims

A control circuit for controlling the effective power to a load from a power source of substantially constant direct current voltage includes a first or main solid state switching device for placing the load and the power source in series. Suitable circuitry including a commutating capacitor chargable in a direction such that its discharge will terminate conduction of the main switching device further includes re-



sistive means serving to maintain the capacitor in constant communication with the power source. Also provided is a means for providing dynamic braking of a direct current motor load through a resistive element such that the armature terminal voltage is adjusted linearly with the speed thereof.

3,660,739

MEANS TO PROMOTE THE COMMUTATION OF A THYRISTOR SWITCHING ARRANGEMENT FOR AN ELECTRIC MOTOR AT LOW MOTOR SPEEDS

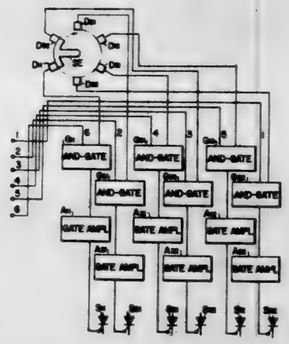
Toshiaki Okuyama, and Hiroshi Watanabe, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 8, 1970, Ser. No. 96,169

Claims priority, application Japan, Dec. 8, 1969, 44/97872

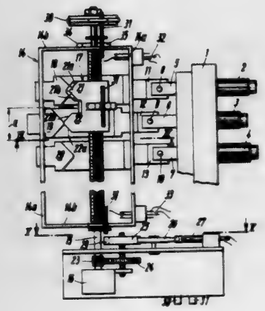
Int. Cl. H02p *5/40*

U.S. Cl. 318—227 12 Claims



An electric motor system consisting of switching means, such as an inverter, and a synchronous motor, means to promote the commutation action of the switching means at starting, comprising two polyphase windings mounted on the stator of the synchronous motor with magnetic coupling, one of the polyphase windings being connected to produce the rotating magnetic field with the direct current source through the switching means and the other polyphase winding being energized by an external alternating current source in order to supply commutating energy to the switching means.

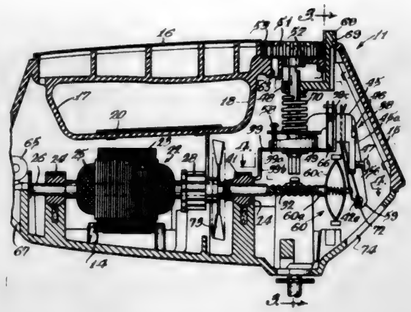
3,660,740
DEVICE FOR REMOTE-CONTROL OPERATION OF KNOBS IN TELEVISION RECEIVERS OR THE LIKE
Gerhard Rosteutscher, Villingen, Germany, assignor to Saba Schwarzwalder Apparate-Bau-Anstalt, August Schwer Sohne GmbH, Villingen, Germany
Filed July 27, 1970, Ser. No. 58,419
Claims priority, application Germany, July 25, 1969, P 19 37 750.5
Int. Cl. H02p 3/08
U.S. Cl. 318—265 15 Claims



A device for actuating by remote control a row of pushbuttons in a television or radio receiver wherein a mechanism automatically releases a previously actuated pushbutton in response to actuation of another pushbutton. The device has a series of parallel slides each coupled to one of the pushbuttons, a feed screw which can be driven stepwise in clockwise and counterclockwise directions, and a follower which meshes with and moves lengthwise of the feed screw when the latter rotates. The slides have coplanar projections and the follower has two angularly and axially offset cams one of which engages successive projections in front of it to actuate the respective pushbuttons in response to rotation of the feed screw in one direction and the other of which engages successive projections in front of it to actuate the respective pushbuttons in response to rotation of the feed screw in the other direction. The follower is pivoted in response to changes in the direction of rotation of the feed screw to place the one or the other cam into the plane of the projections and the follower comes to rest in such positions that it cannot interfere with manual actuation of the pushbuttons.

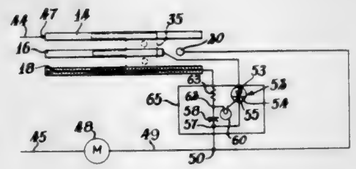
3,660,741
GOVERNOR CONTROLLED FOOD MIXER
John Walter, Evergreen Park, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed June 17, 1970, Ser. No. 47,003
Int. Cl. B01f 7/16
U.S. Cl. 318—325 12 Claims

A lightweight, hand operated food mixer having a speed control which includes a mechanical governor for controlling the motor to any preselected speed. The speed control includes a manually operable cam and a switch which are mounted on a frame above the worm drive to the beater spindles. The switch, which includes a pair of starting contacts and governor controlled contacts, extends downwardly into proximity with the centrifugal element which is mounted on the forward end of the motor shaft. A beater ejector is



mounted for reciprocating movement by the speed control shaft and straddles the cam for controlling the governor.

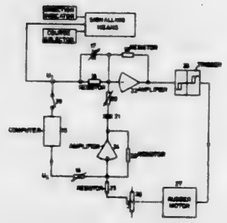
3,660,742
TRIGGER OPERATED SPEED CONTROL ASSEMBLY FOR ELECTRIC MOTORS
Alex F. Gawron, Chicago, Ill., assignor to Skil Corporation, Chicago, Ill.
Continuation of application Ser. No. 438,627, Mar. 10, 1965, now abandoned. This application June 24, 1970, Ser. No. 49,217
Int. Cl. H02p 5/16
U.S. Cl. 318—345 2 Claims



A trigger operated switch includes three contact strips and a bypass contact button. The trigger carries three slides for respective sliding engagement with such strips. Two of the strips are adapted for connection with a speed control circuit, one strip cooperating with one slide to define a variable resistor of such circuit. When the trigger is fully depressed, one of the slides is in engagement with the contact button for bypassing the speed control circuit.

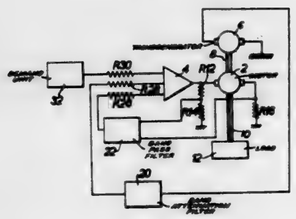
3,660,743
ELECTRICAL AUTOMATIC PILOT
Walter Kundler, and Gerd Hingst, both of Kiel, Kiel-Ellerbek, Germany, assignors to Anschutz & Co., G.m.b.H., Kiel-Wik, Germany
Filed Oct. 6, 1970, Ser. No. 78,497
Int. Cl. G05d 1/00; B63h 25/02
U.S. Cl. 318—588 4 Claims

The invention relates to an automatic pilot for a rudder-controlled ship of the type in which the motor-operable steering gear for actuating the rudder of the vehicle is controlled by a trigger circuit which in its turn is controlled by an operational circuit including a PID-network. Some ships have a tendency to break out of their course when the rudder is in the midship-position. It is the object of the invention to provide the pilot with additional means for overcoming this tendency by such a control of the trigger circuit that the rudder is displayed by an angle in excess of that produced by said operational circuit thereby exerting a stabilizing moment



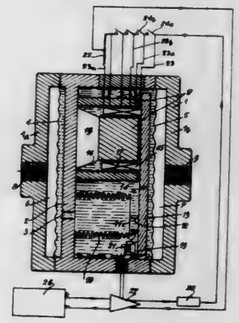
on the ship. The additional means comprises an electronic computer having an input receiving the error signal and an output connected to the trigger circuit.

3,660,744
SERVO CONTROL SYSTEMS
Dexter Robert Plummer, Leicester, England, assignor to The Rank Organization Limited, London, England
Continuation of application Ser. No. 797,560, Feb. 7, 1969, now abandoned. This application Jan. 11, 1971, Ser. No. 105,703
Claims priority, application Great Britain, Feb. 22, 1968, 8,733/68
Int. Cl. G05b 5/01
U.S. Cl. 318—616 7 Claims



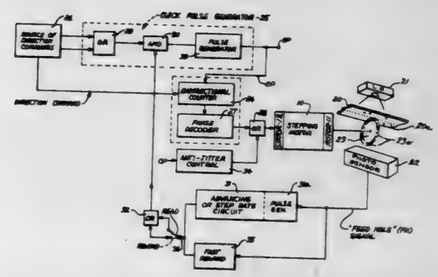
A servo control system comprises an actuator such as an electric motor which is operated in response to a demand signal and to a feedback signal representative of the actual actuator response. The feedback signal is derived by way of respective filters from two component signals representative of the actual response of the actuator and derived respectively from a transducer such as a tachometer generator coupled directly to the actuator and from the actuator itself. The filters are arranged so that the feedback signal contains a greater proportion of the component signal from the actuator within any frequency ranges in which mechanical resonance occurs in the system and a greater proportion of the component signal from the transducer within frequency ranges devoid of such mechanical resonance, so that the component signals substantially compensate each other at resonance and the resulting feedback signal is substantially free of resonance components.

3,660,745
DEVICE FOR ADJUSTING THE MEASUREMENT RANGE OF CAPTORS FITTED WITH FORCE BALANCES PARTICULARLY FOR PRESSURE CONVEYORS
Pierre Claude Bertrand, Pau-Billere, France, assignor to Compagnie Des Compteurs, Paris, France
Filed June 5, 1970, Ser. No. 43,849
Claims priority, application France, June 19, 1969, 6920508
Int. Cl. G01l 9/10
U.S. Cl. 318—676 6 Claims



The device comprises a force balance including several windings, switches being provided for selective connection of any of the windings in the circuit of the force balance to compensate for different ranges of measurement.

3,660,746
STEPPING MOTOR DAMPING SYSTEM
Donald L. Milek, Seal Beach, Calif., assignor to Ex-Cello-O Corporation, Detroit, Mich.
Filed June 9, 1970, Ser. No. 45,172
Int. Cl. H02k 37/00
U.S. Cl. 318—696 11 Claims

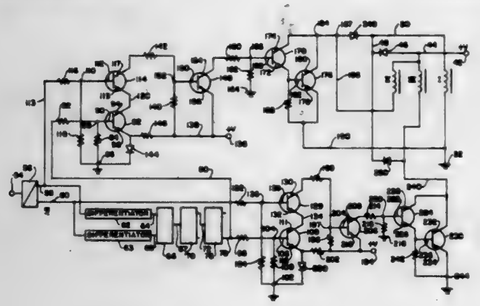


Method and apparatus for electronically damping a stepping motor to prevent the rotor from oscillating in advancing from position to position. The electronic damping includes digital circuits constructed and defined for advancing the rotor from position to position and while advancing, energizing all of the stator windings for a time interval less than the time period required to advance the rotor from position to position and yet of sufficient time duration to prevent the rotor from hunting when it arrives at its new position.

3,660,747
STEP MOTOR AND CONTROL CIRCUIT THEREFOR

Clifford W. Kruer, and John R. Frazier, both of Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Aug. 27, 1970, Ser. No. 67,403
Int. Cl. H02k 37/00
U.S. Cl. 318—696 4 Claims

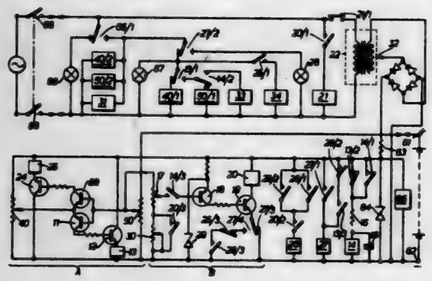


A step motor has three phase windings and is operated with one phase winding continuously energized and the other phase windings alternately energized, each to select one of two possible step positions. The three phase windings separately develop flux between pole portions of the stator and a rotor responsive to the magnetic flux in the stator pole portions moves between two positions of least reluctance as the second and third windings are alternately energized. By means of associated control circuits, each of the second and third windings, when de-energized, is permitted to dissipate its back e.m.f. through the first winding to momentarily increase the magnetic flux developed with said first winding. Accurate step positioning without overshoot and without detent means is achieved by a timed interruption in the energization of whichever of the second and third windings is initiating a shift in the rotor position, the arrangement of stator windings being such that upon re-energization of the step initiating phase the flux developed by the step initiating phase will operate to arrest rotor movement.

3,660,748
BATTERY CHARGING CURRENT AND TERMINATION CONTROL CIRCUITRY

Dennis Albert Clayton, Gewsworth, England, assignor to Legg (Industries) Limited, Wolverhampton, England

Filed Mar. 2, 1970, Ser. No. 15,627
Claims priority, application Great Britain, Mar. 3, 1969, 1,160/69
Int. Cl. H02j 7/04
U.S. Cl. 320—39 29 Claims

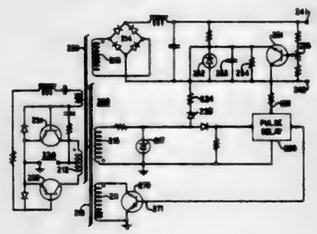


To reduce the charging current in the latter part of a charge, an automatic battery-charging apparatus includes means for comparing a sample voltage depending on the battery voltage while on charge, with a reference voltage which is progressively increased throughout the charge, and using a function of the difference to control the charging current. Thus if the battery voltage and sample voltage increase more rapidly than the reference voltage, the charging current is reduced and vice versa. The reference voltage may be supplied by a motor-driven potentiometer, or by a progressivley charged capacitor. The duration of the charge is also controlled so that a phase of the charge is terminated when the value or rate of change of the sample voltage, having exceeded that of the reference voltage, then falls below it.

3,660,749
DC TO DC CONVERTER WITH VOLTAGE REGULATION THROUGH PULSE WIDTH MODULATION BY CONTROL OF THE DISTRIBUTION OF FLUX VARIATIONS IN A DUAL CORE TRANSFORMER

Fred Vassaf Kadri, Madison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 25, 1971, Ser. No. 127,923
Int. Cl. H02m 3/22
U.S. Cl. 321—2 7 Claims



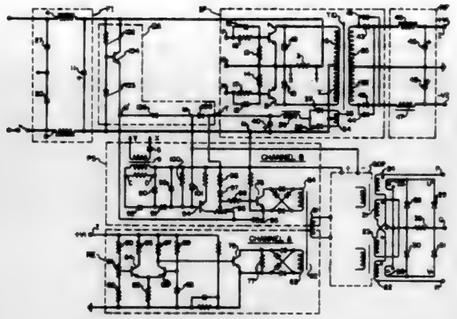
A DC to DC converter regulates its voltage output by controlling the distribution of flux variations in a dual core transformer included in the converter's inverter circuit. The inverter output is coupled to a rectifier and the output load, via one core of the transformer. A voltage regulation control circuit includes the other core of the transformer and pulse width modulates the inverter output by controlling the flux variations in the two cores of the transformer. The second core included in the voltage regulation control circuit advantageously permits complete isolation between the input and output circuits of the converter.

3,660,750
SELF-REGULATED DC TO DC CONVERTER

Pietro Bustelli, Milan, Italy, assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 7, 1970, Ser. No. 95,675
Claims priority, application Italy, Mar. 25, 1970, 22408
Int. Cl. H02m 3/28
U.S. Cl. 321—2 9 Claims

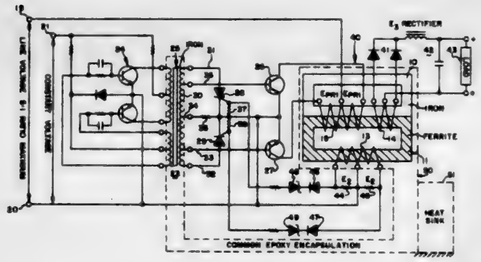
A regulated power supply using square wave generator the pulse width of which is governed by an impedance controlled by the converter output. The impedance is impressed on the square wave generator through an insulating transformer with two separate secondary windings, one connected to the diode bridge output of an output voltage error detector and the other connected to the diode bridge output of an overcurrent and overvoltage protecting device; in this manner physical isolation is provided between the error detector, as well as the protecting device, and the square wave generator and thus between the output and input of the power supply. The square wave generator output operates on the control input of a separate power inverter which is also used to provide a regulated, but isolated, output for normally powering the square wave generator. Initially the square wave generator is powdered by a preregulator associated with the DC input to the converter. In addition to the conventional output pulses the square wave generator also furnishes quenching pulses to minimize the switching losses in the switching transistors of the power inverter.



3,660,751
DC-DC REGULATED INVERTER EMPLOYING PULSE-WIDTH MODULATION WITH A CONSTANT VOLT-SECOND SENSING TRANSFORMER

Johannes Bullings, Cedar Rapids, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa

Filed Mar. 29, 1971, Ser. No. 128,748
Int. Cl. H02m 3/32
U.S. Cl. 321—2 6 Claims



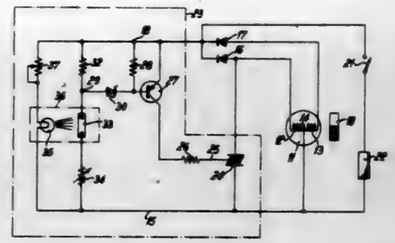
A static DC-DC inverter employs an output transformer utilizing core materials of different permeability characteristics. The transformer establishes a constant volt-second product as concerns the output waveform and establiahes self-regulation on an open loop basis with inherent preventatives as concerns excessive output current spike generation.

3,660,752
PHOTOELECTRIC VOLTAGE REGULATOR ARRANGEMENT

Peter Pfeffer, Lauffen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 13, 1970, Ser. No. 19,280
Claims priority, application Germany, Mar. 19, 1969, P 19 13 809.1
Int. Cl. H02p 9/00
U.S. Cl. 322—26 8 Claims

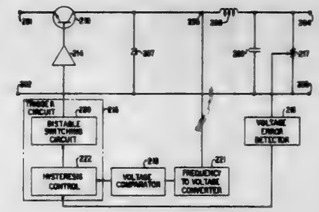
A permanent magnet alternating current generator has an incandescent bulb connected across the full-wave rectifier which furnishes a D.C. current to a load. The incandescent bulb varies the resistance of the photo resistor. A sufficient change in the resistance of the photo resistor causes the conduction of a transistor which in turn causes conduction of a triac which is connected in parallel with one of the two series connected output windings of the generator. When the triac becomes conductive, it short circuits the winding, lowering the output voltage, thus in turn causing the incandescent lamp to emit less light, varying the photo resistance to block the transistor and open the triac.



3,660,753
SELF-OSCILLATING SWITCHING REGULATOR WITH FREQUENCY REGULATION THROUGH HYSTERETIC CONTROL OF THE SWITCHING CONTROL TRIGGER CIRCUIT

Frank Fuller Judd, Madison; Jan Mark Lieberman, Lake Hiawatha, and Helmut Wilhart, Whippany, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1970, Ser. No. 100,148
Int. Cl. G05f 1/56
U.S. Cl. 323—22 T 6 Claims



A self-oscillating switching mode regulator is frequency regulated by directly controlling the hysteresis of the switching control circuit in the voltage control feedback loop. The switching control circuit includes a hysteretic bistable trigger circuit whose hysteresis width defined by its upper and lower triggering levels may be widened or narrowed about some mean signal level in response to a frequency error signal.

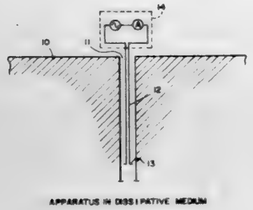
3,660,754
APPARATUS FOR MEASURING CONDUCTIVITY IN A DISSIPATIVE MEDIUM WITH ELECTRICALLY SHORT PROBES

Carson K. H. Tsao, Braintree, and Joseph T. De Bettencourt, West Newton, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of application Ser. No. 748,814, July 30, 1968, now abandoned. This application June 11, 1970, Ser. No. 48,837
Int. Cl. G01v 3/08, 3/18
U.S. Cl. 324—5 9 Claims

An apparatus for measuring conductivity in a dissipative medium with electrically short probes uses a signal source of wavelength λ. The apparatus further includes a dipole antenna probe of electrical length *l* less than λ/2, and a transmis-

sion line. The line intercouples the dipole antenna probe to the signal source. The conductivity of the dipole as reflected



back through the transmission line most nearly approximates a point measurement of conductivity in the immediate region surrounding the probe.

3,660,755

DUAL FOCUSED LOG HAVING ALTERNATELY ENERGIZED FOCUSING APPARATUS THEREIN

Herman W. Janssen, Kiel, Germany, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 7, 1969, Ser. No. 874,748
Int. Cl. G01v 3/18
U.S. Cl. 324—10 6 Claims

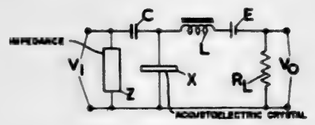
Methods and apparatus for simultaneously obtaining two focused logs of formation resistivity with different depths of investigation. A pair of nearby focusing current return electrodes is added to the subsurface apparatus of a conventional focused logging system and a second focusing current supply is added to the surface instrumentation. The preferred embodiment uses commutator devices to effect, alternately and repetitively, two different interconnections of the subsurface electrodes with the surface equipment whereby two logs are recorded on a single traverse of the borehole by the subsurface instrument. The two logs are combined to obtain a compensated focused current log representing improved measurements of the true resistivities of the formations. All subsurface elements of one focused logging system, except its focusing current return electrode, are time-shared with the other focused logging system.

3,660,756

FREQUENCY SENSITIVE DETECTING AND MEASURING CIRCUITS BASED ON THE ACOUSTIC ELECTRIC EFFECT

James Dennis Maines, and Edward George Sydney Paige, both of Malvern, England, assignors to National Research Development Corporation, London, England

Filed May 7, 1969, Ser. No. 822,682
Claims priority, application Great Britain, May 10, 1968, 22,263/68
Int. Cl. G01r 23/00
U.S. Cl. 324—80 4 Claims



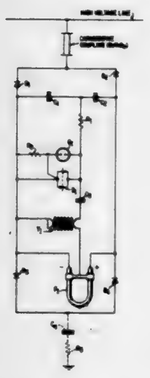
A detector consists of an acousto-electric oscillator biased above cut-off for spontaneous acousto-electric oscillations and stimulates into acousto-electric oscillations by the a.c. signal to be detected. Alternatively the power supply to an acousto-electric oscillator may be pulsed, in which case the time delay between the beginning of the pulse and the build-up of significant acousto-electric current will depend upon the applied voltage, provided that the applied voltage is in the region of cut-off for spontaneous acousto-electric oscillations.

3,660,757

FLASH TUBE POTENTIAL INDICATOR

Willis M. Winslow, Wheatridge, Colo., assignor to Wefco, Inc., Wheatridge, Colo.

Filed Feb. 2, 1970, Ser. No. 7,605
Int. Cl. G01r 13/36, 19/16
U.S. Cl. 324—122 10 Claims



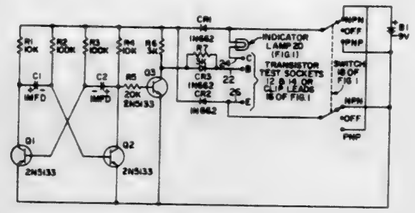
This disclosure describes a flash tube potential indicator that indicates whether or not a high voltage line is energized. Rectifiers convert a.c. microamps to direct current to charge capacitors. When the capacitors reach a predetermined voltage level, they are discharged through a photoflash tube. The resultant flash indicates the existence of a high voltage on the high voltage line. The various electric circuit components are mounted in a tubular structure which may or may not be directly attached via a suitable clamp to a high voltage line. In addition, to increase the safety of the invention, barium titanate rods capacitively couple the rectifiers to the high voltage line.

3,660,758

DEVICE FOR TESTING SEMICONDUCTORS

James A. Means, 2090 Saner Circle, Camarillo, Calif.

Filed July 23, 1970, Ser. No. 57,599
Int. Cl. G01r 31/22
U.S. Cl. 324—158 T 6 Claims



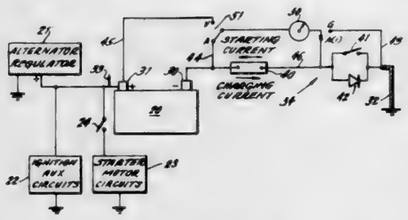
A small, compact device for quickly and easily testing semiconductors to ascertain whether they are usable or whether they are faulty because of a short or open circuit. Each condition is represented by the status of an indicator lamp, when testing bipolar transistors - (1) a flashing light indicates a good component, (2) a steady on light a shorted transistor ro excessive leakage current, and (3) a steady off light, an open component or unusually low current gain.

3,660,759

METER CONNECTION ADAPTER FOR AUTOMOBILE ELECTRICAL SYSTEM TESTER INCLUDING DIODE AND SHORTING SWITCH THEREFOR

Lee Parmater, Plainwell, Mich., assignor to Kal-Equip Company, Otsego, Mich.

Filed Mar. 19, 1970, Ser. No. 20,925
Int. Cl. G01n 27/46
U.S. Cl. 324—29.5 9 Claims



A length of flexible conductive wire acts as a shunt for a voltage-current meter for an automotive test device. One end of the wire is connected to a connector adapted to be connected to an automotive battery terminal and its other end is connected to a conductive body housing having a stud which can receive the automotive battery terminal. The body housing contains a diode and a shorting switch for the diode where the forward resistance of the diode can be connected in series with the shunt during voltage regulator tests and is short-circuited by the switch during motor starting.

3,660,760

INDUCTIVE COMMUNICATION SYSTEM

Howard A. Schaad, Abingdon, Ill., and Richard L. Randolph, San Rafael, Calif., assignors to William J. Foley, Galesburg, Ill., a part interest

Filed July 23, 1969, Ser. No. 844,047
Int. Cl. H04b 13/02
U.S. Cl. 325—28 22 Claims

There is disclosed a communication system in which a pair of spaced conductor rods or elements, embedded or placed in the earth, and energized by a signal voltage to induce a dynamic magnetic signaling field above the earth surface between the conductor element and having a specific and relatively large controlled area of high signal resolution. A match of the earth's impedance to the signal source is achieved by adding additional conductors at the remote conductor point. In locations where it may not be practical to embed the elements in a vertical position, horizontally buried elements may be used and the conductor nearest the signal



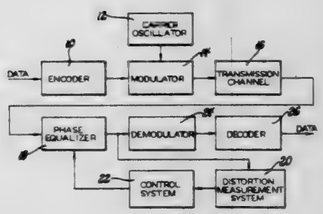
voltage source may be constituted by an earth-embedded utility pipe. Switching devices controlled by coded signals may be used to connect or disconnect such conductors to thereby vary the system impedance or control the strength of the magnetic induction signaling field, as well as vary the area and shape of the magnetic induction signaling field. The magnetic induction signaling field may be picked up by magnetic pick-up coil or other devices sensitive to magnetic fields.

3,660,761

AUTOMATIC EQUALIZATION SYSTEM FOR DATA TRANSMISSION CHANNELS

Samuel T. Harmon, Jr.; Kenneth E. Monroe, and Gino Venturi, all of Ann Arbor, Mich., assignors to Datamax Corporation, Ann Arbor, Mich.

Filed Jan. 29, 1970, Ser. No. 6,738
Int. Cl. H04l 1/00; H04b 1/10
U.S. Cl. 325—42 5 Claims

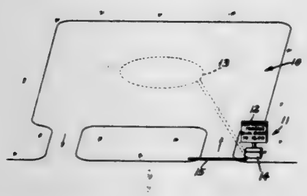


A system for equalizing the phase distortion of a data transmission channel is disclosed wherein the equalizer comprises a fixed delay network and a plurality of selectable delay networks. The fixed delay network exhibits an envelope delay similar to the difference between the characteristic envelope delay for the channel and a desired delay for the channel and the selectable delay networks may be connected therewith in any combination to produce the desired envelope delay. Control means are provided for successively connecting the selectable delay networks to form a successive plurality of test channels. The phase distortion produced by each channel is measured and compared with that produced by each other test channel. The control means includes means for reconnecting the combination of selectable delay networks which produce the smallest value of phase distortion to provide equalization of the channel for data transmission.

3,660,762
APPARATUS AND METHOD FOR TRANSMITTING MESSAGES TO VEHICLES IN PRESELECTED OFF THE HIGHWAY AREAS

Darrell S. Smith, 402 4th Street, S.E., Cut Bank, Mont.

Filed Aug. 6, 1969, Ser. No. 847,853
Int. Cl. H04b 1/00
U.S. Cl. 325—51 5 Claims

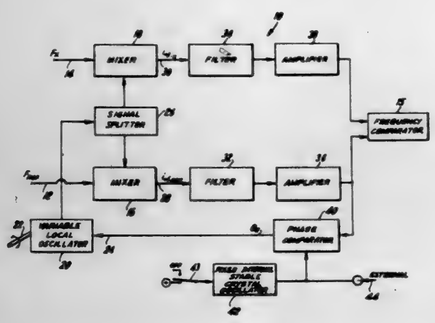


A transmitter operatively mounted for transmitting prerecorded messages to mobile radio receivers within a predetermined area, sign adjacent the area to indicate the frequency of the transmitter and condition responsive means, such as a pressure-sensitive switch, for causing the transmitter to transmit at least one complete message upon the occurrence of the condition, such as an automobile passing over the pressure-sensitive switch.

3,660,763
WIDE BAND FREQUENCY EXTENDER FOR A FREQUENCY COMPARATOR

Benjamin Parzen, 303 East 57th Street, New York, N.Y.

Filed Jan. 8, 1970, Ser. No. 1,472
Int. Cl. H04b 1/00
U.S. Cl. 325—363 5 Claims

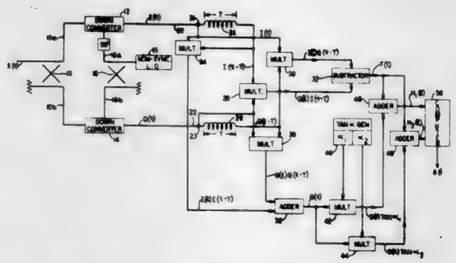


An apparatus for effectively extending the operating range of a frequency comparator is described. Input signals of close frequency are heterodyned by a common variable local oscillator to produce intermediate frequency (i.f.) signals at the output of mixers. A stable reference crystal oscillator signal source having a frequency coincident with the input frequency of a frequency comparator is compared with one of the i.f. signals. An error signal representative of the comparison is applied to the variable local oscillator to alter the frequency thereof in a direction to phase lock the one i.f. signal to the reference signal source. Frequency comparisons of signals over a large frequency band is provided.

3,660,764
NON-COHERENT DIFFERENTIAL PHASE DETECTION

James E. Gooll, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 26, 1969, Ser. No. 879,994
Int. Cl. H04b 1/16; H04l 27/22
U.S. Cl. 325—320 17 Claims

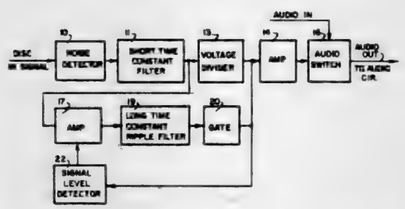


A differentially phase modulated (DPM) information signal, such as a binary differentially coherent phase shift-keyed signal, is detected without the need for a synchronous local oscillator by decomposing the carrier information signal into its baseband conjugate in-phase and out-of-phase components, $I(t)$ and $Q(t)$, respectively, generating from the components the functions $F(t) = Q(t)I(t-T)-I(t)Q(t-T)$ and $G(t) = I(t)I(t-T)+Q(t)Q(t-T)$ and subsequently forming $H_1(t) = F(t)+G(t) \tan \alpha_1$, and $H_2(t) = F(t)+G(t) \tan \alpha_2$, where T is the bit interval and α_1 and α_2 are arbitrary but generally unequal. In the binary case, however, $\alpha_1=\alpha_2=0$ and $F(t)$ is the differentially phase detected signal. In higher order DPM systems the equations for $H_1(t)$ and $H_2(t)$ are simultaneously solved to recover the differential phase information.

3,660,765
SQUELCH CIRCUIT HAVING SHORT AND LONG TIME CONSTANT FILTERS FOR SQUELCH TAIL ELIMINATION

James R. Glasser, Naperville, and Stanley J. Tomsa, Berwyn, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Continuation of application Ser. No. 643,874, June 6, 1967, now abandoned. This application Apr. 13, 1970, Ser. No. 28,169
Int. Cl. H04b 1/10
U.S. Cl. 325—478 12 Claims

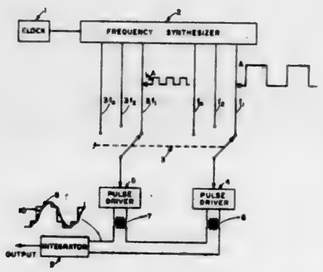


A squelch filter circuit is provided having a short time constant ripple filter and a long time constant ripple filter. The long time constant ripple filter is responsive to signals just above squelch threshold in order to provide maximum sensitivity and smooth operation. At strong signal levels, where the long time constant ripple filter is not necessary, the circuit switches to a short time constant filter. The circuit reverts to the long time constant filter if the signal drops to low signal levels relatively slowly, to keep the squelch open during fade and flutter. If the signal drops very rapidly, as, for example, where the transmitter ceases transmission, only the short time constant filter is operative and the turn off of the squelch circuit is very rapid, thus eliminating the noise burst or "squelch tail."

3,660,766
SINUSOIDAL WAVEFORM GENERATOR

Edward J. Hilliard, Jr., Portsmouth, R.I., assignor to The United States of America as represented by the Secretary of the Navy

Filed Apr. 28, 1971, Ser. No. 138,226
Int. Cl. H03b 19/00
U.S. Cl. 328—14 2 Claims

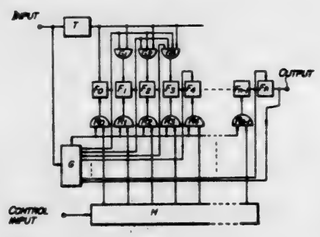


There is disclosed an arrangement for generating sinusoidal waves of low harmonic content and relatively high output level wherein selected square waves of related amplitude and frequency derived from a digital frequency synthesizer are utilized to trigger conventional driving circuits. The outputs of these driving circuits are combined and the complex signal obtained therefrom fed to an integrator which provides the desired signal wave form.

3,660,767
FREQUENCY DIVIDER CIRCUIT SYSTEM

Hirokazu Yoshino, and Tomio Yoshida, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 18, 1969, Ser. No. 886,131
Int. Cl. H03b 19/00
U.S. Cl. 328—15 3 Claims

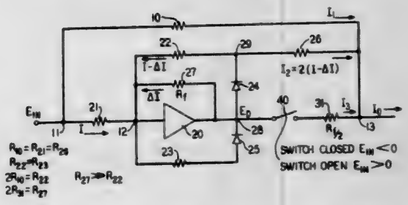


A frequency divider wherein the pulse input having been delayed by a predetermined time interval is impressed upon a plurality of cascade connected flip-flops, and the output from each of the flip-flops is fed to an AND gate to which is also fed the input which has not passed through the delay circuit to produce a resultant AND output to be fed back to each of the required flip-flops, thereby increasing the upper limit of the frequency to be divided and practically eliminating the danger of a malfunction in the system.

3,660,768
PRECISION RECTIFIER WITH IMPROVED TRANSIENT RESPONSE

Carl Leslie Dammann, Holmdel, and Frederick Alan Seal, Colts Neck, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1970, Ser. No. 100,175
Int. Cl. G06g 7/14
U.S. Cl. 328—26 7 Claims

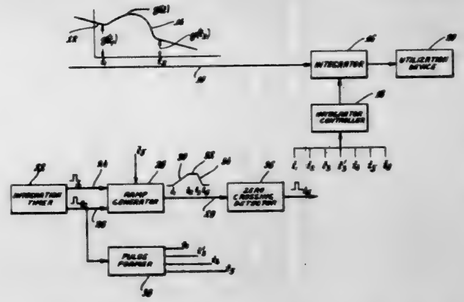


A precision rectifier circuit rectifies voltage signals near zero without a loss in transient response. This is accomplished by reducing the gain of the amplifier with an additional feedback resistor. The error in the output current caused by this resistor is canceled by supplying additional current from the amplifier to the rectifier output through a second rectifier and a resistor.

3,660,769
MEANS FOR INTEGRATING A TIME LIMITED SIGNAL HAVING BASE LINE DRAFT

William E. Jordan, Foxboro, and William E. Earle, North Easton, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed June 2, 1969, Ser. No. 829,681
Int. Cl. G06g 7/18
U.S. Cl. 328—127 15 Claims



An apparatus for integrating a time limited signal is described. The signal is applied to an integrator for a predetermined time period. A measurement of the input signal base line is made before and after integration, and a voltage proportional to the difference is applied to the integrator for a second time period, proportional to the first time period.

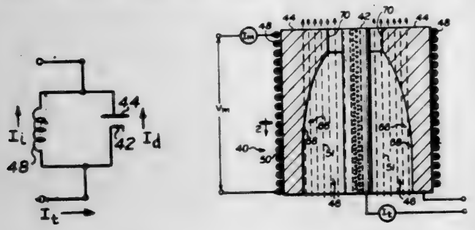
3,660,770
MAGNETICALLY CONTROLLED ELECTRON TUBE FUNCTION GENERATOR

William W. Snow, 3250 54th Street, Woodside, N.Y.

Filed Apr. 7, 1970, Ser. No. 26,190
Int. Cl. H01j 21/18
U.S. Cl. 328—253 21 Claims

A function generator. An electron tube is provided having a cathode, and an anode coextensive with and spaced from

the cathode so as to form a gap therebetween. The anode is at a higher potential than the cathode so as to create an electric field between the anode and the cathode. A means for obtaining an output from the function generator as a desired function of the input to the function generator is also provided. This means includes a means for providing a magnetic field in the gap which is normal to the electric field and further includes means for varying the direction of the mag-

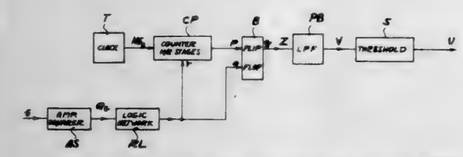


netic field. The variation in the electric field is obtained by varying the width of the gap in the direction of the longitudinal axis of the tube. The variation in the magnetic field is obtained by varying the intensity of the magnetic field in the direction of the longitudinal axis of the tube. By use of additional magnetic fields or by separating the cathode and anode into distinct portions, or a combination thereof multiple functions may be provided.

3,660,771
DEMODULATOR FOR TWO-FREQUENCY COMMUNICATION SYSTEM

Fabio Balugani, and Paolo Fornasiero, both of Milan, Italy, assignors to Societa' Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Nov. 30, 1970, Ser. No. 93,537
Claims priority, application Italy, Dec. 3, 1969, 25269 A/69
Int. Cl. H04l 27/14; H03d 3/04
U.S. Cl. 329—104 **6 Claims**



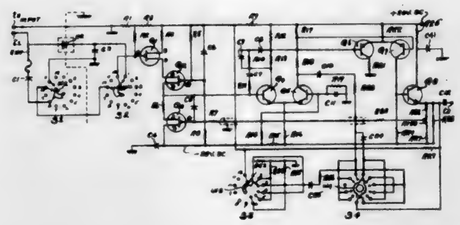
At the receiving end of a communication system utilizing a lower keying frequency f_1 and a higher keying frequency f_2 for the transmission of information, a counter with N/2 stages is stepped by clock pulses having a cadence Nf_2. The incoming two-frequency wave is converted into a train of signal pulses occurring at the end of each half-cycle, these signal pulses being used to reset the counter which therefore does not generate an output if the signal pulses follow one another at a rate equal to or faster than $\frac{1}{N}f_2$. With lower incoming frequencies, the counter sets a flip-flop which is then reset by the next signal pulse and which thereby generates a stepped wave to yield, on integration, a definite DC voltage.

3,660,772
WIDE-BAND DIRECT CURRENT COUPLED AMPLIFIER FOR ALTERNATING CURRENT UTILITY

Frederick Rodney Holt, Manhattan, N.Y., assignor to The Hickok Electrical Instrument Company, Cleveland, Ohio

Filed May 13, 1970, Ser. No. 36,977
Int. Cl. H03f 3/42
U.S. Cl. 330—18 **4 Claims**

A wide-band direct-current-coupled amplifier for alternating current use having substantially flat operating characteristics and a high signal-to-noise ratio between input and output signal levels; the amplifier consisting of a high impedance input stage formed of a capacitive divider coupled to three FETs connected into a triple cascode circuit, which

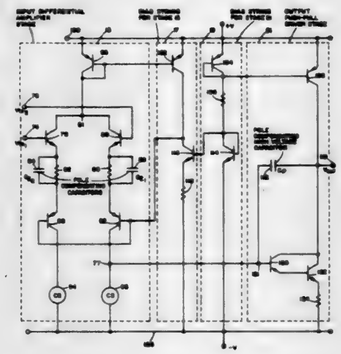


input stage, in turn, is connected to a cascoded differential amplifier; the output stage being an emitter follower. Suitable feedback which is adjustable for each operating range throughout the band is effective to provide an output signal that varies linearly in proportion to the input signal.

3,660,773
INTEGRATED CIRCUIT AMPLIFIER HAVING AN IMPROVED GAIN-VERSUS-FREQUENCY CHARACTERISTIC

Maurice G. Free, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 5, 1970, Ser. No. 8,835
Int. Cl. H03f
U.S. Cl. 330—30 D **17 Claims**

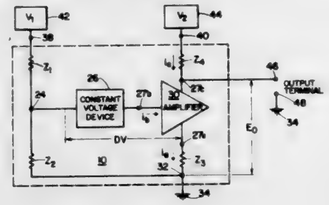


Disclosed is an operational amplifier including an input differential amplifier stage and an output driver stage, with each of the input and output stages having pole compensating capacitance means therein for improving the gain-versus-frequency characteristic of the amplifier. The output pole compensating capacitance means is a high voltage MOS capacitor which splits two of the poles of the amplifier's transfer function, broadbanding one of the poles and narrowbanding the other of the poles to improve the gain-versus-frequency characteristic of the amplifier. The input pole compensating capacitance means is a low voltage PN junction capacitor which relocates one of the poles of the amplifier's transfer function to thereby further improve the gain-versus-frequency characteristic of the amplifier while at the same time minimizing the total monolithic integrated circuit die area required for the fabrication of the input and output pole compensating capacitance means.

3,660,774
SINGLE STAGE DIFFERENTIAL AMPLIFIER

Joseph J. Eachus, Cambridge, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 16, 1969, Ser. No. 885,597
Int. Cl. H03f 3/68
U.S. Cl. 330—30 D **17 Claims**

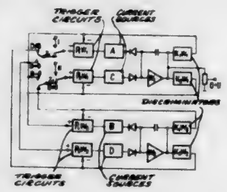


A single stage differential amplifier provides an output voltage proportional to the algebraic difference between a pair of input voltages.

3,660,775
TRAPEZOIDAL WAVE GENERATOR

Andrzej Nechay, Warsaw, Poland, assignor to Polska Akademia Nauk, Instytut Cybernetyki Stosowanej, Warszawa, Poland

Filed May 6, 1970, Ser. No. 34,991
Claims priority, application Poland, May 8, 1969, P 133421
Int. Cl. H03k 4/00
U.S. Cl. 331—57 **6 Claims**



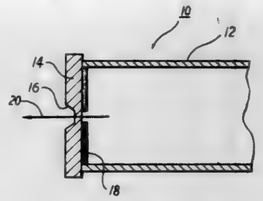
Disclosed is a wave generator capable of generating trapezoidal wave shapes. The generator comprises two operational amplifiers which function as integrators. Each operational amplifier has two trigger circuits connected to its input and two discriminators connected to its output. The discriminators and the trigger circuits are interconnected by a series of feedback loops. The generator of the present invention is capable of operation on internal or external synchronization to generate trapezoidal pulses in a single circuit.

3,660,776
MIRROR MEANS FOR LASER STRUCTURES

Eiso Yamaka; Norio Karube, and Masakazu Akiyama, all of Osaka, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed June 22, 1970, Ser. No. 48,206
Claims priority, application Japan, June 27, 1969, 44/51987
Int. Cl. H01s 3/04
U.S. Cl. 331—94.5 **4 Claims**

A mirror means used in a gas laser structure for permitting an infra-red laser beam to pass therethrough comprising a substrate plate made of an infra-red transparent material and secured air-tightly to the one end of the laser tube, the central portion of the substrate plate being made thinner than the remaining portion and sized substantially larger than the sectional area of the output laser beam, and a reflective metal film coated on the inner surface of the remaining portion. The mirror means is free from being destroyed by a high



temperature increase and has a light absorption reduced to a minimum at the central recessed portion, thus providing an utmost high output power.

3,660,777
LASER PULSE TIME MODULATION Q-SWITCH

Allen M. Erickson, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Apr. 16, 1971, Ser. No. 134,790
Int. Cl. H01s 3/11
U.S. Cl. 331—94.5 **12 Claims**



Apparatus for Q-switching a carbon dioxide laser which operates on the scanning Fabry-Perot principle to affect a laser switching. At both ends of a laser cavity are positioned 100 percent reflective mirrors perpendicular to the laser beam. A pulse time modulation Q-switch is placed in the laser cavity which produces laser output pulses of fixed amplitude and width, but of varying frequency. The pulse time modulation, Q-switch is contained in a sandwich that includes a piezoelectric crystal, a germanium wedge, one of the end mirrors, a second germanium wedge, a Fabry-Perot interferometer, and a third germanium wedge. The Fabry-Perot interferometer, which is positioned within the laser cavity, is at a slight angle to the laser beam, while the 100 percent reflective mirror is perpendicular to the laser beam. Voltage pulses applied to the piezoelectric crystal cause the Fabry-Perot interferometer to change from a highly reflective state to a highly transmissive state, whereupon lasing occurs. When the Fabry-Perot interferometer changes back to its highly reflective state, a laser pulse is fed out of the laser cavity.

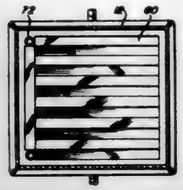
3,660,778
LASER BEAM FOLDING DEVICE

Leo J. Le Blanc, Sr., 1116 Cypress Lake Drive, Fort Myers, Fla.

Filed June 16, 1970, Ser. No. 46,755
Int. Cl. H01s 3/08
U.S. Cl. 331—94.5 **12 Claims**

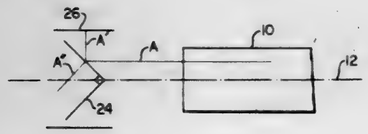
The resonant cavity of anionized gas laser device is elongated by conducting a laser beam between internal reflectors along a plurality of parallel plasma tubes located between

beam folding reflectors in a gas discharge region. The plasma tubes are cooled by a circulating coolant and the length of



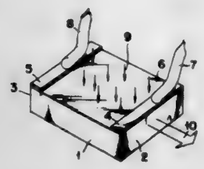
the resonant cavity is adjustable adjacent to the internal reflectors.

3,660,779
ATHERMALIZATION OF LASER RODS
David W. Cuff, Chepachet, R.I., and Paul G. De Baryshe, Lincoln, Mass., assignors to American Optical Corporation, Southbridge, Mass.
Filed Jan. 2, 1970, Ser. No. 236
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 8 Claims



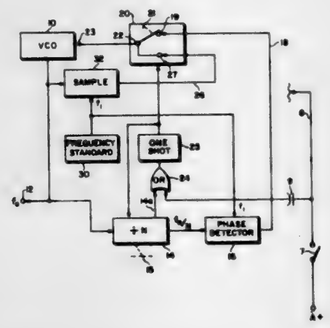
A cone of 90° vertex or a Brewster angle cone is disposed co-axially with a cylinder and laser rod, the cylinder having an internal reflective surface, for discriminating against radially polarized components of the laser light. An alternative embodiment discriminates against tangentially polarized light by disposing a Brewster angle cone co-axially with the rod and uses another cone as the retroreflective element for the laser system. In any of the embodiments, a 90° Faraday rotator may be used to change the polarization of the mode conserved.

3,660,780
SEMICONDUCTOR LASERS
Seishi Ida, Fujisawa, and Yoichi Uano, Kamakura, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed May 26, 1970, Ser. No. 40,608
Claims priority, application Japan, May 28, 1969, 44/40905; Mar. 7, 1970, 45/19051
U.S. Cl. 331—94.5 10 Claims



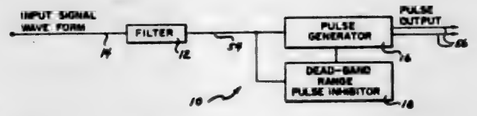
In a semiconductor laser comprising a body of semiconductor laser material which is caused to radiate coherent light by a pumping input, at least two electrodes are provided adjacent the reflective end surfaces or longitudinal edges and a control voltage is impressed across the electrodes to reduce multifrequency modes to a single central frequency mode or to a central frequency mode with a minority of side band modes.

3,660,781
LOW POWER FREQUENCY SYNTHESIZER WITH TWO PHASE LOCKING LOOPS
John M. Tewksbury, Lutherville; Harold W. Jackson, Baltimore, and Thomas H. Powell, Jr., Lutherville, all of Md., assignors to The Bendix Corporation
Filed Oct. 19, 1970, Ser. No. 81,991
Int. Cl. H03b 3/04
U.S. Cl. 331—1 A 17 Claims



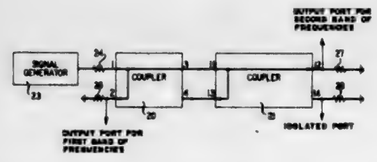
A stabilized, low power frequency synthesizer operates in two time determined modes. In a temporary first mode used to initially place the synthesizer at a selected frequency, the synthesizer makes use of a standard digital phase locked loop wherein a voltage controlled oscillator output frequency is counted down by a divider, with the divided frequency being compared to a standard frequency in a phase detector to generate an error signal to control the voltage controlled oscillator. In a second mode used to hold the synthesizer at the selected frequency an analog circuit samples the voltage controlled oscillator output frequency at regular sampling intervals which are determined by the period of the standard frequency. These samples comprise a second error signal. The circuit characteristics of the various error signal generating circuits permit the second error signal to be permanently connected to the voltage controlled oscillator while a switching circuit permits connection of the first error signal to the voltage controlled oscillator in accordance with a predetermined timed program when the selected frequency is changed or during initial start up.

3,660,782
SIGNAL LEVEL-TO-PULSE RATE CONVERTER
David Friedman, and Kenneth Levy, both of Framingham, Mass., assignors to Computervision Corporation, Burlington, Mass.
Filed Aug. 24, 1970, Ser. No. 66,344
Int. Cl. H03k 7/10
U.S. Cl. 332—1 14 Claims



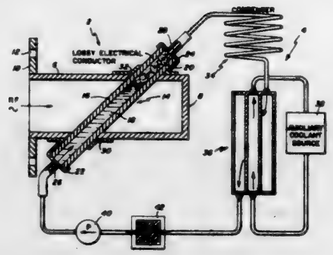
An electronic circuit for generating pulses at a rate and of a nature representative of an input signal level. In order to limit the rate of change in the pulse rate to a rate of change at which an element driven by the pulses can respond, a filter is provided which establishes a maximum positive and negative slope for the signal waveform. The same slope is achieved for any abrupt step in the input signal level regardless of the magnitude of the step change. The slope-limited signal is then fed to a symmetrical zero-to-plus or minus infinite rate integrator which establishes a dead-band range surrounding the zero level. When the slope-limited signal level is outside the dead-band range, the integration proceeds at a rate proportional to the amount by which the signal level exceeds the dead-band until a positive or negative threshold level is reached, at which time a pulse is generated and the integrator reset to a lower magnitude. The pulse rate is thus proportional to the amount by which the input signal level exceeds the established dead-band.

3,660,783
SIGNAL SPLITTING NETWORK WHEREIN AN OUTPUT FROM SECOND COUPLER IS FED BACK TO ISOLATED PART OF FIRST COUPLER
Joseph D. Cappucci, Wayne, N.J., assignor to Merrimac Research and Development Company, West Caldwell, N.J.
Continuation of application Ser. No. 866,632, Oct. 15, 1969, now abandoned. This application Jan. 21, 1971, Ser. No. 108,550
Int. Cl. H01p 1/20
U.S. Cl. 333—10 6 Claims



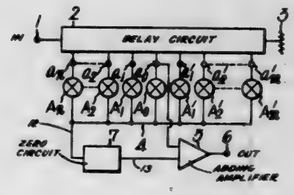
A composite coupler is disclosed formed by a pair of analogous quadrature couplers. Energy passed from the first coupler to the second is fed back to the first initiating a recirculating effect which provides composite coupling characteristics described by a higher order differential equation than describes the original pair of couplers.

3,660,784
ENERGY ABSORBER AND EVAPORATIVE COOLING SYSTEM
Howard Scharfman, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Aug. 28, 1970, Ser. No. 67,723
Int. Cl. H01p 1/22, 1/26
U.S. Cl. 333—22 F 5 Claims



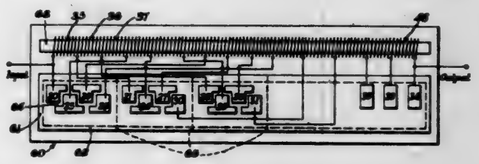
A transmission line termination load or attenuator device is provided with energy absorbing means including a medium for absorption of thermal energy, particularly, in the electromagnetic spectrum. The device is coupled to an evaporative type cooling system to evolve a relatively low pressure, low flow rate means for handling extremely high power levels with a relatively small volume of absorbent. The device utilized in either application has substantially low reflection coefficient characteristics over relatively wide frequency bandwidths and may be in either rectangular or coaxial waveguide configurations.

3,660,785
TRANSVERSAL EQUALIZER
Jun-ichi Hosokawa, Higashikatsushika-gun, Japan, assignor to Kabushikikaisha Asahi Shimbunsha, Osaka-fu, Japan
Filed July 22, 1970, Ser. No. 57,164
Claims priority, application Japan, July 25, 1969, 44/58842
Int. Cl. H03h 7/28, 7/14
U.S. Cl. 333—28 5 Claims



A transversal equalizer for equalizing a transmitted waveform with the use of an echo waveform for correction which is formed through a zero circuit or an energy suppressing circuit of a particular AC frequency.

3,660,786
COMPENSATED DELAY LINE
George A. Senf, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.
Filed Aug. 20, 1970, Ser. No. 65,458
Int. Cl. H03h 7/32
U.S. Cl. 333—29 5 Claims

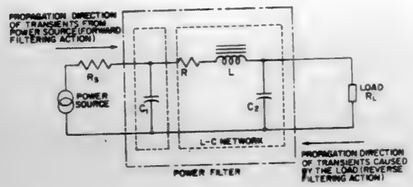


A delay line having additional compensation for output phase distortion and output pulse top ringing which includes a first feedback capacitor connected to the input lead and bridging the first three inductive coil sections of the delay line, with a series of successive feedback capacitors connecting each consecutive coil interconnection point and bridging the three inductive coil sections immediately following the coil interconnection point.

3,660,787
LOW FREQUENCY PAPER TRANSIENT FILTERS
Aly A. Mahmoud, Oxnard, Calif., and The United States of America as represented by the Secretary of the Navy
Filed Aug. 19, 1970, Ser. No. 64,955
Int. Cl. H03h 7/04; H04b 15/00
U.S. Cl. 333—76 5 Claims

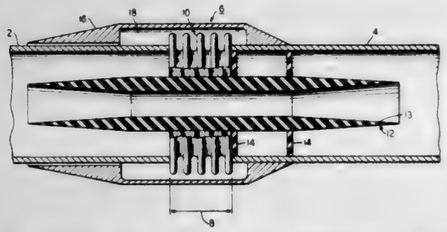
Transients in electrical power systems are capable of causing operational malfunctions in, and possible damage to, delicate equipment such as computers and data processing

apparatus. The present disclosure is directed to the design of an inductance-capacitance filter which effectively suppresses



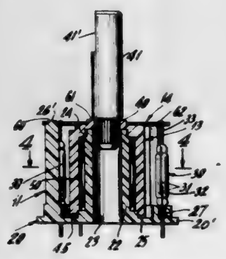
externally-produced transients as well as those generated within the load itself.

3,660,788
WAVEGUIDE EXPANSION JOINT
Dietrich Anselm Alsberg, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sept. 4, 1970, Ser. No. 69,579
Int. Cl. H01p *1/06, 1/16, 1/30*
U.S. Cl. 333—98 R **6 Claims**



An expansion joint for a waveguide transmission system utilizes a dielectric member to transfer the signal across the joint in the form of a trapped mode and a flexible mechanical closure such as a bellows to permit relative movement between the coupled waveguide sections.

3,660,789
ROTARY REED SWITCH
Lawrence P. Weisenburger, Ottsville, Pa., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Apr. 19, 1971, Ser. No. 135,281
Int. Cl. H01h *19/04, 51/28*
U.S. Cl. 335—206 **11 Claims**



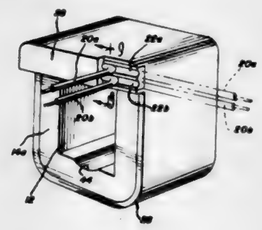
A rotary reed switch includes an integral support structure having a central elongated rotor support about which is arranged an array of reed switches, with a rotor being mounted on the rotor support. A magnet is mounted on the rotor and is operative to selectively actuate the individual reed switches as the rotor is rotated on the central rotor support.

3,660,790
ELECTRICAL INDUCTIVE/CAPACITIVE COMPONENT
Mario Palazzetti, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy
Filed July 15, 1970, Ser. No. 55,185
Claims priority, application Italy, July 16, 1969, 52670 A/69
Int. Cl. H01f *15/14*
U.S. Cl. 336—69 **3 Claims**



A component for providing both inductive and capacitive properties is formed by at least two interleaved spiral coils insulated from each other and each provided with a respective terminal, one of which is an input and the other an output terminal. The component has inductive and capacitive properties, or purely capacitive properties, according to the spacing between the terminals, if any, measured along the spirals.

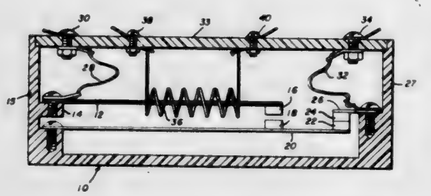
3,660,791
ELECTRICAL COIL
Dhu Aine J. Davis, Wheaton, Ill., assignor to Hermetic Coil Co., Inc.
Filed Sept. 10, 1970, Ser. No. 71,096
Int. Cl. H01f *15/10*
U.S. Cl. 336—192 **5 Claims**



An electrical coil having a bobbin configuration with a coil receiving a central portion and a pair of end discs at opposite ends of the central portion, and a coil would on the central portion with end wires for connection to appropriate flexible wire-like terminal leads. A pair of elongated troughs are formed on the outside face of one of the bobbin end discs for receiving and positioning the terminal leads for connection to the winding end wires. Apertures are formed through the one end disc at the ends of the troughs so that the winding end wires may be inserted therethrough for connection to the terminal leads. An encapsulating casing for the coil covers a portion of the flexible terminals leads and, after encapsula-

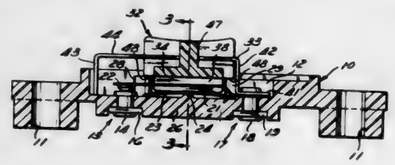
tion, the leads are bent outwardly from the one end disc generally perpendicular thereto for connection in an appropriate circuit. A heat flangible fuse is joined in one of the innermost turns of the coil and is positioned on and spans a pair of spaced raised ribs formed on the bobbin central portion so that the space between the ribs forms a recess to receive the fuse in a molten state to insure a positive fuse break. At least one elongated raised rib is formed on the central portion and extends between the end discs to provide insulating air spaces on opposite sides of the rib, between the wound coil and the bobbin central portion.

3,660,792
TIME DELAY SWITCH
Edwin H. Strain, Allentown, and Nalini R. Das, Bethlehem, both of Pa., assignors to Caloric Corporation, Topton, Pa.
Filed Dec. 16, 1970, Ser. No. 98,496
Int. Cl. H01h *37/52, 37/62, 61/01*
U.S. Cl. 337—102 **4 Claims**



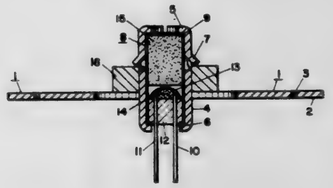
A switch which embodies a fail safe feature achieved by means for interrupting the switch circuit when the switch contacts remain closed for longer than a predetermined time period, said switch comprising a support having first and second terminals to one of which a bimetallic element is conductively connected, and third and fourth terminals to which respective ends of a heater element are connected, a conductive strip disposed in normally nonconductive relation to any of the terminals, and a contact member attached to the second terminal, with the bimetallic element and conductive strip being normally spaced out of electrical contact with one another, and with the conductive strip and contact member being normally in electrical contact with one another.

3,660,793
THERMOSTAT WITH MANUAL RESET
Edward G. Thesn, and Walter C. Kowalski, both of Mansfield, Ohio, assignors to Therm-O-Disc, Incorporated, Mansfield, Ohio
Filed Apr. 1, 1970, Ser. No. 24,605
Int. Cl. H01j *37/54;* **H01h** *37/70, 37/74*
U.S. Cl. 337—348 **4 Claims**



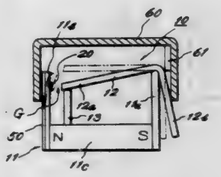
A structurally simple low cost manual reset thermostat is disclosed. The thermostat includes a one piece body and two terminal assemblies. The rivet of one terminal assembly connects the switch arm and a reset retainer. The switch arm retains a snap disc in its assembled position. Four guide projections with two on each side of the spring arm laterally locate the snap disc. A reset member is positioned by the guide projections and is arranged to engage the snap disc on opposite sides of the spring arm. Stops are provided to prevent overstressing of the disc by the reset member.

3,660,794
ELECTROPYROTECHNIC LINK
Henry M. Brizzolara, Allentown, Pa., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.
Filed May 7, 1970, Ser. No. 35,493
Int. Cl. H01h *37/76*
U.S. Cl. 337—401 **5 Claims**



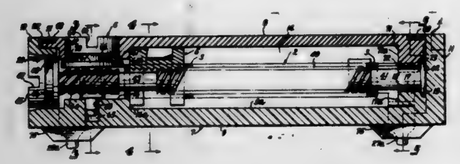
An electropyrotechnic link having two connectors held together by a ring of fusible material. When the ring is melted by heat, the two connectors separate. The heat may come from an external source such as a fire or from an electrically activated burner positioned so as to melt the ring if activated.

3,660,795
CONTACTLESS SWITCHING APPARATUS
Tunekazu Kobayashi, Kawaski, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan
Filed Sept. 8, 1970, Ser. No. 70,361
Claims priority, application Japan, Sept. 8, 1969, 44/85132; Sept. 9, 1969, 44/85721
Int. Cl. H01c *7/16*
U.S. Cl. 338—32 **7 Claims**



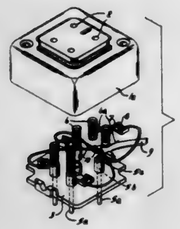
This contactless switching apparatus is comprised of a magnetic path having a U-shaped base of magnetic material, both ends whereof are made free, and a movable yoke which is put on one free end of the said base so that the inner end of the movable yoke can move inside both ends of the base, the said movable yoke being arranged so that the moving inner end of the said movable yoke may be opposite to the other free end of the said base to form a gap, either or both the movable yoke and one magnetic yoke of the base forming the said gap which are opposite to each other being made a bimetal yoke or bimetal yokes so that they bend in such a direction that the said gap may be narrowed when the base rises in temperature, a magneto-electric converting device being inserted in the said magnetic path so as to be actuated by the magnetic flux flowing in the magnetic path, and the converting device being connected to an external input power source and an external load.

3,660,796
RESISTOR WITH AT LEAST TWO POINTS OF MANIPULATION FOR ADJUSTMENT
Geoffrey Southwell, Waverly, Pa., assignor to Weston Instruments, Inc., Newark, N.J.
Filed Jan. 21, 1971, Ser. No. 108,354
Int. Cl. H01c 9/02
U.S. Cl. 338—180 7 Claims



Fully encased adjustable resistors, typically rectilinear potentiometers, characterized by having at least two points of manipulation for adjustment. In a typical embodiment, a lead screw-operated rectilinear potentiometer has the head of the lead screw exposed at one end of the housing and is provided with an additional adjusting member the head of which is exposed through the top of the housing, the lead screw being provided with a helical gear portion and the additional adjusting member having a helical gear portion meshed therewith.

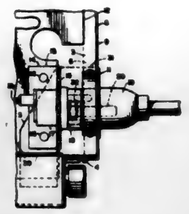
3,660,797
TELEPHONE CONNECTOR
Jerome Firestone, Mt. Vernon, N.Y., assignor to Saxton Products, Inc., Congers, N.Y.
Filed Nov. 9, 1970, Ser. No. 88,013
Int. Cl. H01r 13/12
U.S. Cl. 339—29 R 8 Claims



A cupped housing has an open side releasably closed by a cover. Male contacts project from the exterior of the cover and each have a portion projecting beyond the interior of the cover into the open side of the cupped housing. Helical springs are pushed onto the interiorly projecting portions of the contacts and each have an open face end registering with apertures provided for this purpose in the cupped housing portion opposite the cover.

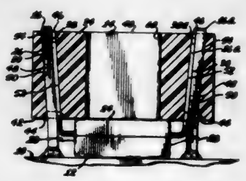
3,660,798
INTERLOCK DEVICES
Casimir C. Marasc, Chicago, Ill., assignor to Speed-O-Print Business Machines Corporation, Chicago, Ill.
Filed Dec. 11, 1970, Ser. No. 97,083
Int. Cl. H01r 13/44
U.S. Cl. 339—36 10 Claims

A mechanical interlock device having a member movable between one position effective to prevent the insertion of an electric plug into a socket and another position wherein it is ineffective to prevent such insertion, and wherein the



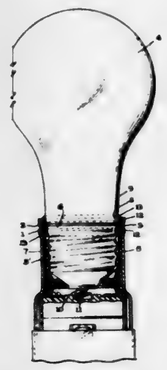
member affords a door latch when it is disposed in the aforementioned other position.

3,660,799
CONNECTOR DEVICE
William G. Tinkelenberg, Phoenix, and James D. Fredenberg, Glendale, both of Ariz., assignors to Honeywell Information Systems Inc.
Filed June 17, 1969, Ser. No. 833,986
Int. Cl. H01r 13/48
U.S. Cl. 339—61 M 2 Claims



A demountable connector for electrically and mechanically attaching a multi-lead electronic element to a wiring panel.

3,660,800
LAMP SEAL MEANS
Lewis Detch, 2133 Chalfant Street, Pittsburgh, Pa.
Filed Apr. 17, 1970, Ser. No. 29,466
Int. Cl. H01r 13/52
U.S. Cl. 339—94 L 10 Claims

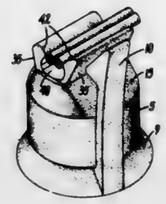


A sealing means primarily for incandescent electric lamps which serves to prevent, primarily, entrance of moisture, and also of other substances, into the lamp socket, and to insure against loosening of the lamp in, and its possible escape from, such socket while in use. The sealing means include, primarily, a resilient, and preferably compressible, sealing ring or collar, which may be molded from natural or synthetic rubber, and is adapted to seat between the outer end of the lamp socket and the glass envelope of the lamp bulb at the slight bulge just above the metal lamp base, and, if desired, the sealing function of the ring may be augmented by, and/or the ring secured to the envelope of the lamp bulb by a normally compressible, yieldable plastic substance, or composition, such, preferably, as a silicone adhesive which is commercially known as "RTV."

The sealing ring may be provided in one, or both, of its axial faces with a circumferential recess to receive, locate and partially confine the yieldable plastic substance, and it may also be provided with a circumferential, radially inwardly extending, groove in which may be confined a spring ring having the form either of a resilient wire ring or a coiled spring ring which serves to fill the groove and functions to maintain the desired circular form of the ring and its desired axial resiliency. If desired, the groove may be filled with a compressible plastic.

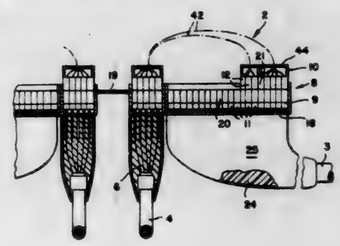
Thus, by these means, the lamp, when screwed home into circuit-establishing assembly in its socket, will be resiliently locked in such assembly and sealed against the entrance primarily of moisture, and other substances, into the socket. Moreover, the resilient nature of the sealing means assures a continuable ability of it to adjust to changes in atmospheric conditions, particularly as reflected in variations of temperature and moisture content, to thereby maintain its sealing effect during the life of the lamp and to enhance such life, and the life of the socket.

3,660,801
ONE-PIECE SOCKET FOR DECORATIVE LIGHT
Bernard Paulius, Palos Hills, Ill., assignor to Noma-World Wide Inc., Chicago, Ill.
Filed Jan. 11, 1971, Ser. No. 105,399
Int. Cl. H01r 11/20
U.S. Cl. 339—97 L 10 Claims



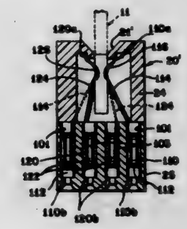
A one-piece socket for a decorative light, such as a Christmas tree light, is provided. The socket is of the pin-tap terminal type and employs a pair of resilient gripper arms at the base of the socket which are adapted to flex apart to accommodate an electrical wire and to retain the wire in firm connection with the pin-tap terminals when the wire is positioned in a wire receiving channel defined by the arms. The arms are formed with guide surfaces which direct the wire into the channel and which also aid in spreading the arms apart when the wire is forced thereagainst so as to facilitate the positioning of the wire in the channel.

3,660,802
CONNECTING ARRANGEMENT FOR MULTICONDUCTOR CABLES
Markus Staudt, Basel, Switzerland, assignor to Neidecker & Co., Basel, Switzerland
Filed Mar. 20, 1970, Ser. No. 21,458
Claims priority, application Switzerland, Mar. 17, 1969, 3943/69
Int. Cl. H01r 23/10, 23/52
U.S. Cl. 339—126 RS 10 Claims



A trunk cable has its end fitted with a multicontact plug that is held in a frame member of a connecting arrangement. A similar multicontact plug is fitted to each branch cable, and is held next to the trunk plug with all the plug contacts exposed on one face of the frame member. At least one jack body can be fitted over all the exposed contacts to couple the trunk cable conductors to those of the branch cables. A cover is hermetically attached to the frame member to cover the jack body and all of one face of this frame member. The plug casings have their edges soldered together and the wires leading away from them are potted with insulating resin in lead shells or synthetic resin shells which are sealed to the casings so that the entire coupling arrangement is fully sealed, while the connections can be easily changed by removing and replacing the upper plug bodies.

3,660,803
ELECTRICAL CONNECTORS
Frank E. Cooney, Manhattan Beach, Calif., assignor to The National Cash Register Company, Dayton, Ohio
Filed Oct. 8, 1969, Ser. No. 864,591
Int. Cl. H05k 1/07
U.S. Cl. 339—176 MP 2 Claims



A connector comprised of a body member formed with a longitudinal slot along the upper surface thereof for receiving a circuit card. A plurality of contact elements, arranged in sets of four, are disposed within the body member along the longitudinal slot. In each set of contact elements the upper portions of two of the elements are disposed to form a pair of adjacent coplanar contacts accessible on one side of the longitudinal slot, the upper portions of the other two of the elements are disposed to form an opposing pair of adjacent coplanar contacts accessible on the other side of the longitu-

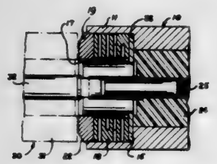
dinal slot, and the lower portions of the four elements are disposed so as to form four contacts accessible on the lower surface of the body member in openings formed therein so as to be aligned in a direction transverse to the longitudinal slot.

3,660,804

HIGH FREQUENCY COUPLING DEVICE

Charles J. Bebber, Jr., Commack, N.Y., assignor to The Narda Microwave Corporation, Plainview, N.Y.

Filed Apr. 17, 1968, Ser. No. 722,006
Int. Cl. H01r 13/24
U.S. Cl. 339—177 3 Claims



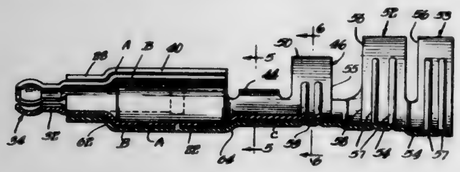
A device for coupling high frequency signals, utilizing a non-inductive spring member fabricated from solid tubular material wherein slots are made through a substantial portion of the tubular material in planes orthogonal to the axis of the tube, with successive cuts originating at different radial locations.

3,660,805

SHIELDED CABLE CONNECTOR AND METHOD OF MAKING THE SAME

Cletus G. McDonough, Elmhurst, Ill., assignor to Molex Incorporated, Downers Grove, Ill.

Filed Aug. 5, 1970, Ser. No. 61,185
Int. Cl. H01r 17/06, 17/18
U.S. Cl. 339—183 8 Claims



Complementary male and female connectors are provided for shielded cables such as audio cables. Each connector comprises inner and outer sheet metal conductors with a sheet of insulation laminated to the outer conductor and located between the two conductors to insulate the two conductors. Each connector has portions for crimping respectively the center conductor and shield of a shielded cable. A method of making the connector is provided whereby a sheet of metal, a part of which has the insulating sheet laminated thereto, may be blanked and folded to bring together an outer laminated conductor part and an inner non-laminated conductor part so that the insulation is sandwiched between the two conductor parts, following which the inner and outer parts are shaped into a configuration which includes a tubular body having a longitudinal seam.

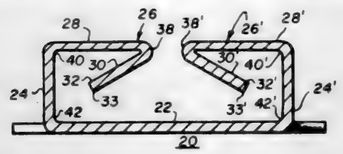
3,660,806

CONNECTOR

Joseph J. De Stephan, Edison, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Oct. 7, 1970, Ser. No. 78,684
Int. Cl. H01r 13/12
U.S. Cl. 339—256 SP 11 Claims

The invention is directed to an improved, integral female electrical connecting device having unique, reversibly formed resilient inturned fingers depending from associated upstanding side walls and overhanging a generally planar base portion, establishing a multiplicity of interfaces arranged to provide firm electrical and mechanical contact with a selectively dimensioned mating tab resiliently encompassed therewithin. The base, side walls, and the portions of the clasp fingers may be so proportioned relative to each other as to advantageously provide a flexing zone at each of the juncture



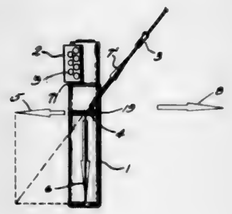
between adjacent portions. Each of the inturned free ends of the clasp fingers are provided with at least one sharp edge arranged to provide full linear contact with an associated mating tab. The basic structure may be suitably modified by the addition of side tabs and base ribs to increase the contact areas thereof. A generally centrally disposed upstruck portion of the base of the device may be arranged to cooperably detachably engage a complementary mating recessed portion in the mating tab.

3,660,807

TOWED BODY VERTICAL ATTITUDE STABILIZATION SYSTEM

Donald R. Depew; Karl L. Greesman, both of Jackson, Mich., and Daniel C. Probert, Key West, Fla., assignors to Sparton Corporation, Jackson, Mich.

Filed Mar. 14, 1968, Ser. No. 713,167
Int. Cl. B63b 21/00
U.S. Cl. 340—3 T 12 Claims



A stowable, automatically deployable system to stabilize a body and which functions passively to maintain a vertical body attitude within a dynamic fluid and to traverse a substantially vertical path while in free descent in the fluid, and which enables the vertical stabilization of an elongated body about its longitudinal axis while being towed through a viscous medium, said system comprising fins and a towing bridle assembly; with the shape, size and body placement of such fins in conjunction with the bridle configuration and body attachment thereof being precisely integrated to affect dihedral effect fluid stabilization.

3,660,808

ASSEMBLY FOR RECOGNIZING UNDERWATER ACOUSTIC SIGNALS

Kern M. Bowyer, Wilmington, and David L. Coursen, Newark, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

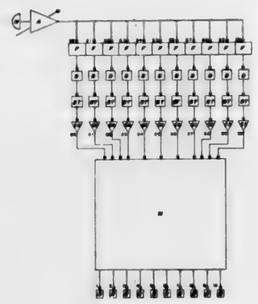
Filed Aug. 24, 1962, Ser. No. 219,342
Int. Cl. G01s 3/00
U.S. Cl. 340—5 R 4 Claims

1. An assembly for determining and indicating the difference between the periods of a pair of pressure pulse sequences received by a pressure pulse receiver situated in the ocean at a location non-normal to a longitudinal array of spaced explosive elements detonated in the ocean in a manner such as to form two parallel detonation trains travelling in opposite directions relative to each other, the period of each pressure pulse sequence received at any angle from said array varying according to said angle and being the same at a normal angle to said array, the periods of pressure pulse sequences expected to be received at different angles from said array being known, and the difference between periods of a pair of pressure pulse sequences received at any angle from said array being equal to $2(d/C)\cos\phi$ where d is the distance between explosive elements in said array, C is the speed of sound in water, and ϕ is the angle between the receiver and the longitudinal axis of said array, which assembly comprises

a. a pressure transducer;

b. an amplifier with automatic gain control coupled to said pressure transducer;

c. a frequency separator coupled to said amplifier and having n frequency-band elements each of which passes a narrow band of frequencies, said frequency-band elements collectively passing all frequencies expected



at all angles from said array and being so arranged that their center frequencies provide equal period increments Δt between successive frequency band elements, the period corresponding to the lowest center frequency being T, and the periods corresponding to the successively higher center frequencies of successive elements being $T-\Delta t$, $T-2\Delta t$, $(n-1)\Delta t$;

d. an integrating device coupled to each of said frequency-band elements;

e. a triggering device coupled to each integrating detector;

f. a sorting circuit coupled to said triggering devices, said sorting circuit having a plurality of conductors for carrying an output signal therefrom when signals are received from at least two different triggering devices, the number of said conductors being equal to the number n of said frequency-band elements in said frequency separator less one, one of said conductors carrying an output signal when the signals received are from two different frequency-band elements whose center frequencies correspond to periods which differ from each other by Δt, another by $2\Delta t$, etc. through $(n-1)\Delta t$;

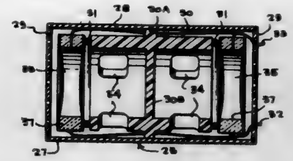
g. a multi-response circuit having $(n-1)$ response mechanisms each coupled to one output conductor from said sorting circuit, wherein n is as defined above.

3,660,809

PRESSURE SENSITIVE HYDROPHONE

Raymond H. Pearson, Richardson, Tex., assignor to Whitehall Electronics Corporation, Richardson, Tex.

Filed June 29, 1970, Ser. No. 50,707
Int. Cl. G01v 1/38
U.S. Cl. 340—8 S 9 Claims



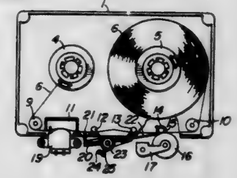
A marine hydrophone for producing electrical signals responsive to sound pressure waves in water, and especially adapted for use in towed seismic streamers. The hydrophone includes an annular piezoelectric ring with electroded inner and outer surfaces and a pair of thin circular diaphragms covering the opposite ends of the ring. The diaphragm portions within the inner surface of the ring are permanently formed inwardly toward each other. An assembly of a pair of such hydrophones supported by resilient rings on opposite ends of an axially elongated support cylinder mounted within an cylindrical enclosure having perforated end caps and mounted by a resilient tube between streamer spaces is also disclosed.

3,660,810

TAPE TERMINATION ALARM DEVICE

Tetsuji Yoshii, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 9, 1970, Ser. No. 17,615
Claims priority, application Japan, Mar. 13, 1969, 44/23752; 44/23753
Int. Cl. G08b 19/00
U.S. Cl. 340—259 6 Claims



In a magnetic tape recording and/or reproducing apparatus, a device for giving an alarm sounds when the magnetic tape runs out in a tape reel. The device comprises a tension change sensing element adapted to sense a change in tension of the tape, a sound producing member and a rotating body which keeps on rotating even after the termination of the tape feeding, and is operative in such a manner that when the tape feeding is terminated, the tension change sensing element is displaced as a result of a change in tension of the tape at the end portion thereof, thereby bringing the sound producing member into engagement with the rotating body to produce an alarm sound.

3,660,811

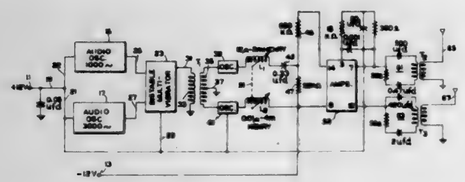
PROXIMITY WARNING TRANSMITTER FOR EMERGENCY VEHICLES

Evelyn W. Vail, and John Popik, both of Columbus, Ga., assignors to Alert, Inc., Columbus, Ga.

Filed Nov. 12, 1969, Ser. No. 875,668
Int. Cl. G08c 17/00
U.S. Cl. 340—33 6 Claims

A transmitter, carried by an emergency vehicle, transmits directional jamming radiation to operating receivers of pas-

senger vehicles in its path. Different fixed frequency audio signals alternately modulate both an AM carrier and an FM carrier to provide a wobbling sound at either AM or FM receivers. The carrier frequencies are varied through their respective broadcast bands to scan up and down their



frequency spectrums so that the alarm is picked up by any receivers in the directional path of radiation regardless of the station to which it is turned. The carriers are caused to scan their broadcast spectrums by imparting reciprocating motion to slugs in inductor tuners in circuit with the respective oscillators, thereby varying the carrier frequencies.

3,660,812
ROAD TRAFFIC CONTROL SYSTEM

Hiroshi Inose; Hiroya Fujisaki, and Takashi Hamada, all of Tokyo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation-in-part of application Ser. No. 631,056, Apr. 14, 1967, now abandoned. This application May 1, 1970, Ser. No. 33,826
Int. Cl. G08g 1/08
U.S. Cl. 340—35 9 Claims

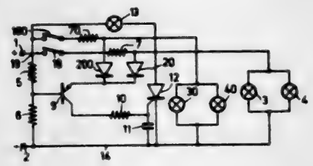


This invention provides an apparatus for effecting optimal road traffic control of a road network in a traffic area, such a traffic area being divided into a plurality of sub-areas and a district controller being provided in each sub-area. The district controller is provided to control the traffic in the sub-area, road network, establishing a preferential offset for two-way traffic for a tree pattern of the road network which includes no closed road loop, by considering the offset effect quantum for each road section between signals, and a split for each intersection and a common cycle length thereby minimizing the delay time in the sub-area as based on information from traffic detectors on the road and other road conditions. A Central Controller is provided for controlling traffic of the entire road network in the area by coordinating the district controllers as based upon the traffic pattern of the entire area.

3,660,813
CIRCUIT ARRANGEMENTS FOR THE INDICATION OF LAMP FAILURE

Paul Rumpf, Kew East, Australia, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 7, 1970, Ser. No. 26,205
Claims priority, application Australia, Apr. 8, 1969, 53156
Int. Cl. B60q 1/00
U.S. Cl. 340—52 R 11 Claims

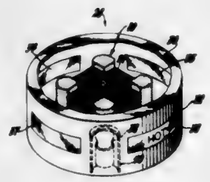


An electric warning system for a pair of parallel-connected lamps includes a warning lamp in series with a thyristor across the system input terminals. A resistor is connected in a first series circuit with the lamps and in a second series circuit with a transistor and a capacitor across the input terminals. The transistor is biased to cut-off by means of second and third resistors in series across the input terminals. The circuit components are arranged so that failure of either lamp turns the transistor "on" to charge the capacitor. The capacitor voltage is coupled to the thyristor control electrode to trigger the thyristor "on" when a given capacitor voltage level is achieved. A switch is provided in the circuit so as to remove the input voltage from all of the circuit components except the thyristor and the warning lamp.

3,660,814
VEHICLE CONDITION RESPONSIVE MONITORING SYSTEM

Douglas I. Fales, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 20, 1970, Ser. No. 91,491
Int. Cl. G08b 19/00
U.S. Cl. 340—52 F 4 Claims

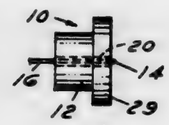


Apparatus for providing information as to a plurality of conditions using a single air core gauge. Each condition being monitored controls a switch that in turn controls the energization of at least one winding, the magnetic fields generated by the windings forming a resultant magnetic field that controls the orientation of an indicia-bearing rotatable disc. When one or more windings are energized a lamp illuminates the indicia that is located at a certain position by the disc so as to indicate the status of the condition which caused energization of the winding. A steering diode network permits the monitoring of more conditions than the number of windings employed in the gauge. A warning network provides an immediate indication of a change in a condition being monitored regardless of the position of the rotatable disc.

3,660,815
ABRASION WEAR WARNING DEVICE FOR VEHICLE BRAKES

Donald W. Rees, 12912 Leisure, Warren, Mich.

Filed Dec. 15, 1969, Ser. No. 885,170
Int. Cl. G08b 21/00
U.S. Cl. 340—52 A 7 Claims

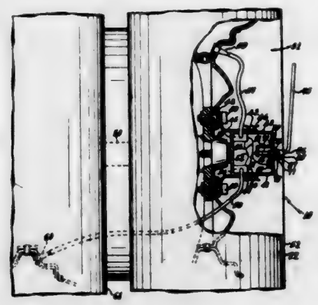


The present invention provides an abrasion wear warning device for indicating when a predetermined wear point has been reached in a monitored part undergoing wear by abrasion, comprising a sensor means which is generally closed and part of an indicator circuit, but which upon wear of the monitored part to the predetermined wear point is opened thereby causing an indicator to be activated and to produce some visual, audible or other sensible reaction display to warn that the predetermined wear point in the monitored part has been reached.

3,660,816
TIRE CONDITION INDICATING SYSTEM

Forrest E. Barber, 9255 4th Avenue, Jacksonville, Fla.

Filed Feb. 4, 1970, Ser. No. 8,543
Int. Cl. B60c 23/04
U.S. Cl. 340—58 14 Claims



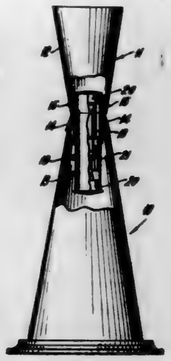
A low pressure indicating system for a vehicle including an electrical circuit having an indicator mounted on the frame and a switch pneumatically connected to the tire and responsive to a predetermined low pressure condition thereof. The switch is located within the tire rim cavity and rotatively connected to the tire assembly. A rotating brush is electrically connected to the switch and cooperates with a non-rotating shaft extending coaxial with the axle. An elongated electrical cable extends from the shaft outboard of the tire to the frame, such cable being rigid and extensible to permit upward and downward movement of the tire assembly with respect to the frame while inhibiting rotation of the shaft.

3,660,817
TRAFFIC MARKER HAVING GRAVITY SWITCH CONTROLLED HORN

Harvey E. Abrams, 56 Drewry Lane, Tappan, N.Y.

Filed Dec. 22, 1970, Ser. No. 100,630
Int. Cl. G08b 5/36, 5/38
U.S. Cl. 340—114 8 Claims

A conical type rubber traffic marker is converted into a bidirectional warning sound amplifier by installation of a horn or horns. A gravity switch is actuatable, in the event of



overturn, with the cone of traffic marker serving as a megaphone.

3,660,818
ELECTRO-OPTICAL MEMORY

Juan Jose Amodei, Langhorne, Pa., and Richard Williams, Princeton, N.J., assignors to RCA Corporation

Filed May 4, 1970, Ser. No. 34,118
Int. Cl. G11c 11/22, 13/04
U.S. Cl. 340—173 LS 10 Claims

Information is optically written onto the electrically charged surface of a transparent storage medium by directing light modulated with this information at this surface. The light partially discharges the charge and creates an electrical charge pattern which remains stored for long periods. The light either may be scanned across the surface to achieve sequential information storage or may be employed to write a large amount of information in parallel, for example in the form of a hologram. The stored information may be optically recovered by directing polarized light at the storage medium and employing a suitably oriented analyzer or, in the case of hologram storage, by wavefront reconstruction.

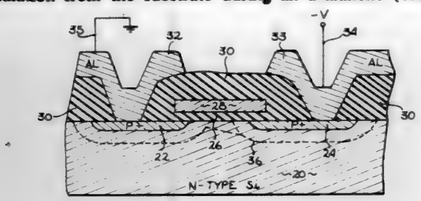
3,660,819
FLOATING GATE TRANSISTOR AND METHOD FOR CHARGING AND DISCHARGING SAME

Dov Frohman-Bentchkowsky, Los Altos, Calif., assignor to Intel Corporation, Mountain View, Calif.

Filed June 15, 1970, Ser. No. 46,148
Int. Cl. H01l 11/14
U.S. Cl. 317—235 R 9 Claims

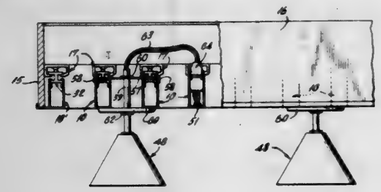
A floating gate transistor comprising a floating silicon or metal gate in a field effect transistor which is particularly useful in a read-only memory is disclosed. The gate which is surrounded by an insulative material such as SiO_2 is charged

by transferring charged particles (i.e., electrons) across the insulation from the substrate during an avalanche (breakdown) condition in the source or drain junctions of the transistor.



3,660,820
LIGHTING FIXTURE DISPLAY AND SUPPORTING STRUCTURE

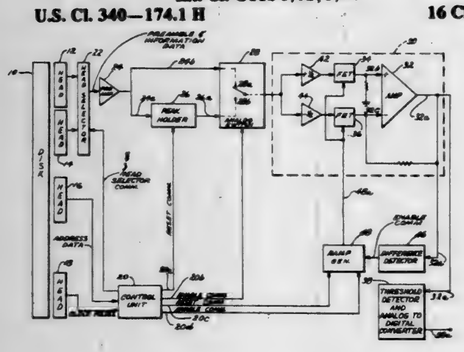
Milton Liberman, 65 Seawane Rd., East Rockaway, N.Y.
Filed May 6, 1970, Ser. No. 35,028
Int. Cl. H01r 13/60
U.S. Cl. 339—22 B 6 Claims



A lighting fixture supporting and display structure having a plurality of transverse members, a plurality of longitudinal channels removably supported by said transverse members by interlocking connector means and at least certain of said channels have electric outlets for energizing fixtures supported by said channels.

3,660,821
DISC FILE AGC CIRCUIT

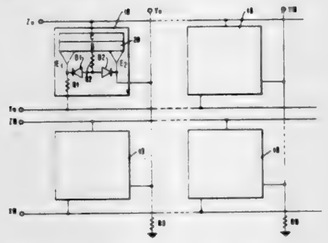
Gunter R. Weber, Newbury Park; Charles E. Bickel, Thousand Oaks, and Richard W. Krueger, Oxnard, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.
Filed June 17, 1970, Ser. No. 46,912
Int. Cl. G11b 5/02, 5/44
U.S. Cl. 340—174.1 H 16 Claims



In a storage system having a moving magnetic recording surface, a method and apparatus for providing constant amplitude readback information data, regardless of the initial amplitude of the information data when read from the magnetic recording surface, utilizes an AGC feedback loop between a readback amplifier's output and input. Preamble data, preceding each recorded segment of information data is sampled and a signal indicative of the peak value thereof is fed into the amplifier. The amplifier output signal is compared with a reference signal representing the desired peak value of the information data readback. As long as a difference is detected, a signal is generated to vary the amplifier gain until it reaches a value wherein the difference is eliminated. Once the difference is eliminated, the gain is maintained at that value so as to insure constant information data readback amplitude for the segment of information data.

3,660,822
VARIABLE BREAKDOWN STORAGE CELL WITH NEGATIVE RESISTANCE OPERATING CHARACTERISTIC

Evan E. Davidson, Wappingers Falls, and Richard L. Moore, Liverpool, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 15, 1969, Ser. No. 885,152
Int. Cl. G11c 11/40; H03k 17/24
U.S. Cl. 340—173 NR 4 Claims

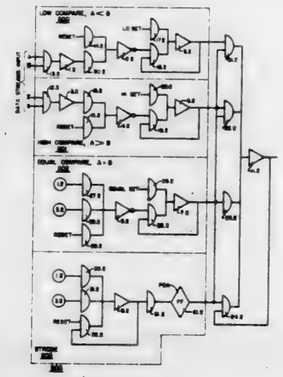


This application discloses a storage cell which employs a single gated multi-emitter semiconductor device that exhibits a negative resistance operating characteristic. The semiconductor device is biased to have two stable operating states on this negative resistance characteristic and is addressed by a word line connected to one of its emitters and a bit line connected to the other of its emitters. A parasitic transistor is formed by the two emitters and the gating layer of the semiconductor device. By application of half-select pulses to the word and bit lines, the parasitic transistor is broken down to cause a temporary current flow in the gating region of the semiconductor device. While this current flows in the gating region, the operating characteristic of the semiconductor device is changed so that there is only one stable operating state for the semiconductor device. The operation of the semiconductor device therefore shifts to this single operating state. When the temporary current flow ends the semiconductor device will be in a low voltage, high current stable state along the negative resistance characteristic irrespective of the operating state of the semiconductor device prior to the application of the half select pulses. When such a storage cell is manufactured in monolithic form, very high cell densities and extremely high operating speeds are obtainable.

3,660,823
SERIAL BIT COMPARATOR WITH SELECTABLE BASES OF COMPARISON

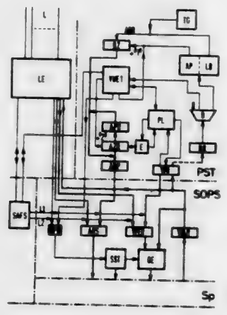
John A. Recks, Lincoln, Mass., assignor to Honeywell Inc., Minneapolis, Minn.
Filed July 20, 1970, Ser. No. 56,595
Int. Cl. G06f 7/02
U.S. Cl. 340—146.2 8 Claims

A serial by bit comparator device is disclosed for determining the relative magnitude of two binary numbers. The comparator comprises a plurality of storage means for storing interrogating bits therein. Each storage means represents a proposition relative to the numbers to be compared, and the presence of an interrogating bit in a storage means signifies that the proposition for which that storage means represents is true. The binary numbers to be compared are fed into the comparator, and depending on their relative magnitude, permit or inhibit the continued storage of the interrogating bit. Means are provided to sense in which of the storage means there still remains an interrogating bit, hence determining which proposition is true, or if a given proposition is true.



3,660,824
METHOD AND CIRCUIT ARRANGEMENT FOR THE SUPERVISION OF CONNECTIONS IN STORAGE-PROGRAMMED TELECOMMUNICATION SWITCHING INSTALLATIONS FOR BINARY, CODED MESSAGES

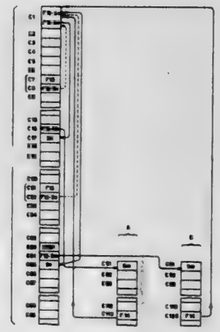
Hans-Ulrich Meder, and Bernhard Schaffer, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Feb. 5, 1970, Ser. No. 8,967
Claims priority, application Germany, Feb. 5, 1969, P 19 05 659.8
Int. Cl. G06f 9/02
U.S. Cl. 340—172.5 19 Claims



A method and apparatus for the supervision of connections in storage-programmed telecommunication switching installations for binary coded messages is described. The information identifying transmitters to be supervised is recorded at permanently assigned storage locations such that the assigned location will be checked first. Only when the stored information demands supervision, the bit combination which is contained in the word stored therein, is checked in a program control and changed. The changed bits are recorded in each case during a single storage cycle through operations similar to the logic OR operation, taking place at the store itself, the changed bits being recorded into the assigned storage location. Therefore, only those transmitter cells are tested which are to be supervised, and erroneous over-writing is avoided.

3,660,825
ELECTRONIC COMPUTER

Giovanni De Sandre, Seclle, Italy, assignor to Ing. C. Olivetti & C.S.p.A., Ivrea, Italy
Continuation of application Ser. No. 717,110, Mar. 29, 1968, now abandoned. This application Feb. 5, 1971, Ser. No. 113,060
Claims priority, application Italy, Apr. 1, 1967, 51164 A/67
Int. Cl. G06f 9/16; G05b 19/22; G06f 15/02
U.S. Cl. 340—172.5 4 Claims



In a program controlled electronic computer the address of the return point (or main program re-entry storage location) from a program subroutine to the main program is specified by information in a fixed address program storage location, which location is loaded by a special instruction placed in the main program ahead of the branching point. Each subroutine may be contained in an individual record card, which upon being fed into the computer causes said subroutine to be executed.

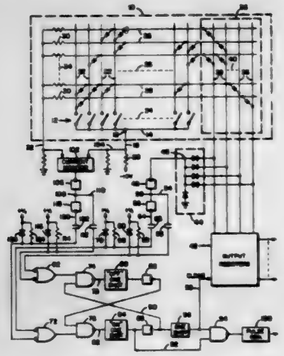
3,660,826
NOISE PROTECTION AND ROLLOVER LOCKOUT FOR KEYBOARDS

Stanley J. Liss, Minneapolis, Minn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Oct. 2, 1970, Ser. No. 77,467
Int. Cl. G11c 11/36
U.S. Cl. 340—173 R 5 Claims

An electronic circuit for use with an operator keyboard for preventing erroneous data generation which may otherwise

occur because of contact bounce or by the substantially simultaneous closure of more than one key at a time. A pair of cross-coupled monostable multivibrators (one-shots) are coupled by coincidence circuits to the keyboard and keyboard encoder so as to control the generation of "-Keyboard Ready" control pulses.

The first contact closure of a single key causes one of the one-shots to trigger on and to generate a single "Keyboard Ready" pulse. It also locks out the second one-shot circuit

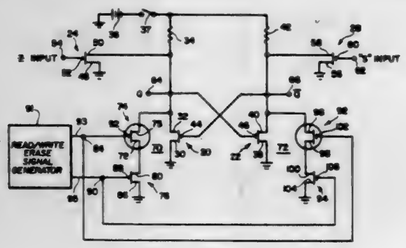


and prevents and subsequent triggering pulses caused by contact bounce from reactivating the first one-shot and producing additional "Keyboard Ready" control pulses until the first onetshot has again reverted to its stable state. Additionally, a monitor circuit is provided which senses whether more than one key on the keyboard is simultaneously depressed. This monitor circuit is coupled to the above described circuitry and prevents the generation of "Keyboard Ready" control pulses until a single key condition is restored.

3,660,827
BISTABLE ELECTRICAL CIRCUIT WITH NON-VOLATILE STORAGE CAPABILITY

Andrew C. Tickle, Chatsworth, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Sept. 10, 1969, Ser. No. 856,607
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 FF 23 Claims

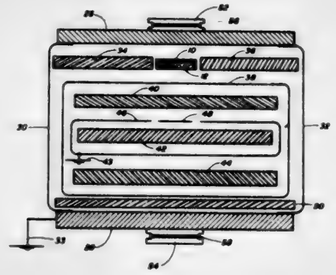


A bistable electrical circuit, such as a flip-flop, incorporating insulated-gate field-effect transistors as non-volatile memory elements. Read and write circuitry couple the memory elements to amplifying (switching) stages of the bistable circuit such that the state of the flip-flop, at the time a write signal is applied to the memory elements, is non-volatilely stored. Upon application of a read signal the flip-flop is initialized to a state which is a function of the state of the flip-flop during the writing mode of operation. Data storage is maintained in the absence of all applied power to the bistable electrical circuit.

3,660,828
METHOD AND APPARATUS FOR RECORDING TRANSIENT SIGNALS

Henry R. Irons, Adelphi, and Leonard J. Schwee, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Jan. 14, 1970, Ser. No. 2,757
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF 9 Claims

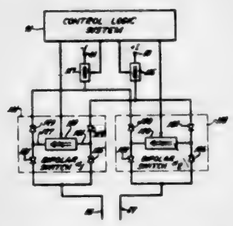


A method and apparatus for recording transient signals of extremely short duration on a thin film medium. A uniaxially anisotropic film having easy and hard axes of magnetization is located adjacent an input signal conductor and a scanning conductor. The scanning conductor is energized to produce a high intensity field which sweeps along the film parallel to its hard axis, while the input conductor applies the signal to be recorded to the film along its easy axis. The film may be exposed to a constant gradient field to insure that the recording faithfully represents the amplitude of the input signal.

3,660,829
BIPOLAR CURRENT SWITCHING SYSTEM

George H. Wells, Santa Ana, and Perry B. Persons, Irvine, both of Calif., assignors to Technology Marketing, Incorporated, Santa Ana, Calif.

Filed July 15, 1970, Ser. No. 55,054
Int. Cl. G11c *5/02, 11/06*
U.S. Cl. 340—174 TB 5 Claims

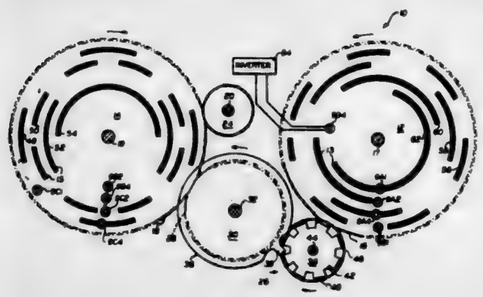


A current steering system is described in the context of a multi-plane magnetic core memory stack. The system is designed to control a given end of a set of core drive lines and includes a pair of bipolar switches for each pair of lines. Each bipolar switch includes two diode pairs, each pair being connected in series through a common unipolar switch to form two switchable unidirectional current paths for each bipolar switch. One current path from each bipolar switch is connected between respective ones of their associated pair of drive lines and a switchable current source of a given polarity. The remaining two current paths of the pair of bipolar switches are connected between the same two lines and a switchable current source of the opposite polarity. In this way both bipolar switches participate in controlling the flow of current in each of a pair of drive lines.

3,660,830
MULTI-ELEMENT SHAFT ENCODER INCORPORATING A GENEVA DRIVE

Fredrick W. Osborn, Purdy's Station; Geoffrey S. Hedrick, Bedford, and William A. Prause, Bedford, all of N.Y., assignors to Lear Siegler, Inc., Armonk, N.Y.

Filed Aug. 18, 1969, Ser. No. 851,020
Int. Cl. G08c *9/06*
U.S. Cl. 340—204 5 Claims

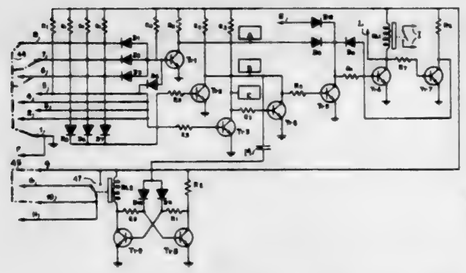


Digital encoder for an input variable represented by rotation of a shaft, as for encoding the altitude reading of an altimeter, comprising a pair of encoder discs having arcuate tracks or bit paths bearing rotational position indicia, and means for sensing the indicia, one of the discs being driven at a relatively low average speed by a geneva drive interposed between the input shaft and the low-speed disc. The low-speed disc carries higher order or coarse data. Using transparent encoder discs having opaque tracks thereon in the form of a conventional gray code, duplication of tracks having the same form but differing in phase is eliminated by utilizing two pickups separated at appropriate angular intervals along a single track. Where one cycle is complementary to another, two pickups may be used with a single track, one of the signals being fed through an inverter to obtain the proper resultant signal.

3,660,831
ELECTRONIC ANTITHEFT DEVICE USING AN ELECTRONIC SAFETY LOCK

Maurilio Nicola, and Ezio Luciano, both of Manta, Cuneo, Italy, assignors to Mazzoelectronics, S.n.c. di Luciano' & Nicola, Manta, Cuneo, Italy

Filed Apr. 2, 1970, Ser. No. 25,231
Claims priority, application Italy, Apr. 2, 1969, 51269 A/69
Int. Cl. E05b *45/10*; H01h *9/28, 27/00*
U.S. Cl. 340—274 12 Claims

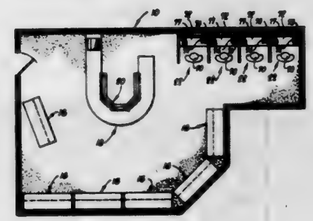


An antitheft device operated by a key containing electronic contacts insertable into a lock comprising electronic circuitry, the contacts being uniquely arranged to actuate the electronic circuitry. The keyhole has two positions such that insertion of the key into the first position actuates the circuitry into a pre-alarm state wherein any unauthorized tampering with the system will sound an alarm. Insertion of the key into the second position deactivates the electronic circuitry.

3,660,832
APPARATUS FOR MERCHANDISING SMALL MERCANTILE ITEMS

Thomas C. Heshall, P. O. Box 14100, Oklahoma City, Okla.

Filed Mar. 19, 1970, Ser. No. 21,124
Int. Cl. G08b *21/00*
U.S. Cl. 340—280 6 Claims



A plurality of display cases where each display case includes a door which can be moved from an open to a closed position and a plurality of separate compartments therein for receiving the mercantile items. A locking device is secured to each display case and each locking device is adapted to move into and out of a locking engagement with the door, such that the door may be locked in a closed position. A control panel is disposed remotely from the display cases and includes a plurality of lock actuating devices, each of which are connected to one of the locking devices in a display case, such that a particular lock actuating device can actuate the locking device in the case, thereby moving the locking device into and out of a locking engagement with the door; and a plurality of lock indicator devices, each of which is connected to one of the lock actuating devices, and is adapted to provide a visual indication that the locking device has been moved out of a locking engagement with the door.

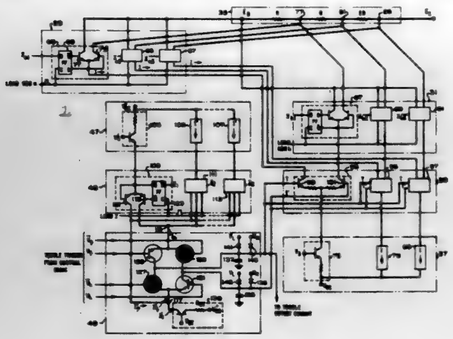
3,660,833
SYSTEM FOR PRODUCING CHARACTERS ON A CATHODE RAY TUBE DISPLAY BY INTENSITY CONTROLLED POINT-TO-POINT VECTOR GENERATION

Walter T. Bielwas, Jr., 1056 Brown Road, Somerville, N.J.; Anthony R. Kaseta, 6 Runnymede Road, Clark, N.J., and Rene Colen, 525 Stony Brook Drive, Somerville, N.J., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 11, 1970, Ser. No. 36,054
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A 12 Claims

An alpha-numeric character generating system receives digital codes representing characters and controls a CRT to trace a plurality of vectors which in combination form the characters displayed. A read-only memory provides in sequence a plurality of sets of X, Y and Z parameters for each character. Succeeding X and Y parameters are each stored in corresponding alternate registers. The sets of X and Y parameters define the end points of the vectors forming a character. Two digital to analog converters responsive to the X and Y parameters, respectively, provide signals for deflecting the CRT beam. The inputs of the digital to analog converters are transferred between corresponding alternate registers to cause the CRT beam to trace from one vector end

point to the next in sequence. A toggle circuit responsive to the Z parameter associated with each set of X and Y parame-



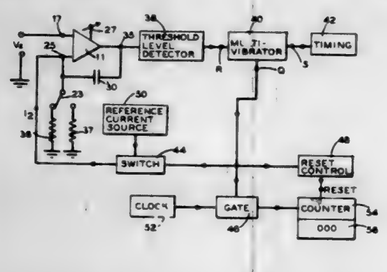
ters controls the transfer time between registers and thus the brightness of each vector traced on the CRT screen.

3,660,834

ANALOG CIRCUIT FOR AN ANALOG-TO-DIGITAL CONVERTER OF THE DUAL-SLOPE INTEGRATING TYPE

Clement Picot, Massy, France, assignor to Societe D'Instrumentation Schlumberger, Paris, France

Filed May 25, 1970, Ser. No. 40,173
Claims priority, application France, May 28, 1969, 6917334
Int. Cl. H03k *13/20*
U.S. Cl. 340—347 NT **5 Claims**



The analog circuit portion of an analog-to-digital converter of the dual-slope integrating type is comprised of a single, high gain differential amplifier having signal inverting and signal noninverting inputs and an integrating capacitor coupling the amplifier output to the inverting input. Analog signal is applied to the noninverting input to charge the capacitor and reference signal is selectively applied to the inverting input to discharge the capacitor. The range of measurement is determined by a resistor having one end connected to the amplifier inverting input and the opposite end connected to a constant potential source.

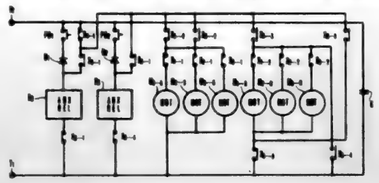
3,660,835

DESTINATION DISPLAY APPARATUS

Ishi Habuka; Kazuko Habuka, and Takashi Habuka, all of No-23-8, 3-chome, Sengoku, Bukyo-ku, Tokyo, Japan

Filed Apr. 7, 1970, Ser. No. 26,223
Int. Cl. G08b *23/00*
U.S. Cl. 340—325 **2 Claims**

Destination display webs mounted on various portions of a vehicle are operated in the same manner by providing a plurality of position detection elements for respective display sections of the display webs, a plurality of proximity switches — associated with respective webs to detect position detection elements and a control circuit responsive to the output



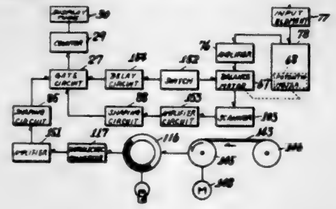
from the proximity switches to stepwise move the display webs.

3,660,836

DATA CONVERTER

Taro Nakatani; Masaki Nishimoto, both of Kobe; Hiromi Segawa, Nishinomiya, and Hiroshi Yamamoto, Osaka, all of Japan, assignors to Toa Tokushu Denki Kabushiki Kaisha, Osaka, Japan

Filed Mar. 17, 1970, Ser. No. 20,335
Claims priority, application Japan, Oct. 14, 1969, 44/82064; Mar. 17, 1969, 44/20712
Int. Cl. G08c *9/06*
U.S. Cl. 340—347 R **11 Claims**



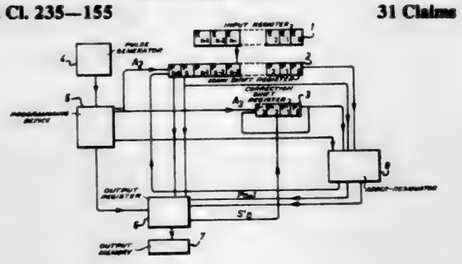
A data converting apparatus cooperating with a function pattern containing information of a given function; the scanner is to be actuated a distance corresponding to the axis of the independent variable and the corresponding value on the function pattern is detected for conversion to provide a numerical readout.

3,660,837

METHOD AND DEVICE FOR BINARY-DECIMAL CONVERSION

Jean Pierre Chinal, 6, Rue Felicien-David, Paris 16 , Seine, France

Continuation of application Ser. No. 594,873, Dec. 16, 1966, now abandoned. This application Aug. 10, 1970, Ser. No. 62,637
Int. Cl. H03k *13/24*
U.S. Cl. 235—155 **31 Claims**



A method for conversion of a binary number to the decimal system utilizing division of the binary number by 2 with storage in memory of the remainder corresponding to the binary figure of smaller order of the number and a sequence of operations on the quotient to effect division by 5

so as to obtain at each sequence a number associated with the quotient of successive divisions by 10 of the number to be converted, and a number associated with the remainder of this same division, the remainder then constituting a decimal figure of the converted number.

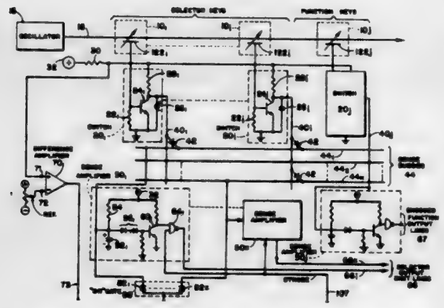
A conversion device constituted by a counter of elementary times or a clock, an input register with n bits positions, a main shifting register with $n + 2$ bits positions, a correction shifting register with four positions of bits for formation of the correction in finding the true quotient of division by 5, a series adder with variable connections and a carry-over trigger device for establishing the above connections during the course of the cycle of operation and for sequencing the device, a programming device and an output register for presentation of the decimal figures.

3,660,838

MULTIPLE POINT SWITCHING APPARATUS

Donald C. Gove, Manchester; Barry W. Mullins, and Edmund G. Rousseau, both of Chelmsford, all of Mass., assignors to Control Devices Inc., Woburn, Mass.

Filed Apr. 2, 1970, Ser. No. 25,088
Int. Cl. G08c *9/02*
U.S. Cl. 340—365 **11 Claims**



A multiple point switching array employs a plurality of keys for effecting a variable capacitance coupling between an oscillator and oscillation-responsive semiconductor switching circuits. The output of the semiconductor switches are encoded onto a plurality of sense buses, and connected therefrom to output digit lines via a plurality of sense amplifiers.

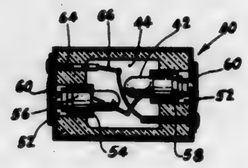
A strobe circuit is provided to simultaneously enable the sense amplifiers after their switching thresholds have been exceeded, and circuitry is employed to inhibit all outputs when more than one key is actuated at any one time.

3,660,839

REMOVABLE ANNUNCIATOR LAMP BLOCK

Samuel Wittman, and Marcel Wittman, both of Lake Drive, Bethlehem, Conn.

Continuation of application Ser. No. 726,916, May 6, 1968, now abandoned. This application Oct. 16, 1970, Ser. No. 81,490
Int. Cl. G08b *5/00*
U.S. Cl. 340—381 **5 Claims**



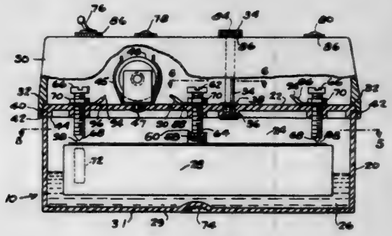
An annunciator lamp block which includes a color filter laminated thereto, indicia markings on said filter, one or more lamps within the lamp block, and spring contacts between the lamps and the annunciator circuit.

3,660,840

LEVEL INDICATOR DEVICE

James Michael Piofchan, 15410 Rockdale Ave., Detroit, Mich.

Filed May 25, 1970, Ser. No. 39,970
Int. Cl. G01f *23/00*
U.S. Cl. 340—421 **5 Claims**



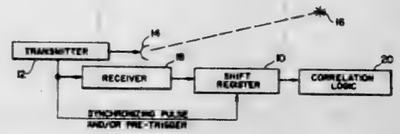
A reservoir having a float therein buoyed by a liquid into engagement with a center pivot point. Electrical contacts on the four corners of a cross-shaped member carried by the float are engageable with four associated contacts fixed to the reservoir and each connected to a signal light such that when the reservoir is not level one or more of the lights are energized thereby indicating the direction of inclination of the reservoir.

3,660,841

APPARATUS AND METHOD FOR ADJUSTING THE INDEXING RATE OF A FIXED LENGTH SHIFT REGISTER

Allen E. Powers, Canoga Park, and Robert Segal, Pacific Palisades, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Sept. 8, 1969, Ser. No. 856,120
Int. Cl. G01s *9/02*
U.S. Cl. 343—5 DP **18 Claims**



A means and method for adjusting the indexing rate of a fixed length shift register to cause the register to index through its entire length during one period between variably spaced trigger pulses, the shift register being clocked at different clocking rates.

3,660,842

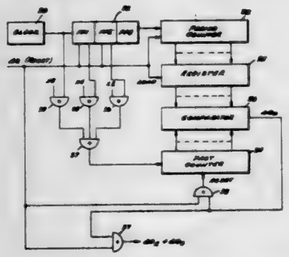
AZIMUTH INTERPOLATOR

Jack R. Ballantyne, Santa Ana, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 25, 1970, Ser. No. 40,014
Int. Cl. G01s *9/52*
U.S. Cl. 393—16 R **10 Claims**

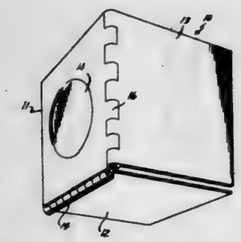
An azimuth interpolator is disclosed which receives as an input a sequence of a fixed number of azimuth change pulses for each revolution of a rotating antenna. The time periods between adjacent pairs of the input pulses are assumed to be nearly, but not necessarily, equal. The interpolator includes a

first counter which measures the time period between each pair of pulses by accumulating a count which is related to the measured period. At the end of the measured period, the count is transferred to a register which holds the count while the first counter measures a succeeding period. During the latter period, a second counter is clocked at a rate which is greater than the clocking rate of the first counter by a factor



X. Each time the count in the second counter equals the count in the register, a pulse is produced which is inserted between the two input pulses which define the period being measured. The interpolator includes an inhibit structure which prevents the Xth pulse from being inserted either immediately before or after the input pulse which defines the end of the period which is being measured.

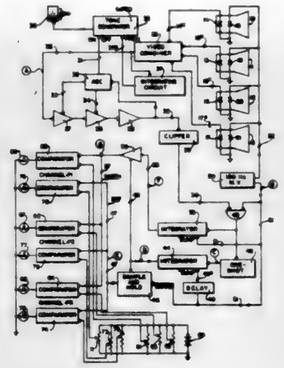
3,660,843
RECOVERY SYSTEM
Hanns H. Wolff, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy
Filed Aug. 31, 1970, Ser. No. 68,281
Int. Cl. H01q 15/20
U.S. Cl. 343—18 C 8 Claims



A personnel locating and recovery system utilizes a radar corner reflector comprising a flexible membrane or diaphragm which is actuable by voice to modulate radar energy reflected toward a searching radar equipped to detect the modulation for recognition and identification purposes. In a preferred embodiment the reflector is foldable to pocket size.

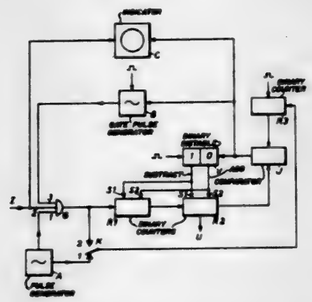
3,660,844
RADAR DETECTOR AND IDENTIFIER
Basil E. Potter, Williamsville, N.Y., assignor to Sierra Research Corporation
Filed May 4, 1970, Ser. No. 34,296
Int. Cl. G01s 7/40
U.S. Cl. 343—18 E 8 Claims

A radar detector and identifier device described with reference to an illustrative embodiment wherein the device is carried and used by persons, such as military personnel, to warn them when they are being illuminated by radar, to provide such persons with the capability of roughly determing the direction from which the radar illumination is coming, and especially to provide them with the capability of identifying the radar signal as originating from an enemy or a friendly source by identifying certain characteristics of the



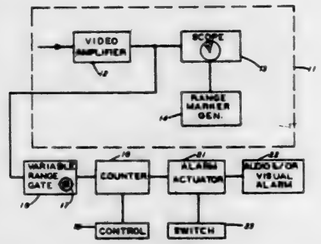
radar signal itself such as its pulse repetition frequency and its pulse width, the device also being operative to recognize CW signals.

3,660,845
RADAR UNIT ARRANGEMENT FOR DETERMINING IN RECEIVED ECHO PULSES THE POSITION OF THE PULSE CENTER AND THE PULSE DURATION
George Gustaf Lennart Pettersson, Skalby, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Jan. 5, 1970, Ser. No. 619
Claims priority, application Sweden, Feb. 26, 1969, 2589/69
Int. Cl. G01s 7/28
U.S. Cl. 343—17.1 R 3 Claims



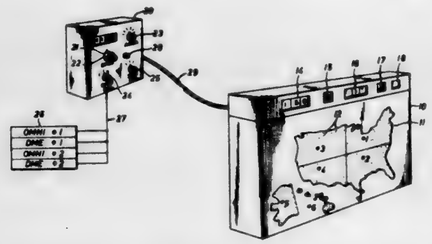
A radar unit arrangement for determining the position of the pulse center and the pulse duration of the received echo pulses. The echo pulses gate a number of subpulses to a first binary up-down counter which counts the subpulses. A second binary up-down counter receives a pulse from the first each time a certain value is exceeded. A third binary counter indicates the time elapsed from the moment of the emitting a radar pulse. The contents of the second and the third binary counter are continuously compared in a comparator which each time equality is obtained activates a bistable circuit. The first and the second binary counters are controlled by the bistable circuit so as to switch the counting direction of the counter in such a way that the number of subpulses before and after the change of state of the bistable circuit will be the same.

3,660,846
AUTOMATIC COLLISION WARNING SYSTEM
Lawrence F. Anderson, 818 North Delaware Ave., #402, San Mateo, Calif.
Filed Oct. 23, 1969, Ser. No. 868,806
Int. Cl. G01s 9/02
U.S. Cl. 343—7 ED 6 Claims



A simplified collision warning system particularly applicable for ships and automatically producing an alarm signal upon the persistence of an object within a predeterminable range. The video output of conventional radar is employed with a variable range gate and counter to actuate an alarm when a target return signal remains within a set gate range for a preset number of radar sweeps.

3,660,847
AIRCRAFT POSITION DISPLAY
Harry C. Danaher, Houston, Tex., assignor to The Superior Oil Company, Houston, Tex.
Filed Aug. 30, 1968, Ser. No. 756,660
Int. Cl. G01s 5/02
U.S. Cl. 343—112 PT 20 Claims



An onboard position display for aircraft, including a map located in the passenger compartment with lights on the map corresponding to Omni stations. A control unit operated by the pilot activates one of the lights, representing the Omni station used for navigation. The control unit includes a frequency select dial which is set on the same frequency used at the time for the Omni receiver. DME and To-From indications are also provided. A memory device permits a series of the lamps to be lighted representing the flight path, with the lamp for the closest station blinking.

3,660,848
RESONANT RHOMBIC TYPE TELEVISION ANTENNA
John Kerch, Bomarton, Tex., assignor by Verlan D. Coffman, Bomarton, Tex., a part interest
Filed Aug. 17, 1970, Ser. No. 64,461
Int. Cl. H01q 21/12
U.S. Cl. 343—749 7 Claims



A television antenna utilizing vertically spaced apart sets of rhombics arranged in parallel horizontal planes, one rhombic within another rhombic in the same plane which rhombics are so connected as to get the entire range of television bands from 54 to 216 megacycles with one set of rhombics being resonant to the midband of the low segment of the band, and another set of rhombics being resonant to the midband of the high segment of the band. The antenna rhombics are center grounded to a metallic ground, such as a boom or mast and is lightning proof, due to the grounded construction of the rhombics. The rhombic antenna has high sensitivity in picking up television color pictures and has long range with a high gain. The sets of rhombics lie in vertical, spaced apart horizontal planes and are braced by support tubes with one set above another connected by vertical phasing network tubes to which the transmission lines are attached mediate the length thereof.

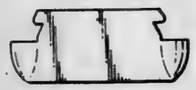
DESIGNS

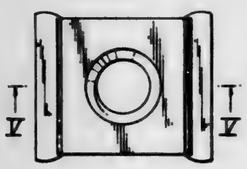
MAY 2, 1972

223,531
ATHLETIC SHOE
Daniel J. McCarthy, Somerville, Mass., assignor to Converse Rubber Corporation, Malden, Mass.
Filed Aug. 13, 1969, Ser. No. 18,674
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—310



223,532
CLINCH NUT
Katsumi Shinjo, 8, 6-chome, Asahi Minomidori, Nishinariku, Osaka-shi, Japan
Filed June 26, 1970, Ser. No. 23,684
Term of patent 14 years
Int. Cl. D8—*10*
U.S. Cl. D8—274





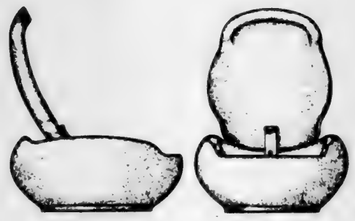
223,533
INSULATED CONTAINER
Kenneth A. Mitchell, 4704 Stevens Ave. S., Minneapolis, Minn. 55409
Filed June 26, 1970, Ser. No. 23,686
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—179



223,534
WHEEL
Donald J. Reid, Pleasant Ridge, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed Feb. 12, 1970, Ser. No. 21,414
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—30



223,535
CHAIR
Peter Ghyczy, Stettiner-Str. 6, 2844 Lemfoerde, Hannover, Germany
Filed Mar. 23, 1970, Ser. No. 22,015
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D15—1



223,536
COMBINED WALKER AND TRAY FOR A CHILD
Shoichi Itoh, Tokyo, Japan, and Elmer Rocker, Shaker Heights, Ohio, assignors to Century Products, Inc., Cleveland, Ohio
Filed May 4, 1970, Ser. No. 22,808
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D15—1



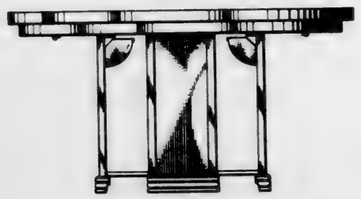
223,537
ELECTRIC LAMP BULB
Harold Charles Fishbein, 1267 S. Barry Ave., Los Angeles, Calif. 90025
Filed May 20, 1970, Ser. No. 23,062
Term of patent 14 years
Int. Cl. D26—*04, 05*
U.S. Cl. D26—8



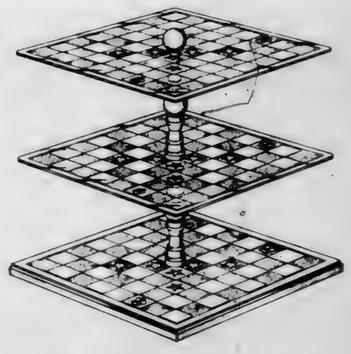
223,538
TABLE
James P. Manning, Deerfield, Ill., assignor to Republic Molding Corporation, Niles, Cook County, Ill.
Filed Oct. 12, 1970, Ser. No. 25,461
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D33—14



223,539
CONVERTIBLE TABLE FOR UTILITY, GAMES, AND BUMPER POOL
Ernest Milu, Hollywood, Fla., assignor to All Tech Industries, Inc., Miami, Fla.
Filed May 17, 1971, Ser. No. 144,382
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—3



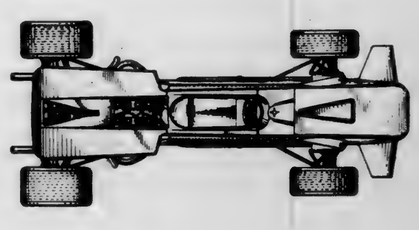
223,540
THREE DIMENSIONAL GAME BOARD
Jerry P. Kayle, Sherman Oaks, Calif., assignor to Pacific Game Co., Inc., North Hollywood, Calif.
Filed July 6, 1970, Ser. No. 23,839
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



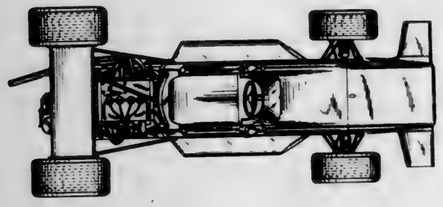
223,541
ACCESSORY FOR SPINNING TOY OR THE LIKE
Richard L. Shield, Long Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed June 8, 1970, Ser. No. 23,373
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



223,542
MODEL RACING CAR
Leonard Edward Terry, Wimborne, England, assignor to Leda Cars Limited, Balena Close, Creekmoor, Poole, Dorsetshire, England
Filed July 1, 1970, Ser. No. 23,797
Claims priority, application Great Britain Jan. 1, 1970
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



223,543
MODEL RACING CAR
Robert John Herd, Milton Malsor, England, assignor to March Engineering Limited, Bicester, Oxfordshire, England
Filed July 30, 1970, Ser. No. 24,222
Claims priority, application Great Britain Jan. 30, 1970
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



223,544
CANISTER
Kurt Sager, Basel, Switzerland, assignor to Ciba-Geigy AG., Basel, Switzerland
Continuation-in-part of design application Ser. No. 18,532, Aug. 4, 1969. This application Nov. 6, 1969, Ser. No. 19,967
Claims priority, application Switzerland Feb. 11, 1969
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—6



223,545
RING
David Raab, 1500 Bay Road, Apt. 547, and Samuel Goldstein,, 1500 Bay Road, Apt. 1097, both of Miami Beach, Fla. 33139
Filed Aug. 7, 1970, Ser. No. 24,371
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10





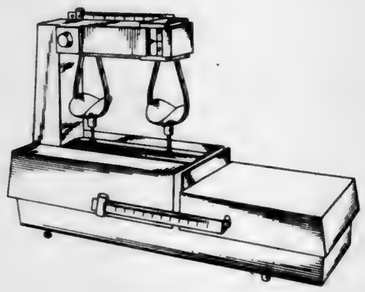
223,546
FLOOR LAMP
Sergio Gandini, Via Toulo 20, Brescia, Italy
Filed June 25, 1970, Ser. No. 23,668
Claims priority, application Italy Dec. 31, 1969
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20



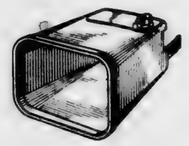
223,547
DESK LAMP
Ryuji Ohwa, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 27, 1970, Ser. No. 24,730
Claims priority, application Japan Mar. 2, 1970
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20



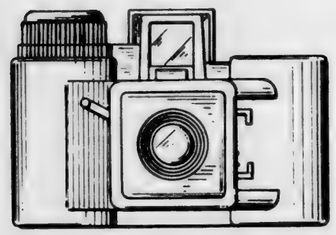
223,548
SCALE
Earl D. Myers, Westfield, N.J., and Samuel S. Leotta, Jenkintown, Pa., assignors to Ohaus Scale Corporation, Florham Park, N.N.Y.
Filed Nov. 19, 1970, Ser. No. 26,081
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—10



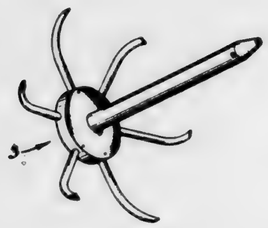
223,549
OSCILLOSCOPE CAMERA HOOD
Billy H. Vinson, San Diego, Calif., assignor to Integrated Controls, Inc.
Filed Sept. 14, 1970, Ser. No. 24,972
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1



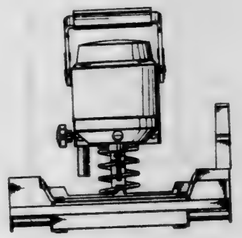
223,550
CAMERA
Ernest Camuso, Irvington, N.J., assignor to GAF Corporation
Filed Jan. 25, 1971, Ser. No. 109,750
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1



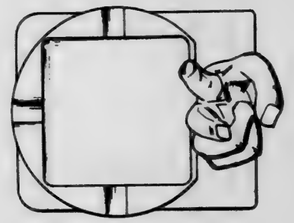
223,551
ANCHOR FOR BOATS
Laverne O. Persinger, Burbank, Calif., assignor of fractional part interest to Merle L. Persinger
Filed Nov. 28, 1969, Ser. No. 20,297
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D71—1



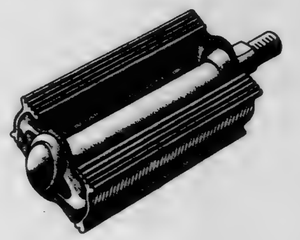
223,552
PUNCH
Norihito Tanaka, Osaka, Japan, assignor to Lihit Industrial Co., Ltd., Osaka, Osaka Prefecture, Japan
Filed Dec. 11, 1969, Ser. No. 20,465
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—1



223,553
ASHTRAY
Manuel Valverde, 419 E. 10th St., Seymour, Ind. 47274
Filed Sept. 16, 1969, Ser. No. 19,166
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D85—2



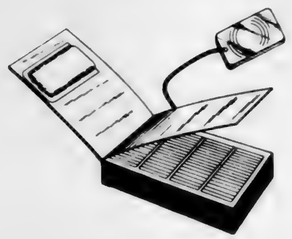
223,554
REFLECTIVE BICYCLE PEDAL
Carlton P. Pawsat, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Mar. 2, 1970, Ser. No. 21,704
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D90—14



223,555
SPEED CHANGE GEAR FOR BICYCLES
Norio Sato and Takuo Ishida, both % Shimano Industrial Co., Ltd., 77, 3-chome, Oimatsu-cho, Sakai, Osaka Prefecture, Japan
Filed Sept. 10, 1969, Ser. No. 19,085
Claims priority, application Japan Mar. 26, 1969
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D90—17



223,556
COMBINED ADDRESS BOOK AND MAGNIFYING LENS
Richard-Wilhelm Heydemann, Via Tagliaferri Blocco A, CH–6911 Campione-Lugano, Switzerland
Filed Feb. 2, 1970, Ser. No. 21,211
Claims priority, application Germany Oct. 28, 1969
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D97—2



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 2D DAY OF MAY, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AB Ferrosan: *See—*
Abramo, Aina Lisbeth; Bjorklund, Rolf; Borretzen, Bernt; Olsson, Knut Gunnar; and Sundbeck, Bertil, 3,660,501.

AB Inventing: *See—*
Wallsten, Hans I., 3,659,347.

AB Purac: *See—*
Malm, Lars G., 3,659,720.

Abbott Laboratories: *See—*
Von Esch, Anne Mary; and Crovetti, Aldo Joseph, 3,660,390.

Abegg, Moroni Taylor; and Leslie, William B., to United States of America, Atomic Energy Commission. High temperature detonator. 3,659,527, Cl. 102-28.000

Abernathy, Robert G., to Avco Corporation. Combination rivet installation apparatus and self-drilling rivet. 3,659,449, Cl. 72-391.000

Abramo, Aina Lisbeth; Bjorklund, Rolf; Borretzen, Bernt; Olsson, Knut Gunnar; and Sundbeck, Bertil, to AB Ferrosan. Metal-organic compounds. 3,660,501, Cl. 260-613.00d

Abrams, Harvey W. Traffic marker having gravity switch controlled. 3,660,817, Cl. 340-114.

Abrosimov, Nikoloi Nikitovich: *See—*
Vasilkovsky, Lev Fedorovich; Sjusjuk, Vladimir Efimovich; Abrosimov, Nikoloi Nikitovich; Geidebrekhov, Georgy Andreevich; Lyashenko, Vsevolod Andreevich; and Podmogilny, Vladimir Ivanovich,3,659,642.

Acar Industries, Inc.: *See—*
Kravitz, Harley A., 3,659,762.

Accra-Point Arrays Corporation: *See—*
Conley, Larry R., 3,660,631.

A.C.E. Machinery Limited: *See—*
Shalders, Alan John, 3,659,677.

ACF Industries, Incorporated: *See—*
Carney, John L., Jr.; and Schipper, Dennis J., 3,659,752.

Ackerman, Alfred J.: *See—*
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Ackermann, Hans; Seiler, Herbert; and Meindl, Hubert, to Ciba-Geigy AG. Anthraquinonyl-triazines. 3,660,393, Cl. 260-249.

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Allen, Laird R., Jr., to Westinghouse Electric Corporation. Synchronous-type circuit breaker having two independently-operable mechanism. 3,660,625, Cl. 200-148.

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Allsup, Oliver L. Stock for shoeing animals. 3,659,653, Cl. 168-44.

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Auberry, Horace R.; and Liebscher, Anton, to Ro-Search, Incorporated. Footwear with method and device for its manufacture. 3,659,301, Cl. 12-133.000

Aubin, Adelard L., Jr. Wall mounted combination chalkboard, projector screen and information display apparatus. 3,659,355, Cl. 35-62.000

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Bell, George. Electrical key for ignition systems. 3,660,624, Cl. 200-44.

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Blejwas, Walter T., Jr.; Kaseta, Anthony R.; and Cohen, Rene. System for producing characters on a cathode ray tube display by intensity controlled point- to-point vector generation. 3,660,833, Cl. 340-324.

Bloch, Herman S.; and Lester, George R., to Universal Oil Products Company. Preparation of primary alcohols. 3,660,503, Cl. 260-617.

Blood, Lewis H. Sling and board for carrying canoes, small boats and outboard motors. 3,659,760, Cl. 224-25.

Bloom, Melvin S.; and Merrill, Stewart H., to Eastman Kodak Company. Polyarylalkane-terminated, solvent-resistant polycarbonate resins as photoconductors. 3,660,083, Cl. 96-1.500

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Cachelin, Gerard; and Jeannottat, Etienne, to Fabrique d'Horlogerie Chas. Tissot & Fils S.A. Wrist watch strap connections. ,000,00!, Cl. 50-88.

Cahill, John A. Apparatus for sampling ore and the like. 3,659,460, Cl. 73-421.

Caldwell, Robert H. Cable laying plow. 3,659,426, Cl. 61-72.600

Cale, Albert Duncan, Jr.; and Jenkins, Herndon, to Robins, A. H., Company, Inc. Process for the preperation of 4-pyrazolidinols. 3,660,426, Cl. 260-310.

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Cappucci, Joseph D., to Merrimac Research and Development Company. Signal splitting network wherein an output from second coupler is fed back to isolated part of first coupler. 3,660,783, Cl. 333-10.000

Carey, Ralph A.; and Jacobson, Robert L., to Chevron Research Company. Cyclic hydrogenation-reforming. 3,660,275, Cl. 208-138.

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Chen, Arthur C. M.; and Lommel, James M., to General Electric Company. Thin film nickel temperature sensor and method of forming. 3,660,158, Cl. 117-217.

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Kishino, Tatsuo, to Hitachi, Ltd. Direct-cooled rotor for rotary electric machines. 3,660,702, Cl. 310-61.

Kiss, Laszlo. Positive continuously constant gear-mesh speed change system for planetary drive systems and the like. 3,659,479, Cl. 74-681.

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Kizu, Humio: *See—*
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Kobayashi, Kanjiro; Uyama, Takashi; Suzuki, Hideo; and Shirai, Hiroshi, to Nagase & Co., Ltd. Aryl 3-iodopropargyl formals. 3,660,499, Cl. 260-613.00d

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Kojima, Noriatsu. Coupling construction and improved packing ring therefor. 3,659,883, Cl. 285-348.

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Kraus, Willibald, to Rheinstahl Henschel Aktiengesellschaft. Frameless water pipe boiler. 3,659,561, Cl. 122-510.

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Kruer, Clifford W.; and Frazier, John R., to National Cash Register Company, The. Step motor and control circuit therefor. 3,660,747, Cl. 318-696.

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Kunioka, Kazuo; Shimizu, Shigenari; and Hirata, Masaru, to Nippon Kokan Kabushiki Kaisha. Method for cooling steel materials. 3,659,428, Cl. 62-64.000

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Lacey, John Aldwyn, to Gas Council, The. Purification of hydrocarbon oils. 3,660,276, Cl. 208-212.000

Lachambre, Jean L., to Canada, Her Majesty the Queen in the right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government. Ballistic joule meter for measuring a pulse of infrared radiation. 3,660,661, Cl. 250-83.30h

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Laubenstein, Priscilla. Multisensory learning aid device. 3,659,359, Cl. 35-70.

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La Vange, Donald H., to Polytop Corporation. Dispensing closure with bonded spout seal. 3,659,750, Cl. 222-153.

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Leblond, Jean, to Uniroyal Englebert France S.A. Bagless tire press. 3,659,975, Cl. 425-36.

Leboutet, Hubert; Jaouen, Jean; and Aucouturier, Jeanne, to Thomson-CSF. Electron beam deflector system. 3,660,658, Cl. 250-49.5

Lecht, Charles P.; Harden, William O.; Lavell, Matthew J.; Kos, Stanley M.; and Pace, Robert A., to Advanced Computer Techniques Corporation. Calculating display board. 3,660,645, Cl. 235-152.000

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Levine, Seymour D., to Squibb, E. R., & Sons, Inc. 5-Cyano-A-norpregnane-2-one derivatives. 3,660,457, Cl. 260-464.

Levy, Joseph; and Walker, William, to Universal Oil Products Company. Esterification process. 3,660,411, Cl. 260-293.81

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Ley, Kurt: *See—*
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Ley, Kurt; Eholzer, Ulrich; Nast, Roland; Metzger, Karl Georg; and Fritsche, Dieter, to Farbenfabriken Bayer Aktiengesellschaft. 2-Methyl-3-carboxylic acid amido-quinoxaline 1,4-di-N-oxides and their production. 3,660,391, Cl. 260-247.5

Ley, Kurt; Eholzer, Ulrich; Nast, Roland; and Seng, Florin, to Farbenfabriken Bayer Aktiengesellschaft. Preparation of quinoxaline-di-N-oxides. 3,660,398, Cl. 260-250.

Liberatore, Hadrian J.: *See—*
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Licencia Talalmanyokat Ertekesito Vallalat: *See—*
Baranyi, Jozsef; and Lakatos, Laszlo, 3,660,034.

Lichte, Carl L., to Dresser Industries, Inc. Large diameter bit with a replaceable stem. 3,659,659, Cl. 175-53.000

Liebe, Robert James, Jr. Plastic athletic lettering material and process for manufacturing same. 3,660,212, Cl. 161-41.000

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Lin, Kingpo Chingtaung, to Hooker Chemical Corporation. Process for preparing hydroxy- methylated phosphines. 3,660,495, Cl. 260-606.5

Lindquist, Claude A., Jr., to Pfizer Inc. Dielectric films. 3,660,328, Cl. 260-22.00r

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Lindstrom, Oscar H.; and Fischer, Nathan A., to Hormel, Geo. A., & Co. Skinning machine having a reciprocating fat removing knife mechanism thereof. 3,659,639, Cl. 146-130.

Linecker, Josef. Swimming pool. 3,659,295, Cl. 4-172.19

Lins, Stanley J., to Sperry Rand Corporation. Noise protection and rollover lockout for keyboards. 3,660,826, Cl. 340-173.

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Lippitt, David L.; and Schlunk, Rainer W., to General Electric Company. Method and apparatus for aluminum potline control. 3,660,256, Cl. 204-67.

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Lokka, Leif. Vacuum breaker for automobile engines. 3,659,575, Cl. 123-124.00r

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Longi, Paolo; Valvassori, Alberto; Greco, Francesco; and Bernasconi, Ermanno, to Montecatini Edison S.p.A. Elastic films, fibers and other manufactured articles based on unsaturated olefinic copolymers. 3,660,364, Cl. 260-80.78

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Bernstein, Jack; and Losee, Kathryn Alice,3,660,466.

Los, Marinus, to American Cyanamid Company. Trans-octahydro-4a-lower alkyl-5-(t-butoxy or benzyloxy)-2-oxo-1-(4-substituted-3-oxobutyl)-1- naphthaldehydes. 3,660,490, Cl. 260-586.000

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Luginsland, Hans Hermann, to Titangesellschaft mbH. Process for the manufacture of a free-flowing titanium dioxide pigment. 3,660,129, Cl. 106-300.

Luker, Ronald J., to Westinghouse Canada Limited. Photo-cell controlled pattern tracer. 3,660,665, Cl. 250-202.000

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Luviano, John Joseph; and Potts, Vinson S., to Crown Cork & Seal Company, Inc. Easy-open pull-tab construction for a container. 3,659,739, Cl. 220-53.

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Lyon, Lee R. Liquid drain structure for hide processing apparatus. 3,659,440, Cl. 69-30.000

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Mac Donald, Alastair Rigg. Window ventilators. 3,659,516, Cl. 98-2.12

Macfarlane, George, 1/2 to Davis, John Alan. Reflection apparatus for simulating the effect of use by a person of a cosmetic or article. 3,659,928, Cl. 350-291.

Machado, Anthony A. Distributor for internal combustion engine with improved adjustable rotor contact assembly. 3,660,622, Cl. 200-19.

Mack Trucks, Inc.: *See—*
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Mack, Zdenek, to Tesla, narodni podnik. Apparatus and method for detecting phase deviation of a pilot sub-carrier in stereophonic multiplex broadcasting. 3,660,607, Cl. 179-15.

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Mahmoud, Aly A., to United States of America, Navy. Low frequency power transient filters. 3,660,787, Cl. 333-76.000

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Maichen, Karl, to Shell Oil Company. Infinitely variable friction gearing. 3,659,469, Cl. 74-192.

Maines, James Dennis; and Paige, Edward George, to National Research Development Corporation. Frequency sensitive detecting and measuring circuits based on the acoustic electric effect. 3,660,756, Cl. 324-80.

Maisthia, Shashi B., to Polychrome Corporation. Diazo-polyurethane light-sensitive compositions. 3,660,097, Cl. 96-91.

Majima, Kanji; Takei, Kenz[illegible] and Oku, Masayuki, to Kao Soap Co., Ltd. Process for preparing light-colored, long-chain olefin sulfonates. 3,660,472, Cl. 260-513.

Maker, Paul, to Bird Island Inc. Gear making. 3,659,495, Cl. 90-3.

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Maldener, Alfred: *See—*
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Maley, Gerald A.; and Walsh, James L., to International Business Machines Corporation. Basic ternary logic circuits. 3,660,678, Cl. 307-209.

Malivoir, Roger Marcel, to Centre de Recherches de Pont-a-Mousson. Machine for coating cylindrical objects. 3,659,555, Cl. 118-320.

Mallabar, John J., to Dunlop Company, The. Polyurethane prepolymer composition containing the reaction product of a carboxylic acid and a monomeric isocyanate. 3,660,326, Cl. 260-18.

Mallan, Jean Margaret; and Kay, Edward Leo, to Firestone Tire & Rubber Company, The. Production of lactones. 3,660,433, Cl. 260-343.

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Mamalis, Patrick, to Vitamins Limited. 4,6-Diamino-1,2-dihydroaryloxy-1,3,5-triazines. 3,660,394, Cl. 260-249.9

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Mancebo, Lloyd, to United States of America, Atomic Energy Commission. Electrode structure for controlling electron flow with high transmission efficiency. 3,660,712, Cl. 313-307.

Mandorf, Victor, Jr.; and Montgomery, Lionel C., to Union Carbide Corporation. High purity hot pressed boron nitride. 3,660,027, Cl. 23-191.

Manizza, Guelfo A., to Continental Can Company, Inc. Carton. 3,659,773, Cl. 229-33.

Manning, Robert E., to Sandoz-Wander Inc.Certain 2,3,5,6-tetrahydroimidazo [2,1-b] thiazoles. 3,660,418, Cl. 260-306.7

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Marcatili, Enrique Alfredo Jose, to Bell Telephone Laboratories, Incorporated. Single-mode dielectric waveguide. 3,659,916, Cl. 359-96.

Marcinkus, Donald W., to Ampex Corporation. Cassette lowering and release mechanism. 3,659,857, Cl. 274-4.

Marcinkus, Donald W., to Ampex Corporation. Cassette changer with a pause mode. 3,659,859, Cl. 274-4.

Mares, Vladimir, to Ceskoslovensky uranovy prumysl, oborovy podnik. Arrangement for slide-tracking of a boring machine in mines with a limited profile. 3,659,656, Cl. 173-23.

Marino, Frank J. Cargo container. 3,659,641, Cl. 150-52.

Markel, Arthur L., to Reynolds Submarine Services Corporation. Method of separating fluids having different densities. 3,660,285, Cl. 210-65.000

Markey, James F., to Weltronic Company. Analog tens and units timer with source synchronization. 3,660,693, Cl. 307-293.

Markley, Joseph M., to Robbins & Myers, Inc. Brake means for electric motors. 3,659,686, Cl. 192-2.

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Marquette, Russell C. Detachable protector for steel bodies. 3,659,887, Cl. 293-1.

Marsch, Karl. Metal pulley with detachable plastic fan. 3,659,471, Cl. 74-230.3

Marsh, Lawrence B., to United States of America, Navy, mesne. Line-scan television system employing spectrum analysis. 3,660,594, Cl. 178-5.2

Marsh, Robin S.Method and apparatus for determination of H_2S in hydrogen sulfide petroleum products. 3,660,035, Cl. 23-230.

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Marshall, Philip; and Stevens, William C., Jr., to Marshall Research and Development Corporation. Shock spectrum analysis and synthesis method and apparatus. 3,659,456, Cl. 73-71.6

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Martin, Daniel W., to Baldwin, D. H., Company. Electronic organ keying circuits. 3,660,587, Cl. 84-1.18

Martin, Dougall C., Jr. Fluid system leak detector. 3,659,453, Cl. 73-40.

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Martin, John R. Tension regulation apparatus. 3,659,767, Cl. 226-195.

Martinesco, Dimitri; and Marsot, Charles L. Audio-visual apparatus. 3,659,357, Cl. 35-35.

Maruta, Iwao; Arai, Haruhiko; and Murata, Moriyasu, to Kao Soap Co., Ltd. Process of preventing agglomeration of fertilizers. 3,660,070, Cl. 71-64.

Marzec, Casimir C.; and Goepfrich, Rudolph A., to Speed-O-Print Business Machines Corporation. Interlock devices. 3,660,798, Cl. 339-36.

Masar, Joseph M. Pintle assembly. 3,659,875, Cl. 280-477.000

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Maschinenbau Aachen-Furstenau Gesellschaft mit beschrankter Haftung, Firma: *See—*
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Mason, Charles D.; and Rakus, Julius P., to Allied Chemical Corporation. Petroleum wax blends. 3,660,335, Cl. 260-28.5

Mason, Edwin E., to Design Elements, Inc. Solenoid drive circuit. 3,660,730, Cl. 317-148.5

Mason, Harold F., to Chevron Research Company. Two-stage process for producing naphtha from petroleum distillates. 3,660,270, Cl. 208-59.

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Matsukawa, Hiroharu, to Fuji Photo Film Co., Ltd. Method of producing oily liquid-containing microcapsules. 3,660,304, Cl. 252-316.

Matsumiya, Toshiharu, to Tokuyama Sekisui Kogyo Kabushiki Kaisha. Heat resistant composition comprising chlorinated polyvinyl chloride and copolymer of methyl methacrylate and alpl.amethyl styrene. 3,660,538, Cl. 260-899.

Matsumoto, Mikio; Terada, Kenji; and Matsunaga, Mitsuru, to Tsubakimoto Chain Co. Shift register circuit. 3,660,643, Cl. 235-92.

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Matthews, James J. Jacket stripping tool. 3,659,483, Cl. 81-9.50c

Mattsson, Bo Gunnar, to Aktiebolaget Electrolux. Multi-purpose vacuum cleaner nozzle. 3,659,312, Cl. 15-319.

Matzuzi, Guglielmo: *See—*
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Mayer, Dietmar: *See—*
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Mayer, Frederick S., to Meyer Laboratories, Inc. Effervescent beverage powder and tableted beverage compositions. 3,660,107, Cl. 99-66.

Mayer, Georg, to Mayer KG, Firma. Plate for controlling the filling density in plant containers before or during an automatic making of holes for plants in the filling compound. 3,659,380, Cl. 47-1.

Mayer KG, Firma: *See—*
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Mayer, Stephan; and Engel, Rolf, to Maschinenfabrik Augsburg-Nurmberg AG. Liquid cooled cylinder sleeve, particularly for internal combustion engines. 3,659,569, Cl. 123-41.79

Mayes, Nathan; and Michaels, Ronald, to Thiokol Chemical Corporation. Nitroso polymers. 3,660,367, Cl. 260-92.1

Maytag Company, The: *See—*
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Mazza, Lamberto, to Becchi S.p.A. Cooking stove. 3,659,580, Cl. 126-37.

Mazzarins, Janis, to General Motors Corporation. Suspension system for crawler tractor. 3,659,669, Cl. 180-9.5

McArthur, Colin S.; and Hester, Benny L., to Reynolds, R. J., Tobacco Company. Knitting machine defective needle detector. 3,659,437, Cl. 66-157.

McArthur, Ralph F.; Kardoes, Max T.; and Geurts, Melle F., to Kobe, Inc. Hydraulic intensifier. 3,659,967, Cl. 417-397.

McCammon, Thomas A., to Morton-Norwich Products, Inc. Liquid paint booth deflocculant. 3,660,297, Cl. 252-156.

McCammond, Warren E.: *See—*
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McCarthy, James F., to Susquehanna Corporation, The. Hot top liner and refractory ring combination for use with metal hot top casing. 3,660,121, Cl. 106-38.25

McCarthy, James F., to Susquehanna Corporation, The. Hot top liner and refractory ring combination for use with metal casing that is hot. 3,660,122, Cl. 106-38.25

McCauley, John J., to Atlantic Richfield Company. Coal processing. 3,660,269, Cl. 208-8.000

McClincy, Richard J.; Downing, James H.; and Wilson, Benjamin J., to Union Carbide Corporation. Furnace charge for use in the production of silicon metal. 3,660,298, Cl. 252-188.3

Mc Cord, Donald M.: *See—*
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McCoy, Frederic C.: *See—*
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McCrobie, George L., to Xerox Corporation. Symmetrical half-lens optical system. 3,659,922, Cl. 350-202.

Mc Cullough, James D., to Du Pont de Nemours, E. I., and Company. Yarn heating jet. 3,659,350, Cl. 34-155.

McDonough, Cletus G., to Molex Incorporated. Shielded cable connector and method of making the same. 3,660,805, Cl. 339-183.

Mc Dougall, John D., to Sprague Electric Company. Complementary metal insulator silicon transistor pairs. 3,660,735, Cl. 317-235.

Mc Elroy, Philip W. Concrete pump. 3,659,970, Cl. 417-516.

McFarlane, William, to Emerson Electric Co. Methods of making electric resistance heating mats. 3,659,338, Cl. 29-611.

McGlasson, Frank William, to Singer Company, The, mesne. Wide angle infinity image visual display. 3,659,920, Cl. 350-174.

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Van Dusen, Harold A., Jr., 3,660,650.

McKellin, Wilbur H., to Pennwalt Corporation. Carboxy-peresters. 3,660,468, Cl. 260-488.

McKeown, Lewis A. Paper machine broke control. 3,660,226, Cl. 162-264.

McKinstry, Richard G., to Anchor Hocking Corporation. Glass treating tunnel. 3,659,551, Cl. 118-48.

McLain, Earl A.; and Mahon, Henry I., to Dow Chemical Company, The. Spinnerette for the production of hollow fibers. 3,659,983, Cl. 425-72.

McLaughlin, Gladys M. Occluaive dressing. 3,659,599, Cl. 128-157.

McLean, John A., to Westinghouse Electric Corporation. Refrigerator-freezer with fast chill arrangement. 3,659,429, Cl. 62-157.

McMullen, John J., Associates, Inc.: *See—*
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McSwiggin, Joseph R.; and Brandt, Charles H., to Procter & Gamble Company, The. Method of making flaked roast and ground coffee. 3,660,106, Cl. 99-65.000

McWhirter, John R.; and Robinson, Ernest K., to Union Carbide Corporation. Oxygenation-ozonation of BOD-containing water. 3,660,277, Cl. 200-6.

McWhorter, Robert W.: *See—*
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Mead Johnson & Company: *See—*
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Means, James A. Device for testing semiconductors. 3,660,758, Cl. 324-158.

Meder, Andre Fernand; and Jaeggi, Max Rudolf, to Constr. Metalliques et Mecaniques Eugene Meder S.A. Device for the sterilization of ampoules. 3,660,633, Cl. 219-388.

Mednis, Edmar J., to General Foods Corporation. Agglomerating granular material. 3,660,108, Cl. 99-71.

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Meerson, Harry O. Ornamental headdress. 3,659,622, Cl. 132-53.

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Melton, Johnnie D. Trailer hitch. 3,659,876, Cl. 280-511.000

Melville, Alfred W.; O'Hare, David H.; and Brickell, Christopher G., to Fisher & Paykel Limited. Humidifying means. 3,659,604, Cl. 128-212.

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Messerschmitt-Bolkow-Blohm GmbH: *See—*
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Metzger, Hans Siegfried, to Moeller & Neumann G.m.b.H. Rolling mill or calendar with crown control of the rolls for rolling flat material. 3,659,450, Cl. 72-237.

Metzger, Hans Siegfried; and Gilges, Fred, to Moeller & Neumann G.m.b.H. Screw down device for rolling mill frames and calenders. 3,659,451, Cl. 72-248.

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Meyer, Barthold F., to General Motors Corporation. Selt belt retractor. 3,659,800, Cl. 242-107.4

Meyer, Engelbert A., to USM Corporation. Fastener assembly. 3,659,320, Cl. 24-73.

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Meyer, Ludwig: *See—*
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Meyer, Marvin; Avena, Salvatore; and Leiner, Robert L., to Curtiss-Wright Corporation. Bi-directional torque limiting brake mechanism. 3,659,682, Cl. 188-134.000

Michael, Dietrich; and Kosiol, Wilfried, to Farbenfabriken Bayer Aktiengesellschaft. Self-extinguishing polyamide moulding compositions. 3,660,344, Cl. 260-37.

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Michalski, Raymond J., to Naico Chemical Company. Foam control in liquid hydrocarbons. 3,660,305, Cl. 252-321.

Michel, Francis; Gandon, Louis; Jean, Roger; and Fer, Pierre, to Le Nickel. Method of removing iron and cobalt from a partially refined nickel matte. 3,660,026, Cl. 23-183.

Michielsen, Paul Joseph, to Baxter Laboratories, Inc. Container for organ perfusion or the like. 3,660,241, Cl. 195-127.

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Midland Processing Inc.: *See—*
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Miklos, Louis F. Motor boat propelled pontoon boat. 3,659,546, Cl. 114-235.

Milek, Donald L., to Ex-Cell-O Corporation. Stepping motor damping system. 3,660,746, Cl. 318-696.000

Miles, Earl F., Jr., to Indy Lighting, Inc., mesne. Adjustable light fixture. 3,660,651, Cl. 240-73.

Miller, Charles Fredrick. Circuit bonding means. 3,659,770, Cl. 228-1.

Miller, Don R., to Dow Corning Corporation. Tracheal tube seal. 3,659,611, Cl. 128-351.

Miller, Ronald D., to Allis-Chalmers Manufacturing Company. Quick detachtable brace rods for combine. 3,659,405, Cl. 56-15.600

Miller, Roy W.; Stark, Marvin; and Shaver, William R., to Pullman Incorporated. Railroad flat car. 3,659,724, Cl. 213-8.

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Mills, James B., to Aluminum Company of America. Hand crimper. 3,659,397, Cl. 53-329.

Mimura, Akio; Kawano, Takatsugu; and Yamaga, Kanshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for preparing specially activated sludge. 3,660,278, Cl. 210-11.

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Minero, Richard H., deceased (by Beard, John Q., administrator); Anello, Anthony J.; Furey, Robert G.; and Palounek, Lubos R., to International Business Machines Corporation. Checking by pseudoduplication. 3,660,646, Cl. 235-153.000

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Miyasaka, Kenji, to Citizen Watch Co., Ltd. Positioner for calendar dial in timepiece. 3,659,412, Cl. 58-4.

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Mobil Oil Corporation: *See—*
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Moder, Hans-Ulrich; and Schaffer, Bernhard, to Siemens Aktiengesellschaft. Method and circuit arrangement for the supervision of connections in storage-programmed telecommunication switching installations for binary, coded messages. 3,660,824, Cl. 340-172.5

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Metzger, Hans Siegfried; and Gilges, Fred, 3,659,451.

Moen, Asbjorn. Plant for A.C. power supply to a device movable along a track. 3,660,621, Cl. 191-2.

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Molins Machine Company Limited: *See—*
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Monpetit, Louis A., to Societe des Procedes Modernes d'Injection Sepromi. Individual correcting system for the electronically controlled electromagnetic injectors in internal combustion engines. 3,659,563, Cl. 123-32.0ea

Monres (Proprietary) Limited: *See—*
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Montblanc-Simplo GmbH: *See—*
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Moran, Charles E., to Chevron Research Company. Asphalt compositions containing polyamide. 3,660,126, Cl. 106-279.

Morane, Bruno; Paoletti, Charles; Merrien, Louis; Sathicq, Robert; and Maurelli, Manlio, to L'Oreal. Method for filling a container with a fluid under pressure. 3,659,395, Cl. 53-36.

Morannais, Charles, to Zafira France. Brush for cleaning gramophone records. 3,659,952, Cl. 401-196.

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Morimoto, Shiro; Nomura, Hiroaki; Fugono, Takeshi; Maeda, Kihachiro; and Ishiguro, Toshihiro, to Takeda Chemical Industries, Ltd. Synthetic penicillins. 3,660,379, Cl. 260-239.1

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Morris, Horton H.; Olivier, James P.; and Ross, Sydney, to Freeport Sulphur Company. Separation of discolorants from clay. 3,659,708, Cl. 209-5.

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Morroni, Peter J. Apparatus for molding open containers. 3,660,002, Cl. 425-405.

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Muller, Heinz K., to Sealol, Inc. Barrier seal with self regulating buffer. 3,659,860, Cl. 277-59.000

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Murray, Margaret H.; and Brodhag, Earl E., to Time Incorporated. Satin white process and product. 3,660,131, Cl. 106-306.

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Mutschler, Edward Charles, to Xerox Corporation. Programmable tone dispenser. 3,659,556, Cl. 118-637.

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Naguib, Ahmed G. E., to Carpenter, Edith W. Process for beneficiating ilmenite. 3,660,029, Cl. 23-202.

Nagy, Joseph G. Non-seizing slide valves. 3,659,822, Cl. 251-178.

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Naito, Kenji; Okudo, Hiroshi; Ogino, Katsuhiko; Tanaka, Michio; Kamatani, Yoshio; Mukai, Hiroshi; and Takeuchi, Tatsuro, to Takeda Chemical Industries, Ltd. Stabilized isocyanate composition. 3,660,456, Cl. 260-453.

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Snow, William W. Magnetically controlled electron tube function generator. 3,660,770, Cl. 328-253.

Snyder, Clermont J.; and Moore, Jack P., to Anaconda Wire and Cable Company. Descaling copper rods. 3,659,830, Cl. 266-3.

Snyder, Roderick C., to Wausau Iron Works. Adjustable wing plow with means to positively maintain adjustment. 3,659,363, Cl. 37-50.000

Societa Farmaceutici Italia: *See*—
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Societe Technique pour l'Utilisation de la Precontrainte: *See*—
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Sokol, Kurt Rudolf. Device for measuring blood sedimentation rate. 3,660,037, Cl. 23-253.

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Speed-O-Print Business Machines Corporation: *See*—
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Speedrack Inc.: *See*—
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Staker, Walter L.; Dean, Karl C.; and Chindgren, Carl J., to United States of America, Interior. Recovery of copper. 3,660,022, Cl. 23-135.000

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Suozzo, Leonard S. Spring support device. 3,659,834, Cl. 267-70.

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Svensson, Sven-Erik Vilhelm; and Thoma, Erno Jozef. Flexible scaffold for supporting sliding molds or climbing molds used for the erection of concrete structures. 3,659,978, Cl. 425-63.

Svensson, Sven-Erik Vilhelm; and Thoma, Erno Jozef. Extensible locking systems for formwork for the casting of concrete constructions. 3,659,982, Cl. 25-131.

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27R 3,659,618
30R 3,659,619

CLASS 131

146 3,659,620

CLASS 132

53 3,659,621
3,659,622

CLASS 133

255 3,659,623

CLASS 134

22 3,660,160
32 3,660,159

CLASS 136

67 3,660,161
83R 3,660,162
3,660,163
3,660,164
86D 3,660,165
3,660,166
107 3,660,167
3,660,168
111 3,660,169
154 3,660,170

CLASS 137

75 3,659,624
204 3,659,625
329.1 3,659,626
344 3,659,627
501 3,659,628
551 3,659,629
596 3,659,630
596.17 3,659,631
610 3,659,632

CLASS 140

111 3,659,633

CLASS 141

163 3,659,634

CLASS 143

43N 3,659,635

CLASS 144

2Z 3,659,636

CLASS 145

3.31 3,659,637

CLASS 146

76R 3,659,638
130 3,659,639
222 3,659,315

CLASS 148

1.5 3,660,171
6.2 3,660,172
6.35 3,660,173
11.5R 3,660,177
12 3,660,174
18 3,660,182
103 3,660,175
142 3,660,176
175 3,660,180
189 3,660,178
3,660,179

CLASS 149

2 3,660,181
21 3,660,183
46 3,660,182

CLASS 150

35 3,659,640
52 3,659,641

CLASS 156

62.2 3,660,184
72 3,660,185
73 3,660,186
79 3,660,187
94 3,660,188
145 3,660,189
150 3,660,190
152 3,660,191
155 3,660,192
169 3,660,193
191 3,660,194
197 3,660,195
235 3,660,196
280 3,660,197
292 3,660,198
306 3,660,199
3,660,200
309 3,660,201
335 3,660,202
384 3,660,203
443 3,660,204
515 3,660,205
545 3,660,206
555 3,660,207
571 3,660,208
580 3,660,209
583 3,660,210

CLASS 161

2 3,660,211
7 3,660,213
38 3,660,214
41 3,660,212
57 3,660,215
68 3,660,217
87 3,660,218
93 3,660,219
3,660,220
128 3,660,221
156 3,660,222
161 3,660,216
168 3,660,223
252 3,660,224

CLASS 162

17 3,660,225
264 3,660,226

CLASS 164

169 3,659,642
260 3,659,643
326 3,659,644
353 3,659,645

CLASS 165

164 3,659,646

CLASS 166

120 3,659,647
3,659,648
247 3,659,649
275 3,659,650
280 3,659,651
299 3,659,652

CLASS 168

44 3,659,653

CLASS 172

699 3,659,654

CLASS 173

1 3,659,655
23 3,659,656
105 3,659,657

CLASS 174

28 3,660,589
47 3,660,590
70R 3,660,591
114R 3,660,592
152R 3,660,593

CLASS 175

4.6 3,659,638
53 3,659,659
3,659,660
85 3,659,661
107 3,659,662
325 3,659,663

CLASS 176

17 3,660,227
20 3,660,228
3,660,229
36R 3,660,230
56 3,660,231
84 3,660,232
87 3,660,233

CLASS 177

1 3,659,665
25 3,659,664

CLASS 178

5.2A 3,660,595
3,660,597
5.2R 3,660,594
5.2 3,660,596
5.45D 3,660,598
6 3,660,599
88 3,660,601

CLASS 179

1VC 3,660,603
1A 3,660,602
8A 3,660,604
15AN 3,660,608
15AS 3,660,605
15BA 3,660,606
15BT 3,660,607
16F 3,660,609
18BC 3,660,610
18EA 3,660,600
18ES 3,660,611
18D 3,660,612
98 3,660,613
100.2MD 3,660,616
100.2C 3,660,617
100.2T 3,660,614
3,660,615
115.5R 3,660,618
170.2 3,660,619
175.3 3,660,620

CLASS 180

6.2 3,659,666
3,659,667
6.7 3,659,668
9.5 3,659,669
3,659,670
24.02 3,659,671
65R 3,659,672

CLASS 182

115 3,659,673

CLASS 184

6.16 3,659,674
39 3,659,675

CLASS 185

40R 3,659,676

CLASS 187

61 3,659,677

CLASS 188

5 3,659,678
62 3,659,679
3,659,680
72.5 3,659,685
72.9 3,659,681
134 3,659,682
162 3,659,683
322 3,659,684

CLASS 191

2 3,660,621

CLASS 192

3,659,686
3.33 3,659,690
4B 3,659,687
105CE 3,659,688
112 3,659,689

CLASS 193

2C 3,659,691

CLASS 194

59 3,659,692

CLASS 195

1.2 3,660,234
29 3,660,235
65 3,660,236
66A 3,660,238
66B 3,660,239
66R 3,660,237
103.5R 3,660,240
127 3,660,241
139 3,660,242
3,660,243
143 3,660,244

CLASS 198

20 3,659,693
25 3,659,694
35 3,659,695
127 3,659,696
136 3,659,697
140 3,659,698
165 3,659,699
213 3,659,700
221 3,659,701
3,659,702

CLASS 200

19A 3,660,622
19R 3,660,623
44 3,660,624
148J 3,660,625
168G 3,660,626
175 3,660,627

CLASS 202

99 3,660,245
187 3,660,246

CLASS 203

1 3,660,247
7 3,660,248

CLASS 204

1T 3,660,249
3,660,250
15 3,660,251
17 3,660,252
34 3,660,253
59 3,660,254
3,660,255
67 3,660,256
72 3,660,257
73A 3,660,259
73 3,660,258
98 3,660,261
158R 3,660,260
181 3,660,262
3,660,263
197 3,660,264
212 3,660,265
300 3,660,266

CLASS 206

1A 3,659,703
45.14 3,659,704
45.34 3,659,705
56AB 3,659,706
65B 3,659,707

CLASS 208

8 3,660,267
3,660,269
11 3,660,268
59 3,660,270
65 3,660,271
93 3,660,272
96 3,660,273
120 3,660,274
138 3,660,275
212 3,660,276

CLASS 209

5 3,659,708
82 3,659,709
125 3,659,710
457 3,659,711

CLASS 210

6 3,660,277
11 3,660,278
19 3,660,279
22 3,660,280
23 3,660,281
33 3,660,282
3,660,283
49 3,660,284
65 3,660,285
73 3,659,712
83 3,659,713
107 3,659,714
242 3,659,715
247 3,659,716
329 3,659,717
333 3,659,718
483 3,659,719
525 3,659,720

CLASS 211

7 3,659,721
106 3,659,722
151 3,659,723

CLASS 213

8 3,659,724
75TC 3,659,725

CLASS 214

6H 3,659,727
3,659,728
6P 3,659,726
25 3,659,729
146E 3,659,730
314 3,659,731
621 3,659,732
730 3,659,733
764 3,659,734

CLASS 215

9 3,659,735
40 3,659,736

CLASS 217

12R 3,659,737

CLASS 219

69V 3,660,628
73 3,660,629
76 3,660,630
78 3,660,631
85 3,660,632
222 3,660,634
273 3,660,635
388 3,660,633
3,660,636
413 3,660,637

CLASS 220

42B 3,659,738
53 3,659,739
54 3,659,740
63R 3,659,741
86R 3,659,742
97E 3,659,743

CLASS 221

1 3,659,744
12 3,659,745
185 3,659,746

CLASS 222

14 3,659,747
56 3,659,748
145 3,659,749
153 3,659,750
194 3,659,751
195 3,659,752
199 3,659,753
368 3,659,754
397 3,659,755
531 3,659,756
541 3,659,757
561 3,659,758

CLASS 224

5R 3,659,759
25A 3,659,760
39R 3,659,761
42.03B 3,659,762
42.45R 3,659,763

CLASS 225

2 3,659,764
4 3,659,765
94 3,659,766

CLASS 226

195 3,659,767

CLASS 227

10 3,659,768
68 3,659,769

CLASS 228

1 3,659,770
2 3,659,771

CLASS 229

3.1 3,659,772
33 3,659,773
52B 3,659,774
53 3,659,775
54R 3,659,776
55 3,659,777

CLASS 232

43.1 3,659,778

CLASS 234

114 3,659,779
265.1B 3,659,789

CLASS 235

61.11C 3,660,640
61.11J 3,660,639
61.12N 3,660,641
61.6B 3,660,638
92PL 3,660,644
92C 3,660,642
92J 3,660,643
95R 3,659,780
152 3,660,645
153 3,660,646
155 3,660,837
181 3,660,647
186 3,660,648
193 3,660,649

CLASS 236

11 3,659,781
68B 3,659,782
93 3,659,783

CLASS 238

349 3,659,784

CLASS 239

2R 3,659,785
5 3,659,786
15 3,659,787
127.1 3,659,788
265.19 3,659,789
336 3,659,790
375 3,659,791

CLASS 240

25 3,660,650
73BJ 3,660,651

CLASS 241

21 3,659,792
187 3,659,793
189R 3,659,794

CLASS 242

7.03 3,659,795
18.1 3,659,796
55.19A 3,659,797
71.3 3,659,798
71.9 3,659,799
107SB 3,659,801
107.4 3,659,800
128 3,659,802
130.1 3,659,803
195 3,659,804
201 3,659,805
3,659,806
219 3,659,807
3,659,808

CLASS 243

19 3,659,809

CLASS 244

76R 3,659,810
110C 3,659,811
114R 3,659,812
116 3,659,813

CLASS 246

125 3,660,652
182B 3,660,633

CLASS 248

23 3,659,814
97 3,659,816
242 3,659,815
317 3,659,817
363 3,659,818
373 3,659,819
447 3,659,820

CLASS 249

84 3,659,821

CLASS 250

41.9SB 3,660,655
41.9TF 3,660,654
49.5ZC 3,660,656
49.5D 3,660,657
3,660,658
62 3,660,660
83.3D 3,660,662
83.3H 3,660,659
3,660,661
3,660,663
86 3,660,664
202 3,660,665
206 3,660,666
209 3,660,667
213VT 3,660,668
217S 3,660,669
219DC 3,660,670

CLASS 251

178 3,659,822

CLASS 252

8.55B 3,660,287
40.7 3,660,288
51.5A 3,660,289
3,660,290
62.51 3,660,291
62.6 3,660,292
79.4 3,660,293
100 3,660,294
104 3,660,295
106 3,660,296
156 3,660,297
188.3 3,660,298
300 3,660,299
301.1R 3,660,300
309 3,660,301
3,660,302
311.5 3,660,303
316 3,660,304
321 3,660,305
415 3,660,306
3,660,307
416 3,660,308
442 3,660,309
454 3,660,310
518 3,660,312
522 3,660,311
545 3,660,313

CLASS 254

93 3,659,823
124 3,659,824

CLASS 259

60 3,659,825
102 3,659,826
110 3,659,827
190 3,659,828

CLASS 260

2A 3,660,314
3,660,315
2N 3,660,316
2.2C 3,660,317
2.5AC 3,660,319
2.5FP 3,660,318
3,660,321
2.5P 3,660,320
5 3,660,323

17R 3,660,325
17.5 3,660,324
18TN 3,660,326
22CQ 3,660,329
22TN 3,660,327
3,660,330
22R 3,660,328
23XA 3,660,331
3,660,332
23H 3,660,333
28.5AV 3,660,334
3,660,335
28.5A 3,660,336
29.2R 3,660,337
29.6NR 3,660,338
29.7D 3,660,339
31.8HA 3,660,340
32.6N 3,660,341
33.6 3,660,348
3,660,349
37EP 3,660,343
37EB 3,660,345
37N 3,660,344
41 3,660,346
42.97 3,660,443
45.75R 3,660,350
45.85 3,660,351
45.95 3,660,352
47EC 3,660,354
47UA 3,660,353
75N 3,660,356
75R 3,660,358
75S 3,660,521
77.5AN 3,660,357
77.5CR 3,660,355
3,660,359
78L 3,660,522
78R 3,660,361
78.5E 3,660,360
79 3,660,362
80.78 3,660,363
3,660,364
82.5 3,660,365
85.3 3,660,366
85.5 3,660,527
92.1 3,660,367
92.3 3,660,368
93.1 3,660,369
93.31 3,660,371
94.9R 3,660,370
141 3,660,372
203 3,660,373
207 3,660,374
207.1 3,660,375
210E 3,660,376
211R 3,660,377
211.5R 3,660,378
239.1 3,660,379
239.3B 3,660,381
239.3T 3,660,380
239.5 3,660,382
239.9 3,660,383
240A 3,660,384
3,660,385
242 3,660,386
243C 3,660,395
3,660,396
244R 3,660,387
246B 3,660,388
247.2B 3,660,389
247.2 3,660,390
247.5R 3,660,391
248NS 3,660,392
249 3,660,393
249.9 3,660,394
250B 3,660,397
3,660,398
3,660,399
3,660,400
3,660,401
251QA 3,660,322
251A 3,660,402
251R 3,660,403
256.4R 3,660,404
256.5R 3,660,405
258TR 3,660,406
273 3,660,407
281 3,660,408
293.76 3,660,410
293.81 3,660,411
294.8E 3,660,412
294.8K 3,660,413
294.9 3,660,414
3,660,415
297R 3,660,416
306.7 3,660,417
3,660,418
309 3,660,419
3,660,420
309.2 3,660,421
3,660,422
309.6 3,660,423
310D 3,660,426
310R 3,660,424
3,660,425
314.5 3,660,427
325 3,660,428
326.16 3,660,430
326.5A 3,660,429
332.3R 3,660,431
343 3,660,433
348SC 3,660,434
348R 3,660,432
397.45 3,660,437
397.5 3,660,435
397.7 3,660,436
404.5 3,660,438
410.9R 3,660,439
3,660,440
413 3,660,441
429.7 3,660,442
439R 3,660,444
3,660,445
3,660,446
448.8AD 3,660,447
448.2D 3,660,449
3,660,450
448.2N 3,660,448
3,660,452
448.2R 3,660,451
3,660,453
448.8R 3,660,454
453PC 3,660,458
453SP 3,660,456
453R 3,660,455
459 3,660,459
464 3,660,457
3,660,460
465D 3,660,461
3,660,462
465.5R 3,660,463
470 3,660,464
471C 3,660,465
471R 3,660,466
479S 3,660,467
488F 3,660,468
501.11 3,660,469
501.12 3,660,470
513R 3,660,471
513 3,660,472
515A 3,660,473
518R 3,660,474
519 3,660,475
524R 3,660,476
3,660,477
525 3,660,478
530N 3,660,479
533N 3,660,480
533R 3,660,481
541 3,660,483
552R 3,660,484
553A 3,660,486
556A 3,660,487
55EH 3,660,485
566R 3,660,511
584 3,660,488
586R 3,660,489
3,660,490
592 3,660,491
593 3,660,492
604HF 3,660,493
606.5B 3,660,494
606.5P 3,660,495
607A 3,660,496
609A 3,660,497
611A 3,660,409
3,660,498
613D 3,660,499
3,660,501
613R 3,660,500
615A 3,660,502
617H 3,660,503
3,660,504
619R 3,660,505
666PY 3,660,508
666A 3,660,342
3,660,507
3,660,509
666 3,660,506
669R 3,660,510
675.5 3,660,512
680E 3,660,513
3,660,514
681.5R 3,660,515
683D 3,660,516
3,660,517
683.15D 3,660,518
3,660,519
683.43 3,660,520
825 3,660,524
830P 3,660,523
836 3,660,525
837R 3,660,526
861 3,660,528
3,660,532
3,660,531
876B 3,660,529
876 3,660,530
878B 3,660,533
880R 3,660,534
3,660,536
880 3,660,535
885 3,660,537
899 3,660,538
920 3,660,539
941 3,660,540
944 3,660,541
946 3,660,542
948 3,660,543

CLASS 263

32 3,659,829

CLASS 264

1 3,660,545
3C 3,660,546
8 3,660,544
22 3,660,549
24 3,660,547
40 3,660,550
47 3,660,548
49 3,660,551
68 3,660,552
71 3,660,553
78 3,660,554
126 3,660,555
185 3,660,556
210F 3,660,557

CLASS 266

3R 3,659,830
4A 3,659,831
30 3,659,832
37 3,659,833

CLASS 267

70 3,659,834
136 3,659,835

CLASS 270

86 3,659,836

CLASS 271

9 3,659,837
11 3,659,838
46 3,659,839
64 3,659,840
88 3,659,841

CLASS 272

57B 3,659,842
57R 3,659,843
58 3,659,844
69 3,659,845
80 3,659,846

CLASS 273

55R 3,659,847
3,659,848
96B 3,659,849
102.2R 3,659,850
130B 3,659,851
134AD 3,659,852
138A 3,659,853
155 3,659,854
173 3,659,855
177R 3,659,856

CLASS 274

4F 3,659,857
3,659,858
3,659,859

CLASS 277

59 3,659,860
96 3,659,861
106 3,659,862

CLASS 279

4 3,659,863
121 3,659,864

CLASS 280

7.1 3,659,865
7.15 3,659,878
11.35T 3,659,866
36C 3,659,867
47.32 3,659,868
96.1 3,659,869
124F 3,659,870
221 3,659,871
289 3,659,872
415A 3,659,873
446 3,659,874
477 3,659,875
511 3,659,876

CLASS 285

3 3,659,877
114 3,659,879
161 3,659,880
249 3,659,881
333 3,659,882
348 3,659,883

CLASS 287

189.36R 3,659,884

CLASS 290

1 3,660,671

CLASS 293

2 3,659,885
7B 3,659,886

CLASS 293

1 3,659,887
91 3,660,247

CLASS 294

5.5 3,659,889
19R 3,659,891
49 3,659,888
104 3,659,890

CLASS 296

3 3,659,892
23MC 3,659,894
23R 3,659,893
65R 3,659,895
93 3,659,896

CLASS 297

337 3,659,897
445 3,659,898

CLASS 298

22R 3,659,899

CLASS 299

43 3,659,900

CLASS 301

65 3,659,901

CLASS 303

6C 3,659,902
20 3,659,903
21CF 3,659,907
21CG 3,659,904
21A 3,659,906
21F 3,659,905

CLASS 306

38 3,659,908

CLASS 307

17 3,660,672
88.3 3,660,673
202 3,660,674
208 3,660,675
3,660,676
209 3,660,677
3,660,678
231 3,660,679
234 3,660,680
237 3,660,681
3,660,682
252B 3,660,687
252K 3,660,683
252N 3,660,684
252W 3,660,688
260 3,660,685
269 3,660,689
270 3,660,684
273 3,660,690
293 3,660,691
3,660,692
296 3,660,693
304 3,660,694
309 3,660,697
3,660,695
311 3,660,696
3,660,698

CLASS 308

6R 3,659,909
9 3,659,910
122 3,659,911
217 3,659,912

CLASS 310

9.4 3,660,699
11 3,660,700
3,660,701
61 3,660,702
68E 3,660,703
80 3,660,704
198 3,660,705

CLASS 312

71 3,659,913

CLASS 313

64 3,660,706
80 3,660,707
855 3,660,708
3,660,709
109.5 3,660,710
220 3,660,711
307 3,660,712
318 3,660,713

CLASS 315

27GD 3,660,717
86 3,660,714
111 3,660,715
187 3,660,716

CLASS 317

11C 3,660,723
13B 3,660,718
16 3,660,719
3,660,720
3,660,721
3,660,724
18R 3,660,722
68 3,660,725
101CM 3,660,726
118 3,660,728
134 3,660,729
148.5R 3,660,731
148.5 3,660,730
157.5 3,660,727
234R 3,660,732
234 3,660,733
235R 3,660,734
3,660,735
3,660,819
262F 3,660,736

CLASS 318

138 3,660,737
3,660,738
227 3,660,739
265 3,660,740
325 3,660,741
345 3,660,742
588 3,660,743
616 3,660,744
676 3,660,745
696 3,660,746
3,660,747

CLASS 320

39 3,660,748

CLASS 321

2 3,660,749
3,660,750
3,660,751

CLASS 323

26 3,660,752

CLASS 323

22T 3,660,753

CLASS 324

5 3,660,754
10 3,660,755
29.5 3,660,759
80 3,660,756
122 3,660,757
158T 3,660,758

CLASS 325

28 3,660,760
42 3,660,761
51 3,660,762
320 3,660,764
363 3,660,763
478 3,660,765

CLASS 328

14 3,660,766
15 3,660,767
26 3,660,768
127 3,660,769
253 3,660,770

CLASS 329

104 3,660,771

CLASS 330

18 3,660,772
30D 3,660,773
3,660,774

CLASS 331

1A 3,660,781
57 3,660,775
94.5 3,660,776
3,660,777
3,660,778
122 3,660,779
217 3,660,780

CLASS 332

1 3,660,782

CLASS 333

10 3,660,783
22F 3,660,784
28 3,660,785
29 3,660,786
76 3,660,787
98R 3,660,788

CLASS 334

94.5 3,660,779

CLASS 336

206 3,660,789

CLASS 336

69 3,660,790
192 3,660,791

CLASS 337

102 3,660,792
348 3,660,793
401 3,660,794

CLASS 338

32 3,660,795
180 3,660,796

CLASS 339

22B 3,660,820
29R 3,660,797
36 3,660,798
61M 3,660,799
94L 3,660,800
97L 3,660,801
126RS 3,660,802
176MP 3,660,803
177 3,660,804
183 3,660,805
256SP 3,660,806

CLASS 340

3T 3,660,807
5R 3,660,808
85 3,660,809
33 3,660,811
35 3,660,812
52A 3,660,815
52F 3,660,814
52R 3,660,813
58 3,660,816
114 3,660,817
146.2 3,660,823
172.5 3,660,824
3,660,825
173FF 3,660,827
173LS 3,660,818
173NR 3,660,822
173R 3,660,826
174TB 3,660,829
174TF 3,660,828
174.1H 3,660,821
204 3,660,830
259 3,660,810
274 3,660,831
280 3,660,833
324A 3,660,833
325 3,660,835
347NT 3,660,834
347R 3,660,836
365 3,660,838
381 3,660,839
421 3,660,840

CLASS 343

5DP 3,660,841
7ED 3,660,846
16R 3,660,842
17.1R 3,660,845
18C 3,660,843
18E 3,660,844
112PT 3,660,847
749 3,660,848

CLASS 346

3.5 3,659,914
96WG 3,659,915
3,659,916
160 3,659,917
166 3,659,918
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174 3,659,920
186 3,659,921
202 3,659,922
215 3,659,923
224 3,659,924
225 3,659,925
285 3,659,926
286 3,659,927
291 3,659,928
307 3,659,929

CLASS 351

36 3,659,930
41 3,659,931

CLASS 352

242 3,659,932

CLASS 353

44 3,659,933
103 3,659,934

CLASS 355

1 3,659,935
3 3,659,936
3,659,937
3,659,938

CLASS 356

2 3,659,939
36 3,659,940
51 3,659,941
3,659,942
70 3,659,943
86 3,659,944
100 3,659,945
104 3,659,946
106 3,659,947
110 3,659,948
156 3,659,949
199 3,659,950

CLASS 401

190 3,659,951
196 3,659,952
198 3,659,953
223 3,659,954

CLASS 408

1 3,659,482

CLASS 415

116 3,659,955
219 3,659,956

CLASS 416

179 3,659,957
199 3,659,958
212 3,659,959

CLASS 417

53 3,659,960
114 3,659,961
179 3,659,962
213 3,659,963
360 3,659,964
363 3,659,965

CLASSIFICATION OF PATENTS

395	3,659,966	78	3,660,562	232	3,660,573		3,659,974	88	3,659,986	247	3,659,997
397	3,659,967	81	3,660,563	238	3,660,574	36	3,659,975	89	3,659,981	326	3,659,998
417	3,659,968	85	3,660,564	271	3,660,575	42	3,659,976	97	3,659,987		3,659,999
440	3,659,969	89	3,660,565	273	3,660,576	62	3,659,977	131	3,659,988	327	3,660,000
516	3,659,970	95	3,660,566		3,660,577		3,659,979		3,659,989	396	3,660,001
538	3,659,971	122	3,660,567	274	3,660,578	63	3,659,978	141	3,659,990	405	3,660,002
CLASS 428			3,660,568	308	3,660,579		3,659,982	174	3,659,991	427	3,660,003
232	3,660,573		3,660,569	327	3,660,580	72	3,659,980	192	3,659,992	452	3,660,004
CLASS 434		124	3,660,570	343	3,660,560		3,659,983	214	3,659,993	CLASS 431	
7	3,660,558	147	3,660,571	CLASS 435			3,659,984	242	3,659,994	66	3,660,005
9	3,660,559	181	3,660,572	1	3,659,972		3,659,985		3,659,995	168	3,660,006
47	3,660,561	200		29	3,659,973	78		245	3,659,996	351	3,660,007

CLASSIFICATION OF DESIGNS

D 2—	310	223,531			223,536		15	223,541	D45—	10	223,545	D61—	1	223,549	D85—	2	223,553
D 8—	274	223,532	D26—	8	223,537			223,542	D48—	20	223,546			223,550	D90—	14	223,554
D 9—	179	223,533	D33—	14	223,538			223,543			223,547	D71—		223,551		17	223,555
D14—	30	223,534	D34—	3	223,539	D44—	6	223,544	D52—	10	223,548	D74—		223,552	D97—	2	223,556
D15—	1	223,535		5	223,540												

CLASSIFICATION OF PLANTS

P. —	28	3,144	P. —	57	3,143	P. —	69	3,146	P. —		3,148	P. —		3,151	P. —		3,152
P. —	41	3,145	P. —	68	3,149	P. —		3,147	P. —	88	3,150						

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,659,873	3,659,755	3,660,343	3,659,735	3,660,040	3,659,774
3,660,434	3,659,761	3,660,429	3,659,758	3,660,105	3,659,783
3,660,570	3,659,770	3,660,441	3,659,768	3,660,170	3,659,795
2 : 3,659,502	3,659,772	3,660,465	3,659,802	3,660,195	3,659,797
4 : 3,659,374	3,659,781	3,660,494	3,659,840	3,660,234	3,659,852
3,659,448	3,659,782	3,660,541	3,659,879	3,660,258	3,659,857
3,659,652	3,659,809	3,660,580	3,659,945	3,660,259	3,659,858
3,659,653	3,659,816	3,660,608	3,659,950	3,660,285	3,659,859
3,659,725	3,659,824	3,660,614	3,659,999	3,660,361	3,659,891
3,659,874	3,659,831	3,660,617	3,660,114	3,660,512	3,659,897
3,659,890	3,659,835	3,660,631	3,660,131	3,660,588	3,659,898
3,660,209	3,659,843	3,660,659	3,660,140	3,660,778	3,659,927
3,660,585	3,659,856	3,660,666	3,660,177	3,660,816	3,659,934
3,660,669	3,659,863	3,660,672	3,660,203	3,660,843	3,659,953
3,660,773	3,659,868	3,660,673	3,660,277	13 : 3,659,387	3,659,971
3,660,799	3,659,885	3,660,684	3,660,316	3,659,992	3,660,007
5 : 3,659,391	3,659,892	3,660,685	3,660,351	3,660,134	3,660,056
6 : 3,659,300	3,659,914	3,660,690	3,660,458	3,660,590	3,660,064
3,659,304	3,659,926	3,660,712	3,660,478	3,660,811	3,660,073
3,659,322	3,659,932	3,660,713	3,660,622	14 : 3,659,888	3,660,110
3,659,348	3,659,942	3,660,715	3,660,664	15 : 3,660,072	3,660,118
3,659,377	3,659,943	3,660,723	3,660,757	3,660,671	3,660,127
3,659,422	3,659,957	3,660,724	10 : 3,659,350	17 : 3,659,317	3,660,191
3,659,445	3,659,967	3,660,732	3,659,949	3,659,319	3,660,193
3,659,462	3,659,970	3,660,746	3,660,008	3,659,326	3,660,271
3,659,467	3,659,983	3,660,758	3,660,017	3,659,351	3,660,289
3,659,475	3,659,994	3,660,787	3,660,050	3,659,369	3,660,290
3,659,484	3,660,005	3,660,803	3,660,192	3,659,384	3,660,300
3,659,485	3,660,069	3,660,819	3,660,222	3,659,426	3,660,301
3,659,488	3,660,087	3,660,821	3,660,247	3,659,426	3,660,305
3,659,493	3,660,107	3,660,827	3,660,281	3,659,427	3,660,308
3,659,498	3,660,113	3,660,829	3,660,314	3,659,432	3,660,309
3,659,510	3,660,116	3,660,841	3,660,368	3,659,455	3,660,334
3,659,514	3,660,126	3,660,842	3,660,808	3,659,492	3,660,339
3,659,529	3,660,154	3,660,846	11 : 3,660,703	3,659,573	3,660,342
3,659,532	3,660,155	8 : 3,659,416	3,660,704	3,659,582	3,660,390
3,659,535	3,660,162	3,659,458	12 : 3,659,333	3,659,584	3,660,405
3,659,557	3,660,167	3,659,671	3,659,388	3,659,590	3,660,473
3,659,558	3,660,211	3,659,754	3,659,461	3,659,592	3,660,485
3,659,576	3,660,223	3,659,818	3,659,506	3,659,603	3,660,496
3,659,612	3,660,230	3,660,047	3,659,507	3,659,614	3,660,503
3,659,654	3,660,231	3,660,268	3,659,549	3,659,638	3,660,547
3,659,666	3,660,233	9 : 3,659,306	3,659,712	3,659,668	3,660,609
3,659,676	3,660,243	3,659,313	3,659,714	3,659,672	3,660,610
3,659,680	3,660,249	3,659,400	3,659,778	3,659,700	3,660,618
3,659,684	3,660,270	3,659,452	3,659,791	3,659,723	3,660,623
3,659,695	3,660,275	3,659,483	3,659,807	3,659,734	3,660,627
3,659,699	3,660,288	3,659,593	3,659,808	3,659,744	3,660,651
3,659,703	3,660,293	3,659,598	3,659,849	3,659,756	3,660,653
3,659,709	3,660,310	3,659,637	3,659,986	3,659,767	3,660,660
3,659,746	3,660,336	3,659,686	3,660,029	3,659,771	3,660,668

3,660,682
3,660,683
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18 : 3,659,397
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21 : 3,659,478
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23 : 3,659,759
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24 : 3,659,315
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3,659,893
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6 : 223,537
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27 : 223,533
34 : 223,548
223,550

PLANT PATENTS

6 : 3,144
6 : 3,145
34 : 3,150
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48 : 3,149
55 : 3,143

U.S. GOVERNMENT PRINTING OFFICE: 0—1978

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

May 9, 1972 Volume 898 Number 2

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PATENT OFFICE NOTICES

Concordance: United States Patent Classification to International Patent Classification

A revised and updated edition of the "Concordance: United States Patent Classification to International Patent Classification" has been published and is available from the Superintendent of Documents, U.S. Government Printing Office, for $1.50. This second edition is a revision of the edition of April 1969, and contains about 3,000 changes, corrections and additions suggested by users of the book. It includes all new U.S. classes published up to and including November 1971.

Apr. 12, 1972.

W. W. BURNS, Jr.,
Administrator, Office of Search Systems and Documentation.

Certificates of Correction for the Week of May 9, 1972

3,311,616	3,600,154	3,612,151	3,617,561
3,453,281	3,602,949	3,612,500	3,617,622
3,473,816	3,603,667	3,612,793	3,617,789
3,479,261	3,603,875	3,613,031	3,617,870
3,484,416	3,604,057	3,613,639	3,617,901
3,514,017	3,604,935	3,613,679	3,617,919
3,518,296	3,605,713	3,613,792	3,617,920
3,520,779	3,607,604	3,613,883	3,617,936
3,521,041	3,607,145	3,613,917	3,618,579
3,528,478	3,607,811	3,613,957	3,618,632
3,533,548	3,607,830	3,614,064	3,618,668
3,540,579	3,607,951	3,614,107	3,619,121
3,541,162	3,608,062	3,614,145	3,619,148
3,550,749	3,608,119	3,614,176	3,619,282
3,557,370	3,608,184	3,614,372	3,619,359
3,557,974	3,608,456	3,614,432	3,619,386
3,558,559	3,608,502	3,614,452	3,619,389
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3,624,068	3,625,086	3,626,746	3,635,244
3,624,080	3,625,284	3,627,027	3,642,447

Disclaimers

3,225,077.—*Frederic Charles Schaefer,* Munich-Solln, Germany and *Kenneth Robert Huffman,* Stamford, Conn. N-CYANOIMIDATES AND PROCESSES FOR PREPARING SAME. Patent dated Dec. 21, 1965. Disclaimer filed Jan. 12, 1972, by the assignee, *American Cyanamid Company.*

Hereby enters this disclaimer to claim 2 of said patent.

3,530,790.—*Donald P. Post,* Palatine, Ill. ROOF TRUSS FORMING MACHINE. Patent dated Sept. 29, 1970. Disclaimer filed Dec. 30, 1971, by the assignee, *Structomatic, Inc.*

Hereby enters this disclaimer to claim 12 of said patent.

3,556,101.—*Steven G. Economou,* Wilmette, Ill. SURGICAL SUCTION ASSEMBLY. Patent dated Jan. 19, 1971. Disclaimer filed Dec. 27, 1971, by the assignee, *Hollister Incorporated.*

Hereby enters this disclaimer to claims 9 and 10 of said patent.

3,596,126.—*Susumu Yoshida* and *Akio Ohgoshi,* Tokyo, *Senri Miyaoka,* Kanagawa-ken, and *Yoshiharu Katagiri,* Tokyo, Japan. CATHODE RAY TUBE WITH PARALLEL SLIT GRID STRUCTURE ADJACENT COLOR DISPLAY SCREEN. Patent dated July 27, 1971. Disclaimer filed Apr. 7, 1972, by the assignee, *Sony Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to June 3, 1986.

Dedication

3,270,068.—*Joseph Fath,* Barrington, R.I., and *John M. Kolyer,* Seekonk, Mass. METHODS OF MAKING PRIMARY MERCAPTANS. Patent dated Aug. 30, 1966. Dedication filed Mar. 29, 1972, by the assignee, *Tehnor Apex Company.*

Hereby dedicates to the Public the remaining term of said patent.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MARCH 21, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-11-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-04-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	1-28-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director... Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-01-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-01-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	7-21-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	2-11-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	3-03-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	4-01-71
PHYSICS, GROUP 260—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	1-06-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	1-06-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	2-03-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	1-08-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	1-04-71
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation: Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	3-17-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	2-03-71

Expiration of patents: The patents within the range of numbers indicated below expire during April 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 82nd Congress, approved August 23, 1954 (68 Stat. 704), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151:

Patents ..... Numbers 2,705,222 to 2,707,276, inclusive
Plant Patents ..... Numbers 1,274 to 1,286, inclusive

REISSUES

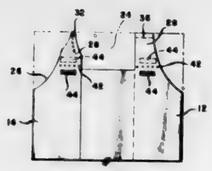
MAY 9, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,348
DISPOSABLE OFFICE GOWN

Theodore Bradley, 147 Eldorado St., Monterey, Calif. 93940

Original No. 3,399,406, dated Sept. 3, 1968, Ser. No. 584,322, Sept. 27, 1966, which is a continuation-in-part of Ser. No. 534,903, Mar. 16, 1966. Application for reissue Aug. 28, 1970, Ser. No. 68,058
Int. Cl. A41d 9/00
U.S. Cl. 2—114 4 Claims

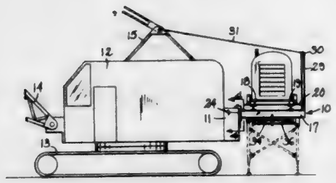


The present application relates to a disposable examination gown of the type adapted for hospital or clinical use wherein portions of the gown may be opened for observation and examination of the patient, then re-sealed for normal wear of the gown upon conclusion of the examination.

27,349
PLATFORM ATTACHMENT FOR CRANES

Roger S. Chapman, Jr., 93 Mohawk Drive, Wallingford, Conn. 06492, and Philip Pillstere, Jr., 189 Winslow Drive, West Haven, Conn. 06516

Original No. 3,481,488, dated Dec. 2, 1969, Ser. No. 684,349, Nov. 28, 1967. Application for reissue Sept. 19, 1970, Ser. No. 65,029
Int. Cl. B66c
U.S. Cl. 212—1 8 Claims

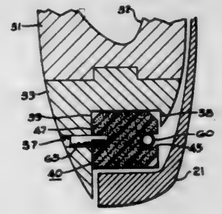


This disclosure relates to a platform attachment for cranes for carrying auxiliary equipment such as air compressors. The platform has foldable legs with each of the legs carrying jacking means so that the platform may be supported on its own legs and moved into engagement with attachment means on the crane. When the platform is supported on the crane the legs are folded beneath the platform.

27,350
LEAKAGE-LIMITING DEVICES FOR ROTATIVE MACHINERY APPLICATION

Joseph M. Jaeger, Woodcliff Lake, N.J., assignor to Jemco Seals, Inc., New York, N.Y.

Original No. 3,460,843, dated Aug. 12, 1969, Ser. No. 514,887, Dec. 20, 1965. Application for reissue Nov. 12, 1970, Ser. No. 89,154
Int. Cl. F16j 15/48
U.S. Cl. 277—26 7 Claims



A leakage-limiting device to be situated between rotary and non-rotary components of a machine. The device includes a leakage-limiting ring to surround a rotative member of the machine with clearance under static conditions. A means is provided for fixing the ring to the non-rotative member of the machine, and a means is provided for retaining this fixed relationship under static conditions. The ring has a low coefficient of friction which will prevent any damage to the rotative member if there should be engagement between the latter and the ring during starting up of the machine. On the other hand, the ring has a coefficient of thermal expansion substantially in excess of those of the materials from which the rotative and non-rotative machinery members are constructed, so that during increase of the temperature of the machine parts to their normal operating temperatures the ring will tend to expand away from the rotative member. However, the positioning and retaining means act on the ring to restrain the latter from radial and circumferential expansion during the temperature rise, and instead to constrain the ring to expand centripetally toward the rotative machine member, thus reducing the clearance with resulting decreased leakage and increased efficiency.

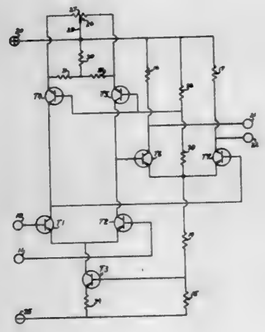
27,351
DIFFERENTIAL DC AMPLIFIER

Donald R. McGraw and Jerald G. Graeme, Tucson, Ariz., assignors to Burr-Brown Research Corporation, Tucson, Ariz.

Original No. 3,440,554, dated Apr. 22, 1969, Ser. No. 579,348, Sept. 14, 1966. Application for reissue Dec. 14, 1970, Ser. No. 98,219
Int. Cl. H03f 3/04, 3/68, 1/32
U.S. Cl. 330—30 D 10 Claims

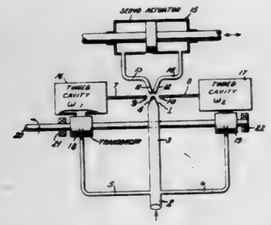
1. In a transistor differential amplifier having: a first and a second connection means for connection to a potential bias source, a pair of input transistors for receiving an imput signal between the base electrodes thereof, and a common mode negative feedback path, said path

including a negative feedback resistor connected to said second connection means, the improvement comprising: a pair of dynamic load transistors each having the emitter-collector circuits thereof connected in series with the emitter-collector circuits of a different one of said input transistors and connected [through a variable resistance]



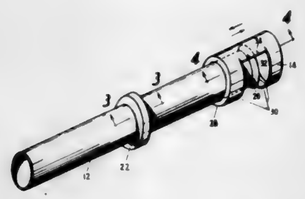
to said first connection means; a bias resistor connected between said first connection means and said negative feedback resistor to thereby provide a negative feedback bias loop; and means connecting the base electrodes of said dynamic load transistors in parallel with each other and to said bias resistor.

27,352
FLUID CONTROL SYSTEM
Hansjoerg Stern, Scotia, N.Y., assignor to General Electric Company
Original No. 2,233,522, dated Feb. 8, 1966, Ser. No. 283,813, May 28, 1963. Application for reissue Mar. 7, 1967, Ser. No. 633,323
Int. Cl. F15b *13/02*
U.S. Cl. 91—3 **1 Claim**



The controller element of a fluid control system is a fluid amplifier circuit which supplies a fluid force to an actuator element for restoring a system parameter to its desired value. A transducer senses the system parameter and converts it to a pulsating flow of control fluid of frequency proportional to magnitude of the system parameter. First and second tuned resonant devices, such as tuned cavities, connected to the output of the transducer have resonant frequencies respectively above and below a frequency corresponding to the desired value of the system parameter. The output fluid flows of the first and second tuned resonant devices are supplied to the control nozzles of the fluid amplifier and have magnitudes of flow respectively proportional to the deviation of the system parameter above and below the desired value.

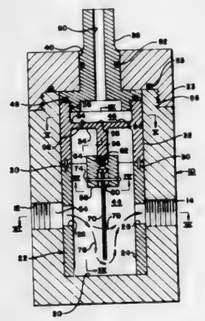
27,353
IRRIGATION CONTROL
Ralph E. Shettel, Rte. 1, Twin Falls, Idaho 83301
Original No. 3,400,909, dated Sept. 10, 1968, Ser. No. 567,444, July 25, 1966. Application for reissue Oct. 16, 1969, Ser. No. 877,915
Int. Cl. F16k *3/00*
U.S. Cl. 251—147 **4 Claims**



[A water metering apparatus having an adjustable inlet device which regulates the flow of water to the field corrugates through a tube.]

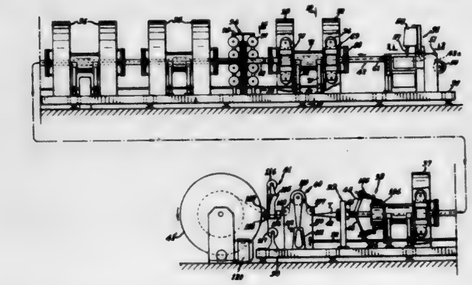
An irrigation ditch valve locating in the earth or concrete lined open ditch bank for the identical metering and automatic distribution of waters to farm lands. The metering means comprising an adjustable cap or gate portion acting with a conduit portion to selectively size a water inlet responsive to crop and seasonal demands. A ditch valve system typically feeding individual corrugates and furrows, or accumulating to feed between borders and dikes through equal spacing and level alinement that affords valve identity through uniform submersion below the checked water line.

27,354
COMBINED RATE OF FLOW, PRESSURE AND TEMPERATURE GAGE
Donald Wiebe, Sewickley, and Richard B. Doorley, Pittsburgh, Pa., assignors to William S. Hansen, doing business as A. Stucki Company, Pittsburgh, Pa.
Original No. 3,354,716, dated Nov. 28, 1967, Ser. No. 397,171, Sept. 17, 1964. Application for reissue Nov. 28, 1969, Ser. No. 880,811
Int. Cl. G01f *1/00*; G01k *13/02*
U.S. Cl. 73—198 **25 Claims**



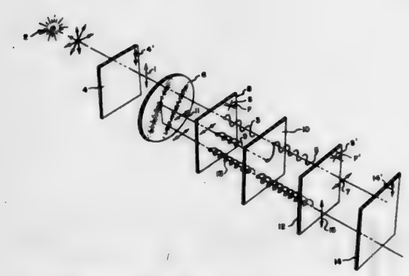
A unitary probe having four strain gages and a cantilever vane mounted on a wall of the probe. Displacement of the vane due to fluid flow is measured by two of the strain gages while another two sense pressure when the probe is adjusted to stop fluid flow. Temperature may be determined by appropriate connection of the gages into a strain gage bridge.

27,355
APPARATUS FOR FORMING TUBULAR REINFORCED PLASTIC MEMBERS
Bruno Bengt Skoggard, King City, Ontario, Canada, and William Clinton Post, Wallingford, Conn., assignors to American Cyanamid Company, Wayne, N.J.
Original No. 3,407,107, dated Oct. 22, 1968, Ser. No. 611,649, Jan. 25, 1967, which is a division of Ser. No. 323,763, Nov. 14, 1963. Application for reissue Apr. 14, 1970, Ser. No. 28,563
Int. Cl. B65h *81/00*
U.S. Cl. 156—432 **18 Claims**



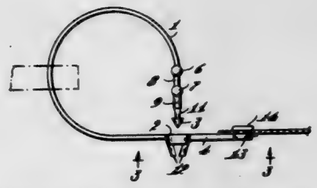
An apparatus for forming continuous lengths of filamentary reinforced plastic pipe by means of a valve assembly which captures a non-moving slug of fluid under pressure over which an imperforate tubular flexible mandrel is continuously passed. Reinforcing filaments and hardenable plastic are applied continuously to the moving mandrel in its inflated condition by winding. Various winding patterns and layer configurations, including an outer wrap, are applied by means of guides and reels. Take-up rolls receive the wound pipe which, if not cured on the machine, is flattened after passing beyond the captured fluid slug. The pipe is then inflated and hardened in situ.

27,356
INFINITE OPTICAL IMAGE-FORMING APPARATUS
Joseph La Russa, Yonkers, N.Y., assignor to Farrand Optical Co., Inc., New York, N.Y.
Original No. 3,443,858, dated May 13, 1969, Ser. No. 529,416, Feb. 23, 1966. Application for reissue Aug. 17, 1970, Ser. No. 64,517
Int. Cl. G02f *1/24*
U.S. Cl. 350—157 **6 Claims**



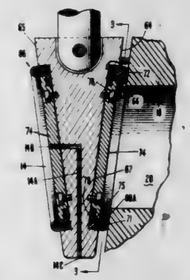
1. Image-forming apparatus comprising a beam-splitting curved mirror, a first quarter-wave plate disposed on the concave side of the curved mirror, a second beam-splitting mirror disposed on the side of the first quarter-wave plate remote from the curved mirror, a second quarter-wave plate disposed on the side of the second beam-splitting mirror remote from the first quarter-wave plate, and a polarizer disposed on the side of the second quarter-wave plate remote from the second beam-splitting mirror, the first and second quarter-wave plates having their fast axes oriented with respect to each other at a substantially integral multiple of 90° and the polarizer having its plane of polarization oriented substantially at an odd integral multiple of 45° to the fast axis of the second quarter-wave plate.

27,357
TAG ATTACHING OR BUNDLE FASTENING DEVICE
Francis G. Mercer, Framingham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.
Original No. 3,402,435, dated Sept. 24, 1968, Ser. No. 633,782, Apr. 26, 1967. Application for reissue Sept. 23, 1970, Ser. No. 74,944
Int. Cl. B65d *63/00*
U.S. Cl. 24—16 PB **9 Claims**



A fastening device for attaching, bundling, affixing or other holding of one or more articles, the device comprising a filament, a socket on the filament and a head on one end of the filament adapted to snap into the socket.

27,358
TOP ENTRY VALVE
Donald R. Nelson, Worcester, Mass., assignor to Goddard Industries, Inc., Worcester, Mass.
Original No. 3,471,122, dated Oct. 7, 1969, Ser. No. 570,920, Aug. 8, 1966. Application for reissue Nov. 18, 1970, Ser. No. 90,884
Int. Cl. F16k *3/12*; F16l *7/00*
U.S. Cl. 251—327 **6 Claims**



A cryogenic gate valve having a body with a full passage formed therein. A gate has opposed faces at an acute angle with recesses formed in the faces of the gate. A sealing means consisting primarily of a plastic O-ring, preferably having an L-shaped configuration, is positioned within the recesses. The sealing means is secured to the gate by a clamping element in the form of a disc positioned within the recess and engaging an inwardly extending flange of the sealing means and securing it directly to and in rigid, interengagement with the gate. Stress razors in the form of annular, sharpened, edges

project from the bottom of the recess into the sealing means to prevent it from moving laterally when the gate valve is cooled.

27,359
METHOD AND APPARATUS FOR TREATING BLOOD

John Ilg, Fitzwilliam, N.H., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Original No. 3,328,255, dated June 27, 1967, Ser. No. 331,342, Dec. 13, 1963, which is a continuation-in-part of Ser. No. 297,854, July 26, 1963. Application for reissue Nov. 24, 1969, Ser. No. 888,178
Int. Cl. A61k 17/00; B01d 21/00; C12b 1/00
U.S. Cl. 424—101 48 Claims

Method of washing blood cells in a closed and sterile system and in a seal flexible bag by adding a sufficient amount of a non-electrolyte washant to the blood cells in the bag to reduce the electrolyte concentration to a point at which the blood cells are precipitated to form a lower precipitated blood cell strata and an upper spent washant strata and separating the spent washant strata from the precipitated blood cell strata by flexing the bag.

The washing step forms part of a method for freezing blood cells for storage and thawing them, wherein the blood cells are added to the bag together with an additive to prevent cell damage by freezing, are then frozen in the bag, are then thawed in the bag and are then washed, as aforesaid, in the bag. After removal of the spent washant strata from the blood cell strata, the precipitated blood cells are resuspended and are collected in a closed and sterile manner in a flexible sterile satellite bag which is sealably secured to the wash bag.

27,360
PREPARATION OF BETA-ACYLOXY-CARBOXYLIC ACIDS AND ALPHA,BETA-UNSATURATED CARBOXYLIC ACIDS BY OXIDATIVE CARBONYLATION

Kenneth L. Olivier, Placentia, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

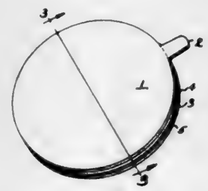
No Drawing. Original No. 3,415,871, dated Dec. 10, 1968, Ser. No. 478,426, Aug. 9, 1965. Application for reissue Oct. 8, 1970, Ser. No. 79,320
Int. Cl. C07c 51/14, 67/04
U.S. Cl. 260—497 A 8 Claims

Ethylenically unsaturated hydrocarbon olefins are reacted under oxidative carbonylation conditions to produce α,β-ethylenically unsaturated carboxylic acids and β-acyloxy carboxylic acids wherein the carboxylic acid portion has one more carbon than the olefin, by contacting the olefin, oxygen and carbon monoxide with an anhydrous reaction medium containing a Group VII noble metal and, as the redox agent therefor, a ferric salt soluble in the reaction medium and a soluble halide. In a specific embodiment, ethylene is converted to acrylic and β-acetoxy propionic acid by oxidative carbonylation wherein ethylene, oxygen and carbon monoxide are introduced into contact with an acetic acid containing reaction medium which also contains about 0.2 weight percent palladium chloride, 0.2 weight percent lithium chloride, 0.2 weight percent ferric chloride and 0.2 weight percent lithium acetate. The oxidative carbonylation proceeds without the necessity for incorporating a dehydrating agent in the reaction medium as is required with previous oxidative carbonylations.

27,361
RECLOSABLE PACKAGE

Harmon B. Miller, 1095 W. Conway Drive NW., Atlanta, Ga. 30327

Original No. 3,272,422, dated Sept. 13, 1966, Ser. No. 444,271, Mar. 31, 1965. Application for reissue Mar. 6, 1970, Ser. No. 17,351
Int. Cl. B65d 43/02
U.S. Cl. 229—43 7 Claims



The disclosure embraces a package having a reclosable lid which is releasably secured to the body of the package by a pressure sensitive adhesive; a peelable film is interposed between the package and the pressure sensitive adhesive.

PLANT PATENTS

GRANTED MAY 9, 1972

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,153
STRAWBERRY PLANT

Ruth Millay, Portland, Maine, assignor to June F. Littlefield, Lewiston, Esther Lavoie, Lisbon Falls, and Lorna A. Young, Portland, Maine, fractional part interest to each

Filed Apr. 6, 1970, Ser. No. 26,175
Int. Cl. A01h 5/03
U.S. Cl. Plt.—49 1 Claim

1. A new and distinct variety of strawberry plant, substantially as herein shown and described, characterized by the unique combination of a general resemblance to the "Red Rich" strawberry variety, but having a habit of producing longer, straighter, stiffer and more numerous runners ranging up to six feet in length before freezing weather, a substantially larger plant size, a more continuous everbearing habit without pause between spring and fall seasons, heavier fruit production, and a superior fruit flavor.

3,154
PLUM TREE

John M. Garabedian, 3158 Hamilton St., Fresno, Calif. 93712

Filed Apr. 15, 1970, Ser. No. 28,992
Int. Cl. A01h 5/03
U.S. Cl. Plt.—38 1 Claim

1. A new and distinct variety of plum tree substantially as illustrated and described which is characterized by its vigorous growth; and its regular and heavy bearing of unusually large plums which are approximately fifty percent larger than the plums from the Kelsey plum tree (unpatented), which it most nearly resembles, but from which it is distinguished in having a dark purple skin, more nearly resembling the skin of the fruit of the Queen Ann plum tree (unpatented), having a brilliant red flesh more similar to the flesh of the fruit of the Mariposa plum tree (Patent No. 111) and in its relatively thick, tough skin which has a greater resistance to shriveling and to bruising.

3,155
AZALEA PLANT

Takeo Yuge, Altadena, Calif., assignor to Geo. J. Ball, Inc., West Chicago, Ill.

Filed July 13, 1970, Ser. No. 54,667
Int. Cl. A01h 5/00
U.S. Cl. Plt.—57 1 Claim

An improved variety of red flowered azalea plant particularly adapted for greenhouse pot-forcing characterized by its profuse production of very large, highly frilled, long lasting, bright red blossoms which are presented very upright in candle style.

3,156
POA PRATENSIS

Torao T. Fuchigami, Long Beach, Calif., and Eugene W. Mayer, Marysville, Ohio, assignors to The O. M. Scott & Sons Company, Marysville, Ohio

Filed July 20, 1970, Ser. No. 56,757
Int. Cl. A01h 5/00
U.S. Cl. Plt.—88 1 Claim

A variety of *Poa pratensis* characterized by its excellent turf performance and disease resistance, a low growing profile, a deep blue-green color, excellent seed yield, and a favorable response to vertical growth inhibitors of the type described in U.S. Patent No. 3,462,257.

3,157
CHERRY TREE

Frederic W. Anderson, Merced, Calif., assignor to Fowler Nurseries, Inc., Newcastle, Calif.

Filed July 20, 1970, Ser. No. 56,761
Int. Cl. A01h 5/03
U.S. Cl. Plt.—37 1 Claim

A dense, large size, vigorous cherry tree having an upright to spreading branching habit, foliage with large ovate leaves, white bloom of medium size, and large deep-red globose fruit, uniform in size and shape, and borne regularly and heavily; the fruit—while otherwise distinct—having general similarity to the Bing (unpatented) in size, appearance, and harvest period.

3,158
PECAN TREE

William T. Osterman, Nebo, Ill., assignor to Stark Bros. Nurseries & Orchards Company, Louisiana, Mo.

Filed July 22, 1970, Ser. No. 57,374
Int. Cl. A01h 5/03
U.S. Cl. Plt.—31 1 Claim

1. A new and distinct variety of pecan tree, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a general resemblance to the variety "Starking Hardy Giant," but having heavier foliage and greater nut crop productivity, excellent hardiness to cold temperatures as low as —18° F. without injury, consistently good annual productivity of large nuts of excellent quality and good flavor, said nuts having thin shells which separate easily from the kernels, and a self fertile habit which assures good annual nut crops of good quality even in the absence of any neighboring pecan trees.

3,159
WALNUT TREE

Louis Rodhouse, Pleasant Hill, Ill., assignor to Stark Bros. Nurseries & Orchards Company, Louisiana, Mo.

Filed July 22, 1970, Ser. No. 57,375
Int. Cl. A01h 5/03
U.S. Cl. Plt.—32 1 Claim

1. A new and distinct variety of walnut tree, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a heavy nut bearing habit and consistently good annual nut crops, good hardiness to cold temperatures as low as —20° F. without injury, excellent flavor qualities of the nuts, with no bitter taste, an attractive light color of the kernels which is retained during proper storage of the nuts, and a self-fertile habit when grown in isolation from other walnut varieties.

3,160
POINSETTIA PLANT

Paul Ecke, Encinitas, Calif., assignor to Paul Ecke, Inc., Encinitas, Calif.

Filed July 24, 1970, Ser. No. 58,210
Int. Cl. A01h 5/00
U.S. Cl. Plt.—86 1 Claim

1. A new and distinct variety of poinsettia plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a short-growing and compact plant habit, a uniform and fast rooting habit, a self-branching habit resulting in the

production of multiple blooms without pinching off the terminal buds as required for other poinsettia varieties, attractive green foliage which is usually somewhat darker green in color than the foliage of "Annette Hegg," with the leaves having distinctive petioles of red color on both the upper and lower surfaces thereof, attractive, darker red bracts than the normal red bracts of "Annette Hegg," said dark red bracts having less tendency to droop than the bracts of "Annette Hegg" when the plants reach maturity, and the darker red color of the bracts being more stable and retaining its brilliance much longer when the plants are used for home decoration, and long-lasting plant qualities.

3,161
ROSE PLANT
Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277
Filed Aug. 24, 1970, Ser. No. 66,663
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—10 1 Claim

1. A new and distinct variety of miniature rose plant of hardy, dwarf, rounded, much branched, bush type, as illustrated and described, characterized by buds and flowers resembling the Eleanor rose (miniature—United States Plant Patent No. 2,175) in general shape and size but differing in color, the general color effect of the opening bud and freshly opened flower being a bright shade of orange-red; and further characterized by a plant of compact growth but more vigorous than the Eleanor variety, easy to propagate from cuttings, with medium small semi-glossy foliage, an abundance of bloom borne almost continuously throughout the growing season, with flowers borne singly or in loose candelabra clusters.

3,162
ROSE PLANT
Walter E. Lammerts, Freedom, Calif., assignor to Germain's Inc., Los Angeles, Calif.
Filed Sept. 25, 1970, Ser. No. 75,794
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—22 1 Claim

A new floribunda variety of rose plant particularly characterized by the very clear and uniform red margin extending completely around each petal, except for the base, which in the opening stage of the bloom contrasts sharply with the basic ivory color of the rest of the petal. The new plant is a free producing variety and under greenhouse conditions produces blooms throughout the entire year that have excellent lasting quality as cut flowers.

3,163
ROSE PLANT
Herbert C. Swim and O. L. Weeks, Ontario, Calif., assignors to The Conard-Pyle Company, West Grove, Pa.
Filed Sept. 29, 1970, Ser. No. 76,650
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—20 1 Claim

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a healthy and vigorous plant habit, long and strong cutting stems which give good support to the blooms, abundant foliage of excellent quality and having better than average disease resistance, a free blooming habit which results in good garden color almost constantly during its normal blooming season, excellent flower petal substance, with consequent good qualities for cut flowers, as well as for garden and landscape use, and an attractive and distinctive fiery orange-red flower color which intensifies in its luminescence in hot weather.

3,164
PLUM TREE
John M. Garabedian, 3158 Hamilton St., Fresno, Calif. 93712
Filed Oct. 19, 1970, Ser. No. 82,228
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—38 1 Claim

A plum tree of medium to small size, medium vigor, upright, open, vase-formed, hardy, and a regular and productive bearer of uniform, large to medium size, usually semi-freestone fruit having red skin and red flesh.

3,165
NECTARINE TREE
Frederic W. Anderson, Merced, Calif., assignor to Reedley Nursery, Inc., Reedley, Calif.
Filed Oct. 29, 1970, Ser. No. 85,313
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—41 1 Claim

A variety of nectarine tree which is large, vigorous, spreading, open, and a regular and very productive bearer of medium size, globose to oblong, freestone fruit, of good keeping and shipping quality, which is uniform both as to size and form; the fruit—which is characterized by an unusually long harvest period—having yellow flesh with red at the pit cavity, and skin which is entirely overspread with high red at maturity.

3,166
YELLOW ROSE
Robert G. Jelly, Richmond, Ind., assignor to E. G. Hill Co., Inc., Richmond, Ind.
Filed Oct. 24, 1969, Ser. No. 869,402
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—24 1 Claim

A continuous and free blooming variety of floribunda rose plant for greenhouse culture, characterized by the very stable yellow color of its blooms, its vigorous and upright growth habit, and its improved winter productivity under low light intensities.

3,167
HYBRID TEA ROSE
Robert G. Jelly, Richmond, Ind., assignor to E. G. Hill Co., Inc., Richmond, Ind.
Filed Oct. 24, 1969, Ser. No. 869,403
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—14 1 Claim

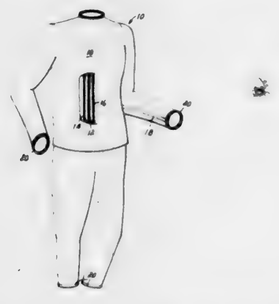
A new variety of hybrid tea rose plant developed for greenhouse production of cut flowers by cross with Snowsong Supreme (P.P. 2,624) and distinguished by longer stems for its blooms, the lively white color of the blooms, and the ability of the flowers to withstand handling and shipping without bruising.

PATENTS

GRANTED MAY 9, 1972

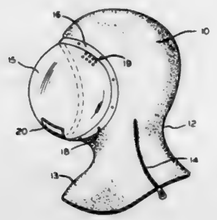
GENERAL AND MECHANICAL

3,660,849
DEEP SUBMERGENCE DIVING SUIT AND INSULATIVE MATERIAL THEREFOR
Nelson Jonnes, Stillwater, Minn., and William S. Friedlander, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of application Ser. No. 701,421, Jan. 29, 1968, now abandoned. This application July 13, 1970, Ser. No. 54,163
Int. Cl. B32b *3/26*; B63c *11/04*; B32b *5/16*
U.S. Cl. 2—2.1 20 Claims



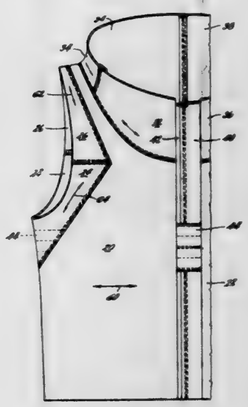
Deep submergence diving suit which maintains its low thermal conductivity at great depths and provides constant buoyancy at changing depths, having a layer of thixotropic material such as a grease or very low modulus elastomeric material filled with hollow glass microbubbles as an insulating layer, the preferred construction being based on a gel of block copolymer and mineral oil as the low modulus matrix.

3,660,850
PROTECTIVE HOOD FOR CRASH HELMETS
Walter E. Garbisch, 4215 W. Hawthorne Trace, Brown Deer, Wis.
Filed Mar. 27, 1970, Ser. No. 23,209
Int. Cl. A41c *13/00*
U.S. Cl. 2—2 7 Claims



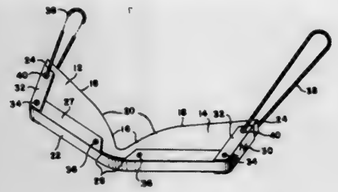
A hood fits over a crash-helmet, the neck, and part of the shoulders of a person wearing the helmet. A transparent, double-walled face shield attached to the hood protects the wearer of the crash-helmet.

3,660,851
RESTRAINT TORSO FOR A PRESSURIZED SUIT
Michael A. Marroni, Jr., Westogue, Conn., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Dec. 20, 1968, Ser. No. 785,613
Int. Cl. A62b *17/00*; A41b *1/00*
U.S. Cl. 2—2.1 1 Claim



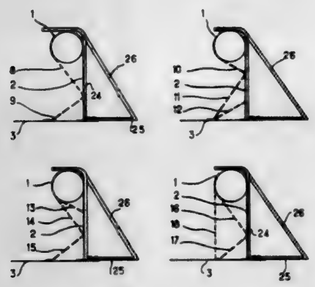
A restraint torso for a pressurized suit consists solely of restraint cloth (with the exception of a zipper for frontal closure not disclosed herein). The torso is rendered elliptical and flat across the chest, rather than cylindrical, by means of shoulder transitions pieces, an upper piece extending from the front of the armhole over the shoulder to the rear of the armhole, and a lower piece extending from the front of the armhole under the arm to the rear of the armhole. The pattern of the lower piece includes slightly curved edges which form straight seams with the main torso pieces, and is cut with the warp oriented so as to provide, in the torso, a warp which extends curvilinearly from below the arm upwardly and inwardly toward the neck at the front of the suit, and with the warp providing virtual extension of the frontal warp direction at the rear of the suit (from the arm downwardly toward the center of the back). The upper piece is so cut that its warp runs from front to back directly over the shoulder. These pieces, together with seams which are five layers thick, and therefore provide restraint against stretching, cause the torso to distort when under pressure into the aforementioned generally elliptical shape, with the chest being relatively flat across the front between the arms. Collar transitions are provided so that the front center of the suit is substantially a straight line from the chin to the waist, thereby to accommodate a reliable closure, such as a zipper with a seal. A restraint belt is provided from under one arm around the back to the under side of the other arm. The main torso pieces in the front are double layers of cloth whereas the main torso pieces in the rear are single layers of cloth. This factor, together with the restraint belt at the back, causes the torso, when under pressure, to remain relatively flat across the chest, while allowing a certain amount of ballooning in the upper back. Precise cloth patterns are disclosed.

3,660,852
EYE SHADE
Leonard Schulenberg, Mound City, Mo.
Substitute for application Ser. No. 563,109, July 6, 1966, now abandoned. This application Aug. 7, 1970, Ser. No. 62,050
Int. Cl. A61f 9/00
U.S. Cl. 2—12 4 Claims



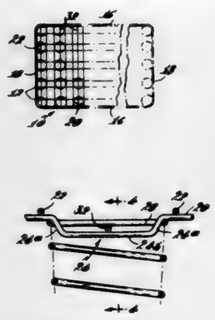
An eye shade particularly adapted for use by athletes during training, as by basket ball players, for practicing the manipulation of a ball or the like without looking at it. The shade is of spongy, yielding material worn under the eyes and capable of absorbing blows without injuring the player, resilient, stiffening material being applied to the forward edge of the shade so that it may be properly retained in its position of use beneath the player's eyes.

3,660,853
TRANSPORTABLE TANKS
Roger Eugene Ducrocq, and Michel Henri Chevalier, both of Lermont-Ferrand, France, assignors to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes, Colombes, France
Filed Dec. 15, 1970, Ser. No. 98,326
Claims priority, application France, Dec. 16, 1969, 6943628
Int. Cl. E04h 3/18, 3/16
U.S. Cl. 4—172.19 9 Claims



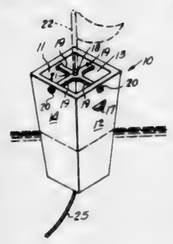
This invention relates to transportable tanks that comprise a base, a wall and one or more inflatable tubes that form part of the wall. The invention is concerned with making the inflatable tube support the wall in a more efficient manner than hitherto and also to form the tank into a polygonal shape, such as a rectangle. The tubular member is reinforced or supported by flexible members which are so located and relatively crossed that the tube acts as a float when the tank is filled with water and thus maintains the polygonal shape of the tank. Additional supports may be used along the sides of the tank and the corners are supported differently from the rectilinear parts. Such a tank may be used as a transportable swimming pool.

3,660,854
SPRING ASSEMBLY AND METHOD OF MAKING THE SAME
Harry A. Garceau, Charlton City, Mass., assignor to Webster Spring Co. Inc., Oxford, Mass.
Filed May 18, 1970, Ser. No. 38,266
Int. Cl. A47c 23/04, 25/00
U.S. Cl. 5—267 7 Claims



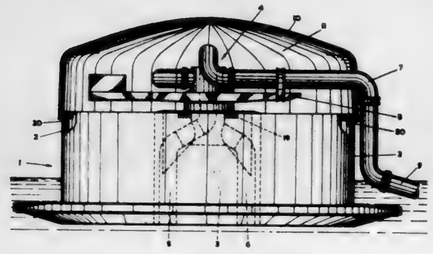
A spring structure comprising a rigid border wire rectangular in configuration having spaced parallel ends and sides, spaced pairs of parallel wires fixed to the border wire transversely and longitudinally thereof, said pairs of wires crossing at right angles and providing at their intersections end supports for the ends of coil springs, said border wire and pairs of crossing wires comprising a rigid grid, the pairs of wires in one direction containing between the pairs of wires in the other direction depressions which extend from the lower side of the grid, a plurality of coil springs mounted to the lower side of the grid with their axes perpendicular thereto and with their ends engaged with the grid and with said depressed portions of the wires, and locking wires extending from border wire to border wire of the grid between the ends of the coils and said depressed portions of the wires in directions at right angles to the wires containing the depressions.

3,660,855
FLOATING MARINE MARKER
Clarence D. Inman, 107 Pine Drive, Covington, La.
Filed Dec. 4, 1970, Ser. No. 95,040
Int. Cl. B63b 21/52
U.S. Cl. 9—8 R 6 Claims



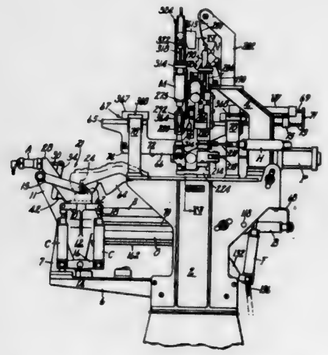
A floating marine marker in which a relatively thin wall surrounds a central vertical open area to permit the passage of water therethrough from rough seas. The relatively thin wall is divided into a plurality of water tight compartments which may be filled with flotation foam if desired. In the modified form of the invention the wall is formed of flotation foam coated with plastic to prevent disintegration of the wall. A flexible removable plastic spider having a central vertical bore is mounted in the top of the marker and is adapted to support a flag pole or like. A bar is embedded in the lower end of the marker for attaching anchor lines thereto. The bar has a central notch for supporting the flag pole. The marker has downwardly sloping tapered walls and may be generally rectangular in horizontal cross-section, triangular in horizontal cross-section, hexangular, circular, oval, or any other desired cross-sectional shape.

3,660,856
MOORING BUOY
Robert Smulders, Meer, Belgium, assignor to Single-Buoy Mooring, Inc., Zug, Switzerland
Filed Oct. 9, 1969, Ser. No. 865,153
Claims priority, application Netherlands, Oct. 10, 1968, 6814522
Int. Cl. B63b 21/50, 21/00
U.S. Cl. 9—8 P 5 Claims



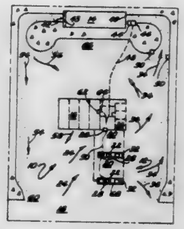
A mooring buoy for transferring fluids between a vessel and the shore comprises a buoy anchored to the bottom of the body of water on which it floats, and a turntable carried by the buoy. To prevent icing, a shield in the form of an inverted bowl is carried by the turntable and is heated, either electrically or by a fluid such as sea water, closed circuit fresh water, or the handled fluid itself. The buoy is also heated adjacent the rim of the cover and adjacent the turntable bearings.

3,660,857
AUTOMATICALLY LASTING MACHINES
Jeremy C. Heal; Raymond Snape, both of Leicester, Leicestershire, and Philip B. Gower, Skipton, Yorkshire, all of England, assignors to USM Corporation, Boston, Mass.
Original application Feb. 17, 1969, Ser. No. 799,856. Divided and this application June 1, 1970, Ser. No. 54,062
Int. Cl. A43d 3/00
U.S. Cl. 12—127 7 Claims



A shoe lasting machine having a support automatically orienting shoes with lasting devices which include grippers automatically located at opposite sides of each shoe and adapted to pull the upper predetermined amounts depending on whether the shoe is left or right.

3,660,858
CAR BEAUTY CARE CENTER
Orville S. Smith, Jr., Columbia, S.C., assignor to Conston, Inc., Columbia, S.C.
Filed June 1, 1970, Ser. No. 41,868
Int. Cl. B60s 3/00
U.S. Cl. 15—1 9 Claims



A car beauty center providing a plurality of optional services for the care and beautification of automotive vehicles including fueling, car washing and waxing, as well as custom interior, facilities.

3,660,859
APPARATUS FOR CLEANING COKE OVEN JAMBS
Charles D. McCullough, Metropolis, Ill., assignor to Wilputte Corporation
Filed July 15, 1970, Ser. No. 55,163
Int. Cl. C10b 43/04
U.S. Cl. 15—93 7 Claims

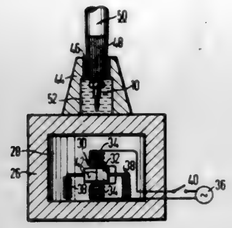


Apparatus for scraping coke oven jambs clean of carbon-tar substances formed thereon during a coking operation. The apparatus includes a pair of carriages having a plurality of scraper units thereon for scraping the side walls of the jamb, and upper and lower oscillating scraping mechanisms operating in timed relationship with said carriages, the oscillating scraping mechanisms scraping the top and bottom walls, respectively, and the corner portions contiguous therewith.

3,660,860
VIBRATION DEVICE
Peter Dziak, Nuraberg, Germany, assignor to J. S. Staedtler, Nuraberg, Germany
Filed Apr. 1, 1970, Ser. No. 24,637
Claims priority, application Germany, Aug. 25, 1969, P 19 43 199.3
Int. Cl. B08b 7/02; B06b 1/00
U.S. Cl. 15—94 5 Claims

A cleaning device for fountain pens having tubular nibs has a vibrator mounted in a housing on which a coupling device

for coupling to the pen to be cleaned is fixedly fastened. The direction of oscillation of the vibrator is aligned with the bore of the tubular nib of a coupled pen.



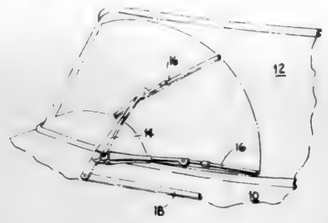
3,660,861
COMBINATION ROUND TOWEL AND HOLDER
Edward N. Delmonico, 1546 Bruce St., North Vancouver, British Columbia, Canada
Filed Jan. 6, 1970, Ser. No. 1,016
Claims priority, application Canada, Jan. 10, 1969, 039,777
Int. Cl. A47k *10/12*
U.S. Cl. 15—209 R 4 Claims



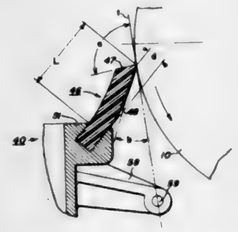
A functional and decorative towel and hanger assembly including a hanger with a first portion adapted to be secured to a wall and a second portion detachably connectable to a towel for suspending the same therefrom, and a circular towel connected to the latter at the approximate geometric center of the towel such that when draped, it provides a neat appearing decorative assembly functional for use in that a minimal amount of towel is utilized for anchoring the same with the remainder being usable for drying hands.

3,660,862
WIPER ARM
Anthony C. Scinta, Hamburg, N.Y., assignor to Trico Products Corporation, Buffalo, N.Y.
Filed Apr. 24, 1970, Ser. No. 31,492
Int. Cl. B60s *1/40*
U.S. Cl. 15—250.23 8 Claims

A blade supporting arm connector for releasably attaching a wiper blade to a wiper arm is pivotally secured to the free end of the wiper arm about an axis perpendicular to an associated windshield and is spring urged by a torsion spring, a tension spring, or a hairpin type spring to pivot relative to the longitudinal axis of the arm assembly to a position where it presents the blade with the longitudinal axis of the blade angularly displaced from the longitudinal axis of the arm. The blade connector may be a cantilever pin type element for releasably engaging a receptor in a blade superstructure or a bayonet type element for reception in a bayonet clip. In certain modifications a housing, sector shaped in lateral cross section, lined with anti-friction sheet material, is secured to the end of the arm and encloses the end of the blade connector. A cushioning element may be disposed on each side of the enclosed portion of the arm connector. In other modifications a similar housing is secured to the inner end of the blade supporting connector and encloses the free end of the arm. A housing is not included in all modifications.

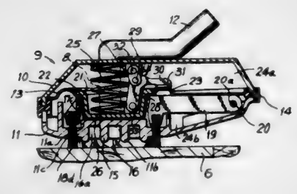


3,660,863
CLEANING APPARATUS
Dennis P. Gerbasi, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed July 3, 1969, Ser. No. 838,984
Int. Cl. G03g *15/00*
U.S. Cl. 15—256.51 7 Claims



An elastomeric blade is herein disclosed for removing a dry particulate material from a surface to which the particulate material is electrostatically bonded. An edge of the blade is supported in pressure contact against the surface in a cutting tool fashion and relative motion between the blade and the surface produced wherein the edge of the blade moves between the particulate material and the surface to cut or chisel the material from the surface.

3,660,864
MULTI-PURPOSE SUCTION CLEANER NOZZLE
Outen Schwartz, Varmdo, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Feb. 2, 1970, Ser. No. 7,704
Claims priority, application Sweden, Feb. 6, 1969, 1562/69
Int. Cl. A47l *9/06*
U.S. Cl. 15—319 7 Claims

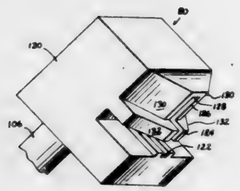


This invention relates to a multi-purpose suction cleaner nozzle having a suction inlet which is movable over a rug to remove dirt therefrom. A brush for removing dirt from a floor is mounted on a diaphragm for movement between upper and lower positions at the vicinity of the suction inlet, the diaphragm forming a wall of a space in communication with a passageway leading to the suction inlet and in which a partial vacuum is developed during operation of the nozzle.

A spring acting on the diaphragm tends to bias the brush to its lower position below the suction inlet responsive to a first partial vacuum developed in the space when a floor is cleaned by the nozzle and the air flow therethrough exceeds a predetermined speed. A second higher partial vacuum is developed in the space when a rug is cleaned by the nozzle and the air flow therethrough is at or less than the predetermined speed, such higher vacuum overcoming the biasing action of the spring and moving the brush to its upper position at or above the suction inlet.

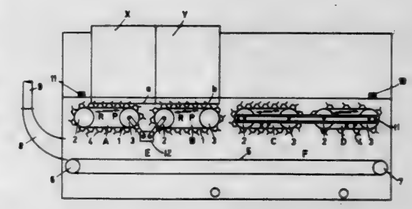
In order to insure that the brush will always move downward from its upper to its lower position, a vertical toggle joint is pivotally connected at its opposite ends to a wall of the space and to the diaphragm and the bend of the toggle is moved horizontally responsive to vertical movement of the diaphragm. When the diaphragm moves upward it causes the toggle bend to move in one direction through dead center to promote movement of the brush to its upper position; and when the diaphragm moves downward with the aid of the spring, it causes the toggle bend to move in the opposite direction to a stable position near dead center. At such stable position the toggle and brush function to support the nozzle when a floor is cleaned, thus eliminating the need for a separate support for the nozzle.

3,660,865
APPARATUS FOR THE MANUFACTURE OF COLOR CATHODE RAY TUBE SCREENS
John F. Larson, Seneca Falls, N.Y., and Walter A. Polashenski, Roanoke, Va., assignors to Sylvania Electric Products, Inc.
Original application Apr. 22, 1968, Ser. No. 723,098. Divided and this application Sept. 24, 1970, Ser. No. 75,103
Int. Cl. A47d *9/02*
U.S. Cl. 15—415 2 Claims



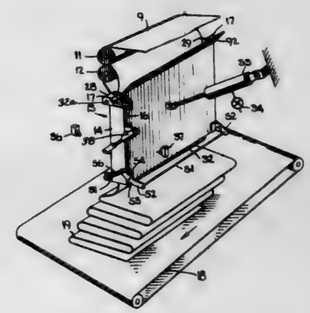
Methods for drying the upstanding walls of a cathode ray tube face plate, particularly around the area of the mask supporting studs are disclosed. The methods utilize an accurately controlled and automatically positionable head for removing excess liquid from the walls and stud area after a processing step. The liquid may be that remaining from either a prerinse in which case either forced air or a vacuum system may be utilized for the liquid removal; or after a developing step in the actual screen formation when a vacuum principle alone is utilized for drying the wall area. The described apparatus for carrying out the methods comprises a free-floating, self-orienting head which is pivoted to provide arcuate movement in a given substantially vertical plane, and reciprocatable shaft means connected to the free-floating head for indexing the head in a substantially perpendicular direction. Cam means associated with the reciprocatable movement causes engagement and disengagement of the head with the face plate in accordance with the direction of movement thereof. The cam means causes the head to pivot in a substantially horizontal plane to bring the head into engagement with the face plate wall.

3,660,866
APPARATUS FOR OPENING BALES OF TEXTILE FIBERS
Peter Jagst, Rheydt, Germany, assignor to Truetzschler & Co., Rheydt, Germany
Filed Jan. 19, 1970, Ser. No. 3,680
Claims priority, application Germany, Jan. 22, 1969, P 19 02 951.7
Int. Cl. D01g *7/06*
U.S. Cl. 19—81 6 Claims



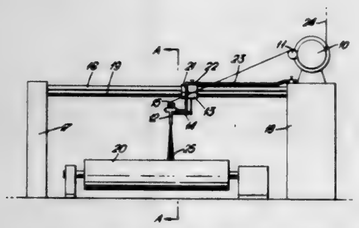
Improved textile fiber bale opening apparatus having a multiplicity of conveyor belts each of which is supported by two spaced rollers and is rotatable about the rollers in both, opposite directions; outwardly directed needle means on the surface of the conveyor belts adapted to penetrate a bale resting thereon; motive means to drive the conveyor belts; and control means at opposite ends of the total conveyor belt path operatively connected to the drive means, and operative in response to a bale reaching this path end, adapted to reverse the drive direction.

3,660,867
METHOD FOR PRODUCTION OF CROSS-LAPPED STRUCTURES
George A. Watson, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.
Continuation of application Ser. No. 568,877, July 29, 1966, now abandoned. This application May 13, 1970, Ser. No. 37,416
Int. Cl. D01g *25/00*; D04h *3/02*
U.S. Cl. 19—163 3 Claims



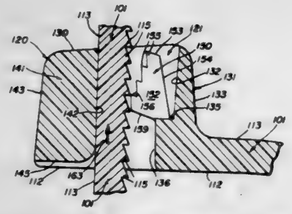
A method for producing cross lapped structures such as battings from lightweight continuous filament webs utilizing high speed delivery means wherein the lightweight web is traversed across a moving collection means utilizing air currents to aid in the traversal, thereby producing a cross lapped structure.

3,660,868
MANUFACTURE OF NON-WOVEN FIBROUS WEBS
Clive Harry Weightman, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England
Filed May 19, 1969, Ser. No. 825,841
Claims priority, application Great Britain, May 29, 1968, 25,776/68; Oct. 4, 1968, 47,223/68
Int. Cl. D04h 11/04
U.S. Cl. 19—163 2 Claims



A process for making a substantially uniform web comprising traversing fiber or filament depositing means across a moving conveyor under conditions defined by the formula $y = 2x(n+z)$ where y is the total effective width of web deposited by the fiber or filament depositing means measured in the direction of travel of the conveyor, x is the speed of the conveyor, t is the turn round time of the fiber or filament depositing means, x is the traverse time of the fiber or filament depositing means and n is any whole number.

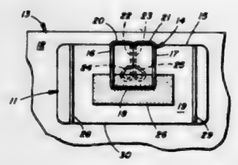
3,660,869
ONE-PIECE CABLE TIE
Jack E. Caveney, Chicago, and Roy A. Moody, Flossmoor, both of Ill., assignors to Panduit Corp., Tinley Park, Ill.
Filed May 1, 1969, Ser. No. 828,075
Int. Cl. B65d 63/00
U.S. Cl. 24—16 PB 14 Claims



An integral one-piece cable tie including an elongated flexible strap having a row of teeth thereon, a frame integral with one end of the strap and having an abutment wall and an end wall and an entry surface and an exit surface and a strap-receiving opening therethrough, a ledge on the end wall, and a pawl pivotally mounted on and integral with the ledge within the opening and having a set of teeth shaped complementary to the row of the teeth and defining with the end wall a strap-receiving throat disposed normal to the longitudinal axis of the strap as molded; there also are disclosed methods of molding such a cable tie.

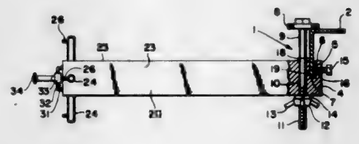
3,660,870
STATIONERY FASTENER ASSEMBLY
Harold F. Murphy, 46 Monmouth Parkway, Monmouth Beach, N.J.
Filed Dec. 9, 1970, Ser. No. 96,551
Int. Cl. B42f 1/00
U.S. Cl. 24—67 R 7 Claims

A stationery fastener assembly attachable to a folder or other stationery carrier comprising a backing sheet attached to the folder or carrier and a resilient clip attached to the top edge of the backing sheet, the clip having a front portion overlying the face of the backing sheet characterized by a pair of generally parallel, spaced apart legs extending downwardly from the top of the sheet and connected at their



opposite ends by an integral spacing leg, the rear portion of the clip comprising a pair of legs extending downwardly from the top edge of the backing sheet, the front portion of the clip being resiliently engaged to the front face of the backing sheet, and a frictional surface on the face of the backing sheet in close proximity to the front portion of the clip.

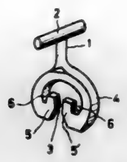
3,660,871
UNIVERSAL BEAM CLAMP
William Joseph Boyle, Jr., New Orleans, La., assignor to Delta Marine Constr. Division of Unitec Industries, Inc., Baltimore (Cockeysville), Md.
Filed Aug. 26, 1970, Ser. No. 67,048
Int. Cl. A44b 21/00
U.S. Cl. 24—73 R 10 Claims



Universal beam clamp includes two clamping jaws, one movable relative to the other for securing the clamp to both vertical and horizontal support structures. The relatively stationary jaw has an oversize slot to permit engagement with flanges of different thicknesses, and one or more leveling screws may be provided for adjusting the angular orientation of the clamp with respect to the support structure. The movable jaw desirably consists of an annular disc or plate which provides a clamping surface around its entire periphery and is carried by a threaded shaft extending through an aperture in the base of the stationary jaw adjacent the slot therein for movement toward and away from the stationary jaw upon tightening and loosening of a nut threaded onto the other end of the shaft. The load may be directly supported by the clamp or suspended therefrom, and a handrail mount may be provided on each side of the clamp to permit support of a handrail in any position of the clamp.

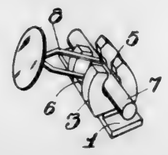
3,660,872
FASTENERS FOR ATTACHING CLOTHES TO RIBS OF UMBRELLAS
Takuo Kawano, Kyoto, Japan, assignor to Moon Bat Kabushiki Kaisha, Kyoto, Japan
Filed Sept. 28, 1970, Ser. No. 75,936
Claims priority, application Japan, Dec. 26, 1969, 45/1549
Int. Cl. A44b 21/00; A45b 25/18
U.S. Cl. 24—75 PF 4 Claims

A fastener for attaching the cloth to the ribs of a umbrella is made of deformable material and comprises a neck, a transverse rod integrally connected to one end of the neck and a substantially inverted U-shaped anchor connected to the other end of the neck. The outer ends of the legs of the



anchor are folded back inwardly to form grooves to receive the rib.

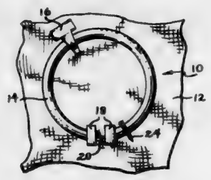
3,660,873
JEWELRY HOLDING DEVICE
Mitsuo Kawashima, Tokyo, Japan, assignor to Kabushiki Kaisha Daiichi Keisu Seisakusho, Tokyo, Japan
Filed July 1, 1970, Ser. No. 51,611
Int. Cl. B65d 1/34; A44b 21/00
U.S. Cl. 24—81 CR 6 Claims



This invention discloses a jewelry holding device which comprises a plurality of holding projections projecting from and formed integrally with a base plate, said holding projections and base plate being made of a comparatively elastic material, thereby enabling a piece of jewelry to be securely and pivotally held in the grooves formed between said projections. Thereby, the jewelry such as a cuff link, tie holder, ring etc. can be held rotatably so as to lie down for transportation and safe-keeping and to set up at a desired angle, thus heightening the display effect of the commodity.

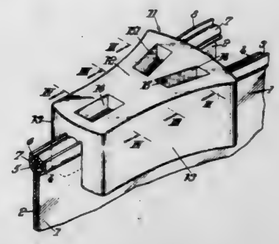
In one of the embodiments, there is formed, between said holding projections a neck having stepped portions on both sides, whereby a firm fitting of the jewelry holding device into a setting board in a jewelry case can be easily and rapidly done by inserting it into an opening formed in said setting board.

3,660,874
PIN FASTENER
Marden G. Platt, 319 Willett Avenue, Riverside, R.I.
Filed Feb. 24, 1970, Ser. No. 13,693
Int. Cl. A44c 1/00
U.S. Cl. 24—162 5 Claims



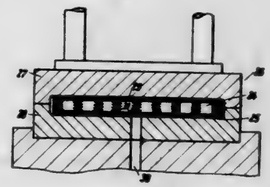
A pin fastener which utilizes both sliding and rotational movement of a pin element to close and open the fastener. The preferred embodiment comprises a generally circular elongated pin supporting member having raised, spaced end portions which form a pin receiving opening through which the pin portion of the fastener can be rotated. The pin element itself is mounted on the support member in a manner to permit both sliding movement along and rotational movement about the longitudinal axis of the pin supporting member. The closing and opening operations are both accomplished by moving the pin element through a rotational-sliding-rotational sequence.

3,660,875
SLIDER FOR SLIDING CLASP FASTENER
Izaj Gutman, Harrow, England, assignor to Minigrip, Inc., Orangeburg, N.Y.
Filed Apr. 28, 1969, Ser. No. 819,710
Claims priority, application Great Britain, Apr. 29, 1968, 20,200/68; May 9, 1968, 22,874/68
Int. Cl. A44b 19/00, 19/26
U.S. Cl. 24—201 11 Claims



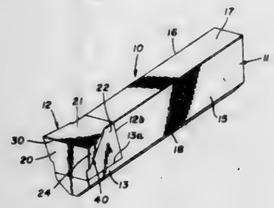
The slider comprises a single slider plate, a side wall at each side of the slide plate, and a separating member between the side walls so as to form a substantially Y-shaped channel for receiving interlocking members of the fastener. The slider plate has three windows, unobstructed from the outside; two of the windows communicate with the arms of the Y-shaped channel, and the third communicates with the stem. Projections are provided on the separating member and on the side walls for guiding the interlocking members through the arms and through the stem, respectively, of the Y-shaped channel.

3,660,876
METHOD OF MAKING AN UPHOLSTERED BODY
Philipp Krier, Stuttgart-Schoenberg, and Lothar Fendler, Stuttgart, both of Germany, assignors to Mirabed AG., Zug, Switzerland
Filed Aug. 19, 1968, Ser. No. 753,391
Claims priority, application Germany, Aug. 19, 1967, P 16 85 176.6
Int. Cl. B68g 7/00
U.S. Cl. 29—91 5 Claims



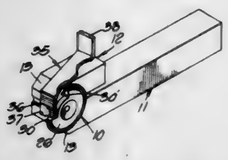
An upholstered body, especially mattress and seat for automobiles, and method of making the same, according to which a core body of coil springs has a seamless cover of foamed material, for instance, of polyester, or polyether, around said core body.

3,660,877
CUTOFF TOOL HAVING IMPROVED CUTTING TIP
William B. Stein, Barberton, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio
Filed Apr. 22, 1970, Ser. No. 30,682
Int. Cl. B26d 1/00
U.S. Cl. 29—95 7 Claims



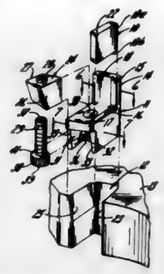
A cutoff tool characterized by the fact that the cutting portion thereof is provided with a localized cutting area that includes a relatively high degree of compound clearance angles provided in a minimal amount of space for increasing the cutoff efficiency and the tool life, while permitting simplified grinding without impairing tool strength.

3,660,878
REVERSIBLE CUTTER AND HOLDER ASSEMBLY THEREFOR
James E. White, Pasadena, Calif., assignor to Poly-Mech Products, Incorporated, Pasadena, Calif.
Filed Jan. 7, 1970, Ser. No. 1,214
Int. Cl. B26d 1/00
U.S. Cl. 29—98 4 Claims



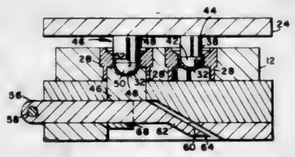
A machine tool cutter and holder assembly therefor, the cutter having a circular head deeply notched to provide a pair of identical cutting edges usable alternatively at the user's option simply by inverting the cutter in the mounting assembly to bring a selected cutting edge into cutting position. The clamping jaw of the holder assembly includes a fulcrum rendering the jaw self-centering with respect to the cutter shank and the seating recess therefor provided in the fixed main holder member. The cutting edges can be reshardpened and restored to their original efficiency repeatedly.

3,660,879
CUTTER WITH NESTED INDEXABLE BLADE CLAMPED BY SCREW ACTUATED WEDGE
Donald S. Erkfritz, Rockford, Ill., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.
Filed Jan. 19, 1970, Ser. No. 3,990
Int. Cl. B26d 1/12
U.S. Cl. 29—105 6 Claims
In the disclosed milling cutter, an indexable insert is seated in a nest in one end of a separately formed holder tack welded at opposite ends to edges of the body slot. A wedge, clamping the insert against a wall of the slot, is drawn into the latter by a screw threaded into the wedge and extending along the slot through a hole in a crosspiece of the holder engaged by the underside of the screw head during the tightening. Two tack welds at the inner end of the holder are



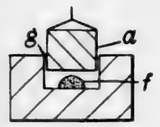
located so as to be stressed in shear as a result of the screw tightening.

3,660,880
HOLLOW BEARING BALL AND PROCESS FOR MAKING THEM
Edward R. Glenn, Newport Beach, Calif.
Filed Mar. 27, 1970, Ser. No. 23,218
Int. Cl. B23p 11/00, 19/04; B21d 39/02
U.S. Cl. 29—148.4 B 11 Claims



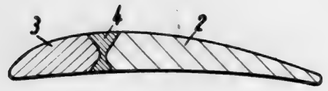
A hollow bearing ball formed from a relatively resilient steel by initially stamping a round blank from a strip, drawing the blank, and forging and flowing the drawn blank of metal to subsequently form a substantially hemispherical portion of a hollow bearing ball. The hemispherical portions are fed into a hopper which serve to place them in opposed concave relationship after which they are interposed within and between two electrode welding seats which hold the hemispherical portions under pressure and weld them to form a hollow bearing ball.

3,660,881
METHOD OF MAKING A BEARING
Derek G. Viner, and John S. Thompson, both of Ilford, England, assignors to The Plessey Company Limited, Ilford, England
Original application Aug. 12, 1968, Ser. No. 752,053, now Patent No. 3,545,900, dated Aug., 1967. Divided and this application Sept. 15, 1970, Ser. No. 72,299
Claims priority, application Great Britain, Sept. 2, 1967, 40,211/67
Int. Cl. B21d 53/10; B23p 11/00
U.S. Cl. 29—149.5 NM 2 Claims



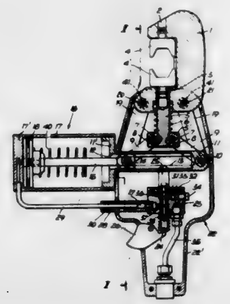
A carbon-lined journal bearing is manufactured by forcing a solid carbon plug into a socket bore of a metal body after introducing a quantity of adhesive into the closed end of the socket bore. The bore allows clearance round the plug so that the adhesive becomes extruded through the gap to fill the latter completely. After setting of the adhesive the two end surfaces are re-machined, the carbon plug is bored conversion into a carbon liner, the machining of the end face adjacent to the closed end of the socket bore being continued to remove the closed end portion of the latter.

3,660,882
PROCESS FOR THE PRODUCTION OF TURBINE BLADES
Herbert Widowitz, Kapfenberg, and Manfred Hammer, Bruck S.D. Mur, both of Austria, assignors to Gebr. Bohler & Co. Aktiengesellschaft, Kapfenberg, Austria
Filed Apr. 27, 1970, Ser. No. 32,037
Claims priority, application Austria, Apr. 28, 1969, 4074/69
Int. Cl. B21k 3/04; B23p 15/02, 15/00
U.S. Cl. 29—156.8 B 4 Claims



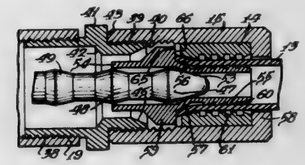
A turbine blade blank is roughly formed having a recess extending along at least a portion of the leading edge, and a hard alloy leading edge insert is also roughly formed to be commensurate in shape to the recess. The insert is then welded to the blade blank, the composite blade is then forged into final shape and heat treated.

3,660,883
PORTABLE PRESS
Max Hoeckele, Steinach, Germany, assignor to Karl Pfisterer Fabrik elektrotechnischer Spezialartikel, Stuttgart-Unterturkheim, Germany
Filed Mar. 4, 1970, Ser. No. 16,462
Claims priority, application Germany, Feb. 18, 1970, P 19 12 908.9
Int. Cl. H01r 43/04
U.S. Cl. 29—203 DT 13 Claims



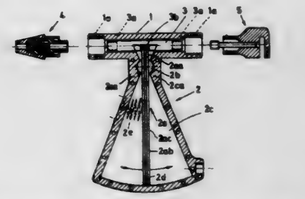
An inexpensive portable pneumatic press which is intended primarily for compressing mechanical or electric connecting elements of electric conductors, cables and the like, in which a ram is driven by one or two cylinder-and-piston units extending transverse to the ram by means of at least one pair of toggle arms which are moved with an equal force toward each other. When the ram approaches its final compressing position, the toggle arm acts upon a control member which shifts the control valve to its venting position.

3,660,884
HAND TOOL FOR CONNECTING A FITTING TO A DUCT END
Leonard J. Kowal, Prospect Heights, Ill., assignor to Imperial-Eastman Corporation, Chicago, Ill.
Filed Nov. 14, 1969, Ser. No. 876,942
Int. Cl. B23p 19/04
U.S. Cl. 29—237 11 Claims



A tool for connecting a fitting to a duct end wherein an insert is radially expanded to clamp the duct end against an outer shell received in a nut member of the fitting. The tool includes means for threading the nut member onto one end of the tool and a punch for movement axially through the insert to effect the desired expansion thereof while the insert and shell are held in place by the nut. The punch is carried on a force member which is reciprocated by manually operable means herein comprising a ratchet mechanism. The means for holding the nut is replaceable to permit a substitution of different size nuts. The punch is removably secured to the force member to permit the substitution of different size punches. Thus, different size fittings may be readily made up with the tool.

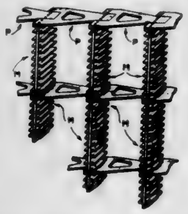
3,660,885
PRESSURE-OPERATED TOOL
Lorenz Elflein, Rhonstrasse 66, 874 Bad Neustadt, Saale, Germany
Filed Mar. 6, 1970, Ser. No. 17,115
Claims priority, application Germany, Apr. 21, 1969, P 19 20 191.3
Int. Cl. B23p 11/00
U.S. Cl. 29—243.53 9 Claims



A pressure-operated tool particularly for the setting of fastening elements, such as blind rivets. The tool utilizes a pressure cylinder operation associated with one end of a pivotal lever whose other end operates the pressing or draw unit for axial motion of the latter.

3,660,886
METHOD OF MAKING FIRING SETTERS FOR TILES AND OTHER CERAMIC ARTICLES
Emanuele Albertini, Milan, Italy, assignor to Societa Ceramica Italiana Richard-Ginori S.p.A., Milan, Italy
Filed Jan. 20, 1970, Ser. No. 4,224
Claims priority, application Italy, Feb. 20, 1969, 13099/69
Int. Cl. B23p 19/00, 21/00
U.S. Cl. 29—434 6 Claims
A method of forming cell-shaped assemblies of firing setters for individually and spacably supporting a plurality of

tiles and other ceramic ware during the firing of the glaze in a firing kiln which involves providing upright wall components made of refractory material with laterally extending projections for supporting the tiles, further providing transverse or horizontal components, also formed of ceramic material, with complimentary configurations for interengaging transverse components in a co-planar manner and interlinking the top and bottom ends of the upright components with the edge portions of the transverse components for affording an essentially loose interfitting engagement of the components to provide an assembly made of a plurality of superimposed and side-by-side located cells.

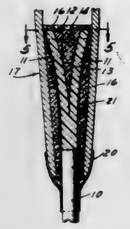


3,660,887

METHOD FOR CONNECTING ATTACHMENTS TO FIBER GLASS RODS

Elbert Davis, Los Angeles, Calif., assignor to Nupla Corporation, Sun Valley, Calif.

Filed June 20, 1969, Ser. No. 835,135
Int. Cl. B23p *3/00, 19/04*
U.S. Cl. 29—460 9 Claims



A method for connecting an attachment to the end of a fiber glass rod, tube or other elongated member. The rod is separated into a plurality of segments which are held apart from each other by a spacer-spreader to form an enlargement at the end of the rod. A plug is disposed within the interior of the separated segments, preferably being cast in place. A socket is formed around the exterior of the segments, also preferably being cast in place within a fitting disposed around the enlargement. A relatively thin barrier film of friction reducing material is applied to the exterior of the enlargement, forming a slip plane between the enlargement and the socket, so that upon the application of longitudinal tension to the rod all of its strands and the plug will simultaneously move longitudinally with the socket to convert such tension into lateral compression which transfers the load across the entire cross-section of the rod.

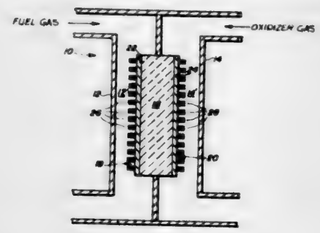
3,660,888

PROCESS FOR MAKING ELECTRICAL ENERGY SOURCES

Sheldon L. Epstein, Wilmette, Ill., and Bernard W. Wessling, Winthrop, Mass., assignors to Brunswick Corporation, Chicago, Ill.

Filed July 24, 1969, Ser. No. 845,945
Int. Cl. B23k *31/02*
U.S. Cl. 29—471.3 14 Claims

The specification describes a molten carbonate fuel cell electric energy source incorporating a novel pair of electrodes comprising a pair of permeable thin metallic films painted on a magnesia electrolyte matrix and a plurality of fiber metal wicks flocked onto the films. During operation, the molten carbonate electrolyte permeates the wicks, which extend into the gas manifolds, to provide very large surface areas for three-phase fuel cell reactions covered by thin films of electrolyte supplied by large reservoirs in the wicks to minimize cell overvoltage. In addition to the preferred embodiment, a process for fabricating fuel cells and electrochemical electrodes is described. Also, applications to other types of fuel cells, batteries and electrochemical systems are described.



3,660,889

METHOD OF MAKING A WEAR BLADE FOR AN OIL DRILLING TOOL

William James Groom, Belton, England, assignor to Lion Oil Tool Holdings (International) Limited, Great Yarmouth, Norfolk, England

Filed Nov. 3, 1969, Ser. No. 873,370
Claims priority, application Great Britain, Nov. 6, 1968, 52,689/68
Int. Cl. B23p *17/00*
U.S. Cl. 29—475 4 Claims



A method of making oil drilling tools, particularly stabilizers, and wear blades therefor. The blades are made and dressed on a separate former to avoid pre-heating the tool body. They are then welded to the tool body by a low heat electric welding technique and are arranged around the body equally spaced and skewed in an anti-clockwise direction, the total circumferential coverage being complete. Typically there are four blades each skewed 90°.

3,660,890

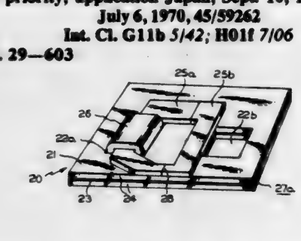
METHOD FOR JACKETING CYLINDRICAL ARTICLES

Rupert Douglas Terry, Toledo, Ohio, assignor to Johns-Manville Corporation, New York, N.Y.

Filed July 28, 1969, Ser. No. 845,404
Int. Cl. B23k *31/02*
U.S. Cl. 29—477 11 Claims

A duct of thermal insulation is jacketed with a gas impermeable sheet material with a longitudinal seam formed by turning the mating ends of the sheet material outwardly and thermally fusing those ends into a linear nodular bead. In the case of metal foils of a few thousandths of an inch in thickness the bead is of the order of a thirty-second of an inch and is turned into the foil jacket to present a smooth non-cutting surface.

Semi-butt welds of foil are made by clamping the foil in face to face relationship along an essentially line contact and moving an arc welding electrode with associated gas jets for a non-oxidizing gas parallel to and in close spaced relation to the clamp line. Jacketing for preformed ducts of glass or other fiber type insulation is drawn from a supply of sheet stock to form a catenary loop in which a preformed duct is placed. Jaws forming unitary clamps and welding electrodes are closed to close the opposite sides of the loop of foil around the duct and upon each other. The foil is severed closely adjacent the clamps and the electrode with its jets for the gas is moved along the exposed edges of foil adjacent the electrode clamps while drawing an arc to fuse the opposed foil surfaces together. The clamps are then released, the jacketed duct removed from the welding apparatus and the radially extending, fused foil bead pressed parallel to the outer face of the duct.



3,660,891

FILLER METAL ALLOY FOR TITANIUM BRAZING

Geoffrey Martin, Nashville, Tenn., assignor to Avco Corporation, Nashville, Tenn.

Filed Sept. 21, 1970, Ser. No. 74,153
Int. Cl. B23k *31/02, 35/38*
U.S. Cl. 29—494 6 Claims

The disclosure is a brazing method for uniting two or more titanium components, e.g., as in fabricating titanium honeycomb sandwich structures, utilizing a filler metal alloy composition which has the unique property of not only permitting the formation of strong brazed joints but also permitting the brazing operation to be carried out at lower temperatures and within a temperature range that is increased more than three-fold over that heretofore attainable.

3,660,892

METHOD FOR MAKING A MULTI-CHANNEL MAGNETIC HEAD

Takashi Tanaka, and Yukihiro Yanagiuchi, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Aug. 28, 1970, Ser. No. 67,822
Claims priority, application Japan, Sept. 10, 1969, 44/73083; July 6, 1970, 45/59262
Int. Cl. G11b *5/42*; H01f *7/06*
U.S. Cl. 29—603 5 Claims

A method of making a multi-channel magnetic head. A support plate having a flat surface is provided, and a magnetic core having a winding wound thereon is placed on said flat surface of said support plate in order to make an elementary unit. A plurality of said elementary units is stacked on one another, and said stacked elementary units are adhered to each other. The stack is cut into two halves in at least one plane which is perpendicular to the flat surfaces of said support plates and which divides each of the magnetic cores into two parts. The two halves are rejoined with a spacer between them with the core parts in one half matched with corresponding core parts in the other half.

3,660,893

REPLACEABLE BLADE UNIT FOR A SAFETY RAZOR

Norman C. Welsh, Balvaig, Admoor Lane, South End, Bradfield, Berkshire, England

Filed Mar. 24, 1970, Ser. No. 22,237
Claims priority, application Great Britain, Mar. 26, 1969, 15,845/69
Int. Cl. B26b *21/06, 21/22*
U.S. Cl. 30—50 5 Claims



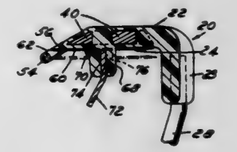
A replaceable blade unit for a safety razor in which the blade is secured in the blade unit at its ends only and the intermediate portion of the blade, on which the cutting edge is formed, is unclamped and held under tension directed longitudinally of the blade parallel to the cutting edge.

3,660,894

SAFETY RAZOR

Robert T. Sand, 5220 McClellan Ave., Detroit, Mich.

Filed Apr. 22, 1970, Ser. No. 30,666
Int. Cl. B26b *21/16*
U.S. Cl. 30—74 7 Claims



A safety razor for a removable and replaceable blade which is characterized by a one-piece head and handle with no moving parts utilizing a magnetic holding device for the blade, and an assembly guide which moves the working blade edge in and over a safety bar to position it properly for a shaving angle together with a unique handle combined with the head serving also as a retainer for blade storage.

3,660,895

RETRACTABLE UTILITY KNIFE

Robert F. West, Simsbury, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Jan. 11, 1971, Ser. No. 105,187
Int. Cl. B26b *1/08*
U.S. Cl. 30—162 14 Claims

Retractable utility knife having separable handle parts and connecting means therefor featuring a single locking screw

for releasable securing the handle parts, retracting a blade carrier and serving as a pivot axis for supporting the handle

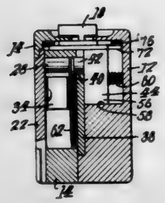


parts for relative angular displacement while continuously retaining the same in assembly.

3,660,896
UTILITY KNIFE

Franklyn G. Umholtz, c/o Russell Harrington Cutlery, Inc., Southbridge, Mass.

Filed Apr. 10, 1970, Ser. No. 27,302
Int. Cl. B26b *29/02*
U.S. Cl. 30—162 5 Claims



A utility knife comprising two main parts forming a housing, one of said parts having a side opening therein for receiving blades in a stack and both parts having cooperating guideways for the reception of a sliding manually operated button having a free-ended pin on it for engaging with a complementary notch in an edge of each blade, there being means providing that the free-ended pin is spring-pressed to a position to enter a notch of the first blade only in the stack and being manually retractable therefrom to release the blade.

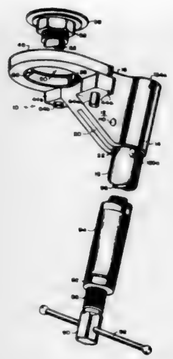
The slider has two locking positions for the blade, one at either end of the housing; two blade-releasing positions adjacent the locking positions whereby the blade may be abstracted manually from either end of the housing, and centrally of the housing the slider has a change position for changing the extent of the blade from the ends of the housing.

3,660,897
NUT SPLITTING TOOL

Arnold L. Gilmore, 2758 El Sabronte St., Santa Clara, Calif.

Filed Oct. 10, 1969, Ser. No. 865,378
Int. Cl. B26b *17/02*
U.S. Cl. 30—184 13 Claims

A stationary cutter and a movable cutter are supported in alignment along a common cutting axis by a head fixedly mounted at one end of a shank. The movable cutter is driven along the cutting axis between a retracted position away from the stationary cutter and an extended position toward the stationary cutter by a cam pivotally mounted in the head. A connecting rod couples the cam to an actuating screw threadedly mounted in the other end of the shank along an actuating axis perpendicularly intersecting the cutting axis. As the actuating screw is turned along the actuating axis

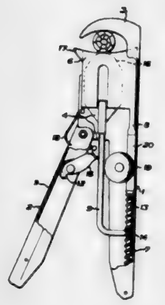


between first and second stop positions the connecting rod actuates the cam to drive the movable cutter along the cutting axis between the retracted and extended positions.

3,660,898
CUTTING TOOL

Per Sigvard Hast, Hastholmsvagen 10, 116 44 Stockholm, Sweden

Filed July 15, 1970, Ser. No. 55,034
Claims priority, application Sweden, Apr. 6, 1969, 10969/69
Int. Cl. B26b *17/02*
U.S. Cl. 30—185 5 Claims

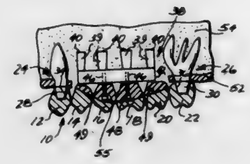


A tool for cutting branches, hoses, electrical conductors, and like objects comprises a stationary part with an abutment, and a cutting part displaceable towards the abutment, said parts being separated in such manner that the object to be cut can be inserted laterally therebetween. The cutting part is a thin steel blade which is guided in a slot in a guide member. According to the invention, the guide member is displaceable towards the abutment and cooperates with a guide in the stationary part, and besides the steel blade and the guide member cooperate with spring means tending to retain the steel blade within the guide part.

3,660,899
BRIDGE STABILIZING SYSTEM

Leonard I. Linkow, 30 Central Park South, New York, N.Y.

Filed Sept. 16, 1970, Ser. No. 72,609
Int. Cl. A61c *13/22*
U.S. Cl. 32—5 10 Claims

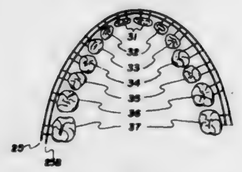


A bridge stabilizing system and method of using same is provided wherein an existing bridge structure may be stabilized directly in the underlying bone structure without the necessity of removing the bridge from its operative engagement with the stubs of natural abutment teeth. To this end, the system comprises a bridge stabilizing implant having a blade edge at one end thereof and a shoulder portion at the other end thereof provided with means for receiving one end of a shaft. The other end of the shaft is adapted to be received in a hollowed out portion of the existing bridge structure. The implant is tapped into the bone and the shaft is placed in its operative position extending into a hollowed-out portion of the bridge structure, after which the hollow is filled with a cold cure acrylic resin to provide operative stabilizing engagement between the implant and the bridge.

3,660,900
METHOD AND APPARATUS FOR IMPROVED ORTHODONTIC BRACKET AND ARCH WIRE TECHNIQUE

Lawrence F. Andrews, 1808 Cable St., San Diego, Calif.

Continuation-in-part of application Ser. No. 669,919, Sept. 22, 1967, now Patent No. 3,477,128, dated Nov. 11, 1969.
This application Nov. 10, 1969, Ser. No. 875,086
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 A 30 Claims

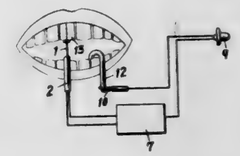


The method and apparatus for improving orthodontic bracket and arch wire technique where the individual brackets have an inner radius for attachment to a tooth band which conforms to the outer contour of the tooth both vertically and horizontally and has at least one groove therein for the reception of one or more arch wires having a radius for conforming to overall arch wire geometry and wherein the groove is cut with a torquing angle, a tipping angle, an in-out dimension and in some cases, a rotation compensation angle for cooperation with an unbent arch wire in which the various angles built into the bracket result in desired force vectors for movement of individual teeth to a desired position, and in the alternative the variations in dimensions and angles are built into the tooth band.

3,660,901
INSTRUMENT OF PROBING THE LENGTH OF A ROOT CANAL OF THE TOOTH

Noboru Inoue, Tokyo, Japan, assignor to Yugen Kaisha Hayashi Shika Sloten, Tokyo, Japan

Filed July 9, 1971, Ser. No. 161,059
Claims priority, application Japan, Aug. 8, 1970, 45/69017
Int. Cl. A61c *3/00*
U.S. Cl. 32—40 1 Claim



An instrument for measuring the length of a root canal of the tooth provided with a transistor amplifier, at the input side thereof a probe needle for inserting into the root canal and at the output side thereof an oral mucous membrane conductor. Between the point of the probe needle and the oral mucous membrane conductor is electrically connected through a human body to form a circuit whereby the variations in low frequency oscillation due to feedback are delivered as oscillation sounds to the ear of the dentist. When the predetermined degree of oscillation sound comes to be audible, the length of the root canal is measured with an impregnated length of the probe.

3,660,902
APPARATUS FOR CLEANING OR POLISHING OF TEETH

Per A. T. Axelsson, Drottninggatan 27, Karlstad, Sweden

Filed Apr. 24, 1970, Ser. No. 31,564. The portion of the term of the patent subsequent to Jan. 5, 1988, has been disclaimed.
Int. Cl. A61c *3/06*
U.S. Cl. 32—58 9 Claims



A dental apparatus for home care of teeth is disclosed. The apparatus comprises a wedge-like and pointed tool adapted for insertion into teeth interstices for cleaning the approximate teeth faces, and a handle whereby the tool can be easily operated. A stem of the tool is held with friction grip by a socket inserted transversely through the end of the handle and completely free to turn about its axis so that the tool by itself adjusts its angular position to the teeth faces being cleaned.

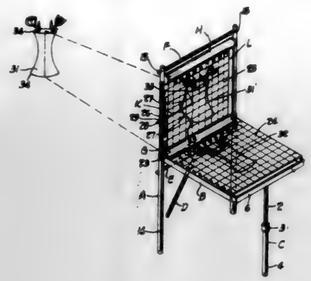
3,660,903
DRAWING AID

George H. Caperton, Jr., 1850 Hilliard Rd. Apt. 104, Rocky River, Ohio

Filed July 28, 1969, Ser. No. 846,312
Int. Cl. G01c *3/00*
U.S. Cl. 33—64 D 4 Claims

As a drawing aid a plurality of sets of grids of different line spacings are drawn on transparent flexible sheet material and mounted on spaced rollers so that one or another of the set of grids can be turned into view according to the nature of the subject to be drawn as seen through the transparent grid sheet. A drawing surface has grids of similar spacing marked thereon for use in reproducing the subject seen through the

grid of the transparent sheet. The grid rollers are mounted on



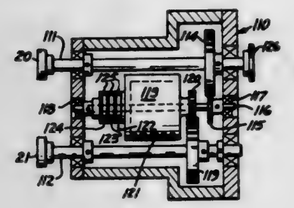
a collapsible structure which is convertible from a drawing table to an easel.

3,660,904

EXTENSOMETER AND ATTACHMENT

Robert D. Steele, Eldorado, and Richard J. Farris, Citrus Heights, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Original application Nov. 4, 1966, Ser. No. 592,018, now Patent No. 3,416,233. Divided and this application May 29, 1968, Ser. No. 749,233
Int. Cl. G01b 5/30
U.S. Cl. 33—147 D 1 Claim



An extensometer having a pair of spaced friction wheels rotatable on parallel axes, which engage the side of a test specimen and are in operable association with an elongation indicator. The elongation indicator is a pair of cooperating members rotatable relative to each other and associated with each other so that the position of one of the members is directly ascertainable relative to the other. One of the members is coupled to one of the wheels and the other member is coupled to the other wheel whereby differential rotation of the wheels produces corresponding change of the relative positions of the two members and therefore gives a direct indication of the elongation of the specimen.

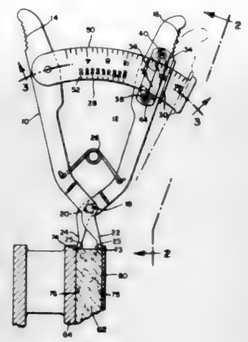
3,660,905

DISC BRAKE LINING THICKNESS GAUGE

Frederick R. McFarland, and Walter L. Diffenderfer, both of Lancaster, Pa., assignors to K-D Manufacturing Company, Lancaster, Pa.

Filed Sept. 26, 1969, Ser. No. 861,316
Int. Cl. G01b 5/00
U.S. Cl. 33—148 R 2 Claims

A caliper type tool, scissors-like and spring biased open is provided with a scale means which accurately reads an amplified measurement, either in fractions, or percentages of the amount of lining left on a brake lining for disc brakes,



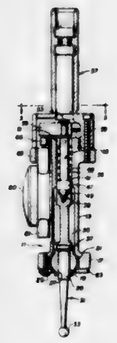
while the lining is in assembled position in the disc brake assembly.

3,660,906

THREE-AXIS INSPECTION PROBE

Harry M Zimmerman, Roseville, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Continuation of application Ser. No. 680,841, Nov. 6, 1967, now abandoned. This application Mar. 17, 1969, Ser. No. 818,852
Int. Cl. G01b 7/28
U.S. Cl. 33—174 L 6 Claims



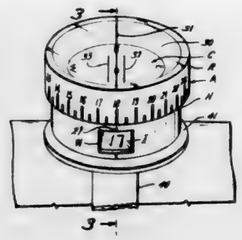
An inspection probe capable of accurate output in three axes, having a spherical probe tip affixed to an arm. Medially disposed about the arm between the end of the spherical tip and the opposite end of the arm is a pivot ball permitting the arm to pivot at its midpoint within a housing provided. The arm passes through the spherical ball permitting additionally linear movement relative to the pivot ball. Adjoining the end of the pivot arm is a transfer pin restricted to solely linear motion. The end of the probe arm and the adjacent surface of the transfer pin are provided with adjoining sliding surfaces so that all movement of the probe tip is thus transferred into linear movement of the transfer pin in a ratio of 1:1. The transfer pin in turn effects a suitable gauge for reading the movement of the probe tip.

3,660,907

UNDERWATER NAVIGATION INSTRUMENT

Lonnie A. Sutherland, 12819 Corpus Christi, Houston, Tex.

Filed Sept. 3, 1969, Ser. No. 854,950
Int. Cl. G01c 17/14
U.S. Cl. 33—222 1 Claim



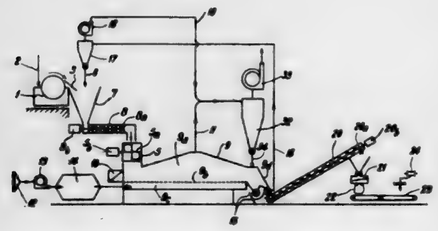
A device adapted to be worn on a diver's wrist for indicating a course underwater comprising a magnetic compass mounted in a case having a side window with means attached to the compass for presenting a visual representation of the actual course on which the diver is heading and a movable reference indicator on the case for presenting a visual indication of the desired course adjacent the window. Such device also includes a rotatable lubbers line movable with the rotatable indicator and extending across the face of the compass for alignment with indicator lines on the face of the compass for presenting a visual course indication on the face of the compass.

3,660,908

PROCESS AND APPARATUS FOR DRYING MICRO-ORGANISMS, IN PARTICULAR EDIBLE YEASTS

Paul Bardot, Paris, France, assignor to Societe Pour L'Equipement Des Industries Chimiques Speichim, Paris, France

Filed Sept. 15, 1970, Ser. No. 72,334
Claims priority, application France, Sept. 15, 1969, 6931305
Int. Cl. F26b 5/08
U.S. Cl. 34—8 15 Claims



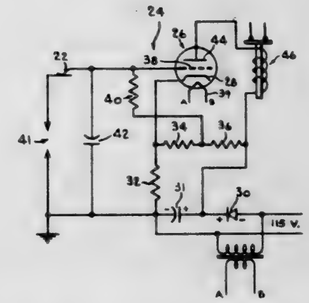
An aqueous suspension obtained by culturing a micro-organism, especially a fodder or edible yeast, is treated to give a dried product by concentrating it as by filtration, bringing it to a solids content at which it can be pelleted, forming it into pellets, and drying the pellets by a fluidized bed technique at a temperature of 50° to 400° C. The solids content of the concentrate can be further increased as required by a pre-drying step at a temperature of 50° to 400° C., or preferably by recycling and mixing with it part of the dried material.

3,660,909

DRYER CONTROL

Dale F. Wilcox, Aurora, Ill., assignor to Controls Company of America, Melrose Park, Ill.

Continuation of application Ser. No. 383,542, June 29, 1964, now abandoned, which is a continuation of application Ser. No. 31,922, May 26, 1960, now abandoned. This application Dec. 18, 1970, Ser. No. 99,398
Int. Cl. F26b 13/10
U.S. Cl. 34—45 18 Claims



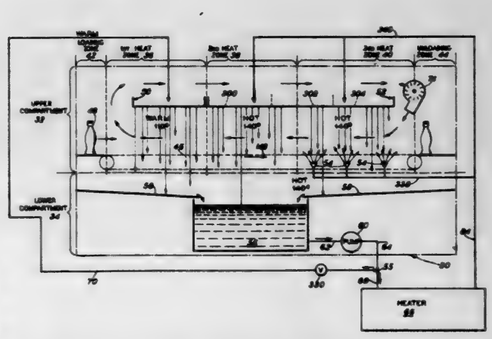
The sensing rings mounted in the dryer drum are bridged by the tumbling clothes. The voltage is impressed on one of the rings and leaks to ground through the other ring allowing the bias on the grid of the triode to change until the triode passes enough voltage to actuate the relay. The resistance bridging the rings is integrated by reason of the capacitor in the circuit. The triode and relay operate as an electronic switch controlling energization of a power relay to shut off the dryer on receipt of the dry signal or to start a timer to provide an additional time delay period. In another version, the time to reach 20 percent moisture level is measured and the 20 percent moisture signal actuates the timer to continue running for a predetermined proportion of the measured period before shutting off the dryer.

3,660,910

APPARATUS FOR HEATING AND DRYING CHILLED, FILLED CONTAINERS

Grover C. Evans, and Thomas J. Evans, both of Little Rock, Ark., assignors to G. C. Evans Products Corporation, Little Rock, Ark.

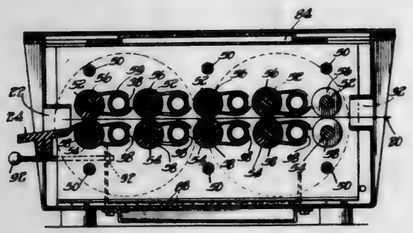
Filed Oct. 21, 1970, Ser. No. 82,711
Int. Cl. B06b 3/00
U.S. Cl. 34—60 14 Claims



Apparatus for heating and drying chilled, filled containers such as bottles and cans. The apparatus comprises an en-

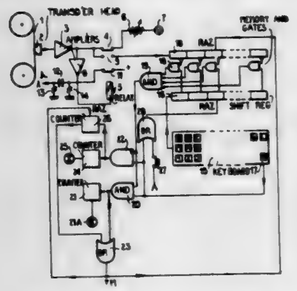
closed housing with upper and lower compartments. Upper compartment has first, second, and third heat zones between loading and unloading zones A screen-type conveyor moves containers successively from the loading zone, through the heat zones, to the unloading zone. The containers are successively heated by: (a) overhead warm water spray in the first heat zone; (b) overhead hot water spray in the second heat zone; and (c) a combination of overhead and underneath hot water sprays in the third heat zone. Water collects in a tank in the lower compartment for re-use. Water is pumped direct from the tank and split into two streams: one stream being reheated and pumped to the second and third heat zones; the other stream being pumped, without reheating, to the first heat zone. An overhead blower directs air onto the containers in the loading zone; and the air is guided along the conveyor opposite to the direction of movement of the containers, and is recycled to the blower in a closed loop.

3,660,911
FILM DRYING DEVICE
Donald A. Buckingham, Evanston, Ill., assignor to Buckingham Graphics, Incorporated, Evanston, Ill.
Filed June 18, 1970, Ser. No. 47,303
Int. Cl. F26b *13/00*
U.S. Cl. 34—160 **10 Claims**



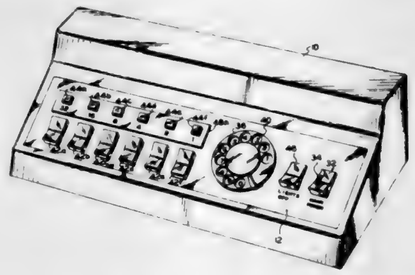
A device for drying film comprising a housing, a transfer assembly connected to the housing for delivering sheets of film along a predetermined path, means for producing a continuous flow of warm air and a plurality of tube assemblies for directing the flow of warm air to the film for drying the same.

3,660,912
TEACHING MACHINE
Jacques Laplume, Gif-sur-Yvette, France, assignor to Societe D'Etudes Techniques et D'Entreprises Generales SODETEG, LePlessis-Robinson, France
Filed Nov. 26, 1969, Ser. No. 880,144
Claims priority, application France, Nov. 26, 1968, 175325
Int. Cl. G09b *7/04*
U.S. Cl. 35—9 A **12 Claims**



A movable record, such as a magnetic tape stores instructional items in paragraph form; associated with each instructional item is a code, recorded on the tape, indicative of a correct answer. A student-operated keyboard is provided which, upon depression of a key indicative of the correct answer, as instructed by the instructional item recorded on the tape, will provide a signal which is compared with a signal derived from the code recorded on the tape and, upon coincidence, causes the tape to proceed to the next instructional item. Upon non-coincidence, an "error response" is indicated; the next, or a subsidiary instructional item will be displayed to the student when a predetermined number of incorrect answers has been counted. The ends of items and switch-over of mode of the receiver (from sound for the student to decoding) is controlled by a special frequency recorded on the tape.

3,660,913
METHOD AND APPARATUS FOR TEACHING MATHEMATICS IN DIFFERENT NUMBER SYSTEMS
James L. Heath, 1500 Northwest 13th Street, Corvallis, Oreg.
Filed June 1, 1970, Ser. No. 41,846
Int. Cl. G09b *19/02*
U.S. Cl. 35—30 **13 Claims**

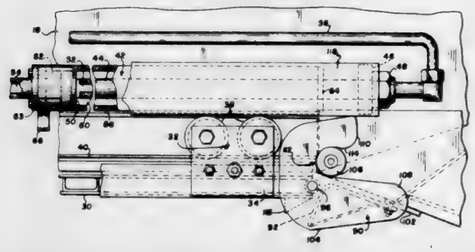


A method and apparatus for teaching relationships between the calculations in different number bases using a simple computer unit. The unit has a manually operable decimal input dial, manually operable binary input switches, an electrical counting circuit activated by the manual input devices, binary output indicators including a series of indicator lamps corresponding to the capacity of the counting circuit, but no memory. Interchangeable indicia strips can be placed in conjunction with the indicator lamps with indicia expresaing the binary output in terms of its decimal, exponential or other equivalent. Remote dial input and large display light attachments facilitate classroom instruction. A modification of the unit has a built-in tape cassette playback component including speaker and controls for playing instructional tapes as the student learns to use the machine.

3,660,914
LIFT AND LOCK STRUCTURE FOR SCRAPER BLADE ASSEMBLY
William H. Bechman, Amherst, N.Y.; Walter E. Lott, Washington, and John F. Siewert, Peoria, both of Ill., assignors to Westinghouse Air Brake Company, Peoria, Ill.
Continuation of application Ser. No. 869,946, Oct. 27, 1969, now abandoned , which is a continuation of application Ser. No. 684,103, Nov. 20, 1967, now abandoned. This application Sept. 15, 1970, Ser. No. 72,505
Int. Cl. E02f *3/62*
U.S. Cl. 37—129 **6 Claims**

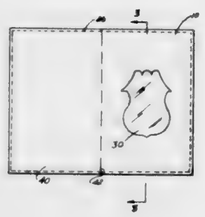
An earthmoving scraper of the type having a bowl assembly including a cutting edge fixed on the forward end thereof, the bowl assembly being defined by a pair of side walls, an ejector forming a rear wall, and a bowl floor rearwardly of the cutting edge, the bowl floor being slidable to a rearward position relative to the side walls to expose a material ejection opening. To facilitate control of the depth of spread or fill during material unloading, a strike-off blade

is pivotally supported on the slidable floor, the strike-off blade being adapted to be pivoted to a lower, operational position when the floor is moved to a rearward or unloading position. Cam and stop means operatively associated with the strike-off blade and the side walls, are provided for moving the strike-off blade to an upper position when the floor is in a



forward position wherein the strike-off blade forms a load-supporting extension of the floor. In this environment, the present invention provides lock means for locking the strike-off blade in the upper position thereby circumventing accidental loss of payload as might be occasioned by undesired downward pivotal movement of the strike-off blade caused by the payload weight thereon, or by shock loads.

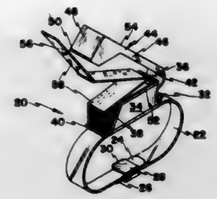
3,660,915
CREDENTIAL AND INSIGNIA HOLDING CASE
Gerard Richard Davis, North Smithfield, R.I., assignor to V. H. Blackinton & Co. Inc., North Attleboro, Mass.
Filed Nov. 19, 1969, Ser. No. 878,042
Int. Cl. G09f *3/18*
U.S. Cl. 40—10 R **4 Claims**



A case to hold a credential card and insignia member has a holder with an opening to removably receive the retaining clip of said member. This holder is normally slipped into position in said case with said insignia member mounted there by means of said clip.

3,660,916
IDENTIFICATION SYSTEM
Clifton E. McDermott, Salt Lake City, and Darrell B. Steinicke, Bountiful, both of Utah, assignors to Bio-Logics, Inc., Salt Lake City, Utah
Filed Nov. 10, 1969, Ser. No. 875,141
Int. Cl. G09f *3/14*
U.S. Cl. 40—21 C **4 Claims**

An identification band has a receptacle for receiving a series of detached or detachably joined labels and dispensing structure for dispensing the labels one at a time. The method includes providing a plurality of labels with indicia including coded identification and placing the labels in an identification band. When the band is attached to a patient and object or the like, the labels may be serially detached and/or



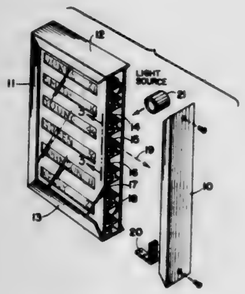
removed from the band, and affixed to a secondary object to identify the object as relating to the patient.

3,660,917
DRIVE UNIT FOR ROTATABLE SIGNS
James W. Bevan, P.O. Box 2515, Salt Lake City, Utah
Filed Dec. 30, 1969, Ser. No. 889,148
Int. Cl. G09f *11/02*; F16h *1/28, 67/00*
U.S. Cl. 40—33 **12 Claims**



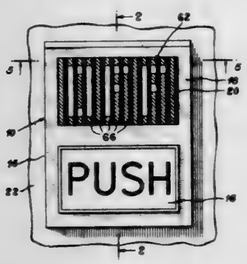
A drive unit for a rotatable sign, preferably electrically illuminated, which is mounted on the top of a supporting post. The post is hollow and houses and supports the drive unit in the upper end thereof. The drive unit comprises (1) a sign rotating shaft journaled in the hollow support with the upper end adapted to be secured to the sign, (2) a speed reducing mechanism having an output shaft and an input shaft, (3) an electrical motor mounted in the hollow support below the speed reduction mechanism and having a shaft and means, preferably a rubber connector, operatively connecting the motor shaft to the input shaft of the speed reduction mechanism, and (4) means operatively connecting the output shaft of the speed reduction mechanism to the sign rotating shaft, preferably a flexible connection including universal joints and a friction clutch. The axes of rotation of all said shafts are in substantial alignment. Electric power is supplied (a) to the motor by conductors passing up the supporting post and (b) to a commutator comprising brushes mounted in the hollow support and slip rings mounted on and insulated from the sign rotating shaft through which electrical conductors pass from the slip rings upwardly into the sign to provide the illumination.

3,660,918
NEGATIVE INSERT HOLDER FOR BUSINESS DIRECTORIES
Robert I. Bourseau, Marina Del Rey, Calif., assignor to Architectural Signing, Inc.
Filed Mar. 27, 1970, Ser. No. 23,159
Int. Cl. C09f 13/04
U.S. Cl. 40—64 3 Claims



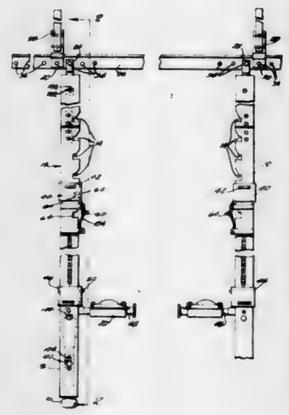
A directory sign includes a frame for holding a plurality of identical inserts in a vertical column, the inserts displaying name bearing media. Each insert includes a front wall having a cut-out window through which the name on the medium inserted behind the wall is visible. The upper and lower flange means define oppositely facing elongated channels such that the upper channel of the insert may be intercoupled with the lower channel of the next adjacent insert thereabove to define a light proof connection between adjacent inserts when in the vertical column. With this arrangement any one insert is slidable horizontally from between the adjacent inserts to effect a change in the order of the names.

3,660,919
OPTICAL ANNUNCIATOR
Robert I. Nagel, Skokie, Ill., assignor to Amerace Esna Corporation, New York, N.Y.
Filed June 26, 1970, Ser. No. 50,043
Int. Cl. G09t 19/12
U.S. Cl. 40—78.03 24 Claims



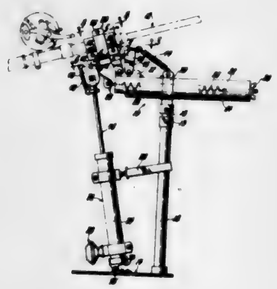
An optical annunciator in which any one of alternate visual displays is revealed for viewing over the entire obverse surface of a lenticulate lens by the displacement of display means juxtaposed with the reverse surface of the lenticulate lens, the display means including alternate visual displays, each divided into portions, each portion of a display being located between adjacent portions of another display, and masking means for blocking from view those portions of the display means which do not form a part of the revealed display.

3,660,920
HIGH-LOW STILTS
John A. Spina, 15 Elcon Street, Pittsfield, Mass.
Continuation-in-part of application Ser. No. 690,659, Dec. 14, 1967, now abandoned. This application Apr. 3, 1970, Ser. No. 25,540
Int. Cl. G09f 7/00; A61f 3/00
U.S. Cl. 40—129 2 Claims



A stilt that is adjustably repositioned to a high or a low position for use, with adaptability and capability of use with various sized shoes of the user, and in which falling or losing or shifting of the user's balance is substantially eliminated.

3,660,921
TRIGGER ACTUATED POWER UNIT
Leo G. McDonnell, 19917 Kinloch, Detroit, Mich.
Filed Jan. 16, 1970, Ser. No. 3,449
Int. Cl. A01k 97/00
U.S. Cl. 43—15 8 Claims



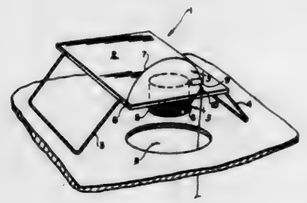
The improvement in a trigger actuated power unit is disclosed comprising a fluid powered power train operative in conjunction with a spring powered power train, said fluid powered power train having a moveable member which is power actuated in the power stroke thereof, and latch means for latching said said moveable member train in active cocked position in operative relation to said moveable object so that upon application of said external force said fluid powered power train is triggered to effect a power stroke in which said moveable object is power actuated at least in part by said moveable member.

3,660,922
FISH HOOK SETTING DEVICE
Duane Charles Cliff, 1015 West Washington, Sandusky, Ohio
Filed Mar. 18, 1970, Ser. No. 20,642
Int. Cl. A01k 97/00
U.S. Cl. 43—15 10 Claims



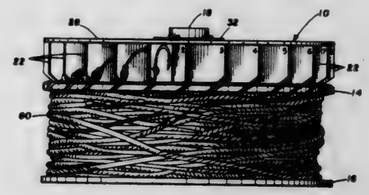
A fish hook setting device comprising a cylindrical housing containing a compression spring. The housing is open at one end and has a notched lip at its opening. A thin flexible leader passes through the opening of the housing and is connected to the spring at one end and to a fish hook at its other end. A small bead is held on the leader remote from the notched lip when the spring is relaxed. The device is cocked by drawing the leader down to seat the bead behind the notched lip and thereby maintain the device in the cocked state against the urging of the spring.

3,660,923
FISHING DEVICE, ESPECIALLY FOR ICE FISHING
Ronald R. Johnson, 6438 Walker Drive Air Park West, Lincoln, Nebr.
Filed Oct. 20, 1970, Ser. No. 82,318
Int. Cl. A01k 97/12
U.S. Cl. 43—17 12 Claims



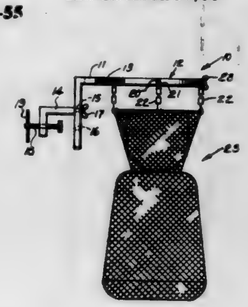
A tip-up type fishing device, primarily for ice fishing, includes a platform-like body member provided with adjustable legs for supporting it generally horizontally. A spool wound with fishing line is fixedly mounted on the bottom of the platform. A signaling device, in the form of an elongate spring member, normally projects upwardly from the platform, and is adapted to be set by being flexed into a bowed configuration with its free end bearing against a cocking member projecting from the upper surface of the platform. In use, a desired length of fishing line is unwound from the spool, and then a portion thereof is trained around the cocking member. The signaling spring is then flexedly bowed into position against the cocking member, and the looped portion of the line is removed from behind the cocking member and placed against the spring immediately adjacent its engagement with the cocking member. The remainder of the line passes down through the usual hole in the ice. A slight tug on the line by a fish pulls the looped portion away from the spring and cocking member, and the line moves freely from the spool. The initial tug on the line simultaneously frees the spring signaling device to be noticed by the fisherman. The legs and the spring are movable into generally parallel positions with the platform for carrying and storing.

3,660,924
TROTLINE CONTAINER AND DISPENSER
Roger V. McGee, Jr., 6011 Gaston, Apt. 216, Dallas, Tex.
Filed Sept. 30, 1970, Ser. No. 76,811
Int. Cl. A01k 97/06
U.S. Cl. 43—54.5 A 20 Claims



A trotline containing and dispensing apparatus which includes a reel for receiving a trotline and a series of hook-retaining compartments positioned on an outer circumferential portion of the reel and opening radially of the reel for receiving and retaining the fishhooks from the trotline. In a preferred embodiment of the invention, an apparatus is provided for automatically dispensing a baited trotline whereby the reel is rotatably mounted on its axis and each hook compartment is provided with means for releasably retaining a baited fishhook so that as the trotline is unreeled from the apparatus, each baited hook is sequentially released from a hook compartment.

3,660,925
BOAT BRACKET FOR FISH NETS
Glenn E. Miller, 6220 Cumberland Avenue, Apt. 201, Springfield, Va.
Filed Apr. 21, 1970, Ser. No. 30,529
Int. Cl. A01k 97/00
U.S. Cl. 43—55 4 Claims



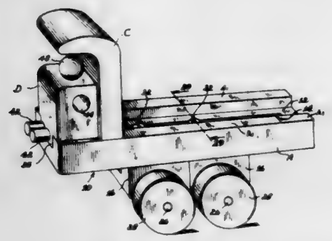
A device for supporting a fish net from a boat includes an adjustable clamp for securing it to the boat while the net depends downwards from a ring portion of the device, the ring portion being adjustable by the use of a bolt and wing nut fastener.

3,660,926
MAGNETICALLY COUPLED TOY ASSEMBLY
George Lerner, Freeport, and Julius Ellman, Brooklyn, both of N.Y., assignors to Hasbro Industries, Inc., Pawtucket, R.I.
Filed May 15, 1970, Ser. No. 37,635
Int. Cl. A63h 33/00
U.S. Cl. 46—1 F 2 Claims



A toy capable of being easily assembled by a child. The components or elements of the toy are supplied in a bag held in a metallic container or can. The elements, which may be facial features and decorative items, are provided with magnet means enabling them to be attached or secured to the container forming a face with attractive accessories such as a hat or the like.

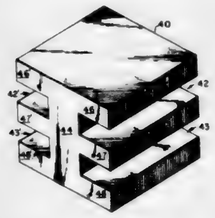
3,660,927
COMBINATION MOBILE TOY
Eugene De Christopher, 326 Sprague Road, Penn Valley, Pa.
Filed Mar. 10, 1969, Ser. No. 805,520
Int. Cl. A63h 33/06
U.S. Cl. 46—17 4 Claims



A basic toy unit including a longitudinally channeled body member and a pair of longitudinally channeled wheel supporting members removably attached to said body member, and a plurality of auxiliary toy units each having means for interfitting engagement with certain of the channels in said members for attaching them respectively to one of said members.

3,660,928
MODULAR BUILDING BLOCKS WITH INTERFITTING GROOVED SURFACES
Jorge Picazo Michel, Presa Valsequillo 17, Col. Irrigacion 10, Mexico City, Mexico
Filed Aug. 28, 1970, Ser. No. 67,761
Int. Cl. A63h 33/08
U.S. Cl. 46—25 5 Claims

A set of building blocks including five basic inter-related elements including two cubical elements having longitudinal grooves along opposite sides of the cube, two semicubical elements one having a longitudinal groove along one side thereof and the other having two longitudinal grooves along one side thereof, and a fifth member comprising an equilateral prism having a base of the same size as one side of a cubical member.

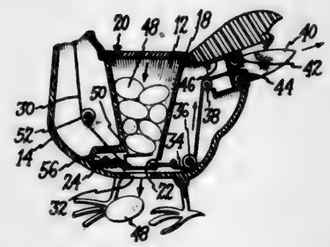


3,660,929
WHIRLING HOOP TOY
A. W. Atkinson, P. O. Box 3925, Wake Village, Tex.
Filed Feb. 26, 1971, Ser. No. 119,286
Int. Cl. A63h 1/10
U.S. Cl. 46—47 10 Claims



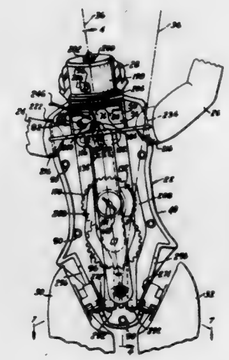
A whirling hoop toy for entertainment and competition and as an object of skill. The toy includes a plurality of hoops of decreasingly smaller diameters which are rollably mounted within each other. A rod having a handle at one end and a hoop guard means on the other end is extended through the hoops so as to have the hoops disposed on the rod in operative relation to the hoop guard means, whereby when the rod is whirled, each of the hoops is rolled along the inner periphery of the next larger diameter hoop.

3,660,930
EGG LAYING TOY FOWL
Arpe G. Indjian, 25 Arlington Street, Pittsfield, Mass.
Filed Nov. 24, 1969, Ser. No. 879,041
Int. Cl. A63h 5/00
U.S. Cl. 46—117 2 Claims



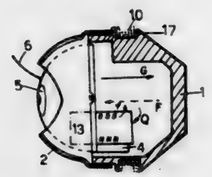
An egg laying toy fowl is disclosed in which a funnel shaped container is provided in the body of the fowl for containing a supply of candy eggs. A lid is provided at the top of the container for filling it with the candy eggs. At the base of the funnel shaped container a sliding door is provided, held closed by a spring. The door is connected to a tail feather of the toy fowl such that movement of the tail feather will slide the door to open position, releasing one egg. A sound box connected to the sliding door makes a noise, such as a cackle, each time the door is moved to open position.

3,660,931
SIDE-STEPPING DOLL
Robert Gardel, New York, N.Y., and Egon Gorsky, Westfield, N.J., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Sept. 22, 1970, Ser. No. 74,346
Int. Cl. A63h 11/00
U.S. Cl. 46—120 17 Claims



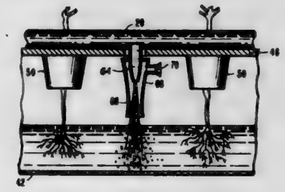
A doll having animated torso, leg, arm and head movement. The torso follows a side to side pivoting movement, with the center of the pivoting taking place at the bottom of the torso. The arms move in unison from side to side. The head oscillates back and forth along with the movement of the torso and arms. The legs propel the doll from side to side, first moving a predetermined number of steps to one side, then reversing the direction and moving the same number of steps to the other side.

3,660,932
DEVICE FOR CONTROLLABLY CAUSING DOLLS EYES AND TONGUES TO MOVE AND ELECTRONIC CONTROL FOR SAID DEVICE
Corrado Raffoli, Via dei Chiavari 6, and Giuliana Sonigli, Via L Ruspoli 40, both of Rome, Italy
Filed May 12, 1969, Ser. No. 823,769
Claims priority, application Italy, May 17, 1968, 37048A/68
Int. Cl. A63h 3/40, 33/26
U.S. Cl. 46—235 8 Claims



A movable eye or tongue for a doll is provided on the outer surface of a hollow substantially hemispherical member rotatably attached to a hollow support in the dolls head. Electromagnetic means are provided to move the eye or tongue and advantageously comprise a multivibrator circuit supplying a coil on the support the magnetic field of which displaces a permanent magnet on the hemispherical member. The eye and mouth can be linked and can also be dependent upon a voice mechanism.

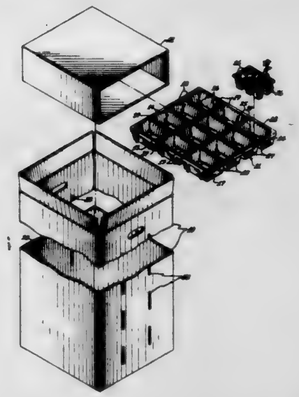
3,660,933
HYDROPONICS SYSTEM AND METHOD
Edward Wong, Jr., Los Angeles, Calif., assignor to Weingarten & Wong Enterprises, Inc.
Filed Mar. 2, 1970, Ser. No. 15,558
Int. Cl. A01g 31/00
U.S. Cl. 47—1.2 13 Claims



A hydroponics system for growing plants in an aqueous nutrient solution and including troughs for conducting a predetermined level of nutrient solution, is disclosed. The solution is supplied to each trough by a branch pipe extending the length of the trough and including a plurality of outlets spaced at uniform intervals. The nutrients are thereby dispersed relatively evenly along the length of the trough. Each outlet has an associated aspirator or eductor whereby air is entrained by the solution issuing from the outlet thereby providing substantially uniform aeration of the nutrient solution.

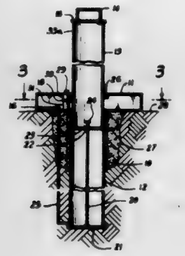
Each plant is supported by a receptacle having an open bottom through which the plant stem extends. The plant is held by resilient foam plastic inserts disposed between the plant stem and the receptacle wall.

3,660,934
MOLDED EXPANDABLE NURSERY TRAY
Russell G. Pollack, Phoenix, Ariz., and Horace E. Comer, deceased, late of Phoenix, Ariz. (by Paul T. Wubbolding, executor), assignors to Vaughn's of Arizona, Phoenix, Ark.
Filed May 11, 1970, Ser. No. 36,073
Int. Cl. A01g 9/02; B65d 21/02
U.S. Cl. 47—34.11 7 Claims



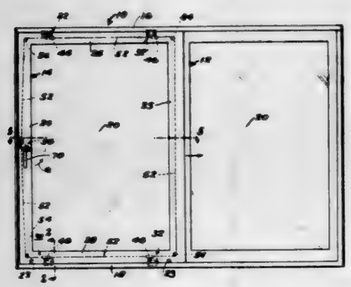
A molded expandable breakaway nursery tray and corregated shipping container therefor.

3,660,935
VEHICLE PARKING SPACE LOCKING DEVICE
Patrick R. Boots, 9150 Gulf Freeway, Houston, Tex.
Filed Mar. 26, 1970, Ser. No. 22,756
Int. Cl. E01f 13/00
U.S. Cl. 49—35 11 Claims



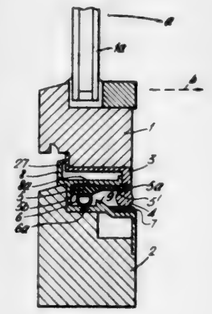
A device for use in combination with a substantially unenclosed parking space such as under a carport or a reserved parking space to selectively permit ingress and egress from the parking space comprising an erectable barrier means operatively mounted in the surface of said parking space to be selectively raised and lowered to thereby control the movement of vehicular traffic into or out of said parking space, means for raising and lowering said barrier from the surface of said parking space and a means for releasably maintaining the barrier in its raised position.

3,660,936
WINDOW CONSTRUCTION
David W. Bryson, 1247 Gordon Court, Clawson, Mich.
Filed Dec. 7, 1970, Ser. No. 95,602
Int. Cl. E05d 15/10
U.S. Cl. 49—209 12 Claims



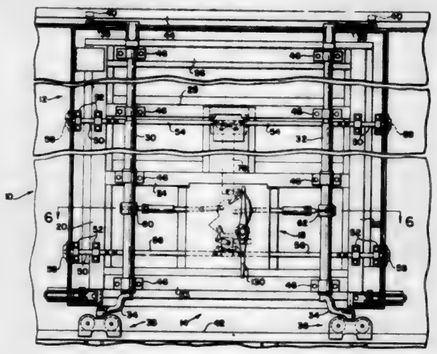
A window construction having a sash supported on rollers for movement along a guideway on the window frame. With the sash in either the closed or opened position, it may be transversely moved into and out of sealing engagement with the frame by means of a mechanical linkage. This linkage comprises a first block transversely movable on the sash and engageable with the guideway, a second block on the window sash movable lengthwise of the guideway and means interconnecting the two blocks such that when the second block is shifted by means of an actuator operatively connected thereto by means of a cable extending around the periphery of the sash, the first block engages the guideway to shift the sash transversely of the frame. The blocks are concealed from sight within a hollow section of the sash.

3,660,937
WINDOWS, DOORS OR THE LIKE
Werner Frach, Bayreuth, and Bernhard Janke, Hohe Flur, both of Germany, assignors to Werner Frach, Bayreuth, Germany
Filed Jan. 30, 1970, Ser. No. 7,084
Claims priority, application Germany, Jan. 31, 1969, P 19 04 648.1
Int. Cl. E05d 15/32
U.S. Cl. 49—192 15 Claims



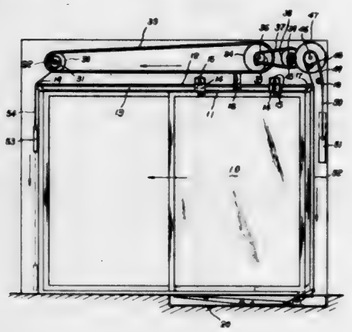
A mounting and sealing system for the closures of openings in building walls, such as doors or, particularly, casement windows wherein the movable closure frame is hinged to its fixed frame by means of a flexible sealing strip permanently attached to one of said frames and releasably attached to the other of said frames by the inflation of a hollow tubular section into effective engagement with said sealing strip or with a separate cooperating support bar; the window or the like being, when closed, preferably sealed around its entire periphery by one or a plurality of hollow sections, and provision being made for selectively varying the location of the hinge.

3,660,938
DUAL BRAKE TYPE DRIVE MECHANISM
Irving D. Rees, Jr., Barrington, and Thorvald Madland, Arlington Heights, both of Ill., assignors to Youngstown Steel Door Company, Cleveland, Ohio
Filed June 26, 1970, Ser. No. 50,288
Int. Cl. E05d 15/10
U.S. Cl. 49—220 5 Claims



The specification and drawings disclose a drive mechanism particularly suited for plug-type rail car doors and arranged to prevent "overspinning" and "drifting." The mechanism disclosed is a double brake-type mechanism and includes a first rotatably mounted member. The first member is arranged to transmit force in either direction of rotation and is connected with an imput drive mechanism and a driven mechanism that, at times, produces forces acting to drive the member in its driven direction at a rate greater than that produced by the imput drive mechanism. The drive mechanism includes a rotatable pinion gear carried on a rotatable imput shaft extending generally parallel to the axis of rotation of the first member. The pinion gear is connected with the shaft by means which cause it to move longitudinally of the shaft to a first or a second spaced point depending upon the direction the shaft is rotated. At each of the points, there are ratchet wheels which are freely rotatable relative to the shaft except when the pinion gear moves to engage them at their respective points. When engaged, the ratchets permit movement of the shaft only in one direction. The arrangement is such that should the driven mechanism begin moving the member at a rate greater than the pinion, the pinion will move longitudinally of the shaft to engage the other ratchet wheel and prevent movement of the shaft in response to force imput from the driven mechanism.

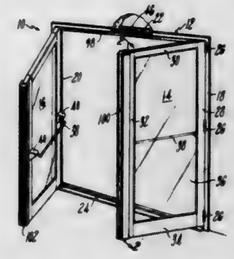
3,660,939
AUTOMATIC DOOR OPENING AND CLOSING MEANS
Shigeo Saita, Saita, Japan, assignor to Ryuichi Misoguchi, Kishiwada and Masataka Kamiya, Tokyo, Japan
Filed Oct. 20, 1970, Ser. No. 82,428
Int. Cl. E05f 13/04; E05d 15/06
U.S. Cl. 49—263 3 Claims



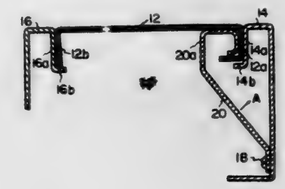
In a non-power driven type of automatic door opening and closing means, man's weight applied onto the step board means will be transmitted over to an operating chain, which is carried over between two chain wheels, through combination of poises, gear wheels, chain wheels, sprocket wheels, and a transmitting chain that are arranged adjacent to the door-case; and a door is connected with said operating chain by means of connecting element so that the running of the chain may cause the door to open or close effectively.

3,660,940
PANIC DOOR
John B. Tavano, 20 Edgewood Drive, Torrington, Conn.
Filed Mar. 4, 1970, Ser. No. 16,414
Int. Cl. E05c 7/04
U.S. Cl. 49—366 29 Claims

A panic door assembly which provides a secure closing due to a special laterally displaceable edge element attached to the free side of the door. The edge element mates with either an adjacent door or a door frame when the door is closed and locked and the edge element is laterally displaced by the door handle to open the door. Where two doors are mounted to a door frame so that they meet at their free sides when closed, each of the doors may be provided with a laterally displaceable edge element, and the confronting profiles of the two edges are made to interengage one another when the doors are locked. With independently operated edges, either door can be opened individually. Either one or both of the doors may additionally include a bolt mechanism for securing the doors to the frame in a locked position.



3,660,941
DOOR MOUNTING MECHANISM
Tadahiko Shibuya, Tokyo, Japan, assignor to Tamura Electric Works, Limited, Tokyo, Japan
Filed Aug. 19, 1970, Ser. No. 65,203
Claims priority, application Japan, Aug. 21, 1969, 44/65640
Int. Cl. E05d 7/00
U.S. Cl. 49—397 2 Claims

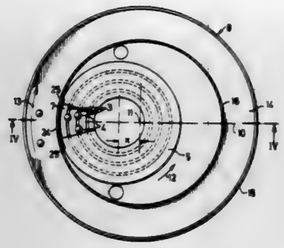


One side edge of a door is bent into L-shaped configuration to oppose the inwardly bent portion of the peripheral flange of a housing. The free end of a resilient anchor plate is shaped into a C-shaped configuration to be received in the L-shaped side edge of the door in an interlocking relationship to clamp the side edge between the C-shaped free end and the inwardly bent portion of the peripheral flange.

3,660,942
BALL LAPPING DEVICE
Sebastian Messerschmidt, Schonungen/Bavaria, Germany
Continuation-in-part of application Ser. No. 789,614, Jan. 7, 1968, now abandoned. This application Oct. 27, 1970, Ser. No. 84,259
Int. Cl. B24b 7/00, 5/24, 1/00
U.S. Cl. 51—3 9 Claims

A ball lapping device comprises two superimposed lapping discs spaced by a working gap, one of the discs being stationary while the other disc is rotatable and includes concentric lapping grooves in its side facing the other disc. The discs are encompassed by a rotary magazine including a circular guide path for balls to be lapped. A radial recess in the stationary disc connects the working gap with the guide path. In one mode of operation balls on the guide path are deflected by a guide from the guide path into the working gap and after being lapped for one revolution are returned by the guide to

the guide path. In a second mode of operation the connection between the guide path and the working gap is closed



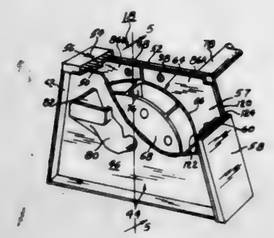
whereby balls in the grooves are continued to be lapped until they have attained the desired surface finish.

3,660,943

SHOT BLAST CHAMBER AND IMPELLER LINERS

Carl W. Barnthouse, 29243 Southgate Drive, Southfield, Mich.

Filed Jan. 26, 1970, Ser. No. 5,726
Int. Cl. B24c 3/14
U.S. Cl. 51—9 16 Claims



A shot blast cleaning unit having an abrasive throwing unit of the rotating impeller type, wherein the sides of the impeller housing are lined with an impact deadening material such as urethane rubber to lengthen their life. The parts to be cleaned by the abrasive are placed upon a rotatably mounted work holding table and rotated into the cleaning chamber formed around a portion of the table. The top surface of the table and the inner surface of the side and top walls of the chamber are also lined with the deadening material to protect the table and walls from the abrasive.

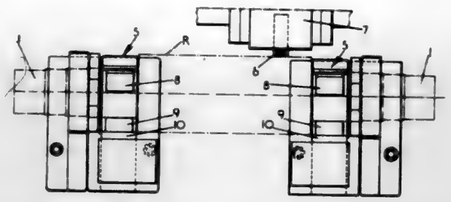
3,660,944

GRINDING MACHINES

John Noel Tittle, Knutsford; Brian Rogers Bottomley, Altrincham, and Eric Warburton, Bolton, all of England, assignors to The Churchill Machine Tool Company Limited, Broadheath, Altrincham, Cheshire, England

Filed Feb. 10, 1970, Ser. No. 10,135
Claims priority, application Great Britain, Feb. 11, 1969, 7,275/69
Int. Cl. B24b 5/18
U.S. Cl. 51—49 6 Claims

A grinding machine in which two sets of probes are provided adjacent each of two motorized roll journal rests, each set of probes being set to act on the journals of a roll to be aligned in the machine and being connected with a sensor unit. Each sensor unit is used to control the motor of the adjacent motorized roll journal rest so that a balance of the



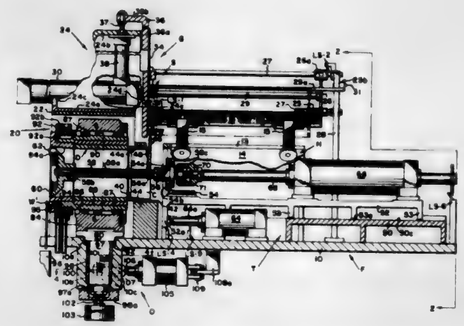
probes is obtained which corresponds to correct alignment of the roll journal.

3,660,945

METHOD AND APPARATUS FOR MACHINING RINGS

Edward F. Sullivan, Saginaw, Mich., assignor to B & K Tool & Die Corporation, Saginaw, Mich., a part interest

Filed Apr. 6, 1970, Ser. No. 26,027
Int. Cl. B24b 7/00, 9/00
U.S. Cl. 51—73 R 15 Claims



Method and apparatus for honing or lapping ring-shaped piston rings, having a gap therein, including mechanism for individually stripping rings from a stack of rings and feeding them individually through a cylindrically shaped lapping drum along the horizontal axis thereof while simultaneously relatively rotating the drum and workpiece. In one version of the machine, as the rings are passing through the drum, the drum is oscillated slightly about a vertically extending axis. After the rings are moved through the cylindrically shaped lapping drum, they are discharged.

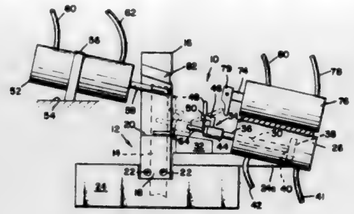
3,660,946

APPARATUS FOR AUTOMATICALLY FEEDING WORK TO A CENTERLESS GRINDER

Douglas L. Thayer, 1622 11th Street, Manhattan Beach, Calif.

Filed June 1, 1970, Ser. No. 41,914
Int. Cl. B24b 5/18
U.S. Cl. 51—103 WH 12 Claims

Work pieces are automatically fed into grinding position on a work-support blade between the grinding wheel and the regulating wheel of a centerless grinder by a work-gripping apparatus to which the work pieces are fed by a first air cylinder. A second air cylinder closes the work-gripping apparatus onto a work piece and other air cylinder means moves the gripped piece into position adjacent the work-support blade and then releases the piece onto the blade. The work-gripping apparatus is mounted for travel in a plane forming a suitable acute angle with the work-supporting plane of the work-support blade so that the work-gripping



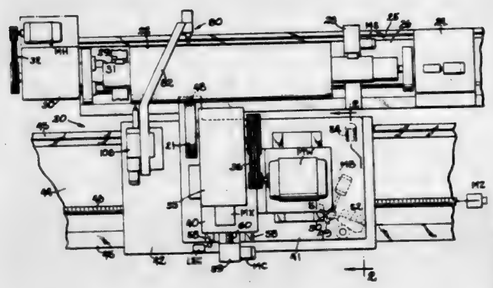
apparatus finds clearance above the working nip of the wheels.

3,660,947

METHOD AND APPARATUS FOR TURNING WORKPIECES

Stephen C. Clark, Jr., Phoenixville, Pa., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.

Original application Jan. 10, 1969, Ser. No. 790,323. Divided and this application Jan. 25, 1971, Ser. No. 109,523
Int. Cl. B24b 5/04
U.S. Cl. 51—165 TP 6 Claims



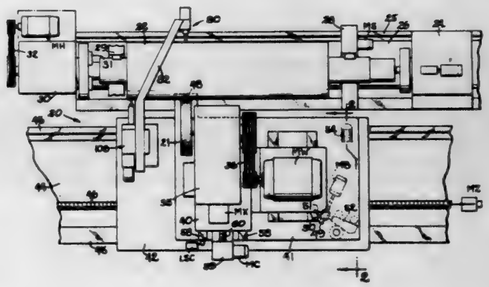
Disclosed here are methods and automatic apparatus for grinding cylindrical workpieces, such as the contoured rolls used in metal rolling mills. The methods and apparatus involve (1) automatic finding of the lengthwise center of rolls of different and undetermined lengths so as to establish a reference position for the execution of a numerically programmed path defined relative to the center of a roll as a point of symmetry, (2) the storage of the successive instructions of multi-axis movements making up a numerically defined profile or contoured path, and the use of those instructions repeatedly and in whole or in part as called for by different ones of a sequence of commands read from storage and executed in succession, (3) the automatic alignment of the roll axis parallel to the longitudinal axis of motion in a grinding machine by pivoting of one end of the roll about the other until the sensed difference in positions of the roll surface, along an axis transverse to the longitudinal axis and at locations near opposite ends of the roll, is changed to a predetermined fraction of the originally sensed difference, (4) the initiation of grinding passes from that end of a roll which is largest in diameter, so as to avoid "digging in" or increasing the depth of wheel bite as the wheel moves lengthwise of the roll, (5) the execution of continuous passes of the grinding wheel with pre-programmed values of feed rate, wheel speed, roll speed, continuous infeed and incremental infeed until a pre-programmed thickness of material has been removed from the roll surface, and (6) the grinding down of a roll until it is reduced to a diameter equal that of a previously ground roll of a matched pair. These functions are all obtained by the calling out and execution of preestablished routines in response to the reading from storage of pre-programmed sequence commands, so that in the disclosed method and apparatus there is an automatic progression from each type of operation to the next, and with the following of numerically defined profile whenever it is required.

3,660,948

METHOD AND APPARATUS FOR FINDING THE LENGTHWISE CENTER OF A WORKPIECE

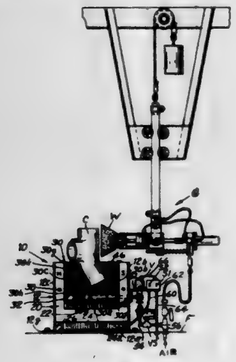
Stephen C. Clark, Jr., Phoenixville, Pa., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.

Original application Jan. 10, 1969, Ser. No. 790,323. Divided and this application Jan. 25, 1971, Ser. No. 109,526
Int. Cl. B24b 5/04
U.S. Cl. 51—165 TP 9 Claims



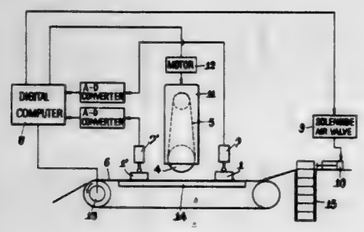
Disclosed here are methods and automatic apparatus for grinding cylindrical workpieces, such as the contoured rolls used in metal rolling mills. The methods and apparatus involve (1) automatic finding of the lengthwise center of rolls of different and undetermined lengths so as to establish a reference position for the execution of a numerically programmed path defined relative to the center of a roll as a point of symmetry, (2) the storage of the successive instructions of multi-axis movements making up a numerically defined profile or contoured path, and the use of those instructions repeatedly and in whole or in part as called for by different ones of a sequence of commands read from storage and executed in succession, (3) the automatic alignment of the roll axis parallel to the longitudinal axis of motion in a grinding machine by pivoting of one end of the roll about the other until the sensed difference in positions of the roll surface, along an axis transverse to the longitudinal axis and at locations near opposite ends of the roll, is changed to a predetermined fraction of the originally sensed difference, (4) the initiation of grinding passes from that end of a roll which is largest in diameter, so as to avoid "digging in" or increasing the depth of wheel bite as the wheel moves lengthwise of the roll, (5) the execution of continuous passes of the grinding wheel with preprogrammed values of feed rate, wheel speed, roll speed, continuous infeed and incremental infeed until a preprogrammed thickness of material has been removed from the roll surface, and (6) the grinding down of a roll until it is reduced to a diameter equal that of a previously ground roll of a matched pair. These functions are all obtained by the calling out and execution of preestablished routines in response to the reading from storage of preprogrammed sequence commands, so that in the disclosed method and apparatus there is an automatic progression from each type of operation to the next, and with the following of numerically defined profile whenever it is required.

3,660,949
WORK HOLDER FOR IRREGULAR SHAPED WORKPIECES
Loring Coes, Jr., Princeton, Mass., assignor to Norton Company, Worcester, Mass.
Filed Apr. 20, 1970, Ser. No. 29,830
Int. Cl. B24b 41/06; B25b 11/00
U.S. Cl. 51—216 R 13 Claims



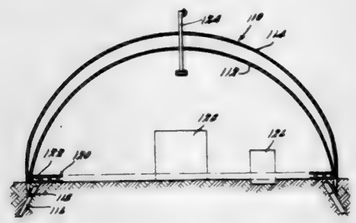
A magnetic chuck having a fluidizable bed of ferromagnetic particles, energizable magnets to magnetize the particles, means to fluidize and demagnetize the particles, and to defluidize and magnetize the particles. Irregularly shaped ferrous and non-ferrous foundry castings are easily partially embedded during fluidizing and demagnetizing of the bed and rigidly held in position upon defluidizing and magnetizing of the particles into a rigid mass about the casting. Thereby all portions of the casting can be worked upon by faster cutting and more powerfully fed cutting tools.

3,660,950
METHOD OF CONTROLLING THE ACTUAL STOCK REMOVAL IN SURFACE BELT GRINDING
Hidehiko Takeyama; Kaneyoshi Miyasaka, both of Tokyo, and Shinichi Miyazawa, Kawasaki, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan
Filed Apr. 6, 1970, Ser. No. 25,837
Claims priority, application Japan, Apr. 22, 1969, 44/31101
Int. Cl. B24b 1/00, 21/12
U.S. Cl. 51—328 2 Claims



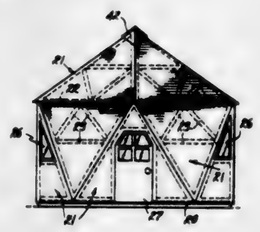
A method of controlling the actual stock removal in a method of belt grinding wherein the infeed and elasticity of a contact roll serve to increase the contact pressure of the abrasive belt, so as to obtain the required amount of stock removal irrespective of deterioration in the grinding performance of the belt due to repeated use and of the thickness of the workpiece.

3,660,951
SHOCK SHIELDING STRUCTURE AND METHOD
Sidney M. Cadwell, 436 Washington Road, Grosse Pointe, Mich.
Continuation-in-part of application Ser. No. 425,497, Jan. 14, 965, now abandoned. This application June 24, 1968, Ser. No. 739,351
Int. Cl. E04b 1/345
U.S. Cl. 52—2 17 Claims



A shock shielding structure and method for shielding against shock by the use of inflated envelopes wherein said shielding is capable of functioning at peak reflected shocks of over 2,000 pounds per square inch to reduce the peak transmitted force by 70–90 percent or more. Still further, the shielding invention herein comprises a sheltering method and structure for use against the dangers incident to war and, more specifically, relates to a method or structure for use in shielding persons or equipment against the effects of nuclear explosion, and also toxic or corrosive gases and bacteria.

3,660,952
PREFABRICATED MODULAR BUILDING
Pryce Wilson, 2812 D. Street, Sacramento, Calif.
Continuation-in-part of application Ser. No. 671,707, Sept. 29, 1967. This application Feb. 19, 1970, Ser. No. 12,173
Int. Cl. E04b 1/32, 17/02
U.S. Cl. 52—81 9 Claims

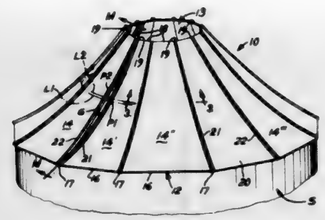


A prefabricated modular building made from a plurality of panel members having the shape of an equilateral triangle and identical dimensions; and means for detachably fastening said panels together to form a building.

3,660,953
PRESTRESSED STRUCTURE
Robert E. Schenk, Waterloo, Iowa, assignor to Schenk Engineering Co.
Continuation-in-part of application Ser. No. 790,214, Jan. 10, 1969, now abandoned. This application May 18, 1970, Ser. No. 38,373
Int. Cl. E04b 7/10, 7/00
U.S. Cl. 52—82 13 Claims

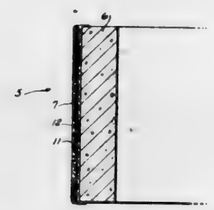
In a prestressed structure for forming roofs or the like, a plurality of elongated curved members are arranged in side

by side relationship to each other, their opposite ends are attached to the corresponding ends of adjacent members and their longitudinal edges are spaced from each other to define



a gap. The curvature of the members is reduced by drawing the adjacent spaced edges of the members together so as to close the gap to effect prestress forces in said members.

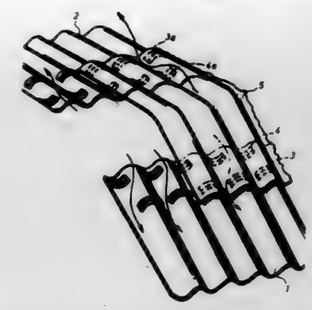
3,660,954
FACING FOR BUILDING BLOCKS
Raymond Logan, Farmers Branch, Tex., assignor to Broadway Finance Corporation, Milwaukee, Wis.
Original application Nov. 15, 1968, Ser. No. 815,507, now Patent No. 3,518,342. Divided and this application June 1, 1970, Ser. No. 42,130
Filed under Rule 47B
Int. Cl. E04c 2/20
U.S. Cl. 52—309 2 Claims



A light weight shallow pan-shaped facing cap for concrete building blocks, formed of fiberglass-reinforced polymerized thermosetting resin with appearance producing particles of marble or granite dispersed therein beneath the outer surface of the cap.

3,660,955
STRUCTURE FOR PROVIDING AIR CIRCULATION AT THE ROOF OF A BUILDING
Hans Simon, Bruchhausener Strasse 5463, Unkel/Rhine, Germany
Filed Apr. 17, 1970, Ser. No. 29,496
Claims priority, application Germany, Sept. 30, 1969, P 19 49 217.2
Int. Cl. E04d 1/06, 3/36, 3/40
U.S. Cl. 52—420 8 Claims

A building having rows of overlapping shingles defining an air passage therebetween. The overlapping rows of shingles include one longitudinal row having an outer edge region overlapping and situated outwardly of an inner edge region of an adjoining row of shingles with these shingle rows respectively having overlapping surface areas directed toward each other. Rows of spacers are situated between these overlapping surface areas to maintain them spaced from each other, and the spacers of one row are staggered with respect to the spacers of the other row with all of these



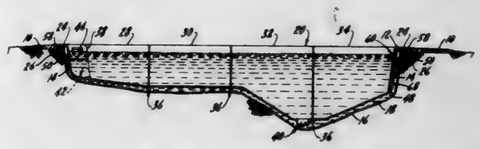
rows extending horizontally. Thus, while air can blow between the rows of spacers and thus between the overlapping surface areas of the shingles, a liquid such as rain cannot progress therebetween.

3,660,956
GRATING CONSTRUCTION
Oscar A. Budlong, Santa Ana, Calif., assignor to Brooks Products, Inc., El Monte, Calif.
Filed June 29, 1970, Ser. No. 50,526
Int. Cl. E01c 9/10
U.S. Cl. 52—669 4 Claims



A grating construction in which the grating members include upper portions defining vertical slots and lower portions defining angular slots, the spacing being such that any particle having a width and length less than the spacing of the upper portions will pass through the lower portions; however, the angular relation between the upper and lower portions prevents passage of an elongated member therethrough.

3,660,957
PREFABRICATED SWIMMING POOL CONSTRUCTION
Martin M. Schenkler, 12 New Dover Road, E. Brunswick, N.J.
Continuation-in-part of application Ser. No. 591,365, Oct. 10, 1966. This application Dec. 10, 1968, Ser. No. 782,668
Int. Cl. E04b 1/41; E04g 21/00
U.S. Cl. 52—742 4 Claims

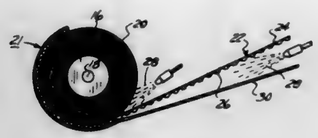


The apparatus and method for building a prefabricated swimming pool in which a flexible liner is placed within an excavated hole and a rigid shell suspended from a peripheral walk around the excavation is spaced from the outer liner to define a water cavity. In one form the cavity is sealed from water within the rigid shell, and in another form means are provided for circulation of water from the shell to the cavity, ad from the cavity to a pump and filter where it is directed back to the shell.

3,660,958
PROTECTIVE WRAPPER FOR ROLL OF SHEET MATERIAL AND METHOD OF MAKING SAME

Donald R. Garrison, Warren, Mich., assignor to Vito Guida, Centerline, Mich., a part interest

Filed June 1, 1970, Ser. No. 42,303
Int. Cl. B65b *11/00*; B65d *85/66*
U.S. Cl. 53—3 1 Claim

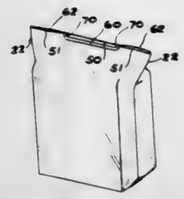


A protective wrapper for a cylindrical article such as a roll of sheet material, or the like, which includes at least one sheet of corrugated material to protect the cylindrical article during shipment and storage and during handling operations.

3,660,959
METHOD OF FORMING PRODUCT-FILLED BAG

Arthur E. La Fleur, 273 River Street, Manistee, Mich.

Filed Mar. 31, 1970, Ser. No. 24,133
Int. Cl. B65b *61/17*, *67/12*; B65d *33/10*
U.S. Cl. 53—14 10 Claims

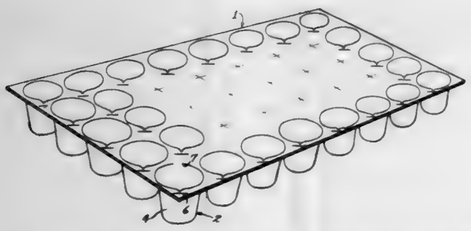


A commodity bag formed of a thermoplastic material, such as polyethylene, provided with gussets along each side and with reinforcing seams at the bottom to impart a square bottom to the bag when opened and which, after being filled with a commodity, has the central portion of its upper edges sealed together to form a handle for the bag.

3,660,960
METHOD OF MAKING A PACKAGE

Richard B. Inman, Dunwoody, Ga.

Filed Apr. 24, 1970, Ser. No. 31,725
Int. Cl. B65b *3/04*, *61/02*
U.S. Cl. 53—14 2 Claims

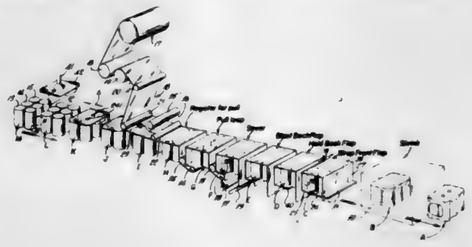


A method of making individual serving packages in which a sheet is sealed around the rims of a plurality of cups formed in a single sheet. After sealing, the cups are cut away from the sheet with the cover sheet sealed to them. The initial sheet containing the cups has a slit which causes a tab to be formed when the completed packages are severed from the sheet.

3,660,961
PACKAGING MACHINE AND METHOD

Robert H. Ganz, 8 Ridge Crest Road, Saddle River, N.J.

Filed June 22, 1970, Ser. No. 47,996
Int. Cl. B65b *11/10*, *35/44*, *49/10*
U.S. Cl. 53—26 40 Claims

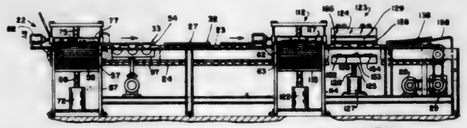


The invention contemplates method and apparatus for the rapid and efficient packaging of clusters of articles, such as beverage containers, with a wrapping such as shrinkable plastic film or sheet. The containers are received at one end of a production line in random succession, are converted into groups or clusters appropriate for packaging, with the maximum dimension of the cluster transverse to the direction of conveyor movement. The clusters are then, in the course of their continuous movement along the conveyor, enveloped with sheet material which is paid out in the longitudinal direction of conveyor movement. In final passage of the conveyor through an oven, the sheet material is adhered to bind the envelopment and is shrunk into tensed limited conformance with the cluster profile.

3,660,962
SHRINK FILM PACKAGE, AND APPARATUS AND METHOD FOR MAKING SAME

Richard T. Bliss, and George L. Nason, both of Andover, Mass., assignors to Bliss-Pack, Inc., Lawrence, Mass.

Filed Oct. 13, 1969, Ser. No. 865,829
Int. Cl. B65b *47/02*, *53/02*
U.S. Cl. 53—30 19 Claims

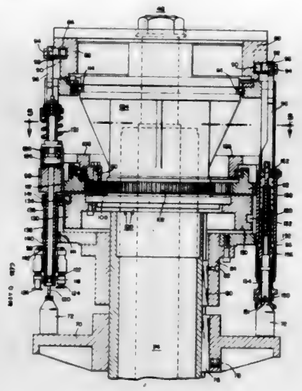


A plastic shrink film package formed of two peripherally heat-bonded films and at least one windowed backer sheet is produced at high speed by being formed of two separate sheets, rather than from a single folded sheet, at least one sheet having multiple windows, the pressure forming die having multiple recesses and the heating plate having multiple heat seal elements. A perforated line is formed inside the heat seal of each individual package during or after the heating step, each pocket is stretched to the full extent of the female die during the pressure step, and each pocket is punctured to form an air outlet orifice at the end of each pressure step.

3,660,963
CONTAINER CLOSING APPARATUS AND METHOD

Edward F. Sullivan, Baltimore, Md., assignor to Crown Cork & Seal Company, Inc., Philadelphia, Pa.

Filed May 28, 1970, Ser. No. 41,283
Int. Cl. B65b *7/28*, *59/04*
U.S. Cl. 53—42 13 Claims

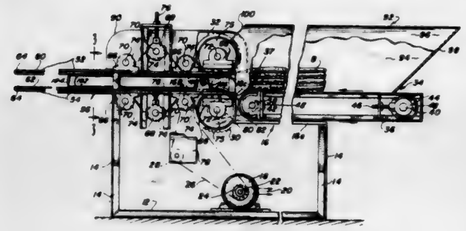


Separable infeed, filling, drive, and closing modules are provided for filling and closing bottles and cans. When bottles are filled and closed, the closing module includes a turret having interchangeable roll-on cap applying heads or crown applying heads. When cans are filled and closed, the closing module includes a seamer.

3,660,964
MATERIAL GUIDE MEMBERS FOR A COMPRESSING AND CONVEYING APPARATUS

Arnold L. Willis, Chicago, and Harold Wortman, Morton Grove, both of Ill., assignors to MSL Industries, Inc.

Filed July 24, 1969, Ser. No. 844,348
Int. Cl. B65b *1/24*, *63/02*, *27/12*
U.S. Cl. 53—125 1 Claim



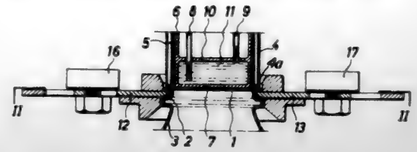
An apparatus having parallel, spaced apart belt conveyors and a hopper used in conjunction therewith and provided with a pair of flexible spaced apart material guide members positioned inwardly of and adjacent to the lateral edges of the belt conveyors to prevent material being conveyed by the conveyors from becoming entangled therewith.

3,660,965
APPARATUS FOR SEALING UPPER CLOSURE COVERS OF CONTAINERS

Jose Coloma Morera, Barcelona, Spain, assignor to Alimentas Ibericos S.A., Barcelona, Spain

Filed Sept. 8, 1969, Ser. No. 856,014
Claims priority, application Spain, Sept. 19, 1968, 358,578
Int. Cl. B65b *7/28*
U.S. Cl. 53—329 5 Claims

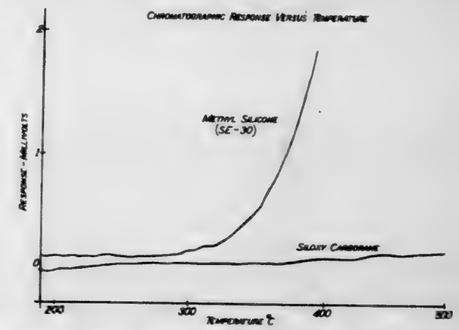
A method of and apparatus for sealing containers for food products, comprising the steps of and means, respectively, simultaneously effecting the sealing of the peripheral zone of the cover on a corresponding flange of the neck of the container and effectively cooling the remainder of the surface of the closure cover, to obtain a pore-free hermetically tight closure.



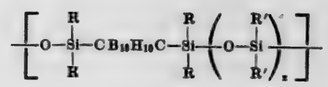
3,660,966
METHOD OF CHROMATOGRAPHIC ANALYSIS USING SILOXY CARBORANYL PARTITIONING PHASES

Richard w. Finch, Northford, and Willard Alan Nichols, Madison, both of Conn., assignors to Olin Corporation

Continuation-in-part of application Ser. No. 879,696, Nov. 25, 1969, now abandoned. This application Aug. 10, 1970, Ser. No. 62,624
Int. Cl. B01d *15/08*
U.S. Cl. 55—67 8 Claims



Vapor phase chromatography wherein a siloxy carboranyl liquid partitioning phase having recurring structural units of the following formula is used:



where each R and R′ substituent is an independently selected alkyl group of one to eight carbon atoms or aryl group of up to 10 carbon atoms and x is 1 to 5. These siloxy carboranyl partitioning phases are particularly useful at high temperatures.

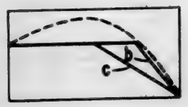
3,660,967
PURIFICATION OF FLUID STREAMS BY SELECTIVE ADSORPTION

John J. Collins, Katonah; Stephen A. Convisser, Pelham; Richard A. Anderson, Katonah, and Krishan D. Manchanda, Scarsdale, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sept. 8, 1970, Ser. No. 70,052
Int. Cl. B01d *53/02*
U.S. Cl. 55—73 9 Claims

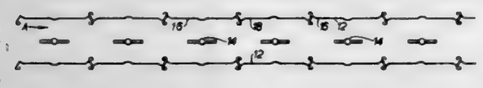
Zeolitic molecular sieve adsorption beds are employed with greatly enhanced efficiency in fluid stream purification

operations by using a bed to selectively adsorb impurities from a first fluid stream and without regeneration of the bed passing a second impure fluid stream therethrough, the second fluid being a less strongly adsorbed material than the fluid of the first stream. For example, the first fluid stream



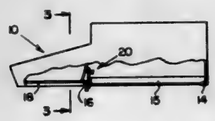
can be an olefin stream containing sulfur compound impurities and the second a paraffin stream also containing sulfur compound impurities. When used in this manner, the bed exhibits a higher capacity for the impurities adsorption than would be predicted from the impurity adsorption loading from the individual streams.

3,660,968
ELECTRO-PRECIPITATORS
John F. Dyla, Birmingham, and Robin A. Attfield, Great Wyrley, both of England, assignors to Lodge-Cottrell, Limited, Birmingham, England
Filed Nov. 10, 1969, Ser. No. 875,396
Claims priority, application Great Britain, Nov. 19, 1968, 54,816/68
Int. Cl. B03c *3/00*
U.S. Cl. 55—130 11 Claims



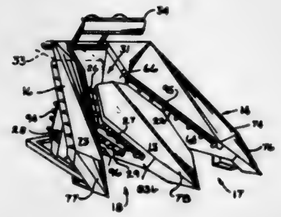
An electro-precipitator collector electrode comprises a plurality of elements each comprising a plate member which comprises (in profile) a substantially straight central portion and two bent end portions extending from either end of the central portion. Each bent end portion engages and is directly and positively secured to an adjacent bent end portion of an adjacent element, and each bent end portion comprises a surface which (in profile) is generally inclined at an angle greater than 90° to said central portion and engages a corresponding surface of the said adjacent bent end portion; this angle of the surface facilitates access of a fastening tool during erection. Adjacent collector electrodes are braced together along top edges thereof.

3,660,969
DEVICE FOR RELEASABLY LATCHING FILTERS AND LAMP LENSES IN RANGE HOODS
Norman P. Fox, Springwater, N.Y., assignor to Fasco Industries, Inc., Rochester, N.Y.
Filed Apr. 13, 1970, Ser. No. 27,691
Int. Cl. B01d *27/08*
U.S. Cl. 55—385 2 Claims



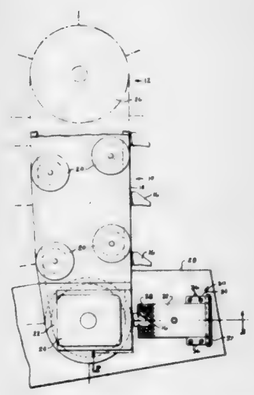
A removable filter unit is mounted in a range hood to pivot about its rear edge into an operative position rearwardly of a removable light lens, and beneath the hood's exhaust fan. A finger-actuatable latch is pivoted on the forward edge of the filter unit, and has a slot in its upper end engageable over a stationary pin in the hood to secure the unit in its operative position, at which time a flange on the forward edge of the unit engages and clamps the rear edge of the light lens against the hood also to lock the lens in place. The lower end of the latch is manually actuatable to pivot the latch to released position to disengage its slot from said pin, thereby to permit the filter unit to pivot downwardly, and the lens to be slid rearwardly for removal.

3,660,970
ROW CROP ATTACHMENT HAVING FRAME WITH A TRANSVERSE BAR AT THE SICKLE
Thomas W. Waldrop, R.D. #2, New Holland, Pa.
Filed Aug. 17, 1970, Ser. No. 64,431
Int. Cl. A01d *45/02*
U.S. Cl. 56—98 5 Claims



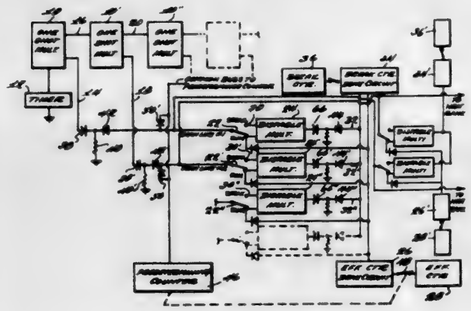
A two row crop attachment has rectangular shape bar between the base frame and lower forwardly extending frames to stiffen the frames for supporting the sickle with a minimum of misalignment.

3,660,971
MOWER BLADE SHARPENING MEANS
Joseph C. Hurlburt, Leola, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed Aug. 24, 1970, Ser. No. 66,430
Int. Cl. A01d *55/24*
U.S. Cl. 56—291 3 Claims



A mower having a sharpening abrasive member for engagement by the cutting blades of the mower during movement of the blades in operation, the abrasive member being mounted so as to permit adjustment to orient the operative face of the abrasive member with the surfaces of the blades to be abraded to sharpen the cutting edges.

3,660,972
OPERATION MONITORING SYSTEM
Henry R. Neill, Clarksville, and Robert G. Davies, Boydton, Va., assignors to Burlington Industries Inc., Greensboro, N.C.
Filed Jan. 9, 1970, Ser. No. 1,814
Int. Cl. D01h *13/14*
U.S. Cl. 57—34 R 7 Claims



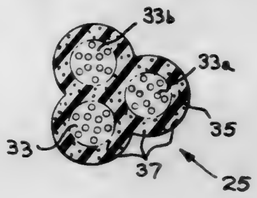
An operation monitoring system which may be adapted for use to monitor numerous types of operations and which is applicable to the monitoring of multi-spindle textile winding operations. The system is adapted to determine the efficiency of the operation and to count the number of unscheduled events which occur, such as yarn breaks in the multi-spindle textile winding operation. Scan pulse providing means produce a series of pulses which are registered by an efficiency counter when the operation is proceeding in a normal manner and a second counter registers the number of unscheduled events or yarn breaks which occur.

3,660,973
SPUN YARN AND A METHOD FOR MANUFACTURING THE SAME
Keso Susami; Keiichi Minami; Masaaki Tabata; Teiryo Kojima, and Zyuji Yuzoki, all of Otsu-shi, Japan, assignors to Toray Industries Inc., Chuo-ku, Tokyo, Japan
Filed Sept. 29, 1969, Ser. No. 861,933
Claims priority, application Japan, Sept. 30, 1968, 43/70191; Oct. 7, 1968, 43/72445; Oct. 11, 1968, 43/73500; Oct. 21, 1968, 43/76134; Oct. 22, 1968, 43/76511
Int. Cl. D02g *3/02*; D01h *1/12*
U.S. Cl. 57—139 6 Claims



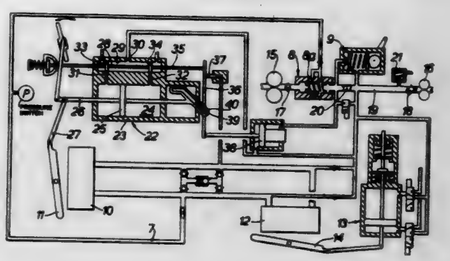
A spun yarn having a particular internal configuration wherein the number of twists of the outer fibrous layer is different from that of the inner fibrous layer, spiral diameter of fibers composing the yarn is almost identical, unevenness index does not exceed 10 and variation coefficient of stretching tension is smaller than 4. In the manufacturing method, a particular relationship is established between the configurational feature of the supplied fiber bundle and the mechanical conditioning of the system.

3,660,974
INDUSTRIAL BELT CONSTRUCTION
Alfred Marzocchi, and Albert J. Garbin, both of Cumberland, R.I., assignors to Owens-Corning Fiberglas Corporation
Continuation of application Ser. No. 828,034, Feb. 27, 1969, now abandoned, which is a division of application Ser. No. 649,165, June 27, 1967, now Patent No. 3,474,400. This application Aug. 31, 1970, Ser. No. 68,523
Int. Cl. D02g *3/36*, *3/44*; F16g *5/16*
U.S. Cl. 57—153 7 Claims



An industrial drive belt (V-belt) construction featuring an interior reinforcement in the form of a continuous cord extending longitudinally of the belt in repeated spiral wraps through the belt; the cord bearing a sheath or coating of cushion-like properties to thereby permit the belt to stretch even if the cord itself is relatively nonextensible.

3,660,975
HYDROSTATIC TRANSMISSION SYSTEMS
Anthony Eugene Joseph Martin, Birmingham, and Bernard James Baker, Wilnecote, near Tamworth, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Sept. 17, 1970, Ser. No. 73,062
Int. Cl. F02b *41/00*
U.S. Cl. 60—19 5 Claims

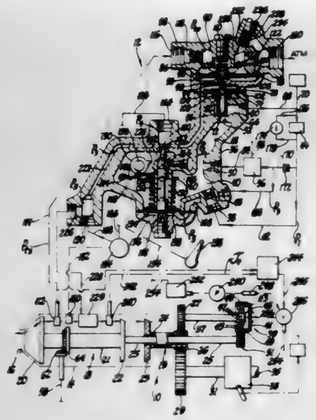


An hydrostatic transmission in which there is provided an automatic pump displacement control, a manual override device for overriding the displacement control to keep the pump displacement at a low level, and a device sensitive to pump inlet pressure to render the override device inoperative when the pump inlet pressure exceeds a predetermined value.

3,660,976
TURBINE ENGINE CYCLE TEMPERATURE CONTROL SYSTEM
Raymond P. Canale, Warren, Mich., assignor to Holley Carburetor Company, Warren, Mich.
Filed Apr. 20, 1970, Ser. No. 29,864
Int. Cl. F02c *7/02*
U.S. Cl. 60—39.16 13 Claims

A turbine engine, provided with a fuel control, has a gasifier section and a free turbine power section with energizeable

clutching means adapted for at least at times causing frictional engagement between the sections in order to vary the



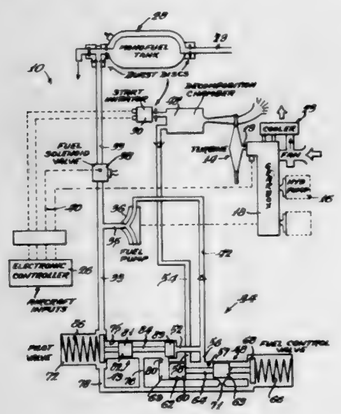
then existing temperature within a selected point of the engine to cause that temperature to change to a value consistent with prescribed limits for that temperature.

3,660,977

EMERGENCY HYDRAULIC POWER SYSTEM

Richard W. Reynolds, Rockford, Ill., assignor to Sundstrand Corporation

Filed Mar. 5, 1970, Ser. No. 16,841
Int. Cl. F02c 9/08, 9/10
U.S. Cl. 60—39.28 **10 Claims**



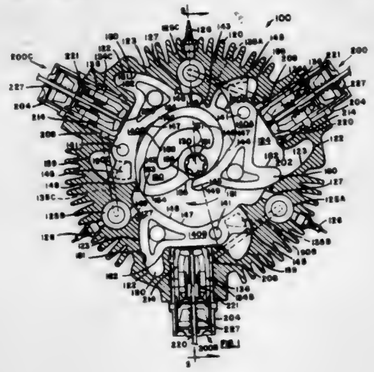
An emergency hydraulic power system for providing emergency hydraulic supply to an aircraft including a turbine driving a variable displacement pump through a gear box with a speed control to maintain a substantially constant turbine speed consisting of a centrifugal fuel pump that is driven at turbine speed for supplying a monopropellant fuel to a decomposition chamber, a bistable fuel control valve in the outlet of the fuel pump that is operated by a fuel pressure responsive pilot valve that closes the normally open fuel control valve when outlet pressure from the fuel pump exceeds a predetermined value indicating turbine overspeed, and opens the fuel control valve when the outlet pressure from the fuel pump drops below a predetermined value indicating turbine underspeed.

3,660,978

INTERNAL COMBUSTION ENGINE

John N. Hinckley, Beloit, Wis., assignor to Beloit College, Beloit, Wis.

Filed Sept. 24, 1969, Ser. No. 870,331
Int. Cl. F02c 5/00, 5/12
U.S. Cl. 60—39.61 **20 Claims**



A rotary internal combustion engine having a plurality of swinging arms spaced uniformly in a rotor housing and a rotor on a power output shaft adapted to engage the arms in said housing and thereby control the cycle of outward compression and exhaust strokes, and inward power strokes of each of said arms. Each arm includes an outwardly tapered, wedge-shaped horn member engageable within a recess provided in the adjacent engine housing to define an expandable compression chamber between said housing and each arm and to permit said arms to move freely between said inward and outward positions. In the preferred arrangement, the arms and rotor can shift laterally within the housing to positions of equilibrium, and the side portions of said arms and rotor include a plurality of labyrinth grooves in sealing relationship with respect to the rotor housing. Spherical combustion chambers in the housing adjacent the free end of each of said arms communicate with the interior of said housing and are adapted to direct an expanding charge of combustion gases against said arms and the exposed portion of the rotor. Said rotor and arms can be adapted to cause substantially complete combustion of the gas charges within the combustion chambers prior to expansion of the charges in said rotor housing. Exhaust ports provided in said housing selectively exhaust spent combustion gases from the interior of said housing, and a cam startup system is adapted to initiate the cycle of operation for the arms. The rotor may be adapted so that each arm will transmit a plurality of power impulses to the rotor for each complete rotor revolution, and further to overlap the power impulses of adjacent arms during the engine operation.

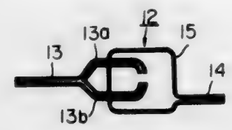
3,660,979

METHOD AND DEVICE FOR DAMPING FLOW PULSATIONS IN A HYDRAULIC SYSTEM

Satoru Kamakura, and Yukio Watanabe, both of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Apr. 1, 1970, Ser. No. 24,481
Int. Cl. F16l 55/04
U.S. Cl. 60—52 **4 Claims**

A method and device for damping flow pulsations in a liquid-phase flow supplied under pressure from a conventional hydraulic pump or the like, which method comprises dividing the supplied pulsating flow into two separate flow components, causing the flow components to impinge upon each other in an enclosure so as to cancel the pulsating energy in the two flow components, and withdrawing the pulsation-free pressurized flow out of the enclosure, whereby a pressurized flow cleared of pulsations can be supplied to a hydraulic system such as an automotive power steering system.

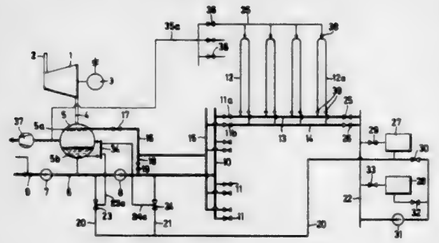


3,660,980

INDIRECT AIR CONDENSATION PLANT

Hermann Knirsch, Wattenscheid, and Hans-H. Von Cleve, Bochum, both of Germany, assignors to GEA Luftkuhlergesellschaft Happel GmbH & Co. KG, Bochum, Germany

Filed May 13, 1970, Ser. No. 36,849
Claims priority, application Germany, May 17, 1969, P 19 25 234.7
Int. Cl. F01k 9/00
U.S. Cl. 60—95 R **21 Claims**



A condensation plant for condensing superheated steam and the like, having a jet condenser for condensing the steam and a plurality of air-cooled cooling elements to feed cooling water to the condenser and to cool the condensate. Distribution means, including pumps and valves, are provided between the condenser and cooling elements which allow for the selective flow of the condensate and drainage of any individual portion of the plant. A vacuum line is included in the distribution means and is connected to the highest point of each cooling element. The pressure in the vacuum line is below atmospheric pressure and only slightly above the specific saturation pressure of the condensate corresponding to the water temperature in the upper part of the cooling elements. The vacuum line, along with providing a control function, also enables replacement of a single cooling element without shutting down the entire plant.

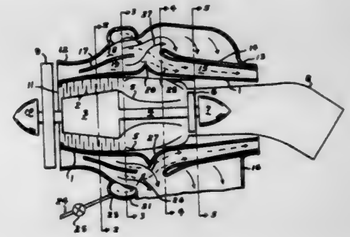
3,660,981

THE S/TOL AIRCRAFT

Emerson W. Stevens, Snyder, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Oct. 5, 1970, Ser. No. 77,776
Int. Cl. F02k 1/20, 3/06
U.S. Cl. 60—226 R **5 Claims**

The invention concerns a turbo fan engine and in which the output of the fan can be normally directed downwardly to lift the aircraft from the ground, or optionally, can be caused to shift into a horizontal direction and thus augment the normal thrust of the engine. It has particular application to the so-called "vertical short takeoff and landing" type of aircraft. The fan is located forward of the engine and the movement of the air which is in excess of that furnished to the compressor in changed as to direction from the vertical to the horizontal by causing a jet of high pressure air, obtained from a source exterior of the fan, bodily to shift or divert the air column emanating from the fan traveling in the downward vertical direction to now travel in the horizontal direction after the plane has attained its proper height in space. The diverting jet of high pressure air is discharged from an annular opening in a chamber of ring-like character which surrounds the engine and to which the source of high pressure air, preferably taken from the compressor, is applied.

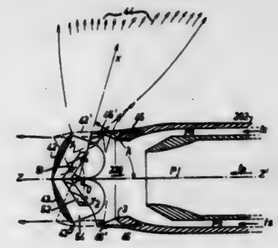


3,660,982

NON-RETURN DEVICE FOR FLUID DUCTS AND THRUST REVERSERS

Albert Gozlan, Asnieres, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, Seine, France

Filed Mar. 3, 1970, Ser. No. 16,042
Claims priority, application France, Apr. 28, 1969, 6925798; Dec. 30, 1969, 6945547
Int. Cl. F02k 1/24
U.S. Cl. 60—230 **19 Claims**



An ejector of the deflected flow type, including a primary duct and a secondary duct, the pressure in the primary duct being higher than that in the secondary duct, the secondary and primary flows being mixed on exit from a common throat-section, the mixture being deflected by a wall opposed transversely to the general direction of the two ducts, within at least one outlet means and in a plane of symmetry of the ejector, at least two non-return deflectors being provided on either side of said plane of symmetry, adjacent lateral walls of the ejector and in the return path of the primary flow deflected by said wall, whereby to deflect in a downstream direction those backflowing streams of said primary flow which are located laterally in relation to the outlet means and which would tend to flow back into said secondary duct, thus avoiding exagerate heating of the ducts.

3,660,983
APPARATUS AND METHOD FOR THE PREVENTION OF ICE IN WATERWAYS

George W. Gill, Wesber Villa, Apt. #71, Webster, Tex.

Filed Sept. 24, 1969, Ser. No. 860,536
Int. Cl. E02b *3/00, 5/04, 15/02*
U.S. Cl. 61—1 8 Claims



The apparatus and method for enclosing bodies of water and for treating said water with chemical agents in order to lower the freezing point thereof and thus maintain the body of water free of ice so as to permit the movement of ships therethrough. The apparatus consists of a plurality of dams constructed of ice extending in such manner as to form a waterway. The dams of ice confine the chemically treated water and restrict escape of the treated water due to natural currents. Gate means are provided within the dam structure so as to provide for the ingress and egress of ships.

3,660,984
STABILIZING SOILS

Amos R. Anderson, Adrian, Mich., assignor to Joseph J. Packo

Filed July 10, 1970, Ser. No. 54,012
Int. Cl. E02d *3/14*
U.S. Cl. 61—36 R 19 Claims

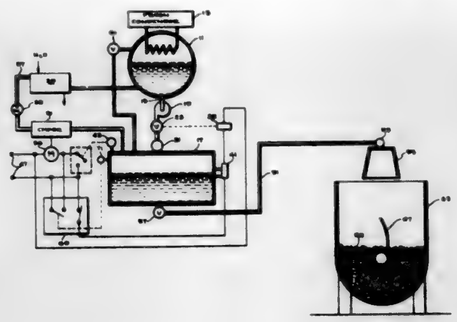
Unstable and permeable soils are stabilized or solidified by a chemical treatment with a soil-stabilizing agent comprising two components: (1) a metal alkyl or metal alkyl hydride or a metal alkyl halide, the metal being aluminum, zinc, indium, gallium or thallium, such as zinc diethyl or aluminum triethyl, and (2) a liquid or solid organo compound of a tetravalent metal such as silicon, titanium, zirconium or hafnium, such as an alkyl alkoxy silane, whereby these components react in presence of soil moisture to form in situ a solid reaction product binding the soil particles; the stabilizing agent may be introduced into the soil by injection, or applied by surface treatment such as spraying or rolling.

3,660,985
METHOD AND SYSTEM FOR MAKING CARBON DIOXIDE SNOW

Lewis Tyree, Jr., 10401 South Oakley Avenue, Chicago, Ill.

Filed Feb. 26, 1970, Ser. No. 14,525
Int. Cl. F25l *1/00*
U.S. Cl. 62—10 10 Claims

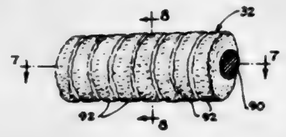
A system for making particulate solid CO_2 using a storage vessel holding liquid CO_2 at high pressure, a tank connected to the storage vessel and expansion means for expanding the high pressure liquid to lower pressure, lower temperature liquid plus vapor at the tank. The passage of liquid through the expansion means is controlled to obtain a desired reservoir of low temperature liquid in the tank. A compressor withdraws vapor from the tank and returns the compressed vapor to the storage vessel. Snow expansion means is connected to the tank. When snow formation is desired, the reservoir of liquid CO_2 in the tank is suitably raised to a high pressure, as by connecting it to the vapor in the storage vessel, and the pressurized liquid CO_2 from the tank is supplied to the snow expansion means.



3,660,986
SOLIDIFIED GAS PELLETS

Robert C. Hardt, Chicago Heights, and Edward Koslow, Homewood, both of Ill., assignors to Chemetron Corporation, Chicago, Ill.

Continuation of application Ser. No. 660,790, Aug. 15, 1967, now abandoned. This application Dec. 3, 1969, Ser. No. 876,170
Int. Cl. F25j *1/00*
U.S. Cl. 62—10 5 Claims



Carbon dioxide pellets of a high density formed in a manner to break easily into minute pieces yet not agglomerate during shipment, together with a head member for a pellet machine to form pellets of this kind.

3,660,987
FREEZE HOLE AIR BLEEDER SYSTEM

Charles P. Gail, San Clemente, Calif.; Ugo Serra Zanetti, New York, and Andrew L. Amisano, Woodside, both of N.Y., assignors to Poirier & McLane Corporation, Yonkers, N.Y.

Filed June 22, 1970, Ser. No. 48,273
Int. Cl. F25d *17/02*; F25l *43/00*
U.S. Cl. 62—230 14 Claims

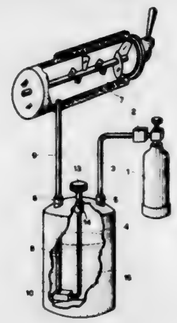


An arrangement for removing occluded air in a refrigerated liquid circulated through a plurality of freezing elements used in solidifying incompetent earth formations, which includes bleed lines extending from the freezing elements to manifolds positioned above the freezing elements, a valve in each bleed line controlling the flow to allow air and a minor amount of said liquid to be conducted therethrough, the manifold sloping downwardly to the inlet of a pump that returns the liquid from the manifold to the refrigeration plant, and float-operated vent devices connected to and positioned above the manifolds for collecting and discharging the air.

3,660,988
CONTAINER FOR COMBINING GAS WITH A LIQUID MIXTURE AND FOR CONVEYING THE MIXTURE THEREBY OBTAINED TO A MACHINE, PARTICULARLY FOR USE IN ICE CREAM MAKING MACHINES

Giancarlo Garavelli, Milan, Italy, assignor to Heron Establishment, Vaduz, Liechtenstein

Filed Sept. 22, 1969, Ser. No. 859,749
Claims priority, application Italy, Sept. 24, 1968, 39973 A/68
Int. Cl. F25c *7/14*
U.S. Cl. 62—306 2 Claims

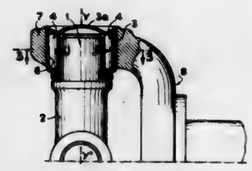


An ice cream making machine and a combined conveying and mixing apparatus are disclosed. The conveying and mixing apparatus provide the pressure for feeding the ice cream mix from its container to the ice cream making machine while simultaneously incorporating a predetermined specific gas ratio into the mix so as to produce the desired gas mix ratio in a complete ice cream.

3,660,989
UNIVERSAL JOINT

Alfred Pitner, Paris, France, assignor to Nadella, a part interest

Filed Dec. 8, 1969, Ser. No. 883,147
Claims priority, application France, Jan. 24, 1969, 6901314
Int. Cl. F16d *3/26*
U.S. Cl. 64—17 2 Claims

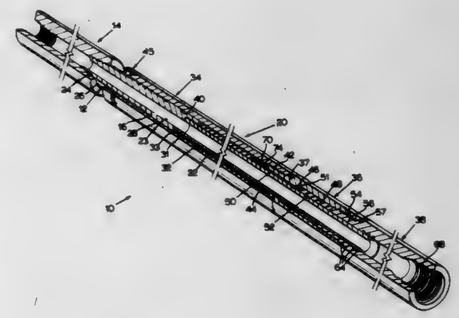


Universal joint in which the needle bearing cup surrounding each trunnion of the cross member of the joint has a non-circular cross-sectional shape so that the passage for the needles is smaller in the zones in which the forces are transmitted by the joint than in the rest of the passage for the needles. This is achieved by an interaction between the branch of the material of the yoke surrounding the bore and the cup which deforms the cup in the desired manner. A method is disclosed for achieving this result.

3,660,990
VIBRATION DAMPER

Donald L. Zerb, 4323 1117th Street, and William M. Varty, 11634 133rd Street, both of Edmonton, Alberta, Canada

Filed June 15, 1970, Ser. No. 46,324
Claims priority, application Canada, Feb. 27, 1970, 76,040
Int. Cl. E21b *17/04*; E21c *15/00*
U.S. Cl. 64—23 2 Claims

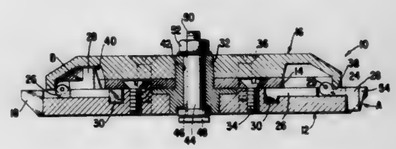


An improved vibration damper for drill bits of the type used in drilling into the earth for oil and gas. The damper includes a rigid metallic sleeve slidably housed in splines formed in an outer casing assembly. The sleeve is free to move longitudinally in the casing assembly and torque is transmitted by the splines. A rubber bush is housed in the outer casing such than when the drill bit receives a longitudinal shock the sleeve moves into the casing assembly and the rubber bush is deformed to absorb the shock.

3,660,991
PATTERN WHEEL WITH PIVOTALLY MOUNTED JACKS

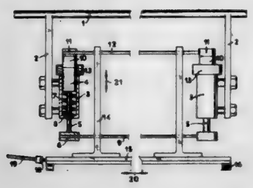
Lester Mishcon, Miami Beach, and Donald W. Reagan, Hialeah, both of Fla., assignors to The Singer Company, New York, N.Y.

Filed Aug. 10, 1970, Ser. No. 62,268
Int. Cl. D04b *15/76*
U.S. Cl. 66—50 A 3 Claims



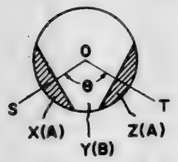
A pattern wheel for a circular knitting machine is provided with pivotally mounted jacks capable of being moved about their pivotal mountings between needle-actuating positions and non-actuating positions, the pattern wheel also being provided with means effective to prevent dislodgement of the jacks from their needle-actuating positions when disposed over the jacks and secured to the wheel.

3,660,992
LOOMS
Augustin Perrier, Lyon, France, assignor to Manufactures Jean-Baptiste Martin, Jean Martin, Andre Charbin Cie, Lyon (Rhone), France
Filed Mar. 11, 1970, Ser. No. 18,587
Claims priority, application France, Mar. 17, 1969, 6906946
Int. Cl. D04b 23/00
U.S. Cl. 66—86 4 Claims



A control apparatus for use in a Raschel knitting machine for effective movements of the guide bar and comprising a pair of spaced bars which are bodily movable up and dow relative to the shaft about which they oscillate under the control of electromagnets and possibly springs and on which the guide bar can slide with a reciprocating motion.

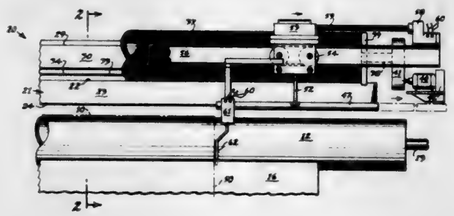
3,660,993
TWO-COMPONENT COMPOSITE FILAMENT AND METHOD OF PRODUCING SAME
Masao Matsui, Takatsuki, and Susumu Tokura, Osaka, both of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan and Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy
Continuation of application Ser. No. 692,479, Dec. 21, 1967, now abandoned. This application Mar. 8, 1971, Ser. No. 122,188
Int. Cl. D04b 21/14, 9/46; D02a 3/00
U.S. Cl. 66—202 11 Claims



A two-component composite filament having an unbiased dyeability and a suppressed crimpability wherein three distinctly sectioned portions including respectively a part of the periphery of the unitary filament are disposed in a side-by-side relation and extends uniformly throughout the entire length of the filament, two portions among said three portions are separated by an adherent intervened portion therebetween, said separated two portions are composed of one thermoplastic synthetic linear polymer and said intervened portion is composed of another thermoplastic synthetic linear polymer which has different heat shrinkability from that of the former polymer.

3,660,994
DYEING APPARATUS FOR CONTINUOUSLY MOVING WEB
Grover Z. Gowin, Tunnel Hill, Ga., assignor to Gowin-Card, Inc., Dalton, Ga.
Filed May 12, 1970, Ser. No. 36,566
Int. Cl. B05c 5/00, 9/06
U.S. Cl. 68—205 R 5 Claims

A spill plate arranged to convey dye liquors upon the surface of a continuously and longitudinally moving web fabric, means feeding dye liquor continuously upon the spill plate, a slotted meter roll engaging the spill plate and driven at a uniform speed to feed uniform streams of dye liquor over the



spill plate, guide cups disposed at opposite sides of the spill plate and transversely movable to confine the stream of liquor falling upon the web to a width substantially coinciding with the width of the fabric.

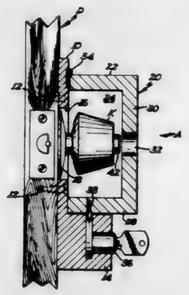
3,660,995
BICYCLE STEM LOCK
Frank F. Klein, Jr., 2049 West 63rd, Chicago, Ill.
Continuation-in-part of application Ser. No. 618,004, Feb. 23, 1967, now abandoned. This application Oct. 28, 1968, Ser. No. 771,080
Int. Cl. B60r 25/02
U.S. Cl. 70—187 9 Claims



A bicycle fork stem lock installed either at the time of manufacture of a bicycle or subsequently, the lock including a slide bolt projecting from the fork stem into the upper bearing cup and preferably also into the head frame, the bicycle fork stem and upper head bearing cup being of standard size.

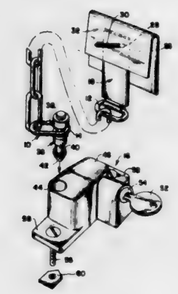
3,660,996
LOCKING DEVICE FOR A DOORKNOB LOCK
Albert Syvertson, 3112 Tenth Avenue South, Minneapolis, Minn.
Filed July 29, 1970, Ser. No. 59,278
Int. Cl. E05b 13/00
U.S. Cl. 70—209 1 Claim

A locking device for a doorknob lock including a base, means for securing the base to a door, said base formed with an opening through which a doorknob extends, a cover, the cover having an access hole, means mounting said cover on the base for displacement relative to the doorknob to allow access to the doorknob and means for locking the cover in a



secure position upon the base and enclosing the doorknob of a door.

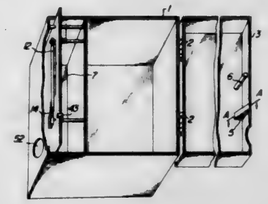
3,660,997
ANTI-THEFT CHAIN LOCK FOR AUTOMOBILE COMPARTMENTS
David N. Michaoff, 7416 West Park Drive, Hyattsville, Md.
Filed Jan. 9, 1970, Ser. No. 1,580
Int. Cl. E05b 65/19; E05c 17/36
U.S. Cl. 70—240 2 Claims



The engine compartment of an automobile is secured against unauthorized access by means of a chain lock including a universally flexible chain, one end of which is simply but securely attached to the hood of the automobile and the other end of which is detachably engaged with a key-operated locking mechanism simply and securely attached to a portion of the engine compartment. The entire chain lock is hidden from view when the engine compartment is closed but becomes immediately evident when normal hood latch is released.

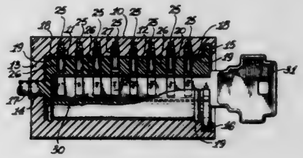
3,660,998
AUTOMATIC TIME-UNLOCKED CIGARET CASE
Yoshihiro Ishijima, Osaka, Japan, assignor to Sogawa Machineries & Supplies, Osaka, Japan
Filed Feb. 16, 1971, Ser. No. 115,624
Int. Cl. A24f 15/12
U.S. Cl. 70—269 1 Claim

A timer-controlled cigaret case which is automatically unlocked after the lapse of a preset period of time, in which a push rod provided on the inner surface of the cover is adapted to press down turning arms pivotally supported inside the case body, thereby winding a flat spiral spring of a timer and starting the timer and bringing a locking pawl formed at the front end of a leaf spring into engagement with a locking groove of a projection from the cover so as to accomplish locking, said leaf spring being adapted to be pressed by a side surface of a criterion cam which is rotatably and slidably fitted to the shaft of a second wheel of the timer,



and a pin provided on the shaft of the second wheel is adapted to fit in a notch formed in the criterion cam to cause axial sliding of the cam so as to release the pressure of the leaf spring and allow the locking pawl to move out of the groove to accomplish unlocking, said criterion cam being rotatable as desired to shift the position of the notch for the purpose of timing control.

3,660,999
MAGNETICALLY OPERATED LOCKING MECHANISM
Henry Janzen, 172 College Street, Kingston, Ontario, Canada
Filed Oct. 22, 1970, Ser. No. 82,879
Int. Cl. E05b 27/00, 47/00
U.S. Cl. 70—276 10 Claims

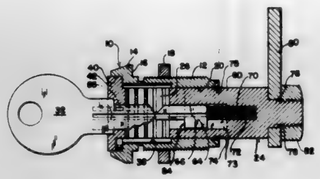


A locking device comprises two members having meeting faces in substantial engagement with each other and a plurality of bores extending normally from each meeting face. The members are relatively movable to place each bore in one member in axial alignment with a bore in the other member. A tumbler is slidably mounted in each bore of one member and a plunger is slidably mounted in each bore of the other member. Resilient means urges the tumbler in one direction of movement. Either the tumbler or the plunger or both has magnetic characteristics. One of the members has a recess for reception of a key with magnetic sections which serve to impart locking or unlocking movement to the tumblers and plungers.

3,661,000
LOCK WITH UNIVERSAL KEY EJECTOR
William J. Kerr, Glenview, Ill., assignor to Chicago Lock Co., Chicago, Ill.
Filed June 12, 1970, Ser. No. 45,698
Int. Cl. E05b 17/00
U.S. Cl. 70—388 9 Claims

A tumbler lock having associated therewith a spring-biased key ejector which is effective to eject the key in all angular

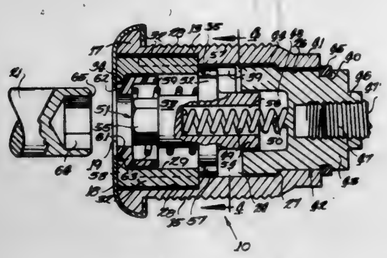
positions of the plug, i.e., in the unlocked position, the locked position, or any intermediate position so that at no time may the key be left within the lock.



3,661,001
KEY EJECTOR LOCK

Dwight W. Glass, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.

Filed Aug. 3, 1970, Ser. No. 60,309
Int. Cl. E05b *17/00, 27/08*
U.S. Cl. 70—388 11 Claims



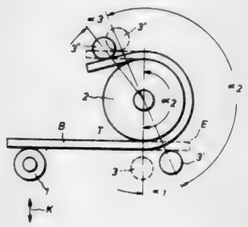
A lock assembly for the door of a cabinet or other enclosure which will eject the actuating key for the lock in either the locked or unlocked position or in any radial position if the key is released and includes a lock cylinder housing a stationary bushing, a reciprocable spring-biased stripper, a reciprocable and rotatable driver, and a rotatable plug. Insertion of a proper key depresses the stripper and reciprocates the driver from a first position in engagement with the bushing to a second position in engagement with the plug, thus freeing the driver from the bushing for rotation with the plug within the cylinder and relative to the bushing. The stripper will eject the key in any position of rotation of the driver.

3,661,002
BENDING MACHINE FOR BENDING REINFORCING IRONS FOR CONCRETE

Paul Ferd Peddinghaus, Jr., Gevelsberg, Germany, assignor to Paul Ferd Peddinghaus, Gevelsberg, Germany

Filed Oct. 5, 1970, Ser. No. 77,886
Claims priority, application Germany, Oct. 4, 1969, P 19 50 127.0
Int. Cl. B21b *37/08*; B21d *7/02*
U.S. Cl. 72—21 5 Claims

A bending machine for bending reinforcing iron rods for concrete, which includes electric control means for preselecting the bending angle of the bending dish or bending arm, in which each desired bending angle of the rod to be bent has associated therewith a setting potentiometer and all setting potentiometers are preceded by a dead angle advance potentiometer and by recoil potentiometers, said last mentioned two potentiometers which also may be combined to a unit being common to all of said setting potentiometers, while means are provided which are operable selectively to operatively connect any one of said setting potentiometers with said preceding dead angle advance potentiometer and said recoil potentiometer.



3,661,003
BLANKHOLDER PINCH INDICATOR SYSTEM FOR A POWER PRESS

Francis E. Helberger, Elmhurst, and Theodore F. Novak, Oakbrook, both of Ill., assignors to Danly Machine Corporation, Chicago, Ill.

Filed Apr. 13, 1970, Ser. No. 27,897
Int. Cl. B21c *51/00*; B21d *22/00*
U.S. Cl. 72—32 5 Claims

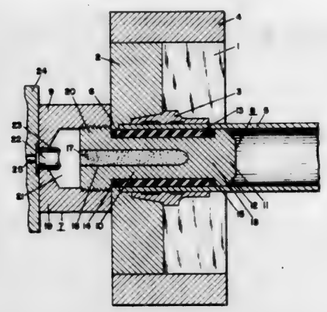
Blankholder pinch indicator system for a production power press where electrical or hydraulic means are utilized to sense the amount of clamping force applied at a number of positions about the edges of the workpiece being clamped thereby and visual indications of the clamping forces developed are produced at remote positions so that the press operator can maintain the proper amount of clamping force over successive press operating cycles.

3,661,004
EXPLOSIVE TUBING SWAGER

John T. M. Lee, Phoenixville, and Donald P. Keathley, Glenmoore, both of Pa., assignors to Atlas Chemical Industries, Inc., Wilmington, Del.

Filed Nov. 7, 1969, Ser. No. 874,767
Int. Cl. B21d *26/08*
U.S. Cl. 72—56 14 Claims

A non-rupturable spool and an explosive cartridge formed therewith useful for swaging tubing. An explosive charge is contained within the spool and a transfer media, such as rubber, is placed over the spool to form the cartridge. The cartridge is inserted into a tube and the charge is detonated which swages the tube against a sleeve or die.



3,661,005
METHOD FOR PRODUCING SEAMLESS TUBES WITH SMALL DIAMETERS

Ulrich Petersen, Duesseldorf; Ernst Von Chiarl, Solingen, and Wilhelm Brutsch, Remscheid, all of Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf, Germany

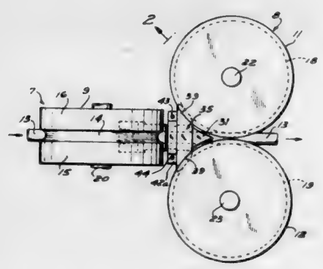
Filed Oct. 29, 1969, Ser. No. 872,373
Int. Cl. B21b *23/00*
U.S. Cl. 72—206 3 Claims

Method for producing seamless tubes of small diameter. The starting tube is subjected to at least one initial cold drawing over an interior tool, decreasing the diameter and the wall thickness of the tube so that the interior tube surface is brought into complete contact with the interior tool. The tube is then subjected to stretch reducing and to final cold drawing over an interior tool.

3,661,006
ROLLING MILL GUIDE

John A. Massara, Pueblo, Colo., assignor to C F & I Steel Corporation, Denver, Colo.

Filed Sept. 18, 1969, Ser. No. 858,945
Int. Cl. B21b *41/00, 39/20*
U.S. Cl. 72—227 8 Claims



A guide for directing the work from one set of shape rolls to the next is constructed to be supported at its opposite ends by the pairs of rolls constituting the successive passes or sets. The guide is specially shaped at each end and is provided near the rear end with a collar which engages the surfaces of the two rolls of the succeeding set. This collar is mounted in a fixed but adjustable position so as to cause the surfaces of the guide at the front end to engage the cylindrical surfaces of the two rolls forming the immediately preceding set.

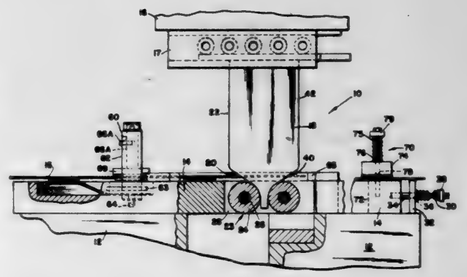
ERRATUM

For Class 72—419 see:
Patent No. 3,661,029

3,661,007
CAM FEEDER AND DIE

Frank R. Benedict, Brightwaters, N.Y., assignor to The Trane Company, La Crosse, Wis.

Filed Dec. 11, 1969, Ser. No. 884,238
Int. Cl. B21d *43/02*; B26d *5/20*
U.S. Cl. 72—421 4 Claims

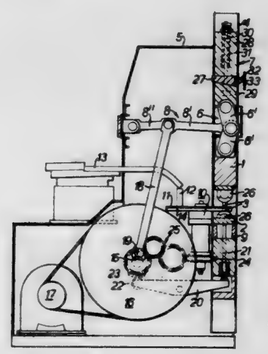


In a feeder die system, a gag system is provided which is adapted to simultaneously operate a plurality of actuators permitting reciptocating movement of feeder bar of a die. Provision is further made for utilizing the actuating force of the actuator cam for general die applications.

3,661,008
PRESSES

Barry Anthony Richardson, Coventry, England, assignor to Wickman Machine Tool Sales Limited, Coventry, England

Filed Mar. 17, 1970, Ser. No. 20,377
Int. Cl. B21j *9/18*
U.S. Cl. 72—451 11 Claims



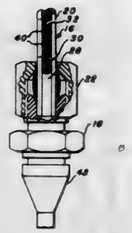
A toggle press, in particular a coining press, in which a press slide is reciprocated towards and away from a thrust member by a first toggle linkage connected between the press slide and a stationary point and which is operated by a second toggle linkage connected between the first toggle linkage and a stationary point and which in turn is operated

by a crank or eccentric driven at constant speed, the said two toggle linkages being of opposed angularity, and the length of the link of the said second toggle linkage which is connected to the said stationary point being shorter than the other link of the said second toggle linkage so that the press slide spends a greater part of its operating cycle near the top of its stroke removed from the thrust member than it does near the bottom of its stroke close to the thrust member. Additionally, the crank or eccentric deflects the second toggle linkage to one side of its center line for the major part of the operating cycle, and also deflects the second toggle linkage to a lesser extent to the other side of its center line during the remaining minor part of the operating cycle. Preferably, the lengths of the links of the second toggle linkage are substantially in the ratio 1:2 and the stroke of the press slide or ram is relatively short so that it remains close to the thrust member throughout its operations cycle.

3,661,009
GAS QUALITY INDICATOR AND METHOD FOR DETERMINING GAS QUALITY

Robert G. Leonard, Franklin, and Chester P. Surprise, Waukesha, both of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Apr. 2, 1970, Ser. No. 25,033
Int. Cl. G01n *21/06*
U.S. Cl. 73—23 7 Claims

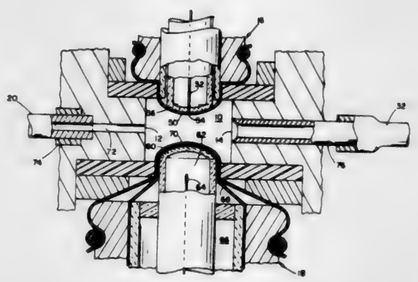


A compressed air line is provided with a coupling, including a shutoff valve for receiving a transparent, lineal, tubular member having a bore of relatively small diameter through which the compressed air is allowed to bleed to atmospheric pressure. The rate of bleeding is calibrated by means restricting the flow of air through the lineal member. The input end of the lineal member into which the air enters is provided with a coloring stage including a dye for coloring contaminates in the air. A contaminant adsorption stage of polyethylene of small micron size fills the remainder of the lineal tubular member. Bleeding of the gas to atmosphere at high velocity through the relatively small metered input to the tube causes the gas to expand suddenly by orifice action. The high velocity flow and rapid expansion of gas causes any vaporized contaminant particles to pick up dye, preferably bright red, as they flow through the coloring stage. The gas then flows at high velocity through the adsorption stage, creating sufficient turbulence to cause coalescence into colored drops which adhere to the polyethylene showing a progressive travel of color through the transparent lineal member with minimal loss of compressed gas in accordance with the amount of contaminant in the air. The rate of such color travel is calibrated and a scale along the length of the lineal member provides an output reading of the contamination in parts per billion sensitivity which may be read either directly in inches or in ounces of contamination per 100,000 cubic feet of air volume, depending on the scale used.

3,661,010
FLUID SAMPLE ANALYZING APPARATUS

Robert T. Neuwelt, Arlington, Mass., assignor to Instrumentation Laboratory, Inc., Lexington, Mass.

Filed Apr. 7, 1970, Ser. No. 27,193
Int. Cl. G01n *7/10*
U.S. Cl. 73—61 R 5 Claims

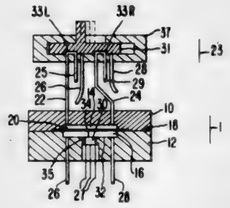


In a method of analyzing a fluid sample employing an electrochemical sensor that has a selectively permeable membrane disposed in the sample chamber, sample fluid to be analyzed is introduced into the sample chamber at a first flow rate, and flow of the sample fluid across the membrane in the sample chamber is continued at a reduced rate for a length of time greater than that required to fill the sample chamber at the first flow rate.

3,661,011
HIGH-SPEED MICROVOLUME MEMBRANE OSMOMETRY

Karl-Dieter S. Myrenne, Sunnyvale, Calif., assignor to Melabs, Inc.

Filed Mar. 2, 1970, Ser. No. 15,779
Int. Cl. G01n *13/04*
U.S. Cl. 73—64.3 11 Claims

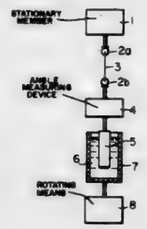


A membrane osmometer is disclosed comprising a semipermeable membrane having first and second opposing surfaces. Means are provided for receiving and confining a solvent in fluid communication with the first membrane surface. Means also are provided for receiving and confining a solution in fluid communication with the second membrane surface. The osmometer further includes a fluid supply inlet conduit, an outlet conduit, and a distributing valve having at least two positions whereby fluid communication may be established between the conduits and the solvent receiving and confining means with the valve in a first position and between the conduits and the solution receiving and confining means with the valve in the second position. A semiconductor pressure transducer is also provided having a pressure-sensitive surface element in pressure communication with the contents of one of the receiving and confining means.

3,661,012
APPARATUS FOR MEASURING TORSIONAL RIGIDITY OF FILAMENTOUS MATERIAL

Chikayasu Yamazaki, Kyoto-shi; Minoru Okabayashi, and Koichiro Ando, both of Otsu-shi, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed July 9, 1969, Ser. No. 840,147
Claims priority, application Japan, Jan. 16, 1969, 44/3002
Int. Cl. G01n *3/22*
U.S. Cl. 73—99 9 Claims

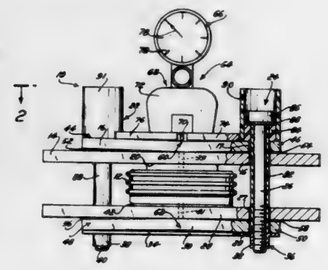


An apparatus for measuring the torsional rigidity of a fibrous material utilizes a rotating viscous liquid of known viscosity to impart a torque to the fibrous material. The fibrous material is clamped at its upper and lower ends by clamping devices and the lower clamping device is connected to a cylindrical mass which is floated in a viscous liquid of known viscosity contained within an outer container. The outer container is rotationally driven to impart a circular motion to the viscous liquid which accordingly applies a torque to the cylindrical mass. The torque applied to the cylindrical mass effects turning of the fibrous material and the extent of turning is measured to obtain an output proportional to the torsional rigidity of the fibrous material.

3,661,013
SEMICONDUCTOR ASSEMBLY

Lance C. Wilcox, Wilton, Conn., assignor to Electric Regulator Corporation, Norwalk, Conn.

Filed Dec. 23, 1969, Ser. No. 887,542
Int. Cl. G01l *1/04*
U.S. Cl. 73—141 A 7 Claims

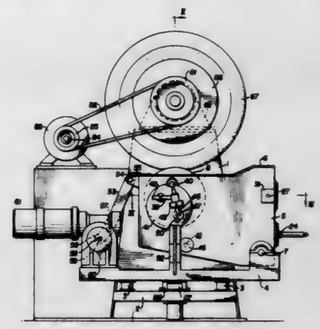


A semiconductor assembly comprises a semiconductor component, a body operatively connected to the semiconductor component, a force generating means operatively connected to the body and effective to force the body and the semiconductor into engagement, and means operatively connected to the force generating means and effective to vary its position. The variation in the position of the force generating means causes a variation in the engaging force between the body and the semiconductor component in the assembly. A force measuring means is operatively connected to the assembly and provides an indication of the exact force applied between components. The force measuring means is operatively connected to the force generating means, the latter being an elongated resilient member having raised end sections and a lowered central section in engagement with the body. The force measuring means is operatively connected to the raised end sections at one part and to the lowered central section at another part. The relative movement of these parts due to the change in position of the raised end sections is effective to provide a force indication on a readout gauge or the like. The change in position of the end sections is controlled by bolts which pass through the end sections and the body and are operatively connected to the semiconductor component. An insulating guide tube encloses each bolt and an insulating member partially supports each bolt head. The insulating members are effective to withstand the pressures generated by the adjustment of the bolts as well as electrically insulate the bolt heads.

3,661,014
METHOD AND APPARATUS FOR DETERMINING IRREGULARITIES IN THE BEHAVIOR OF TIRES ROTATING UNDER LOAD

Valerio Ciampolini, Milan, Italy, assignor to Industrie Pirelli S.p.A.

Filed Apr. 15, 1970, Ser. No. 28,625
Claims priority, application Italy, Apr. 23, 1969, 15.901 A/69
Int. Cl. G01m *17/02*
U.S. Cl. 73—146 24 Claims



The disclosure includes a method and apparatus for determining the maximum variation of the rolling radius and the slip angle during each turn of an automotive tire rotating under load. In the method, the tire under test and a rigid surface having an axis parallel to the tire axis are brought into contact and are mutually compressed by application of an elastic pressure, the cylindrical surface being capable of oscillating about at least one axis lying in its median plane and disposed perpendicular to the axis of the cylindrical surface; the tire and the cylindrical surface are oppositely rotated by controlling the rotation of one or the other; and the angular displacements of the axis of the cylindrical surface about the axis of oscillation, which are caused by variations of the lateral thrust during each turn of the tire in the zone of contact between the tire and the adjacent surface, are then determined. The apparatus comprises a rigid cylinder rotatable about an associated shaft and capable of oscillating about an axle lying in its median plane and disposed perpendicular to the shaft. Such apparatus also includes an element adapted to produce elastic compression between the tire and cylinder and means for determining the angular displacements of the axis of the shaft about the axis of oscillation, which displacements are caused by variations

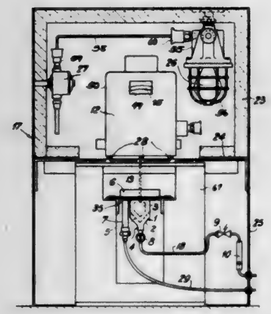
of the lateral thrust which occurs during each turn of the tire in the region of contact between the cylinder and tire as they are oppositely rotated.

3,661,015

DENSIMETER FOR PIPELINE-TRANSPORTED LIQUIDS

Guy Paul, Saint-Maur, Val de Marne, France, assignor to Societe des Transports Petroliers par Pipe-Line (Societe Anonyme), Paris, France

Filed Dec. 9, 1969, Ser. No. 883,459
Claims priority, application France, Dec. 11, 1968, 177619
Int. Cl. G01n *9/10*
U.S. Cl. 73—437 8 Claims



A densimeter for evaluating the specific gravity or mass-volume relationships of a pipeline-distributed liquid, e.g. a petroleum product transmitted from a source to a distribution center, in which a periodically opened valve feeds the liquid into a densimeter cell having a downwardly converging bottom and a cup-shaped upper part in which a plunger with a tapered bottom is received. The liquid is fed to the measuring cell from below and overflow at the top thereof, while the plunger has a density which is heavier than that of the liquid and thus is buoyed upwardly in accordance with the relative specific gravity of the liquid. The plunger is connected to a sensitive balance contained within a thermostatically controlled and mechanically insulated housing to produce an output representing the specific gravity of the liquid and to transmit this output to a digital readout indicating the specific gravity of the liquid and triggering automatic or manual response to facilitate distribution of the particular petroleum product traversing the pipeline.

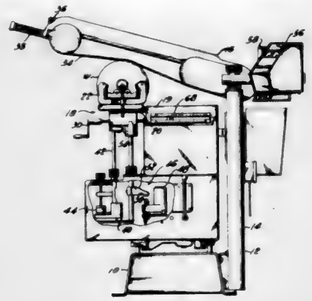
3,661,016

DIRECT READOUT BALANCING METHOD AND APPARATUS

David S. Dopp, Elk Grove, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed July 6, 1970, Ser. No. 52,528
Int. Cl. G01m *1/22*
U.S. Cl. 73—462 13 Claims

A balancing method and apparatus by which a direct readout of the amount of unbalance is provided in order than an operator can determine from a meter reading how much weight to add to an unbalanced body and where to position it. Apparatus for weighing the rotatable workpiece is included as an integral part of the unbalance detecting mechanism with means for attenuating the readout meter signal in accordance with the body weight so that the meter will give an accurate indication of the amount of unbalance in weight times rotational radius units when the body is



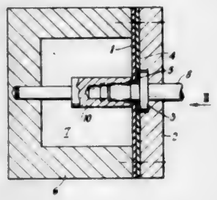
rotated at a predetermined proportion of the resonant speed of the system.

3,661,017

SEALING DEVICES FOR SHAFTS

Karl-Wolfgang Hubschmann, Langenweld, Germany, assignor to Motoren-Werke Mannheim AG Vorm, Benz Abt, Stationarer Motorenbau, Mannheim, Germany

Filed Sept. 17, 1970, Ser. No. 73,042
Claims priority, application Germany, Sept. 17, 1970, P 19 46 965.9
Int. Cl. F16j *15/50*
U.S. Cl. 74—18.1 5 Claims



An oscillatory shaft extends through a wall of a stationary body. A flat, annular, elastomeric, sealing plate is sealingly fixed at its inner periphery to the wall and at its outer periphery to a collar on the shaft. The collar is encircled by the wall with an annular gap between them. At one face of the plate two intermediate elastomeric rings lie between the plate and the wall and between the plate and the collar, respectively. On a pressure difference occurring across the plate, the two rings are thereby deformed to close an annular space between them in the region of the gap, thereby supporting the plate against penetration into the gap.

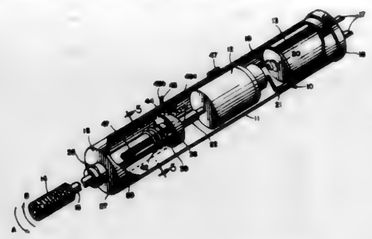
3,661,018

ELECTRIC BRUSHER

Richard K. Keefer, 3807 Beach Street, Rockford, Ill., and James L. Samorian, 2024 Fulton Street, Rockford, Ill.

Filed June 5, 1970, Ser. No. 43,769
Int. Cl. A46b *13/02*; F16h *23/00*
U.S. Cl. 74—22 R 5 Claims

An electric brusher includes an action which both rotates and reciprocates to provide good brushing action. The brush is secured to a driven shaft which is slidably mounted with respect to a rotary drive shaft and which is operably connected to the rotary drive shaft for rotation therewith. A cam wheel rotates with the drive shaft or the driven shaft and



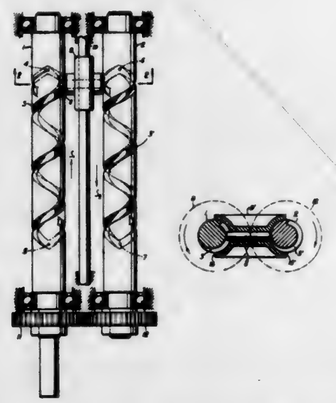
causes the driven shaft to reciprocate axially with respect to the drive shaft.

3,661,019

DEVICE FOR TRANSFORMING A ROTARY MOTION INTO A LINEAR REVERSING MOTION, PARTICULARLY FOR TEXTILE MACHINES

Josef Kacalek; Josef Bartos, and Miroslav Stransky, all of Usti Nad Orlici, Czechoslovakia, assignors to Elitex, Zavody textilniho strojirenstvi, Liberec, Czechoslovakia

Filed May 7, 1970, Ser. No. 35,316
Int. Cl. F16h *25/12*
U.S. Cl. 74—58 4 Claims



A device for transforming a rotary motion into a reciprocatory linear motion. The device is useful, for example, for use as a yarn laying traverse mechanism for textile machines such as winding machines. Two spaced parallel cylinders are driven, usually at constant speed. The cylinders are provided with helical grooves, corresponding elements of which are in transverse alignment. A yarn guide member is mounted for travel between and longitudinally of the cylinders. The yarn guide member is provided with a transversely slidable pin; means is provided for shifting one end of the pin into the helical groove in one of the cylinders at the end of a forward stroke of the guide member, and for shifting the other end of the pin into the helical groove in the other of the cylinders at the end of the reverse stroke of the guide member.

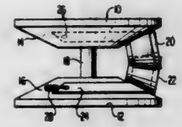
3,661,020

CIRCULAR ROLLER-BAND DEVICES

Preben W. Jensen, 21 Southside Avenue, Somerville, N.J., and Ole R. Jensen, 126 Nottingham Street, Montvale, N.J.

Filed June 30, 1970, Ser. No. 51,231
Int. Cl. F16h *15/16*
U.S. Cl. 74—192 6 Claims

The circular roller-band devices which substantially eliminate or minimize sliding friction are comprised of rotatable members arranged for movement along a circular path between two spaced walls. A flexible band is disposed about each pair of rollers in a substantially S-shaped configuration and the rollers are spaced apart a distance sufficient to



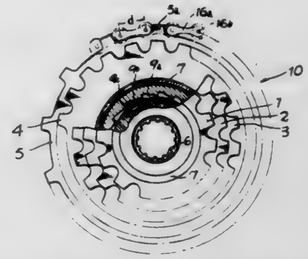
prevent the rollers from overriding each other. The flexible bands may be endless and disposed about two pairs of rollers or may have the opposite ends thereof secured to each wall respectively. The rollers are conical.

3,661,021

MULTIPLE FREE WHEEL FOR A BICYCLE

Masakazu Ohshita, c/o Shimano Industrial Co., Ltd. No. 77, 3-cho, Oimatsu-cho, Sakai City, Japan

Filed June 4, 1970, Ser. No. 43,389
Claims priority, application Japan, July 26, 1969, 44/71242
Int. Cl. F16h *11/04, 7/10*
U.S. Cl. 74—217 B 2 Claims



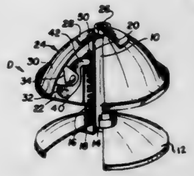
A multiple free wheel for a bicycle comprising a low speed sprocket wheel and a high speed sprocket wheel, wherein the dents of the low speed sprocket wheel are so formed as to engage with a driving chain at the interval equal to one pitch thereof so that when the driving chain is geared into the high speed sprocket wheel it is not disengaged from the low speed sprocket wheel however big the difference may be in dent number between the two sprocket wheels.

3,661,022

SHEAVE DRIVE

Zoel Bergeron, Valcourt; Quebec, and Leo Vadeboncoeur, St. Adolphe D'Howard, Quebec, both of Canada, assignors to Bombardier Limited, Valcourt, Quebec, Canada

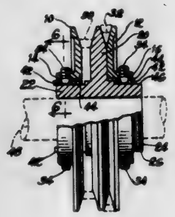
Filed June 26, 1970, Ser. No. 50,253
Claims priority, application Canada, June 23, 1970, 86,360
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 10 Claims



A sheave drive which incorporates resilient shims in the radial slots of the sliding disc's hubs where the inner bell-crank arms of the governor are seated. An encircling band is

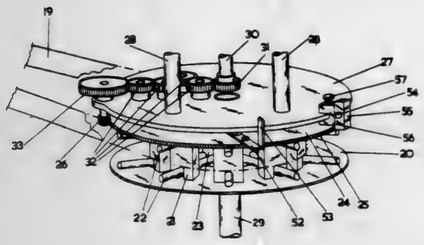
used to retain the shims in place and a shim assembly is taught wherein the shims are integral with the band.

3,661,023
ADJUSTABLE PULLEY CONSTRUCTION
Joseph E. Maurey, Chicago, Ill., assignor to Maurey Manufacturing Corporation, Chicago, Ill.
Filed Dec. 15, 1970, Ser. No. 98,276
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 8 Claims



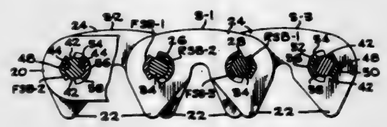
An adjustable pulley construction comprising a pair of discs each having a centrally located hub and defining opposed belt engaging surfaces. The hubs are threaded or otherwise designed for relative axial movement whereby the distance between the belt engaging surfaces can be adjusted. Means are provided for securing the hubs together including a set screw located in a threaded bore defined by the exterior hub. The set screw defines a tapered end which is received within a tapered opening formed in a key located in line with the threaded bore. This key is inserted between the end of the bore and the surface of the inner hub. As the set screw is rotated, the degree of pressure applied by the key on the inner hub can be adjusted whereby an extremely secure relationship between the hubs can be achieved.

3,661,024
ADJUSTABLE DRIVING WHEELS
Albert Edward Cooke, Leicester, England, assignor to Trip-Lite Limited, Leicester, England
Filed June 15, 1970, Ser. No. 46,340
Claims priority, application Great Britain, June 20, 1969, 31,213/69
Int. Cl. F16h *55/54*
U.S. Cl. 74—230.23 7 Claims



An adjustable driving wheel comprises a central holder having a variable diameter wheel periphery provided by blocks slidable on pairs of parallel rods radiating from the central Holder at uniformly spaced intervals around it, the blocks being movable simultaneously inwardly and outwardly by means of a rotary cam positioned at one side of the wheel.

3,661,025
SILENT CHAIN AND METHOD OF ASSEMBLY THEREOF
Stellios Antony Avramidis, Greenfield, Ind., assignor to FMC Corporation, San Jose, Calif.
Filed May 25, 1970, Ser. No. 40,030
Int. Cl. F16g *13/02*
U.S. Cl. 74—245 S 4 Claims



A silent chain is disclosed in which sets of intermeshing links are connected together by means of pins received in front and rear openings in the links between two segmental bushings. Each segmental bushing is rigidly secured in the openings of one of the sets of links to form an inflexible link and bushing unit. Adjacent rigid link and bushing units pivot on each pin to provide flexibility of the chain without play or wear between the bushing segments and the links.

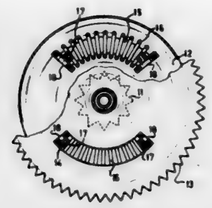
3,661,026
GEAR COUPLING
Gabriele Gavioli, Via M. Maula 30, Bologna, Italy
Filed Nov. 9, 1970, Ser. No. 128,603
Int. Cl. F16h *35/06*
U.S. Cl. 74—385 6 Claims



Gear coupling for transmissively connecting two supported shafts comprising a pair of main gears supported by said shafts, respectively, and engaging with a pair of secondary gears, respectively. The secondary gears are carried each by a supporting structure having at least one degree of freedom with respect to the shaft on which the structure is supported, thereby to allow said shafts to assume variable positions relative to one another.

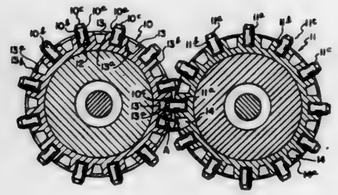
3,661,027
DIAL-TYPE MEASURING INSTRUMENTS
Giovanni Gattesco, Crissier, Switzerland, assignor to Tesa S.A., Renens, Switzerland
Filed May 21, 1970, Ser. No. 39,328
Claims priority, application Switzerland, June 18, 1969, 9283/69
Int. Cl. F16h *57/10*
U.S. Cl. 74—411 4 Claims

The present invention provides a dial-type measuring instrument comprising a geared multiplier mechanism intended to amplify the movements of a movable indicator member facing the dial, wherein the multiplier mechanism comprises a disk driven by the movable measuring member of the instrument and located opposite a toothed wheel which serves to control the movements of the indicator member and is coaxial with the disk, said toothed wheel being connected to



the disk by means of at least two resilient constraining members.

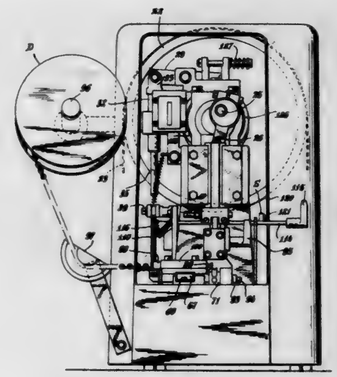
3,661,028
COACTING PIN-IN-HOLE GEARS
Gyula S. Fuchs, 1422 Grace Avenue, Cleveland, Ohio
Filed June 22, 1970, Ser. No. 48,022
Int. Cl. F16h *1/12, 1/06, 1/14*
U.S. Cl. 74—415 1 Claim



Coacting driving gears are disclosed, in certain embodiments each of the gears having an annular series of teeth and cavities for receiving the teeth, these teeth and cavities being alternately arranged and identically and evenly spaced in each of the series on the two gears so that the gears in driving relationship alternately have a tooth of a first of the gears entering into a cavity in the second of the gears, and immediately thereafter a tooth in the second gear enters into a cavity in the first gear. The axes of the two gears may be coplanar or with their axes arranged at 90° and with the axes of the coacting driving elements either arranged at ninety degrees to each other, or at a 45° arrangement. In certain embodiments where the axes of the gears are arranged at 90°, all of the teeth may be on one of the gears and all of the cavities may be on the other of the gears.

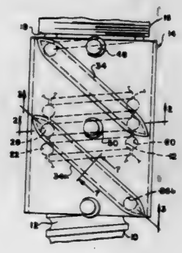
3,661,029
CRIMPING MACHINE
Ernest L. Cheh, Darien; Wade R. Bowden, Jr., Milford, and James D. Anderson, Norwalk, all of Conn., assignors to Burndy Corporation
Filed Nov. 4, 1968, Ser. No. 772,940
Int. Cl. B21d *43/00*
U.S. Cl. 72—419 15 Claims

A press has one or more dies and a work feed mechanism controlled by one die so that a change of dies adjusts the feed mechanism to the new dies and the work piece to be fed to the new dies. There is also a movable control to determine the point of contact of the feed mechanism and the work



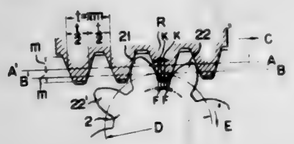
pieces. The feed mechanism is readily releasable to permit removal of the work pieces at any time.

3,661,030
BALL SCREW AND NUT COMBINATION
Oscar J. Gagne, Grosse Pointe, Mich., assignor to Precise Services, Inc., Detroit, Mich.
Filed May 18, 1970, Ser. No. 38,454
Int. Cl. F16h *55/10*
U.S. Cl. 74—459 5 Claims



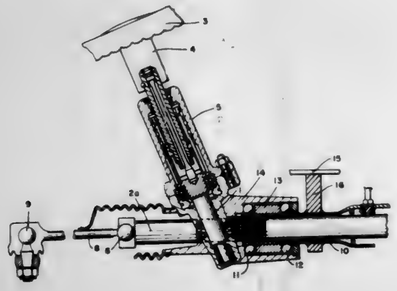
A ball screw and nut combination in which the nut is essentially cylindrical in configuration, is provided with internal threads and a plurality of openings extending generally tangentially into a thread groove and communicating with a helically formed groove or recess at the exterior in helical alignment with but spaced by a smooth cylindrical uninterrupted exterior surface of the nut from a similar helical groove communicating with a second opening communicating tangentially with a thread groove. A cover of sheet material such as metal or plastic is attached overlying the openings and helically extending grooves or channels, the cover having a helically extending groove communicating with said openings and recesses or channels and the smooth exterior surface of the nut to define an enclosed ball return passage interconnecting the openings.

3,661,031
VARIABLE GEAR RATIO STEERING GEARING
Yasumasa Mizukoshi, and Masato Yanagimoto, both of Fujisawa-shi, Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 24, 1969, Ser. No. 818,968
Claims priority, application Japan, May 2, 1968, 43/29117
Int. Cl. F16h 55/06
U.S. Cl. 74—462 1 Claim



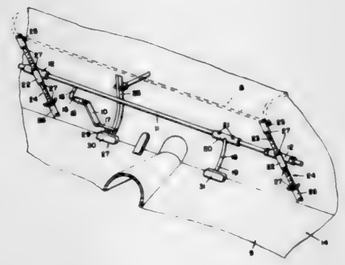
This invention provides an improved variable gear ratio steering gear for vehicles comprising a ball nut which has a rack on one side and moves in the axial direction of a worm, as the worm, connected to a steering shaft, rotates, and a sector gear meshed with said rack. According to this invention, the sector gear is formed by using a rack type gear cutter having blades symmetrically located at two places on the right and left sides of the center position of the sector gear when the vehicle is in its straight ahead position and provided with equal amount of lateral transposition, and the ball nut has the rack to be meshed with the sector gear having nearly the same tooth form as that of said rack type gear cutter.

3,661,032
STEERING ARRANGEMENTS FOR MOTOR VEHICLES
Leslie Richard Jeavey, Reading, England, assignor to Adwest Engineering Limited, Reading, England
Filed Nov. 10, 1969, Ser. No. 875,408
Int. Cl. B62d 3/12, 3/12
U.S. Cl. 74—498 14 Claims



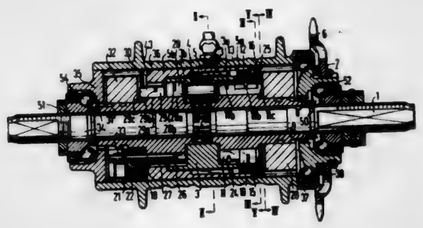
Rack-and-pinion steering mechanism for a motor vehicle, comprising a rack housing having a radial projection thereon, and resilient means arranged on opposite sides of the outward projection, the resilient means on each side of the outward projection being located between the outward projection and a part separate from the rack housing, the arrangement being such that when the pinion is rotated to move the rack the resilient means on one side of said outward projection will be compressed to provide, in effect, lost-motion between the pinion and the rack to a varying degree according to the amount of rotation of the pinion, so varying the steering ratio.

3,661,033
DUAL CONTROL DEVICE FOR AUTOMOBILES
John J. Stantus, North 5321 Lehman Road, Spokane, Wash.
Filed Dec. 11, 1969, Ser. No. 884,254
Int. Cl. G05g 1/16
U.S. Cl. 74—562.5 2 Claims



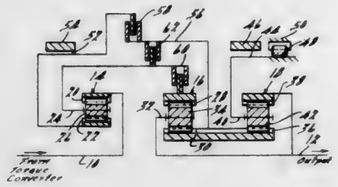
A selectively applicable dual control device for application to many automotive vehicles having a manually depressable foot pedal, comprising: a transverse rock shaft journaled in aligned journal bearings releasably fixed relative to the vehicle structure and having an articulate link pedal actuating means at one end and an arm having an auxiliary pedal, releasably attached for selective radial and axial positions to the rock shaft and thus conventionally disposed for use by an occupant seated beside the driver.

3,661,034
MULTIPLE-SPEED HUB
Hans Joachim Schwerdhofer, and Horst Schulz, both of Schweinfurt am Main, Germany, assignors to Fichtel & Sachs AG, Schweinfurt am Main, Germany
Filed Jan. 13, 1970, Ser. No. 2,513
Claims priority, application Germany, Jan. 16, 1969, P 19 02 021.4
Int. Cl. F16h 5/46
U.S. Cl. 74—752 E 21 Claims



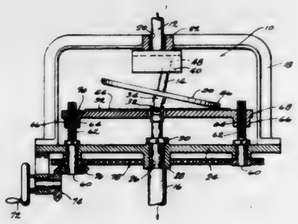
A three-speed bicycle hub has planetary gearing axially centered on the hub shaft. A driving sleeve coupled to the driver and drive sprocket is arranged on the shaft on one side of the sun gear and a driven shaft coupled to the hub shell on the other side. The planet carrier projects axially in both directions beyond the planet gears and the sun gear, and the ring gear similarly projects beyond the planet carrier. A pair of overrunning clutches on each side of the sun gear connects the two sleeves to the ring gear and to the planet carrier. One clutch of each pair can be disengaged by a centrifugal governor whose flyweight is mounted on a respective sleeve in a hub cavity portion remote from the gearing.

3,661,035
FOUR-SPEED RATIO PLANETARY TRANSMISSION
Po-Lung Liang, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Nov. 17, 1970, Ser. No. 90,303
Int. Cl. F16h 57/10
U.S. Cl. 74—763 4 Claims



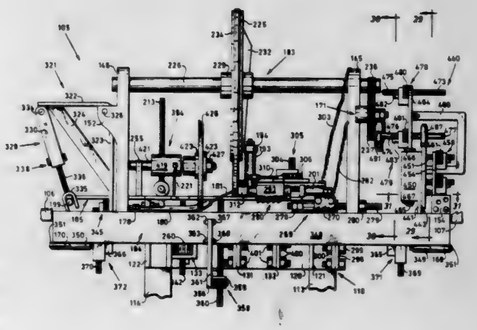
A power transmission mechanism for an automotive vehicle driveline having four forward driving speed ratios and a single reverse speed ratio comprising three simple planetary gear units and clutch and brake means for controlling the relative motion of the elements of the gear units, one gear unit acting as a torque multiplier for the other two gear units and a common reaction brake for the torque multiplier gear unit and the other two gear units during operation in each forward underdrive ratio as well as during reverse drive.

3,661,036
VARIABLE SPEED REDUCER
Ronald G. Quiram, Michigan City, Ind., and Don W. Eichner, Galesburg, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.
Filed Oct. 24, 1969, Ser. No. 869,024
Int. Cl. F16h 1/28
U.S. Cl. 74—800 1 Claim



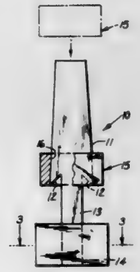
Disclosed herein is a speed reducer or variable speed drive which includes input, output, and intermediate shafts. One end of the intermediate shaft is connected to the output shaft by a universal joint. The other end of the intermediate shaft is received in a transverse slot at the end of the input shaft and is free to move outwardly in the slot from a position in axial alignment with the input shaft in response to centrifugal force upon rotation of the input shaft and thus cause the intermediate shaft to gyrate about the universal joint. The rate of rotation of the output shaft with respect to the input shaft is varied by selective axial movement of a disc which is engageable with a wobble plate secured to the intermediate shaft and which controls the displacement of the other end of the intermediate shaft.

3,661,037
SAW BLADES AND MACHINES FOR SERVICING THEM
Evangelos G. Athanasoulas, 20 Alexandrow Zarra Street, Arta, Greece
Filed Nov. 26, 1969, Ser. No. 880,343
Claims priority, application Greece, Nov. 28, 1968, 36114
Int. Cl. B23d 63/04
U.S. Cl. 76—58 24 Claims



The teeth of a saw blade and particularly of a band saw blade are transversely set so that, for each such set tooth a portion of the tooth bounded by its leading edge and by an outwardly extending line of set is disposed transversely to the remainder of the tooth. The line of set extends edgewise outwardly from the leading edge of the tooth along a line generally parallel to the leading edge. A machine for performing a servicing operation such as tooth-sharpening and/or tooth-setting comprises a clamping device for periodically clamping and releasing the saw blade and a sharpening and/or tooth-setting device for operating on the teeth of the blade while it is clamped. A blade advance mechanism includes a toothed plate which engages several teeth of the blade and reciprocates longitudinally to advance the blade through the machine when the clamp is released. The sharpening wheel and the tooth-setting device are usefully adjustable to permit variation of the sharpening angle, of the depth of set, of the transverse extent of setting, of the angle between the line of set and the longitudinal direction of the blade and of the setting sequence along the blade.

3,661,038
SAW SWAGE TOOL
Lexie L. Steward, Box 20, Randolph, Miss.
Filed June 17, 1970, Ser. No. 46,965
Int. Cl. B23d 63/04
U.S. Cl. 76—72 1 Claim



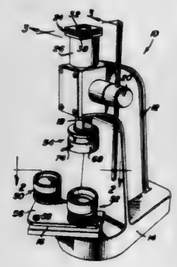
A device of improved structure for the perfection of saw teeth. The device includes a body member which receives a

non-expansive band, the structure being used on inserted saw teeth as used by saw mills.

3,661,039
CUTTING AND ASSEMBLING APPARATUS FOR MAKING BUTTONS

Richard L. Lewis, Promoco Enterprises Limited Route 29, Pekin, Ill.

Filed Apr. 20, 1970, Ser. No. 30,094
Int. Cl. A44b *1/06*
U.S. Cl. 79—5 12 Claims

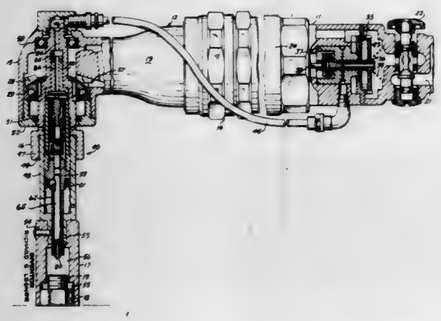


Portions of a pin-on button are cut and assembled as a result of a plurality of operations in a machine having a vertical press. Cutter and work deforming tools are displaced by a single press ram to cut blanks and deform the blanks onto a button top placed in one of two die assemblies positioned in alignment below the work deforming tool on the lower end of the ram.

3,661,040
PNEUMATIC NUTRUNNER WITH WORK MARKING MECHANISM

Richard S. Lesner, Pontiac, Mich., assignor to Chicago Pneumatic Tool Company, New York, N.Y.

Filed June 8, 1970, Ser. No. 44,417
Int. Cl. B25b
U.S. Cl. 81—52.5 10 Claims



A pneumatically powered nutrunner provided with marking mechanism which is pneumatically operable automatically in response to delivery of a preset torque to the work, such as a bolt head or stud, to apply a series of visible marks to the work. The marks serve to indicate that the required torque has been delivered. In one embodiment, the marking mechanism is combined with a nutrunner; and in another embodiment, it is a separate unit.

3,661,041
SOCKET WRENCHES

Rudolf Welz, 122 Ethelbert Street, Winnipeg 10, Manitoba, Canada

Filed Aug. 26, 1970, Ser. No. 67,158
Int. Cl. B25b *13/28*
U.S. Cl. 81—98 3 Claims

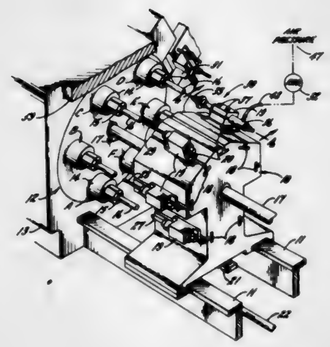


A socket wrench wherein one-half of the socket casing is hinged to swing on and clear of the other half thereof, for spanned reception of a nut therein; said casing having a spring catch on the side remote from the hinge for releasable closure of the socket casing around the nut; and means for receiving a split reducer within the socket casing to operate said wrench on a smaller nut, and such that said casing and reducer will swing open and shut together.

3,661,042
CENTERING MECHANISM FOR MACHINE TOOLS

Chester A. Lender, Rockford, Ill., assignor to Slick Electro Inc., Rockford, Ill.

Filed July 2, 1970, Ser. No. 51,853
Int. Cl. B23b *9/04*
U.S. Cl. 82—3 5 Claims

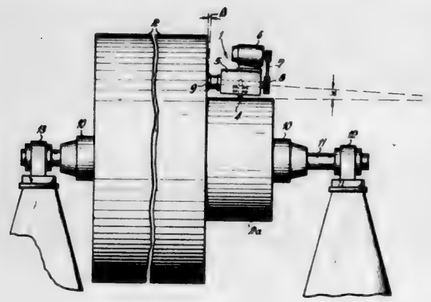


A machine tool, such as an automatic screw machine, having a centering device which is mounted on a tool head and engages the end of a workpiece held by a rotating spindle on a work head as the tool head moves toward the work head. After engagement, the movement of the tool head continues and the centering device slides back relative to the tool head. Pressure fluid under the control of a pressure regulator acts on a piston which holds the centering device against the workpiece. The regulator maintains a constant pressure so that the force with which the centering device engages the workpiece also remains constant.

3,661,043
APPARATUS FOR SLITTING ROLLED WEBS

Heinz Voigt, Bielefeld, Germany, assignor to Feldmuhle Aktiengesellschaft, Duesseldorf, Germany

Filed Apr. 1, 1970, Ser. No. 24,790
Int. Cl. B23b *3/04*
U.S. Cl. 82—101 10 Claims

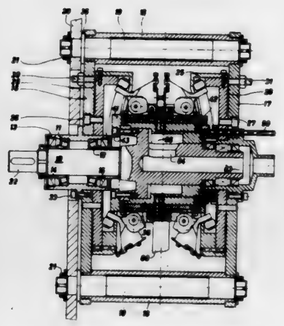


Rolled webs of papers and the like are slit by means of a conical rotary cutter riding the rotating roll, and the severed web portion is unwound. The cutter is mounted on a carrier arm by means of a pivot located close to a vertical plane through the roll axis, and the orthogonal projection of the axis of rotation of the cutter in that plane is inclined relative to the roll axis at an angle of 1.5°–8° to minimize friction between the cutter blade and the radial slit face of the remainder of the roll.

3,661,044
ROTARY PERFORATING APPARATUS

Emanuel Hubert Duden, Mortsel, and Joseph Marie Cappuyns, Berchem, both of Belgium, assignors to Gevaert AGFA N.V., Mortsel, Belgium

Filed May 8, 1970, Ser. No. 35,710
Claims priority, application Great Britain, May 9, 1969, 23,828/69
Int. Cl. B26f *1/08*
U.S. Cl. 83—100 15 Claims

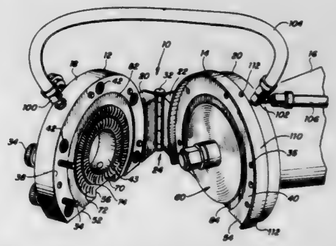


A rotary film perforating apparatus for making the edge perforations in photographic film comprising a rotary wheel carrying on its periphery closely spaced individual perforator assemblies. Each perforator assembly comprises a base fitted with a die element and a pivotable perforator arm carrying a punch element and both elements may be readily removed from the assembly. The arm frictionally engages wall portions of the die element to thereby receive exact guidance with respect to the die. The material hardness of the arm is greater than that of the die so that the arm does not wear out and the replacement of a used die element by a new one entails automatically a renewal of the guidance of the perforator arm.

3,661,045
APPARATUS FOR STABILIZING A ROTARY SAW BLADE

Seymour Mermelstein, Newton, Mass., assignor to Tyco Laboratories, Waltham, Mass.

Filed Sept. 17, 1970, Ser. No. 73,009
Int. Cl. B26d *1/12*
U.S. Cl. 83—676 18 Claims

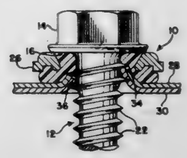


A guide for a rotary saw blade comprising a housing having two inner opposed guide surfaces that define a space for receiving a saw blade mounted on a rotatable arbor and including means for directing a liquid under pressure against the opposite faces of the blade during rotation thereof so as to hydrodynamically stabilize the blade.

3,661,046
COMBINATION SCREW

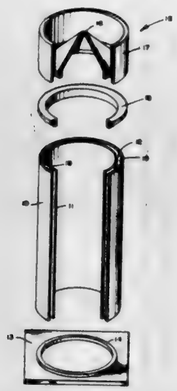
Cornelius Byron Waud, Lake Forest, and Ned J. Gruca, Dundee, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Nov. 9, 1970, Ser. No. 87,763
Int. Cl. F16b *25/00*, *35/00*
U.S. Cl. 85—46 11 Claims



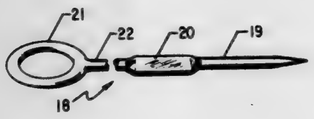
A fastener unit for use in metal building construction in which a compressible sealing washer is used in combination with a threaded shank including a threaded portion of limited axial extent having a crest diameter substantially greater than the crest diameter of the remaining threads on the shank. The fastener unit is capable of being utilized to attach two relatively thin sheets of material while at the same time is configured in such a manner to be able to fasten a thin sheet of material to a structural member. The larger diameter threaded section pulls at least one sheet of material up towards the head of the fastener as the fastener is tightened and the sealing washer is compressed.

3,661,047
APPARATUS FOR CASTING THIN WALLED HOLLOW CYLINDRICAL INSERTS
Wallace E. Silver, Ridgecrest, and Jack Sherman, China Lake, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed Nov. 18, 1968, Ser. No. 777,211
Int. Cl. C06b 21/02; F41b 1/00
U.S. Cl. 86—1 R 1 Claim



A mold for casting thin-walled hollow cylindrical inserts from hazardous materials for use in warheads, rocket motors and pyrotechnic flares. The apparatus comprises a plurality of disposable presized tubes fitted within each other, and spaced apart so as to form mold spaces or chambers which are filled with a hazardous material, such as explosive. Upon curing the tubes are peeled off leaving thin-walled tubular inserts.

3,661,048
FASTENING MEANS FOR STRUCTURAL MEMBERS
Watson M. Judd, Eastlake, Ohio, assignor to Town Line Erection Company, Incorporated, Mentor, Ohio
Filed June 16, 1969, Ser. No. 833,639
Int. Cl. F16b 21/14
U.S. Cl. 85—7 12 Claims

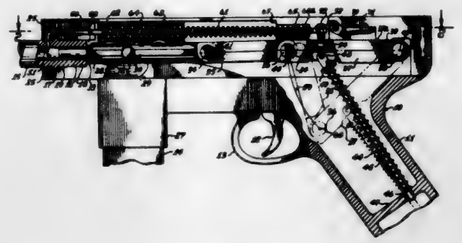


A fastening means for securing structural members including structural beams has an unthreaded bolt having a partially tapered shank, a noncircular head and at least one hole through the shank and a generally rod-shaped locking pin one end of which is capable of fitting in the hole in the shank of the bolt, the locking pin having an eye portion at the other end adapted to receive a tool therethrough to facilitate removal of the locking pin from the bolt and an expanded portion in the locking pin limiting the portion of the locking pin passing through the hole in the bolt.

ERRATUM

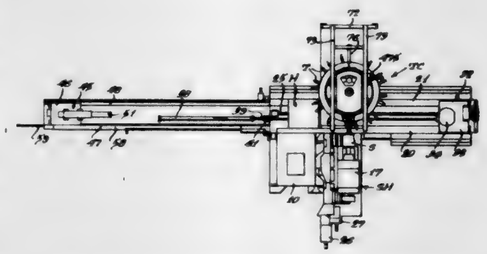
For Class 86—1 see:
Patent No. 3,661,047

3,661,049
GAS OPERATED TOGGLE ACTION WEAPON
Walter E. Perrine, 511 N. 52nd Street, Phoenix, Ariz.
Filed Mar. 18, 1970, Ser. No. 20,578
Int. Cl. F41d 5/04
U.S. Cl. 89—189 2 Claims



A toggle action pistol in which an over-center toggle is tripped to recede into its handle by the effects of gas pressure generated at the time of firing.

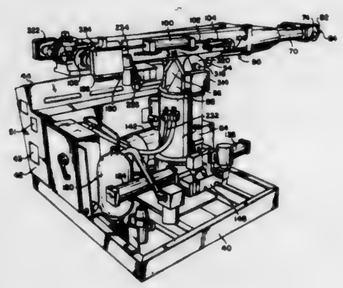
3,661,050
MACHINE TOOL HAVING WORK FEED MEANS
Carl F. Erikson, Belvidere, Ill., assignor to Sundstrand Corporation
Filed July 15, 1969, Ser. No. 841,772
Int. Cl. B23c 9/00; B23q 41/00
U.S. Cl. 90—21 B 16 Claims



A machine tool for machining successive parts from bar stock extending lengthwise along a work axis having a tool spindle for carrying a tool with means mounting the spindle for movement along a first axis extending toward the work axis and a second axis at an angle to the first axis with the plane defined by the first and second axes being at an angle to the work axis, a work holder through which the bar stock extends along the work axis and which grips the bar stock during machining with means for moving the work holder and bar stock along the work axis during machining with a portion of the bar stock length exposed for machining. Mechanism associated with the work holder provides for regripping and location of the bar stock and for either indexable positioning of the bar stock about the work axis or rotation thereof. The bar stock can additionally be supported by a second work holder unit movable with the first work holder and movable relative thereto for varying the distance therebetween or, alternatively, by a steady rest unit which can grip the bar stock at either side of a machining location and provide support for the part of the bar stock at the side of the tool remote from the work holder by connection to the length of bar stock adjacent the work holder. Additionally, a third work holder can be used for additional support and positioning movement of the bar stock relative to the other two work holders. A variety of tools can be used in machining, as provided by a multispindle head or by a single spindle head in association with a tool changer. The tool changer holds a series of tools with their axes disposed radially of the axis of rotation of the tool changer and with insertion and withdrawal of a tool from the magazine being accomplished by movement of the magazine tool gripper in a direction transverse to the length of the tool.

Each of the work holders has gripping jaws for the bar stock which are shaped to firmly engage the bar stock and hold it in position relative to the work holder. The drives for indexing the work holder and indexing of the tool changer are controlled by a numerical control system which selects a desired position of the work holder or tool changer, with provisions for acceleration and deceleration of the drive. The tool spindle is positively locked in position to associate a key with a keyway in the tool or an adapter associated with the tool and the mechanism for locking the spindle provides for two distinct rotatively separated locking positions for the spindle.

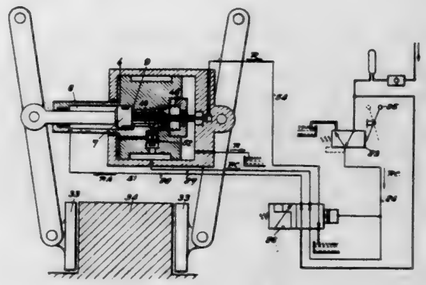
3,661,051
PROGRAMMED MANIPULATOR APPARATUS
Maurice J. Dunne; Joseph F. Engelberger, both of Newtown; Horace L. Gardner, Ridgefield, and Torsten H. Lindbom, Newtown, all of Conn., assignors to Unimation, Inc., Bethel, Conn.
Continuation of application Ser. No. 808,152, Mar. 18, 1969, now abandoned. This application Aug. 18, 1970, Ser. No. 64,802
Int. Cl. F15b 21/02
U.S. Cl. 91—35 29 Claims



A programmed manipulator apparatus employs a continuously rotating memory drum in which may be stored signals representing a number of steps in a desired sequence of operations. A portable teach control assembly is employed during the teaching operation to establish a desired position of the manipulator arm which is then recorded on the memory drum.

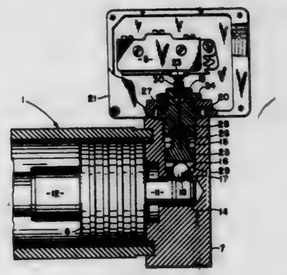
During repetitive work cycles, the recorded signals are used as command signals and are compared with encoder signals representing absolute position to move the manipulator arm to each set of positions in sequence. The manipulator arm may be moved over curved paths by employing artificial coincidence signals which are developed while large error signals still exist in the controlled axes. A common comparator and digital-to-analog converter is employed for all of the controlled axes which provides coincidence signals representing different magnitudes of error.

3,661,052
HYDRAULIC JACK
Rene Lucien, Neuilly-sur-Seine; Yves A. Pascal, Montrouge, and Pierre M. Ghobert, Paris, all of France, assignors to Societe Messier and Societe De L'Aerotrain, Paris, France, part interest to each
Filed Jan. 9, 1970, Ser. No. 1,789
Claims priority, application France, Jan. 10, 1969, 6900313
Int. Cl. F01b 7/20; F15b 15/26
U.S. Cl. 91—173 9 Claims



A hydraulic jack having two consecutive and completely different actions and its hydraulic operating means, the jack responding to the control order given by the operating means in the form of the supply pressure on a first input of the jack and the control pressure on a second input of the jack, while automatically effecting two consecutive actions in the same direction, the first action being a travel of large amplitude (naturally with a low force), while the second action develops a large force proportional to the control pressure (with a zero or very small travel), the disappearance of the control order resulting, by the operating means which apply the supply pressure to a third input of the jack, in the return movement of the travel of large amplitude only.

3,661,053
REVERSING SWITCH ACTUATOR FOR FLUID MOTOR
Belden L. Rich, Buffalo Grove, Ill., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Dec. 4, 1970, Ser. No. 95,311
Int. Cl. F01l 25/08; F15b 15/22
U.S. Cl. 91—275 12 Claims



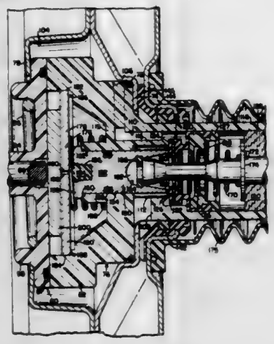
A fluid motor having piston actuated switches on the cylinder heads thereof which control operation of a solenoid reversing valve to achieve automatic reciprocation of the piston. Each switch actuator comprises a radially positioned assembly which includes a relatively large diameter ball which is engaged by the piston as it approaches the end of its stroke, a large diameter spring follower which is spring biased against the ball, and a small diameter actuator rod

which has sliding sealed engagement with a switch retainer in the cylinder head, the radially inner end portion of the rod being engaged with the spring follower and the radially outer end portion of the rod being engageable with the switch plunger to close the switch contacts to reverse the piston when the ball, follower, and rod have been moved radially outwardly by the engagement of the piston with the ball.

3,661,054
POWER BRAKE MECHANISM

Curtis L. Brown, Owosso, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Aug. 4, 1969, Ser. No. 847,274
Int. Cl. F15b 9/10
U.S. Cl. 91—369 B 3 Claims

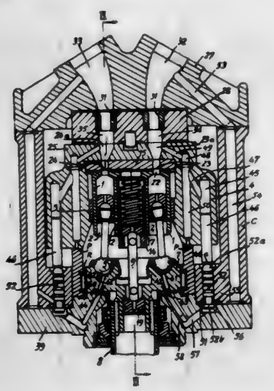


A two-stage power brake mechanism including a pressure-responsive movable wall, encapsulated valve means controlling the pressure differential on opposite sides of the wall, actuating means operable in a first stage to effect movement of the valve means in response to manual effort, reaction means operable in a second stage to resist movement of the actuating means in a substantially direct and uniform ratio to the force developed by the wall.

3,661,055
MULTI-CYLINDER BARREL HYDRAULIC PUMPS OR MOTORS

Francois C. Pruvot, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt and Automobiles Pougeot, Paris, France

Filed May 26, 1970, Ser. No. 40,541
Claims priority, application France, June 12, 1969, 6919519
Int. Cl. F01b 3/00
U.S. Cl. 91—486 5 Claims

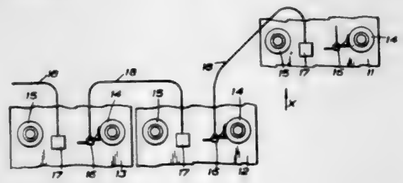


Multi-cylinder barrel pump or motor of which the capacity is variable by controlling the displacement of the barrel in a support adapted to be inclined more or less in the pump casing about a pivot axis perpendicular to the axis of rotation of said barrel, the piston of the pump cylinders being provided with ball-shaped ends for connecting same to an impeller plate rotatably solid, together with said barrel, with the pump driving shaft, wherein said impeller plate is balanced in the axial direction by a hydrostatic bearing in alignment with the bearing slide face of said plate in the pump casing, and having a port corresponding to the delivery port of said distributor slide face and adapted to be connected to the delivery side of the pump through the medium of a check and balancing valve.

3,661,056
CONTROL SYSTEMS FOR SELF-ADVANCING MINE ROOF SUPPORTS

John Cooke, Bolton, England, assignor to Gullick Dobson Limited, Wigan, Lancashire, England

Filed May 22, 1970, Ser. No. 39,766
Claims priority, application Great Britain, May 28, 1969, 26,872/69
Int. Cl. F15b 11/07
U.S. Cl. 91—413 6 Claims

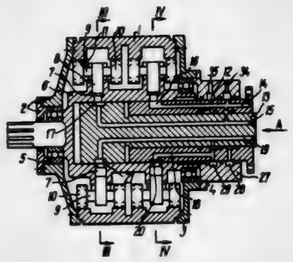


A control system for self-advancing mine roof supports comprising control means on a support to be controlled thereby is operated by operating means on another support by a flexible mechanical coupling. The coupling is a sheathed wire. A Dead Man's Handle arrangement can be provided by transmitting an axial force and rotation to the control means by the wire or by the wire and the sheath. The operating means is designed to fit on the control means on removal of a damaged wire as a temporary measure.

3,661,057
RADIAL-PISTON MULTIPLE-ACTION HYDRAULIC MOTOR

Anatoly Yakovlevich Rogov, Moskovskoi obl., pos. VUGI, 24, kv. 26, Ljubertsy, U.S.S.R.

Continuation of application Ser. No. 738,357, June 19, 1968, now abandoned. This application May 11, 1970, Ser. No. 37,394
Int. Cl. F01b 1/06, 13/06
U.S. Cl. 91—482 3 Claims



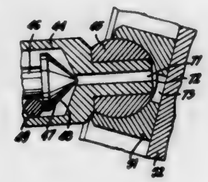
A radial-piston, multiple-action hydraulic motor comprises a casing in which a rotor with an even number of rows of radially arranged pistons is rotatable, the casing having

guides with profiles containing noncontrolled and controlled sections. The pistons of one half of the rows interact first with the noncontrolled sections then with the controlled sections and the pistons of the second half of the rows interact first with the controlled sections and then with the non-controlled sections of the profiles. A journal-type distributor is installed in the rotor and has at least two coaxial journals with channels for distributing working fluid and controlling the displacement volume of the hydraulic motor by turning synchronously in opposite directions relative to their axis, the distributing channels of each journal communicating hydraulically with one half of the rows of the pistons.

3,661,058
PUMP HAVING A VARYING OUTPUT

Robert J. GH. Peron, Scaigneaux-Sclayn, Belgium, assignor to G. Dumont Et Freres Societe Anoayme, Scaigneaux-Sclayn, Belgium

Filed Sept. 12, 1969, Ser. No. 857,379
Claims priority, application Belgium, Sept. 26, 1968, 721.410
Int. Cl. F01b 3/00
U.S. Cl. 91—488 2 Claims

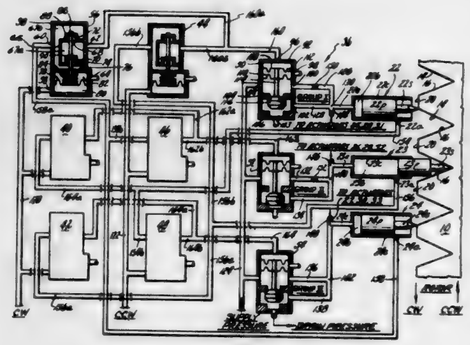


This invention relates to pumps having a varying output of the type comprising a plurality of parallel pistons housed in a common barrel, a means for rotating the said barrel about its axis and an angularly variable plate in relation with the said pistons for varying or adjusting their axial shifting.

3,661,059
FLUID OPERATED STEPPING MOTOR

John M. Hunter, Granby, and Raymond V. Thompson, Simsbury, both of Conn., assignors to Chandler Evans Inc., West Hartford, Conn.

Filed Feb. 19, 1970, Ser. No. 12,585
Int. Cl. F01l 15/00; F01b 3/00
U.S. Cl. 91—499 11 Claims

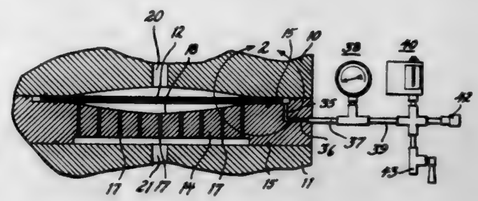


A fluid operated stepping motor has a rotor with a plurality of ramps. A plurality of pistons are positioned in the stator of the motor on opposite sides of the rotor in alignment with the rotor axis to rotate the rotor. A logic circuit is adapted to accept a digital signal to rotate the rotor a discrete amount in either a clockwise or counterclockwise direction. The logic circuit actuates only certain pistons which stroke to rotate the rotor. The position of the rotor determines which of the pistons will be stroked upon receipt of the next signal by the logic circuit.

3,661,060
DIAPHRAGMS FOR HIGH PRESSURE COMPRESSORS AND PUMPS

John C. Bowen, Huntingdon Valley, Pa., assignor to The Duriron Company, Inc., Dayton, Ohio

Filed Aug. 5, 1970, Ser. No. 61,092
Int. Cl. F01b 19/00; F16j 3/00; F04b 21/00
U.S. Cl. 92—102 8 Claims

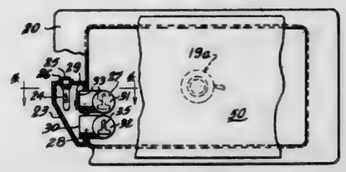


Diaphragms are provided for high pressure compressors and pumps, the diaphragms having heat insulation properties, extended life and apparatus capable of detecting diaphragm leaks associated therewith.

3,661,061
PICTURE POSITION FINDER

Richard D. Tokarz, Richland, Wash., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed May 5, 1969, Ser. No. 821,597
Int. Cl. G03b 17/24
U.S. Cl. 95—1.1 2 Claims



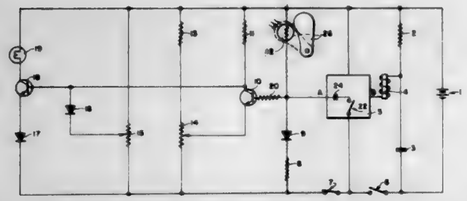
A device which shows the up-and-down orientation of a photograph regardless of the camera attitude at the time the picture was taken. A freely rotatable pointer in the camera body is gravity responsive and an image thereof is projected on the film. In another embodiment images are projected on the film of a pair of pointers mounted at right angles to each other to indicate the up-and-down orientation of the photograph whether the camera is rotated in a vertical plane parallel to the film or rotated in a vertical plane normal to the film; a fiber optics system provides means for transmitting images of the pointers to the film where the pointers are mounted exterior to the camera.

3,661,062

TEST CIRCUIT FOR PHOTOGRAPHIC CAMERAS

Otto Wiest, Waiblingen, Germany, assignor to Eastman Kodak Company

Filed Mar. 11, 1971, Ser. No. 123,278
Claims priority, application Germany, Mar. 20, 1970, P 20 13 432.1
Int. Cl. G03b 7/08; G01j 1/44
U.S. Cl. 95—10 CE 6 Claim.



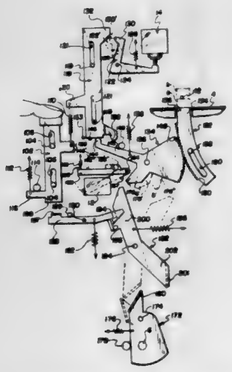
In a camera having a light-integrating, timing circuit for determining shutter speed in accordance with the intensity of scene illumination, a circuit is provided for determining whether the scene illumination is below a predetermined value and for determining the condition of the power source to be inserted in the timing circuit. The test circuit includes an indicating means such as a lamp, a first switch for energizing the lamp, an element whose impedance is dependent upon incident scene illumination, and a second switch which serves to turn "on" the first switch when scene illumination incident upon the element falls below a predetermined value. The test circuit further includes a circuit element (or combination of circuit elements) responsive to the potential of the energizing source, for preventing the second switch from turning "on" the first switch when the potential of the energizing source is below a predetermined value.

3,661,063

MECHANISM FOR SENSING THE CONDITION OF A PERCUSSIVE FLASH DEVICE AND FOR EFFECTING SYNCHRONOUS PERCUSSIVE FLASH EXPOSURES

David E. Beach, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 27, 1970, Ser. No. 23,127
Int. Cl. G03b 9/70
U.S. Cl. 95—11.5 2 Claims



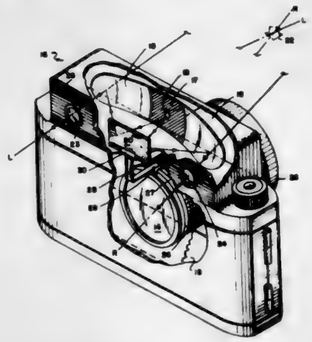
A mechanism for effecting synchronous flash exposures in a camera adapted to receive a percussive flash device of the type incorporating a pre-energized impacting member. According to several embodiments, a high energy lever is released from a set condition in response to the displacement of a release member, and operates to actuate the camera shutter and release the impacting member of the flash device, thereby effecting a synchronous flash exposure. The condition of the impacting member at the camera firing site is determined by a gear driven actuating probe, which additionally serves to fire the flash device. A visual signal indicates that the impacting member is not in the set condition. According to other embodiments, displacement of a release member by a prescribed amount in turn moves a latch which releases high energy levers for effecting synchronous flash exposures.

3,661,064

STEREO RANGEFINDER

Philip R. Norris, North Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 15, 1970, Ser. No. 37,667
Int. Cl. G03b 3/00
U.S. Cl. 95—44 C 22 Claims



A photographic camera having a variable focus objective lens incorporates a binocular rangefinder of the "stereo" type including a reticle and lens means for projecting a virtual image of the reticle a predetermined distance into the viewed field. Left and right eye view windows are located to intercept different portions of common imaging wavefronts defining the virtual reticle image. The rangefinder is coupled to a focus adjustment mechanism for the camera such that the image distance of the projected reticle image and the focused distance of the camera objective lens are caused to vary in correspondence. A novel rangefinding method is also disclosed.

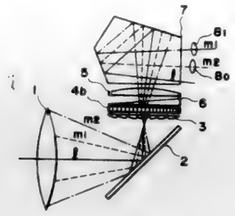
3,661,065

DEVICE FOR OPTICAL FOCUSING A GLASS FIBER PLATE AS A FOCUSING SCREEN

Yasuo Yamazaki; Mitsuo Furuta, both of Osaka, and Yoshio Kuramoto, Saka-shi, all of Japan

Filed Feb. 6, 1969, Ser. No. 797,021
Claims priority, application Japan, Nov. 25, 1968, 43/85603; Feb. 9, 1968, 43/8117; Feb. 8, 1968, 43/7829; Apr. 1, 1968, 43/21282
Int. Cl. G03b 3/00
U.S. Cl. 95—44 R 13 Claims

In an optical focusing system as in a finder optical system of a reflex camera or in an optical focusing system wherein an image on the focusing screen disposed on the focal plane is observed from the back of said screen whereby the focusing condition of the image forming optical system can be detected, the present invention relates to a device for optical focusing, utilizing a glass fiber focusing plate as a focusing screen, which is characterized in that said focusing screen is provided with an incident end face of an optical fiber plate composed of many optical fibers secured with one another in a parallel array. In order to observe through the light ray passing through the circumferential portion of the lens of the image-forming optical system, which comes into said incident



end face, it is possible to observe at a position away from the optical axis of said image-forming optical system, on the back of said optical fiber plate.

3,661,066

SELF-COCKING TWO BLADED PHOTOGRAPHIC SHUTTER

Helmut Ettischer, Ruit/Wurttemberg, and Ernst Lieser, Stuttgard-Vaihingen, both of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 2, 1970, Ser. No. 25,202
Claims priority, application Germany, Apr. 5, 1969, P 19 17 507.6
Int. Cl. G03b 9/10
U.S. Cl. 95—60 10 Claims

A self-cocking shutter including two blades, each of which is movable between first and second positions. The blades are positioned by springs which are arranged so that their forces do not act against each other. One spring moves a first shutter blade from its first to its second position and a second spring returns both of the shutter blades to their first positions.

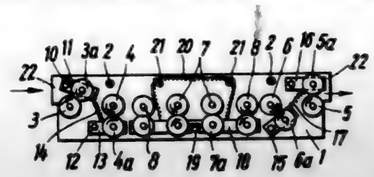
3,661,067

DEVICE FOR USE IN FILM DEVELOPMENT, FIXING, AND RINSING TROUGHS WITH PARALLEL DRIVE ROLLERS

Jaakko Aarnio, Ulappasaarentie 8 D 47, Helsinki 98, Finland

Filed Apr. 10, 1970, Ser. No. 27,204
Int. Cl. G03d 3/00
U.S. Cl. 95—89 A 2 Claims

A device for use in film development, fixing, and rinsing troughs, to which are mounted and which include parallel driving rollers at intervals all located in the same plane. Counter rollers are located in contact with the driving rollers and a bevel tooth spindle wheel is connected to one end of



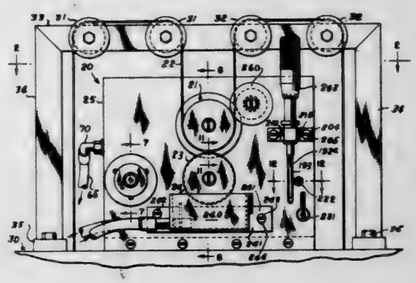
each driving roller and a spindle which is in contact with each spindle wheel is mounted on a common driven shaft.

3,661,068

SOUND TRACK DEVELOPER

Hugh V. Jamieson, Jr., and Charles F. Meize, both of Dallas, Tex., assignors to Jamieson Film Company, Dallas, Tex.

Filed Apr. 27, 1971, Ser. No. 137,829
Int. Cl. G03d 3/12
U.S. Cl. 95—94 R 10 Claims



A sound track developer for use in processing a black and white sound track on color film operated by a vacuum wheel driven by the film. The film is held in driving engagement with the wheel by a vacuum system which imposes a sufficient vacuum around a portion of the wheel periphery and the back face of the film for slip-free driving of the wheel by the film. The vacuum wheel drives a developer applicator wheel which applies a narrow bead of developer from a developer tank along a continuous strip of the film for developing the sound track only. Adjustment devices are provided for properly aligning and spacing the vacuum wheel and the developer applicator wheel to insure uniform developer application to the film.

3,661,069

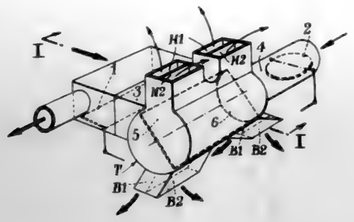
VENTILATION DEVICE FOR AUTOMOTIVE VEHICLES

Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Feb. 18, 1970, Ser. No. 12,394
Claims priority, application France, Feb. 26, 1969, 6904943
Int. Cl. B60h 1/24
U.S. Cl. 98—2.05 2 Claims

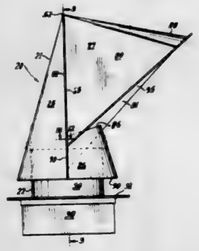
A ventilation device notably for automotive vehicles, comprising a pair of shutters controlling the ingress and adjusting the input of each one of two streams, respectively of fresh air and warm air, which are directed into a distributor box having at least two outlet ducts leading to two different outlet louvres, characterized in that each one of said ducts is divided into two parallel adjacent channels, and that a switch-over member rotatably mounted in a cylindrical portion of said distributor box, is adapted to be set in any one of three

positions in which it is adapted to direct each stream either towards the two channels of one or the other outlet duct, or



towards one of the two adjacent channels of each one of said ducts.

3,661,070
VENTILATOR HOOD ASSEMBLY
Lester L. Miller, 2226 Rogers Road, Jacksonville, Fla.
Filed June 24, 1970, Ser. No. 49,348
Int. Cl. F23l 17/02
U.S. Cl. 98—68 **18 Claims**

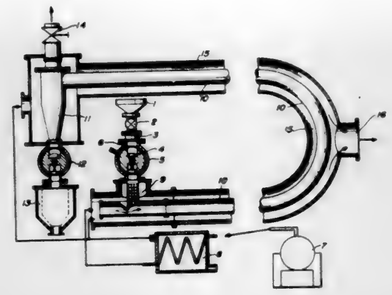


A rotatable ventilator hood having a full conical half portion, a forward conical portion and a wing portion connected together by standing seams internally of the hood. The wing portion includes a pair of wing walls extending downwardly at their connections to and below the termination of the forward portion, and a top portion integral with the wing walls, the top portion being inclined downwardly and being rounded in a plane perpendicular to the inclination thereof. One of the wing walls is larger in surface area than the other wing wall. Lubrication means are mounted to a brace member of the hood through which a stationary shaft extends for lubricating same during rotation of the hood thereon.

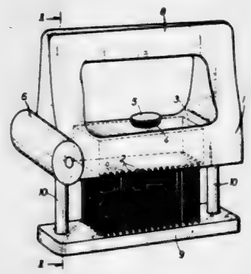
3,661,071
APPARATUS FOR PRODUCING EXPANDED FOOD STUFFS BY GASEOUS CONVEYING HEATING
Ryozo Toei, Kyoto; Tatsuo Aonuma, Kashiwa-shi; Hiroharu Watanabe, and Toshizumi Yuasa, both of Noda-shi, all of Japan, assignors to Kikkoman Shoyu Co., Ltd., Noda-shi, Japan
Filed June 13, 1969, Ser. No. 833,043
Claims priority, application Japan, Oct. 1, 1968, 43/70808
Int. Cl. A23l 1/18
U.S. Cl. 99—238 R **2 Claims**

A method of continuously producing an expanded food stuff, which comprises entraining a material food stuff in a pressurized heated gas stream in a suspended condition, thereby heating and conveying said material, and then discharging the heated material into a gas atmosphere at a lower pressure, whereby said material is expanded.

An apparatus for practicing the above-described method, which comprises a conduit for flowing a pressurized heated gas therethrough, means for introducing a material food stuff into the stream of said gas in a suspended condition to be entrained therein, means for collecting the heated material and means for discharging the heated material abruptly into a gas atmosphere at a lower pressure thereby to expand said material.

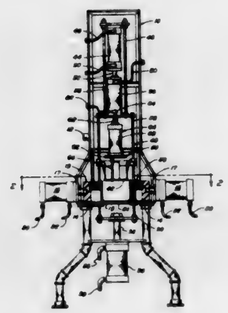


3,661,072
APPLIANCE FOR THE PREPARATION OF BUTCHER'S MEAT BEFORE CONSUMPTION
Fernand Michel Allinquant, and Jacques Gabriel Allinquant, both of 53 Avenue Le Notre, Sceaux 92, France
Filed Feb. 13, 1970, Ser. No. 11,145
Claims priority, application France, Feb. 14, 1969, 6903739
Int. Cl. A23l 3/34
U.S. Cl. 99—256 **3 Claims**



An appliance for the preparation of butcher's meat before consumption comprises the combination of a holder, a plurality of hollow needles arranged in parallel and protruding beneath the holder, a reservoir for a substance which is to be injected into the meat, such reservoir being in communication with the inside of the needles, and means to place the reservoir under pressure. The holder for the needles may be hollow and form the reservoir for the substance which is to be injected and the means for pressurizing the reservoir may comprise a pump delivering atmospheric air into the reservoir.

3,661,073
APPARATUS FOR CURING MEAT
Warren R. Schack, Western Springs; Eugene G. Schmoller, Palos Hgts.; Thomas K. Shanks, Chicago, all of Ill., and Philip C. Metzer, Orange, Calif., assignors to Swift & Company, Chicago, Ill.
Original application Dec. 11, 1967, Ser. No. 689,721, now Patent No. 3,565,639. Divided and this application Sept. 2, 1970, Ser. No. 69,098
Int. Cl. A23b 1/01
U.S. Cl. 99—257 **9 Claims**

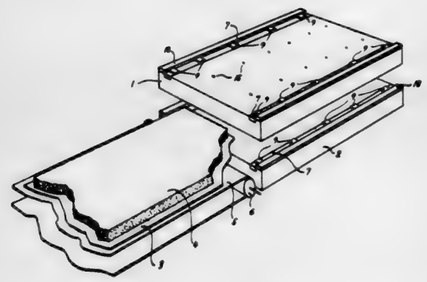


Method of pickling a meat product comprising exerting a compressive force upon the meat product within a container and subsequently reducing the force to a lower positive pressure and thereupon injecting the meat with pickle solution. Apparatus for performing the method comprising positive pressure exerting assembly in combination with an assembly operable to meter desired quantities of pickle and inject the pickle into the meat product.

ERRATUM

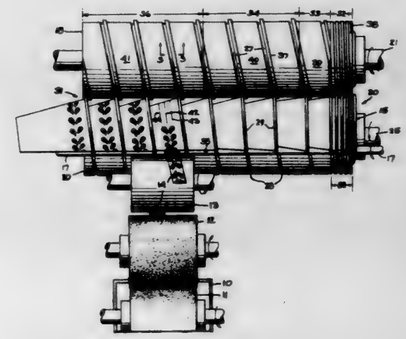
For Class 100—37 see:
Patent No. 3,661,082

3,661,074
APPARATUS FOR FEEDING AND/OR DISCHARGING A PRESS
Rolf Schweizer, Adliswil, Switzerland, assignor to Fred Fahrni, Zurich, Switzerland
Filed Feb. 25, 1970, Ser. No. 13,910
Int. Cl. B30b 15/30
U.S. Cl. 100—215 **5 Claims**



The present invention relates to apparatus for feeding and/or discharging a single- or multi-stage, and preferably heated, press with at least one upper and one lower press plate, between which is passed a flat conductive metal plate or conductive caul with mass to be compressed located thereon. This invention relates in particular to apparatus associated with a heated press for producing wood chip boards, fiber boards, plywood panels, etc. The conductive metal plate acts as the moving portion of a linear induction motor, having a stator which includes a plurality of windings and magnetic cores for converting multi-phase current power into a moving magnetic field which pulls the conductive plate into and out of the press space.

3,661,075
APPARATUS FOR PRINTING ON CURVED SURFACES
Stephen W. Amberg, St. James, N.Y., assignor to Owens-Illinois, Inc.
Filed Dec. 5, 1969, Ser. No. 882,539
Int. Cl. B41f 17/28, 17/20
U.S. Cl. 101—40 **17 Claims**



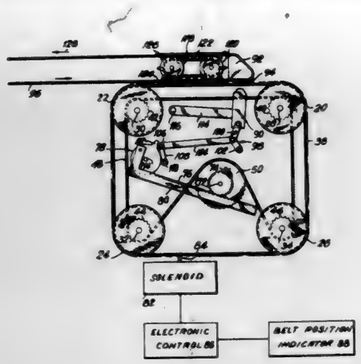
A printer for cups or similar articles, or articles with a surface of revolution having a straight line generatrix, has a helical printing plate. The articles are advanced along a line parallel to the axis of the plate and the sidewall is imprinted while it follows a substantially helical path. Cups or containers are fed through in partially nested condition.

3,661,076
BELT PRINTING APPARATUS FOR PRINTING LINE OF PRINT AT ONE TIME
Ralph Berger, McLean, Va., and Howard A. Satterlee, Madeira Beach, Fla., assignors to New England Merchants National Bank, Boston, Mass.
Continuation-in-part of application Ser. No. 852,697, Aug. 25, 1969. This application May 25, 1970, Ser. No. 40,170
Int. Cl. B41j 9/38, 1/20
U.S. Cl. 101—93 C **10 Claims**

Printing apparatus is provided in which an entire line of print is printed at one time and wherein a sheet of paper is advanced past a printing station so that a series of lines of printing can be successively printed thereon. The printing is effected in a plurality of parallel columns, with which are aligned a like number of belts on which are located the print characters. These belts are driven by one or more drums in repetitive cycles. In one embodiment, each of the belts is brought to a halt with the desired character at the printing line at the printing station and when a line of print has been thusly compiled, a single hammer unit drives the characters against a ribbon to print the line on the paper. The belts are then returned to an initial position of rest in preparation for the next succeeding cycle for the next succeeding line of print. The print hammer may be actuated from the same source of power which drives the drum or drums and there

may be related to this source of power a stepping device which steps the paper through the printing station.

As an alternative, a plurality of parallel belts are selectively



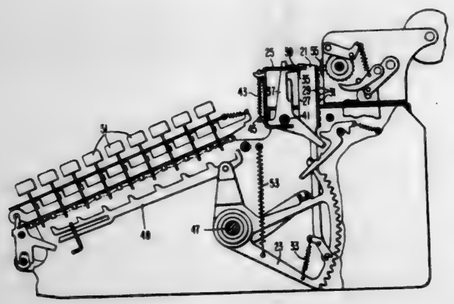
released to be driven by a drum such that the desired characters for a line of print are brought to a printing station in unison.

3,661,077

TYPEBAR FOR PRINTING UNIFORM DENSITY CHARACTERS

Campbell Findlay, Dumbarton, and Thomas McQuade, Alexandria, both of Scotland, assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 6, 1970, Ser. No. 9,341
Claims priority, application Great Britain, June 18, 1969, 30,838/69
Int. Cl. B41j 7/94; B41f 1/54
U.S. Cl. 101—93 R **5 Claims**



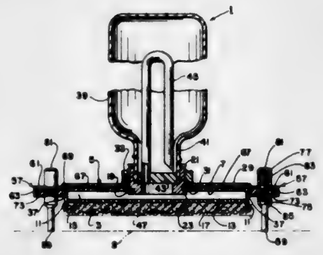
A hammer-impactable and differentially indexible typebar comprising a plurality of type characters of variously dimensioned surface areas is provided with impact control means cooperable with the printing means of a calculating machine and effective for regulating the impacting force of the hammer thereof according to the surface area and location of the selected character to be printed, such regulation serving to assure that all character representations printed by the typebar in an alpha or numeric printer are of such uniform density as to permit satisfactory reading thereof by optical machine-reading equipment. The impact control means of the typebar serves to establish a variable clearance between the hammer and the differentially indexed typebar such that the predetermined firing flight of the hammer will impart a variable striking force of the typebar against a ribbon and a record medium interposed between the selected character and a printing platen.

3,661,078

STENCIL HAND STAMP WITH FLUID-CONTAINING HANDLE AND RETRACTABLE SUPPORTS

Larry F. Hammel, Herrin, Ill., assignor to Diagraph-Bradley Industries, Inc., Herrin, Ill.

Filed June 22, 1970, Ser. No. 48,099
Int. Cl. B41k 1/32
U.S. Cl. 101—125 **5 Claims**



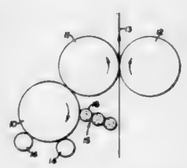
A hand stamp stenciling printing implement or duplicator having an inking pad held in a cap, with the pad projecting down below the cap. The cap has a central opening and a tubular stem extending up from the cap in communication with the opening. The stem is internally and externally threaded. A cover plate is provided on top of the cap having an opening receiving the stem. A nut is threaded externally on the stem for clamping the cover plate on the cap. A plastic squeeze bottle containing ink is threaded internally in the stem. Brackets are provided at opposite ends of the cover plate having tongues extending therefrom between the cover plate and the cap and clamped therebetween by the nut, these brackets carrying retractable spring-biased legs for holding the pad raised above a supporting surface, the implement being adapted to be pushed down toward a supporting surface via retraction of the legs against the spring bias.

3,661,079

ROTARY OFFSET PRINTER WITH DAMPING ROLLER SELECTIVELY ENGAGEABLE WITH PRINT CYLINDER OR BLANKET CYLINDER

Leonard Ernest Stapleford, Orton Longueville, England, assignor to Baker Perkins Limited, Peterborough, Northampton, England

Continuation-in-part of application Ser. No. 661,901, Aug. 21, 1967, now abandoned. This application Dec. 23, 1968, Ser. No. 788,985
Claims priority, application Great Britain, Sept. 3, 1966, 39,493/68
Int. Cl. B41f 7/04, 7/40
U.S. Cl. 101—142 **4 Claims**



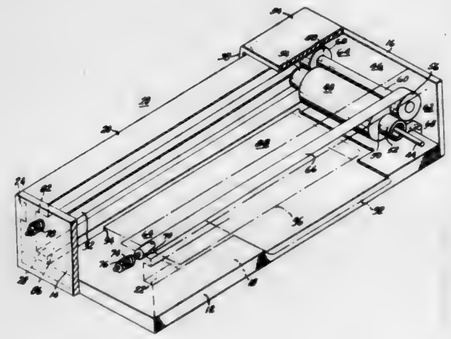
A reversible rotary web offset printing unit wherein the damping means has alternative contact with the printing cylinder after the blanket cylinder and before the inking means, and with the blanket cylinder after the web and before the printing cylinder in forward and reverse running respectively.

3,661,080

TRAVELING CYLINDER IMPRINTER INCLUDING FLEXIBLE BAND CYLINDER SUPPORT MEANS

Thomas F. Laws, 9806 Laurel Street, Fairfax, Va.

Continuation-in-part of application Ser. No. 789,854, Jan. 8, 1969. This application Nov. 17, 1969, Ser. No. 877,416
Int. Cl. B41f 3/20
U.S. Cl. 101—269 **17 Claims**



An imprinting device is disclosed wherein the imprinter roller assembly is loosely connected to the assembly carriage, the imprinter roller being supported at each end thereof by a roller cluster. Each roller cluster is supported by a flexible metal band, the band being fixedly connected at one end of the imprinter and adjustably connected at the other end thereof, each band being confined at the top and bottom thereof by a channel disposed along the imprinter length, the bottom of each channel being disposed above the upper surface of the print bed. Each band passes over and around one of the rollers of its associated roller cluster and then around and under the other roller of its associated cluster. The corresponding rollers of each cluster are connected together by appropriate means. The points where the bands are fixedly connected to one end of the imprinter are respectively disposed immediately above the bottoms of the above-mentioned channels. The print bed is provided with a recess for receiving the printing plate or card prior to the imprinting operation. A document or invoice is placed over the printing plate and onto the print bed. The documents and printing plate are respectively inserted through elongated apertures respectively disposed at opposite sides of the imprinting apparatus. In a modified embodiment of the invention, provision is made for imprinting more than one print field within the print bed area.

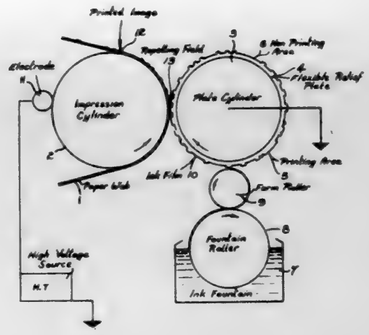
3,661,081

PROCESS OF FLEXOGRAPHIC PRINTING UTILIZING AN ELECTRICAL FIELD

Robert J. Wright, Tranmere, Australia, assignor to Hurletron Controls Division, Danville, Ill.

Filed Oct. 22, 1969, Ser. No. 870,525
Claims priority, application Australia, Nov. 1, 1968, 45744
Int. Cl. B41f 5/04
U.S. Cl. 101—426 **4 Claims**

A process for flexographic printing in which ink transfer between the plate cylinder and the web which passes over the impression cylinder is controlled by an applied electrical field between the impression cylinder and the plate cylinder in a direction such that a polarity sensitive flexographic printing ink is moved away from the web towards the plate cylinder whereby only contact areas between the plate cylinder image



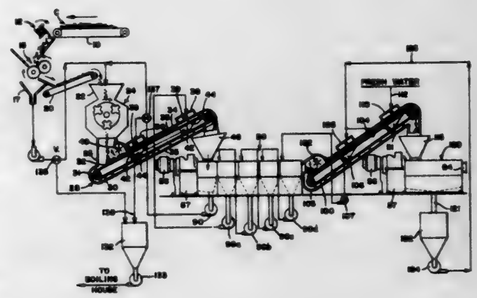
and the web will receive printing ink due to the mechanical contact.

3,661,082

METHOD AND APPARATUS FOR RECOVERING JUICE FROM SUCROSE BEARING MATERIALS

Alfred W. French, and Forest J. Starrett, Jr., both of Piqua, Ohio, assignors to The French Oil Mill Machinery Company, Piqua, Miami County, Ohio

Filed Dec. 18, 1969, Ser. No. 886,178
Int. Cl. B30b 9/14
U.S. Cl. 100—37 **15 Claims**

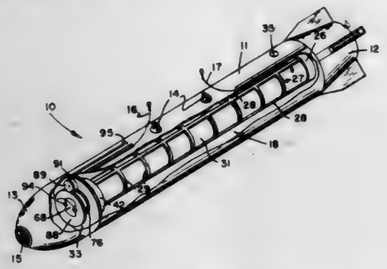


Sucrose bearing materials, such as raw sugar cane, are shredded and then subjected to application of maceration liquid to penetrate the liquid into the ruptured cells of the material. Following this operation, the saturated material is conveyed through a mechanical screw press having sequentially arranged drainage cage sections in each of which juice combined with maceration liquid is expressed from the material. The material leaving the press is subjected to a further treatment with maceration liquid, preferably fresh maceration water, and then the material is processed through the dewatering stage, such as a high pressure dewatering screw press, after which the spent bagasse is disposed of in any suitable manner. In the first screw press, the liquids extracted at various points in the sequential cage sections are recirculated in countercurrent fashion to preceding stages of the press, and liquids from the first stage of the press are recirculated to the material entering the press from the shredding stage.

3,661,083
DEVICE FOR RAPIDLY MIXING AND AGITATING CHEMICALS IN SEALED CONTAINERS

James E. Weimholt, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 12, 1965, Ser. No. 496,742
Int. Cl. F42b 25/12
U.S. Cl. 102—6 7 Claims

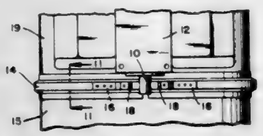


The invention comprises an apparatus for maintaining liquid and dry chemicals safely separate in hermetically sealed containers and for rapidly mixing and agitating the chemicals in flight just prior to launch of the munition.

3,661,084
BAND RELEASE

Ronald C. Noles, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 3, 1969, Ser. No. 855,011
Int. Cl. F42b 3/08
U.S. Cl. 102—24 HC 2 Claims

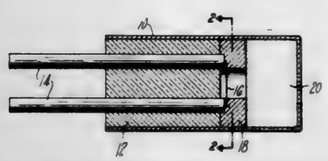


Separation of a fastening band is accomplished by firing a small shaped charge device in such a way as to cut a link in the band. The shaped charge device is contained in an adapter which positions the charge over the link and confines the force of the charge to the desired area. The adapter holds the shaped charge device to a timer mechanism in position to be detonated by a stab primer or the like.

3,661,085
ELECTRICALLY ACTUATED INITIATOR

William M. Smith; Thomas W. Norton, both of Simsbury, and John D. Hawley, East Hartland, all of Conn., assignors to The Ensign-Bickford Company, Simsbury, Conn.

Filed Sept. 19, 1969, Ser. No. 859,336
Int. Cl. F42b 3/12
U.S. Cl. 102—28 7 Claims

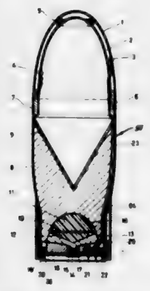


A fast response electrically actuated pyrotechnic or explosive initiator includes an initiating charge in contact with only those portions of a bridge wire located immediately adjacent the area of wire contact with the terminal posts.

3,661,086
HOLLOW CHARGE CONSTRUCTION

Franz R. Thomanek, Sandizell; Georg Lallinger, Muhlried, and Hermann Rosner, Meitingen, all of Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Germany

Filed June 16, 1969, Ser. No. 833,558
Claims priority, application Germany, June 14, 1968, P 17 03 593.7
Int. Cl. F42b 13/10
U.S. Cl. 102—56 9 Claims

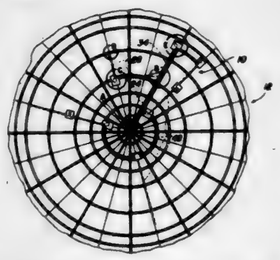


A hollow charge construction in the form of a missile includes a symmetrical explosive charge having a conical forward liner and a rear spherical recess carrying an inert insert made of a material such as silicon rubber and providing guidance of the detonation waves. A detonator is arranged in the axis of rotation of the explosive charge cavity and the conical hollow charge liner and the inert insert which is arranged in the conical cavity. The explosive charge is enclosed by an aerodynamically designed cylindrical housing with a double hood portion. The detonating device is actuated by contact between the outer and inner hood walls and by transmission of a detonating pulse through an electric line which traverses the hollow charge in a longitudinal direction. The detonator in a form of a compressed charge is held centrally within a rear closing cover of the housing. The inert insert is made up of many parts having intersecting surfaces which extend at right angles to the axis of rotation of the charge.

3,661,087
FLARE DEPLOYMENT SYSTEM

Robert C. Willard, China Lake; Harold L. Dauer, and Ronald Clifford Noles, both of Ridgecrest, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Dec. 11, 1969, Ser. No. 884,084
Int. Cl. F42c 9/14
U.S. Cl. 102—70 R 1 Claim

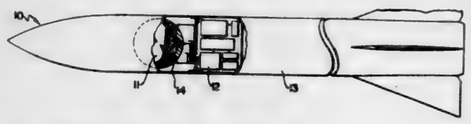


The deployment of a hot air suspended flare system is enhanced by a time delay venting and destruct system. As the balloon is deployed with the aid of a drogue chute, a lanyard attached to the chute extracts a safety wire from a firing device which ignites a length of safety fuze proportioned to ignite a first segment of stranded propellant after a predetermined time for cutting a vent in the balloon and at the same time igniting a second proportioned length of safety fuze. The second length of safety fuze, in turn, ignites a second pattern of stranded propellant which completely destroys the lifting power of the balloon.

3,661,088
WARHEAD SYSTEM

Raymond W. Harr, Columbus, and Mathew Rothman, Gahanna, both of Ohio, assignors to North American Rockwell Corporation

Filed July 25, 1963, Ser. No. 297,525
Int. Cl. F42c 11/00, 13/00, 15/40
U.S. Cl. 102—70.2 R 3 Claims



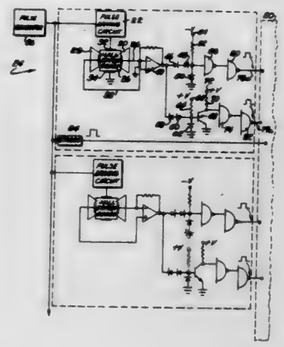
1. In a warhead system, in combination:
   b. More than one detonator device each of which is spaced-apart from the others and located in cooperating relation to said explosive charge and each of which is exploded only by a high-voltage electrical energy charge,
   c. Storage means operable to contain a high-voltage electrical energy charge,
   d. A trigger control means which is connected to said storage means and which conducts a high-voltage electrical energy charge only when activated by a separate low-voltage electrical energy charge,
   e. More than one interlock control means each of which connects one of said detonator devices in conducting relation to said trigger control means and each of which conducts a high-voltage electrical energy charge only when activated by a separate low-voltage electrical energy charge,
   f. First conductor means which conducts an activating low-voltage electrical energy charge to each of less than all of said interlock control means to thereby impart selected directionality to the explosion of said explosive charge caused by said detonator devices, and
   g. Second conductor means which conducts an activating low-voltage electrical energy charge to said trigger control means thereby causing high-voltage electrical energy to be conducted from said storage means simultaneously to those detonator devices which cooperate with the interlock control means activated by said first conductor means.

3,661,089
CONTROL SYSTEM EMPLOYING HALL-EFFECT DEVICES

Daniel J. Soltz, Norristown, Pa., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 3, 1970, Ser. No. 16,023
Int. Cl. B61k 1/00
U.S. Cl. 104—88 4 Claims

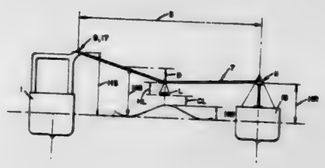
An automated vehicle which moves along a path is to perform certain tasks at predetermined locations along the path in accordance with codes sensed by a code reader from code magnets located at sensing stations along the path. The code reader contains a number of Hall-effect devices for sensing the orientation of the code magnets. The voltage output of each Hall-effect device is coupled to a differential amplifier. The output of each differential amplifier is coupled to a first threshold circuit which produces a first logic level signal when the output of the differential amplifier has a positive polarity and to a second threshold circuit which produces a second logic level signal when the output of the differential amplifier has a negative polarity. A pulse generator may be coupled to a pulse driving circuit to supply current pulses to the Hall-effect devices so that the sensitivity of the Hall-effect devices is increased.



3,661,090
LATERAL LOAD TRANSFER

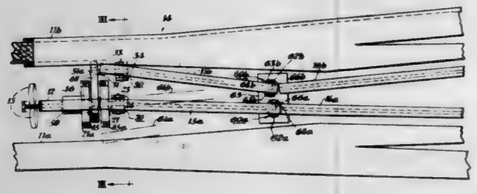
Gerald Y. Martin, Bedford, and John Murray Vines, Halifax, Nova Scotia, both of Canada, assignors to Her Majesty the Queen in right of Canada as represented by the Minister of National Defense of Her Majesty's Canadian Government

Filed Jan. 9, 1970, Ser. No. 1,579
Int. Cl. B61b 7/02, 7/04; B63b 27/08
U.S. Cl. 104—114 8 Claims



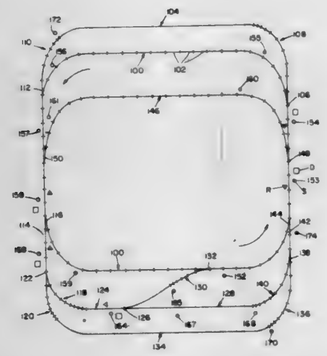
This application discloses a system for transferring loads laterally between two ships at sea. It makes use of a modification of the known "high line" wire which carries a traveller supporting the load and is moved to and fro by "outhaul" and "inhaul" wires attached to the traveller. In the modification, a single cable is used which acts as the high wire and returns round a pulley as the "low wire" being anchored at the traveller. The low wire can be divided at the traveller if desired. The "loose" end of the lower wire is wound on a winch which serves to transfer the load. The geometry of the wires at the traveller tends to keep the load at a constant distance above the water despite relative movements of the two ships.

3,661,091
SINGLE GUIDE MEMBER TRANSIT VEHICLE SWITCHING MECHANISM
Peter M. Noble, Valencia Township, Butler County, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.
Filed Dec. 23, 1969, Ser. No. 887,615
Int. Cl. E01b 25/12, 7/04
U.S. Cl. 104—130 12 Claims



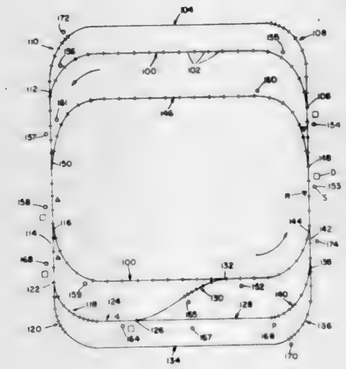
This disclosure relates to a roadway switch for self-guided vehicles having at least two selectable routes of travel. The switch includes at least two movable I-beams each having one end pivotally mounted for movement in two modes. A rotatable member supports the outer end of each of the movable I-beams and permits movement of the other end of the I-beams in three modes. An electric motor is incorporated for rotating the rotatable member between a first and second position whereby one of the I-beams establishes the route of travel for the self-guided vehicles.

3,661,092
TRANSPORTATION SYSTEM
Richard E. Morley, Bedford, and Michael P. Greenberg, Winchester, both of Mass., assignors to Alden-Self-Transit Systems Corporation, Bedford, Mass.
Filed Dec. 5, 1969, Ser. No. 882,422
Int. Cl. B60l 15/00
U.S. Cl. 104—148 R 22 Claims



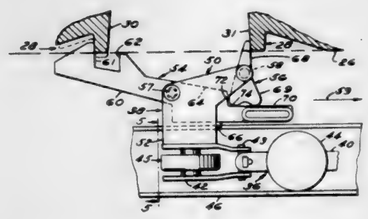
A transportation system has a predetermined path along which vehicles move, which path is divided into a series of discrete control areas. The vehicles move along the path in synchronism with one another under system vehicle velocity control. A supervisory control which includes a series of storage registers, including a register corresponding to each control area on the path, store signals representative of vehicle information, and those vehicle information signals are moved through the storage registers in synchronism with the movement of the vehicles along the path.

3,661,093
TRANSPORTATION SYSTEM
Campbell L. Searle, Weston, Mass., assignor to Alden Self-Transit Systems Corporation, Bedford, Mass.
Filed Dec. 5, 1969, Ser. No. 882,423
Int. Cl. B60l 15/00
U.S. Cl. 104—148 R 5 Claims



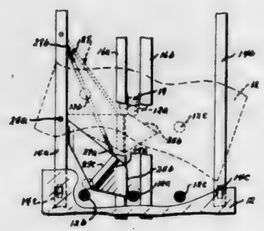
A transportation system has a predetermined path along which vehicles move. Signals are generated that effectively define a series of control areas that circulate along the path. Each control area includes a propulsion control portion and a sense portion, and the vehicles include circuitry responsive to the propulsion control portions for maintaining vehicle movement along the path in synchronism with the movement of the control areas. Should a vehicle be detected in a sense portion of the control area, a warning signal is generated.

3,661,094
CONVEYOR SYSTEM FOR TRAYS
Martin Pachuta, Allen Park, Mich., assignor to Jervis B. Webb Company
Filed Jan. 21, 1970, Ser. No. 4,633
Int. Cl. B65g 17/42
U.S. Cl. 104—172 B 14 Claims



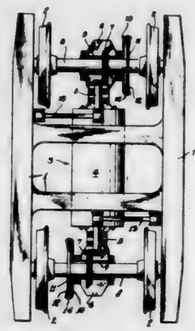
A conveyor system in which carriers such as trays are propelled along a support by pusher units on an endless driven chain and can be stopped, accumulated and transferred from one chain to another. Each pusher unit includes a pusher member engageable with a driving flange on a carrier and retained in driving position by a locking member which projects into the path of carrier movement in advance of the pusher member and the carrier driven thereby and is engageable with an object in the path of movement to release the pusher member and permit the stopping and accumulation of carriers.

3,661,095
CONVEYOR ACCESSORY
Robert F. Pate, Elberfeld; Gilman Tredwell, and William S. Mitchell, both of Evansville, all of Ind., assignors to George Koch Sons, Inc., Evansville, Ind.
Filed July 30, 1969, Ser. No. 846,197
Int. Cl. B61b 7/00
U.S. Cl. 104—172 B 4 Claims



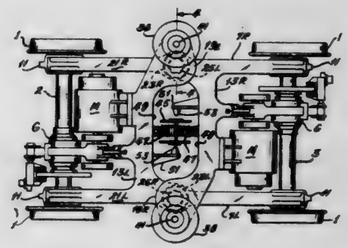
An accessory for a floor type pallet conveyor system characterized by a pivotal member selectively engaged by a pallet pin and at least one pallet positioning pin to align the pallet into a proper position for movement.

3,661,096
MOTORIZED RESILIENT DRIVE RAILWAY TRUCK
Ulrich Kayserling, Nurnberg, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Nurnberg, Germany
Filed May 19, 1969, Ser. No. 825,804
Claims priority, application Austria, June 12, 1968, A 5631/68
Int. Cl. B61c 9/44, 9/52; B61f 3/04
U.S. Cl. 105—117 3 Claims



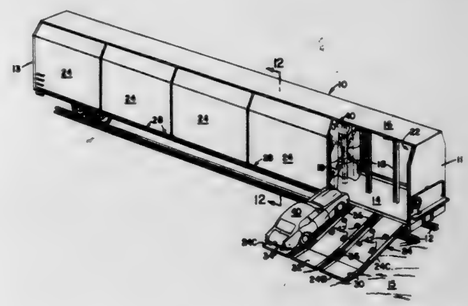
A motor transversely stabilized by links connected to the truck frame is mounted between two axles in a railway vehicle frame and having a drive shaft for each axle elastically coupled to its axle.

3,661,097
RAILWAY VEHICLE ARTICULATED TRUCK
Keith L. Jackson, Granite City, Ill., assignor to General Steel Industries, Inc., St. Louis, Mo.
Filed Oct. 6, 1969, Ser. No. 864,012
Int. Cl. B61f 3/04, 5/14, 5/20
U.S. Cl. 105—199 R 20 Claims



A railway vehicle four-wheel truck has framing comprising separate longitudinally extending side frames carried at their ends by the axles and each having a rigid transverse transom between the axles, the individual side frame transoms being offset from each other longitudinally of the truck except for their outer extremities which are aligned transversely of the truck and extend across the opposite side frames, on which they are supported to pivot about a common transverse axis. Outboard of each side frame, the extremity of the opposite side frame supports an upright elastomeric spring, on which the vehicle body is seated, and the springs are yieldable horizontally as well as vertically to accommodate lateral and swivel movements. At its center the truck framing is connected to the body by a draft-transmitting device capable of permitting such transverse, vertical and swivel movements of the body and truck with respect to each other.

3,661,098
APPARATUS FOR SHIPPING AUTOMOBILES
William M. Jaekle, 18 Tarry Lane, Orinda, Calif.; Paul V. Garia, 1836 Lake Street, San Francisco, Calif.; William E. Thomford, 1176 Glenwood Drive, Millbrae, Calif.; Wallace M. Greb, 1139 Oakes Boulevard, San Leandro, Calif., and Nicholas N. Udaloff, 141-16th Avenue, San Francisco, Calif.
Filed Aug. 14, 1969, Ser. No. 850,107
Int. Cl. B60p 3/06, 7/08; B60d 45/00
U.S. Cl. 105—360 R 8 Claims



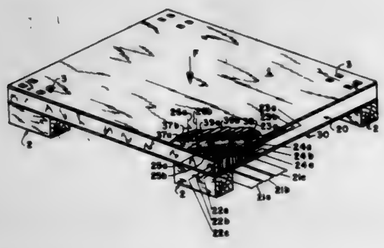
A railway car has a roof portion, a floor portion and side wall portions. Each side wall portion is made up of a plurality

of door portions pivotally fixed relative to the floor portion. The door portions, when pivoted upward, form the side wall portions, with the top edges thereof adjacent the roof portion, and, when pivoted downward, have edges adjacent the ground so that automobiles may be driven thereon. Attaching means are included with the door portions and with the automobiles so that the automobiles may be fixed thereto, with the wheels of the automobiles against the door portions. When the door portions are pivoted upward, the automobiles fixed thereto are carried therewith into the confines of the railway car. Depending on the attaching means used, the automobiles may be either vertically or horizontally fixed to the door portions.

3,661,099
PALLET DECK

Clifford D. Shelor, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Apr. 28, 1971, Ser. No. 138,062
Int. Cl. B65d *19/18*
U.S. Cl. 108—51 10 Claims

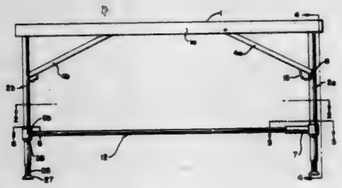


Shipping pallet for large, high density loads having a load receiving deck fabricated entirely from corrugated paper board by adhesively securing a multiplicity of juxtaposed corrugated board strips, flute axes perpendicular to the deck surface, to form a core; and sandwiching said core between corrugated board sheets, flute axes parallel to said deck surface.

3,661,100
FOLDING TABLE

Charles E. Tennant, Collinsville, Ill., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Sept. 5, 1968, Ser. No. 757,593
Int. Cl. A47b *3/091*
U.S. Cl. 108—132 3 Claims

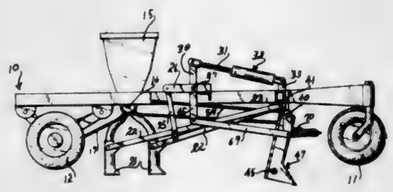


A folding table having a multiplicity of leg members pivotably connected to the table top to be swung relative the table top between a folded storage position adjacent the table top and an open position extending transversely from the table top to support the table in standing position. Sleeve means are provided to slide on selected leg means and a leg brace assembly is provided to be connected to such sleeve means so the leg brace assembly can be moved along the leg means relative to the table top. The leg brace assembly is also received by selected sleeve means so the overall length of the leg brace assembly is decreased to allow the legs to be pivoted to a folded position adjacent the table top.

3,661,101
GRAIN DRILL WITH ROD WEEDER

Billie D. Parsons, Milesville, S. Dak.

Filed Dec. 22, 1969, Ser. No. 886,975
Int. Cl. A01c *7/18*; A01b *39/19*
U.S. Cl. 111—69 2 Claims

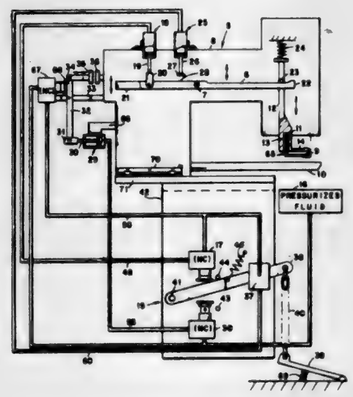


A mobile frame having grain drilling apparatus affixed thereto and an elongated rod mounted for rotation in a horizontal orientation so as to preceed the grain drill shoes but follow all wheels and the like which preceed the grain drill shoes. The rod is mounted to travel a short distance below the surface of the soil and prepare the soil for the grain drill.

3,661,102
CONTROL SYSTEM FOR CYCLICALLY OPERATED STITCHING MACHINES HAVING A DUAL PRESSER FOOT

Richard F. Tice, 4022 Doris Circle, Knoxville, Tenn.

Continuation-in-part of application Ser. No. 739,254, June 24, 1968, now Patent No. 3,565,024. This application Nov. 6, 1970, Ser. No. 87,405
Int. Cl. D05b *3/12*, *69/08*
U.S. Cl. 112—67 8 Claims

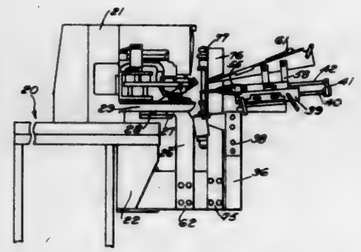


A control system for cyclically operated stitching machines having a dual presser foot wherein the functions of presser foot manipulation and machine starting are brought about by movement of a single operator control.

3,661,103
AUTOMATIC PLEATING MACHINE

Harry Firestein, Mamaroneck, N.Y., and Karl Tyas, Ocean Grove, Mass., assignors to Louis Hand Incorporated, Fall River, Mass.

Filed Nov. 2, 1970, Ser. No. 86,025
Int. Cl. D05b *35/08*
U.S. Cl. 112—134 35 Claims



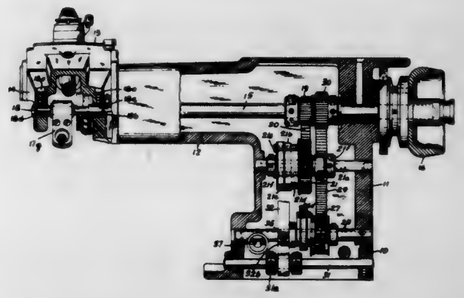
This is an automatic pleating machine which is designed to automatically form a plurality of spaced pleats across the top of a piece of drapery or curtain material and to sew the pleats in place. A sewing machine is mounted on a stand and the automatic pleat forming device is mounted on an arm swung from beneath the stand in front of the sewing machine. A pair of jaws are pivoted to swing vertically into open position with a central tongue between them to form two separate sections. A C-shaped arm is designed to push the material into jaws on each side of the central tongue to form the pleat. A plurality of needles now swing upwardly through slots in the jaw to hold the pleat in position while the C-shaped device is removed. The jaws then close on the pleat and the entire jaw assembly moves forwardly to a point beneath the sewing machine needle. At this point the sewing machine clamp moves downwardly and clamps the pleat. The jaws are then withdrawn and opened up for the formation of another pleat. The second pleat is formed before the first pleat has been sewed by the machine. After the first pleat has been sewed the sewing machine clamp is raised and an arm comes downwardly to pull the material from beneath the needle of the sewing machine. The second pleat already completed in the jaws is then moved forwardly beneath the sewing machine clamp. This is repeated until the plurality of predetermined pleats in a predetermined spaced relation are formed on the material. The pleats are usually so arranged that the first and last pleats are approximately 3 inches from the edge of the material while the other pleats are approximately five inches apart. For this construction the apparatus is provided with an arm controlled by two cams. During the initial operation the first cam permits the arm to move downwardly to pull sufficient material to form the first pleat three inches from the edge. Thereafter during the operation of the device the second cam takes over and pulls more material for the formation of the pleat so that the pleats are now five inches apart. The various parts of the device the jaws and the pleat forming device are all operated by compressed air controlled by solenoid valves. The entire machine can then be programmed from a tape in the conventional manner.

3,661,104
HIGH SPEED BLINDSTITCH SEWING MACHINE

Roy W. Fletcher, Riverdale, and Anthony D. Forte, Chicago, both of Ill., assignors to Union Special Machine Company, Chicago, Ill.

Filed Aug. 19, 1968, Ser. No. 753,654
Int. Cl. D05b *1/24*
U.S. Cl. 112—178 8 Claims

Vibration and noise reducing features are provided in a blindstitch sewing machine and its supporting means, thereby enabling the machine to perform proper stitching at much higher speeds. Includes reduction in size and weight of connection from a rotary drive shaft to a node former for oscillating the latter. Use of toothed pulleys and belt connections from a main drive shaft to two rotary members on stationary or non-rotary shafts, which members serve to operate various devices within the machine to enable it to produce a continuous series of regular, non-skip stitches of seams involving

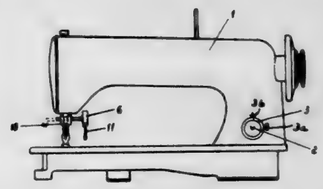


both skip stitches and non-skip stitches, by appropriate adjustment of certain parts. Involves also the provision of special means for mounting the sewing machine on a supporting table and securing the machine thereto. Means are included in the machine structure for firmly retaining both ends of an eccentric shaft which serves to support and control the movement of a looper during stitch forming operations. This has also required changes in the form of the feed bar employed.

3,661,105
SWITCH UNIT FOR CONTROLLING OPERATION OF PARTS OF OR ACCESSORIES FOR SEWING MACHINES

Gunther Rohr, Stuttgart, Germany, assignor to Union Special Maschinenfabrik G.m.b.H., Stuttgart, Wurttemberg, Germany

Filed Jan. 8, 1968, Ser. No. 696,393
Claims priority, application Germany, Jan. 10, 1967, P 16 85 071.8
Int. Cl. D05b *27/00*, *69/00*
U.S. Cl. 112—210 11 Claims



Switch mechanism for attachment as a unit to a sewing machine in a region adjacent the stitch forming zone, said switch having an operating arm or lever extending forwardly and downwardly to a point closely adjacent to one of the hands of the operator as the latter is assisting in the proper advance of the work through the stitching zone. Said switch mechanism is adapted to control the operation of electromagnetic means for operating said part or parts of the sewing machine, such as the feed mechanism thereof, such control being adapted to reverse the direction of feed of the feed mechanism to produce locking of one or both of the ends of a line of stitching being formed. It is also adapted for use in operating other devices provided as a part of or an ac-

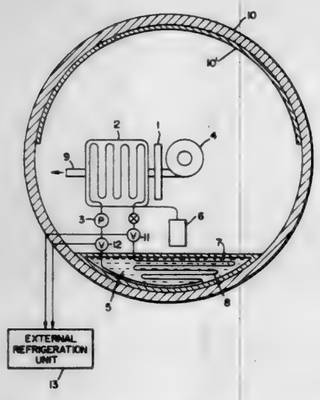
cessory for sewing machines, such as thread, thread chain, and tape cutting devices.

3,661,106
GARMENT PARTS WITH DETECTABLE STITCHING
Erie G. Huddelston, Monroe, Ga., assignor to Oxford Industries Inc.
Filed Aug. 21, 1969, Ser. No. 851,921
Int. Cl. D05b *1/00, 23/00*
U.S. Cl. 112—262 **4 Claims**



Garments are formed with stitching which carries a substance detectable when illuminated by ultra-violet light. When the stitching is detected in a process of making garments, subsequent garment making steps are actuated in response to the detection of the stitching.

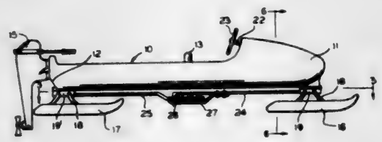
3,661,107
LIFE SUPPORT SYSTEM FOR DEEP SUBMERSIBLE VEHICLES
Richard M. Jacobs, Baton Rouge, La.; Dave W. Alexander, Houston, Tex., and Charles M. Gronroos, Vallejo, Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed Dec. 28, 1970, Ser. No. 101,789
Int. Cl. B63g *8/00*
U.S. Cl. 114—16 R **7 Claims**



A cooling system for a deep submersible vehicle having a cabin and a false floor. The cooling medium of the cooling system has a high specific heat and is stored in the normally unused space beneath the false floor. The cooling media is super-cooled or frozen by the refrigeration system of a mother ship. One heat exchanger is located in the cooling medium and another heat exchanger is located in the crew department of the cabin. A circulation system is provided between the two heat exchangers. Heat for the vehicle is provided by the vehicle passengers, electric equipment, a CO_2 scrubber and a heater if required.

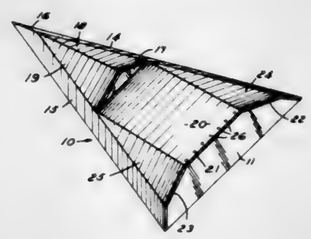
The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

3,661,108
STEERING SYSTEMS ESPECIALLY FOR WATER CRAFTS
Hugh E. Sorenson, 3818-A North 37th Street, Milwaukee, Wis.
Filed July 27, 1970, Ser. No. 58,300
Int. Cl. B63b *1/10*
U.S. Cl. 114—61 **7 Claims**



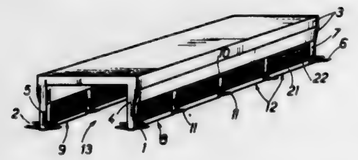
A vehicle is supported at each of its four corners by any suitable means, such as hydrofoils, pontoons, wheels, skiis, or the like. At both the front and back, oppositely disposed supports are rigidly interconnected and the rigid connection is pivotally attached to the vehicle body or hull. A tongue is individually associated with each of the rigid interconnections and the tongues are pivotally interconnected to simultaneously turn both the front and back supports.

3,661,109
BOAT HULL
Carl W. Weiland, 2900 Interlakes, Orchard Lake, Mich.
Filed Apr. 27, 1970, Ser. No. 32,287
Int. Cl. B63b *1/20*
U.S. Cl. 114—66.5 R **4 Claims**



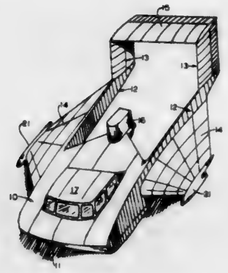
A straight-line boat hull structure of delta shape which is constructed of planar panels set at angles of attack to the water to engage the water as inclined plane lifting ramps to raise the hull in conjunction with forward movement. The panels are set at compound angles to one another creating a truss structure of inherent mechanical strength. Side panels and a transom panel define the delta shape. The side panels intersect at the prow. Bottom fore panels, a bottom aft panel, and bottom aft bilge panels form a bottom structure between the side panels and transom panel in conjunction with a hydroplane step cross panel midway in the hull.

3,661,110
FLUID CUSHION MACHINES
Dominique Etienne Louis Pont, Garches, France, assignor to Societe D'Etudes et De Developpement Des Aeroglisseurs Marius Terrestres et Amphibies S.E.D.A.M., Paris, France
Filed Oct. 15, 1970, Ser. No. 81,050
Claims priority, application France, Oct. 17, 1969, 6935675
Int. Cl. B63b *1/28, 1/38*
U.S. Cl. 114—66.5 H **18 Claims**



An air cushion vehicle adapted to move on the surface of water and comprising in combination stabilizing hydrofoils transmitting to the vehicle structure hydrodynamic lift forces co-operating with one or more fluid cushions to lift and stabilize the vehicle, and further hydrofoils which maintain the bottom edge of the lateral boundary walls for the fluid cushion near the water surface.

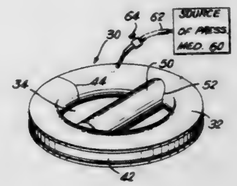
3,661,111
AEROFOILBOAT
Alexander M. Lippisch, 1416 Oakland Road, Apt. 6, Cedar Rapids, Iowa
Filed Oct. 24, 1969, Ser. No. 869,124
Claims priority, application Germany, Oct. 25, 1968, P 18 05 171.3
Int. Cl. B63b *1/38*
U.S. Cl. 114—67 A **7 Claims**



An aerofoilboat shaped with a concavity extending back from the bow, open at the front in the direction of forward motion and generally bounded at the sides and around the rear between the sides by the water surface, and with sufficient forward speed the aerofoilboat being raised and supported above the water surface primarily through an air cushion thereunder built up due to surface ground effect with forward motion of the aerofoilboat. It has a longitudinally shifting center of lift that moved toward the rear in a self adjusting trimming action as the boat moves higher and ground effects lift is lessened.

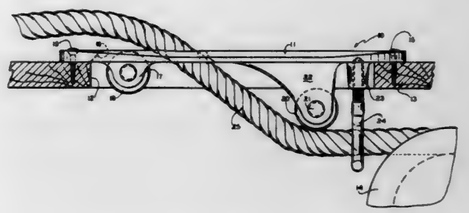
3,661,112
ANCHOR STORAGE AID
Olav Angell, 880 59th Street, Brooklyn, N.Y.
Filed Jan. 29, 1971, Ser. No. 110,866
Int. Cl. B63b *21/18*
U.S. Cl. 114—200 **9 Claims**

An anchor storage aid for supporting an anchor chain in an opening in the bulkhead of a chain locker. The storage aid includes a circular inflatable member peripherally engaged in the opening of the bulkhead and provided with a generally circular opening which with the member deflated permits the free passage of the chain therethrough. An elongated inflatable member is provided on the circular member and is



adapted to extend through the opening in one end of the links of the chain. When the circular and elongated members are inflated, the chain is held in position in the bulkhead opening and the elongated member obturates the opening in the link through which it passes to prevent the passing of water into the locker.

3,661,113
ROPE TRAVERSE DEVICE
Frank A. Benedict, 316 South Orchard Road, Syracuse, N.Y.
Filed June 15, 1970, Ser. No. 46,147
Int. Cl. B63b *21/24*
U.S. Cl. 114—206 R **1 Claim**

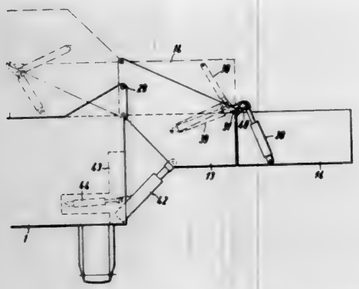


A traverse device for passing an above deck anchor rope or cable through a small opening in the deck to a below deck windlass or fastening, has a plate covering the deck opening and rollers rotatably supported substantially below the plate by ears projecting down from the fore and aft ends of the plate. The forward roller has its periphery at the top substantially tangent to the top of the plate and the aft roller has its periphery at the bottom aligned with the pulley or drum of the windlass. The forward roller is located in a rope guiding slot through the plate and the plate may have rope guiding means pendant therefrom for guiding the cable from the windlass pulley to the aft roller. Alternatively, a grooved slide may replace the aft pulley.

3,661,114
AMPHIBIOUS VEHICLE
Gerhard Wagner, Mainz-Lerchesberg; Friedrich Kroll, Mainz; Horst Gleich, Heilbronn-Bockingen, and Georg Kessler, Oberwesel, all of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Koln-Deutz, Germany
Filed June 8, 1970, Ser. No. 44,025
Claims priority, application Germany, June 10, 1969, P 19 29 246.7
Int. Cl. B60f *3/00*
U.S. Cl. 115—1 B **15 Claims**

An amphibious vehicle having an elongated bouyant main body with ground wheels at the ends for ground travel and

propulsion means for water travel. Auxiliary bouyant bodies on top of the main body can be pivoted outwardly thereon at opposite sides of the main body to form a platform for ferrying or for a bridge. When the auxiliary bodies are pivoted inwardly on top of the main body, the vehicle is compact and



can be transported in a rail car. When the auxiliary bodies are pivoted outwardly, a wide platform is provided. Differing positions for use are realized by folding operations relative to the auxiliary bodies with pure pivoting movements. Land vehicle use, floating body use, and ramp use are feasible in compact and folded apart configurations of auxiliary bodies.

3,661,115
VEHICLE THEFT ARRESTER

Abraham J. Rosenstein, 14 Prospect Lane, New Marlboro, Mass.

Filed Nov. 13, 1970, Ser. No. 89,349
Int. Cl. B60m *25/00*
U.S. Cl. 116—33 10 Claims



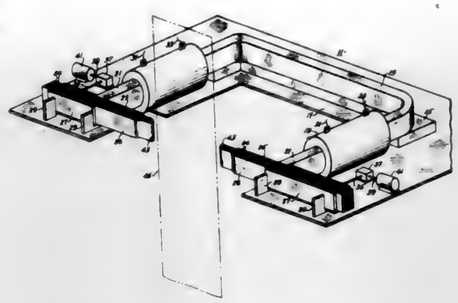
A sensing device detects initial movement of the vehicle and actuates a trigger mechanism of a device which is aimed to shoot a projectile to deflate and destroy the tire.

3,661,116
MAGNETIC STABILIZING MEANS FOR STRIP

Isadore Moskowitz, and George F. Lemon, Jr., both of Baltimore, Md., assignors to Bethlehem Steel Corporation

Filed Nov. 23, 1970, Ser. No. 91,721
Int. Cl. B05c *11/12*
U.S. Cl. 118—6 15 Claims

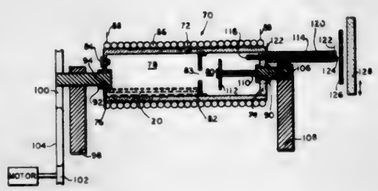
Tapered poles of an electromagnet are positioned adjacent the edges of a magnetic metal strip as it passes from the surface of a coating bath or the like to stabilize the strip against flutter and other lateral stability disturbing influences.



3,661,117
APPARATUS FOR DEPOSITING THIN LINES

William L. Cornelius, Mountain View, and John G. Martner, Atherton, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed Dec. 3, 1969, Ser. No. 881,746
Int. Cl. C23c *13/12*
U.S. Cl. 118—48 8 Claims



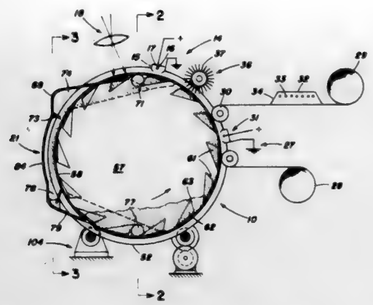
An apparatus for depositing thin lines of conducting, semiconducting or dielectric material on a substrate including a crucible having a vaporizable material charge receiving chamber and a vapor chamber. A first tube for introducing a flow of carrier gas and a heated capillary tube penetrate the vapor compartment. On heating the crucible to a temperature above the evaporation temperature of the charge, the charge evaporates and is pushed through the capillary tube by the carrier gas. The stream of carrier gas and vapor deposits dots or lines on the target. Patterns are produced by translating the target with respect to the crucible.

3,661,118
ELECTROSTATIC DEVELOPMENT

Stephen F. Royka, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 6, 1971, Ser. No. 104,269
Int. Cl. G03g *13/00*
U.S. Cl. 118—636 11 Claims

Electrostatographic development apparatus in which developer is stored in the interior of a movable recording member, such as a rotatable drum. The interior of the drum is provided with buckets which are rotated therewith and scoop developer from the lower portion of the drum and convey the developer to an upper portion of the drum at which point the developer is removed from the interior of the drum and cascaded over the recording surface. The developer

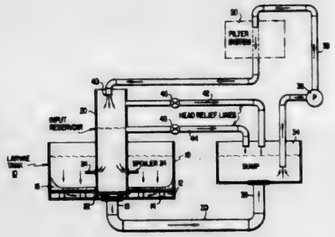


which has cascaded over the surface is then returned to the interior of the drum.

3,661,119
LARVAE REARING TANK AND CIRCULATION SYSTEM FOR FISH CULTURE

Graham Hodge Sanders, Elizabeth City, N.C., assignor to Oceanography Mariculture Industries, Inc., Riviera Beach, Fla.

Filed Sept. 11, 1970, Ser. No. 71,512
Int. Cl. A01k *63/00*
U.S. Cl. 119—3 8 Claims



A larvae rearing tank and a water circulation and filtration system associated therewith which provides a high rate of water exchange in the larvae tank with minimum turbulence and water flow in the direction of the tank walls, thereby to provide optimum conditions within the tank for insuring survival of the fish larvae therein. The larvae tank includes a granular layer of filtrant material supported in spaced relation from its bottom end, an outlet pipe for discharging water from the bottom end, and an input reservoir for supplying water thereto above the level of the granular filtrant material. The reservoir is embodied in a container of smaller cross-sectional area than the larvae tank which is positioned within the tank and has a plurality of horizontally extending hollow rods which are sealed on the ends thereof and have a plurality of small holes therein through which the water is transferred from the reservoir to the larvae tank with an initial circular flow pattern. Water from the outlet of the larvae tank is pumped to a sump positioned at substantially the same level as the larvae tank, and from there it is pumped through a filter system and discharged into the top of the input reservoir, whereby the input rate of water being delivered to the larvae tank is determined by the pressure head in the input reservoir created by the height of the filtered water therein which, in turn, is controlled by a valved head-relief line leading to the output sump.

3,661,120
MILKING INFLATIONS

Don F. Siddall, Akron, and Vincent L. Hoffman, Summit, both of Ohio, assignors to The Norton Company, Worcester, Mass.

Filed Feb. 6, 1970, Ser. No. 9,197
Int. Cl. A01j *5/04*
U.S. Cl. 119—14.49 4 Claims

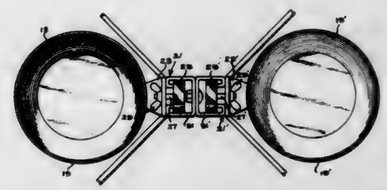


An improvement in milking inflations having a teat-receiving collar wherein the inner periphery of the collar is of generally uniform thickness and when projected onto a plane passed through the center of the inner periphery and perpendicularly to the major axis of the body portion of the inflation has a generally circular configuration with a perimeter of finite length. The inner periphery of the collar is formed of a series of contiguous wave forms representing periodic oscillations above and below the aforementioned plane, the true length of the inner periphery, along the wave forms, exceeding the finite length of the projected perimeter by a given distance, half of the true length falling above and half falling below said plane.

3,661,121
DOG FEEDING APPARATUS

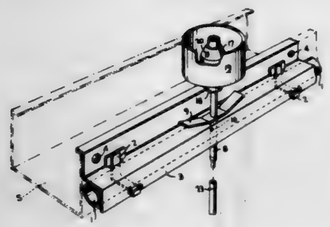
Ronald P. Zielin, 3760 North Harding, Chicago, Ill.

Filed Feb. 9, 1970, Ser. No. 9,577
Int. Cl. A01k *05/00*
U.S. Cl. 119—61 2 Claims



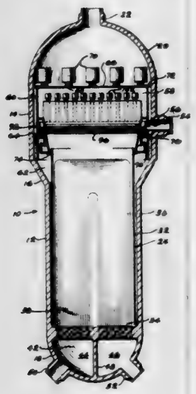
Dog feeding apparatus in which feed dishes are supported on a standard for selective positioning of the feed dishes at appropriate heights for the size and breed of dog.

3,661,122
WATERING SYSTEM FOR FOWL
Charles H. Willauer, Jr., 105 California Road, Quakertown, Pa.
Original application Jan. 10, 1958, Ser. No. 696,893, now Patent No. 3,559,621, dated Feb. 2, 1971. Divided and this application Apr. 13, 1970, Ser. No. 27,829
Int. Cl. A01k 07/00
U.S. Cl. 119—72 3 Claims



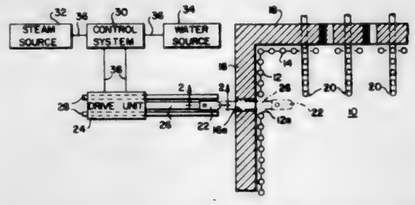
The invention disclosed is an improved low-cost system for watering fowl which maintains without overflow a supply of water at one or more drinking stations, with means for stopping the supply of water at each station individually. A new and simplified supply valve at each station which eliminates the usual causes of valve failure is also a feature of the system disclosed. By utilizing feed troughs as the framework for the system, the invention requires no duplicating supporting structure.

3,661,123
STEAM GENERATOR FEEDWATER PREHEATER
Nicholas D. Romanos, Chattanooga, Tenn., assignor to Combustion Engineering Inc., Windsor, Conn.
Filed Dec. 31, 1970, Ser. No. 103,188
Int. Cl. F22b 1/16
U.S. Cl. 122—34 14 Claims



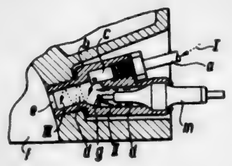
Feedwater preheating apparatus for a shell and tube type vapor generator is disclosed incorporating a plurality of nozzles arranged to discharge cold feedwater into a collector conduit disposed in a region of the unit containing heated fluid. Inductor means are provided to aspirate heated fluid into the collector conduit for mixing with the feedwater whereby the latter is heated.

3,661,124
APPARATUS AND PROCESS FOR SLAG DEPOSIT REMOVAL
Justin P. Winkin, Fairlawn, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.
Filed June 19, 1970, Ser. No. 47,694
Int. Cl. F28g 3/00
U.S. Cl. 122—392 4 Claims



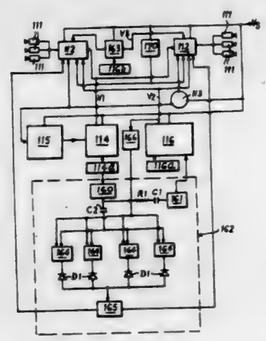
An apparatus for removing slag from the heat absorption surface in the furnace section and convection section of a heat exchanger including at least one blast nozzle disposed proximate to the surface and having at least two outlet orifices. A first fluid, such as water, is delivered to one of the orifices, and a second fluid, such as steam, is delivered to the other orifice to create a thermal shock and mechanical force which causes the slag deposits to separate from the heat absorption surface.

3,661,125
METHOD AND APPARATUS FOR ADAPTING ENGINE TO STRATIFIED CHARGE OEPRATION
Friedrich Stumpfig, Bismarckstr. 31, Nuraberg, Germany
Filed Jan. 29, 1968, Ser. No. 701,290
Claims priority, application Germany, Jan. 27, 1967, St 26424
Int. Cl. F02b 17/00
U.S. Cl. 123—32 ST 8 Claims



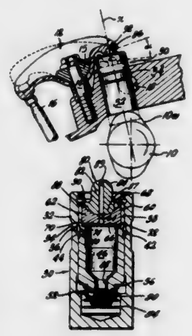
Method and apparatus for operating a two-cycle or four-cycle externally excited combustion engine with external ignition means where at least the fuel required for the ignition is introduced without admixture of main air into an evaporating chamber open toward the combustion chamber where it is precipitated against a non-water cooled wall that is hot during operation and which is elongated and encompasses the vaporizing chamber, is vaporized and is pushed to the ignition point in the vaporizing chamber together with some air until ignition takes place and where immediately after the ignition burning mixture is blown out of the vaporizing chamber into the combustion chamber, where the introduction of the fuel into the vaporizing chamber begins preferably at the end or shortly after the power stroke, after which during the compression stroke compressed air or compressed air-fuel mixture is pushed out of the combustion chamber into the vaporizing chamber, is mixed therein with vaporized fuel and the mixture is pushed to the ignition point provided in the vaporizing chamber, while simultaneously the burned out fuel gas in the vaporizing chamber is moved into a closed end of the vaporizing chamber and is compressed there, whereupon after the ignition burning mixture is blown away from the ignition point in the form of a bunched, very rapid stream of flames through the vaporizing chamber and, subsequently, the last parts of the burning mixture are displaced in the vaporizing chamber toward the combustion chamber by the burned out fuel gas.

3,661,126
FUEL INJECTION SYSTEMS
Albert E. Bexendale, Coventry, England, assignor to Brico Engineering Limited, Coventry, England
Filed Sept. 10, 1969, Ser. No. 856,758
Claims priority, application Great Britain, Sept. 12, 1968, 43/503/68
Int. Cl. F02b 3/10, 33/00
U.S. Cl. 123—32 EA 1 Claim



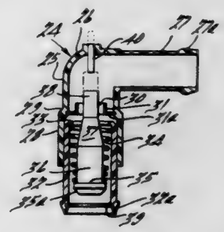
The invention relates to a fuel injection system wherein enrichment of the fuel is effected, when the engine is conditioned for acceleration, by means applying to the electromagnetic fuel injection valves, further energizing pulses in addition to those which are applied to the injectors during normal operation of the engine.

3,661,127
HYDRAULIC TAPPET WITH SWIVELABLY MOUNTED PUSHROD
Richard D. Cornell, Muskegon, Mich., assignor to Johnson Products, Inc., Muskegon, Mich.
Filed May 7, 1970, Ser. No. 35,527
Int. Cl. F01l 1/14; F01m 9/10
U.S. Cl. 123—90.27 4 Claims



A hydraulic tappet in an overhead cam engine characterized by a rocker arm seat swivelably mounted in the tappet and with respect to the rocker arm so as to compensate for the axial misalignment of the rocker arm during the reciprocation of the tappet.

3,661,128
CRANKCASE VENTILATION
Robert W. Eshelman, Ann Arbor, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed May 25, 1970, Ser. No. 40,013
Int. Cl. F02m 25/06; F02f 9/00
U.S. Cl. 123—119 B 7 Claims



The crankcase for an internal combustion engine is vented to the fuel-air inlet induction passage via a ventilation valve comprising a tubular valve housing having a comparatively small metering orifice which cooperates with a movable valve element responsive to decreasing pressure in the induction conduit for restricting the orifice. A coil spring yieldingly opposes closing movement of the valve element and is seated on a tubular spring retainer adjustably telescoped into the upstream end of the valve housing to effect a predetermined rate of gas flow through the orifice when a predetermined low pressure differential corresponding to part load operation of the engine is applied across the orifice. Downstream of the orifice, a cylindrical movement limiting plunger extends through an opening in the sidewall of an elbow in the housing and is secured at a position adjusted to engage and limit closing movement of the valve element to effect a predetermined low rate of gas flow through the orifice when a predetermined high pressure differential is applied across the orifice corresponding to engine idling.

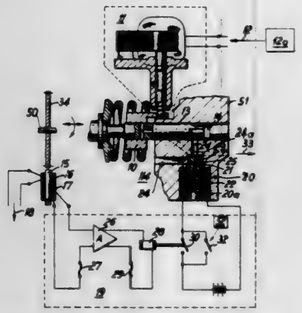
3,661,129
FUEL INJECTION APPARATUS
Junzo Uozumi, and Junki Iwata, both of Aichi Prefecture, Japan, assignors to Aisan Kogyo Co., Ltd., Chita-gun, Aichi Pref., Japan
Filed July 16, 1969, Ser. No. 842,310
Int. Cl. F02m 61/02
U.S. Cl. 123—119 2 Claims



A fuel injection apparatus including a fuel pump and an air pump. The outputs of the pumps interact and the output pressure of the air pump is controllable to thereby control the output of the fuel pump. In one embodiment, the air and fuel are injected separately into an intake cylinder of a spark-ignition combustion engine through opposing inlets, the inlets being aligned so that the injected air is directed toward the fuel inlet to control the amount of fuel entering the cylinder. In a second embodiment, the outputs from the pumps con-

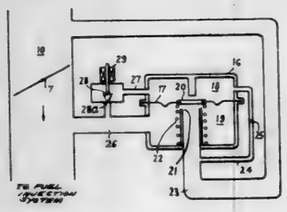
nect with a common fluid duct through which the mixed fuel and air are injected into the intake.

3,661,130
SAFETY DEVICE FOR LIMITING THE ROTATIONAL SPEED OF INTERNAL COMBUSTION ENGINES
Franz Eheim, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Mar. 17, 1970, Ser. No. 20,276
Claims priority, application Germany, Mar. 19, 1969, P 19 13 808.0
Int. Cl. F02d *5/00*
U.S. Cl. 123—140 A **9 Claims**



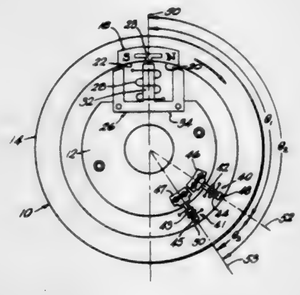
An electronically controlled diesel engine wherein the high-pressure chamber of the fuel injection pump is connected with the low-pressure chamber by a passage controlled by an electromagnetic valve which opens or closes when the rotational speed of the engine reaches a maximum permissible value. The speed is detected by an electrical counter which effects opening of the valve if the latter is installed in a passage which conveys fuel from the high-pressure chamber, or closing of such valve if the latter is installed in a passage which supplies fuel to the high-pressure chamber, whenever the engine speed reaches the maximum permissible value. The electrical connection between the speed counter and the valve comprises an amplifier whose input circuit contains an inductance of the speed counter and a first safety fuse and whose output circuit contains a relay switch for the circuit of the winding in the valve and a second safety fuse. The circuit of the winding can be completed by an auxiliary switch in response to actuation of the starter for the engine.

3,661,131
SPEED CONTROLS
Brian Hugh Croft, Coventry, England, assignor to Brico Engineering Limited, Coventry, England
Filed Nov. 28, 1969, Ser. No. 880,563
Claims priority, application Great Britain, Dec. 6, 1968, 58,195/68
Int. Cl. F02d *1/04, 11/10, 3/00*
U.S. Cl. 123—140 J **11 Claims**



The invention relates to speed control systems for controlling the rotational speed of an internal combustion engine and provides means for controlling the engine utilizing a fuel injection system idling speed so as to maintain it at a substantially constant pre-selected value which is virtually independent of ambient conditions and engine load conditions. Different types of valve means are described for controlling the flow of air from a point at substantially atmospheric pressure to a point downstream of the engine throttle valve. Control circuits are also described for controlling the valve means in accordance with the difference between a pre-selected value of engine idling speed and the actual engine idling speed.

3,661,132
IGNITION CIRCUIT WITH AUTOMATIC SPARK ADVANCE
James B. Farr, Ann Arbor, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.
Continuation of application Ser. No. 684,052, Nov. 17, 1967, now abandoned. This application Dec. 15, 1969, Ser. No. 882,355
Int. Cl. F02p *3/06*
U.S. Cl. 123—148 E **15 Claims**

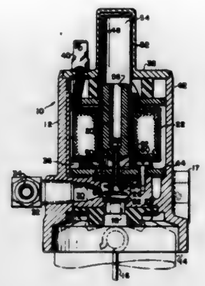


A solid state capacitor discharge ignition system for use in a single-cylinder engine having a magneto for an electrical energy source wherein the capacitor is discharged through a silicon controlled rectifier in response to trigger signals generated by a trigger assembly mounted on the rotor and stator of the magneto. The trigger assembly generates at least two discrete spaced pulses at running and cranking speeds, and the spacing between the two pulses corresponds to a desired shift in the engine timing between cranking and running speeds. The trigger assembly, the silicon controlled rectifier and the circuit connection therebetween are such that both pulses are applied to the controlled rectifier at all engine speeds; but the retarded ignition pulse is effective at cranking speeds and the advance pulse is effective at running speeds.

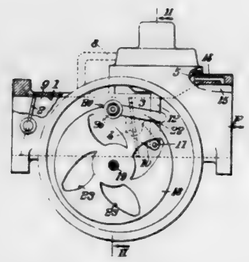
3,661,133
ENGINE STARTING AID
Leroy L. Rasch, Springfield, Ill., assignor to Stewart-Warner Corp., Chicago, Ill.
Filed Jan. 13, 1971, Ser. No. 106,148
Int. Cl. F02m *1/16*
U.S. Cl. 123—180 R **8 Claims**

The following specification describes an assembly for delivering a predetermined amount of engine starting aid fluid to an engine by means of a passageway through a solenoid armature placed in communication with the valve of a starting aid can on energization of the solenoid coil to communicate the starting aid to a chamber of known volume. On

deenergization the armature drives the fluid in the chamber through the passageway to the engine and the fluid is maintained separate from the electrical circuitry without the use of moving seals.



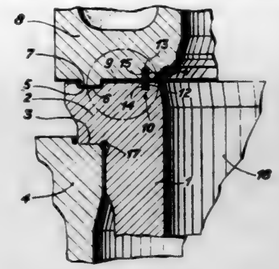
3,661,134
FUEL FEED DEVICES FOR INTERNAL COMBUSTION ENGINES
Andre Louis Mennesson, Neuilly-sur-Seine, France, assignor to Societe Industrielle De Brevets Et D'Etudes S.I.B.E., Neuilly-sur-Seine, France
Filed July 21, 1970, Ser. No. 56,879
Claims priority, application France, July 22, 1969, 6925000
Int. Cl. F02m *51/00*
U.S. Cl. 123—139 AW **8 Claims**



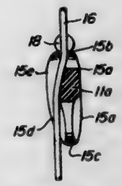
The fuel feed device includes a valve actuated by an electromagnet, which is energized over a variable fraction of each revolution of a rotating member driven by the engine. To modify the moment of the injection, means sensitive to the load on the engine alter the angular position of the rotary member with respect to the engine drive take-up means. The modifying means can be a differential gear device.

3,661,135
WET CYLINDER LINER FOR PISTON-TYPE INTERNAL COMBUSTION ENGINES
Kurt Weiss, Chatswood, New South Wales, Australia, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Filed July 9, 1968, Ser. No. 743,571
Claims priority, application Switzerland, July 12, 1967, 9958/67
Int. Cl. F16j *15/08*
U.S. Cl. 123—193 **6 Claims**

There is disclosed for piston-type internal combustion engines a replaceable wet liner construction in which an annular packing fits into coaxial open grooves, one in a flange at the top of the liner and the other in the cylinder head, facing each other across a gap between the head and liner which extends from the inside wall of the liner radially out across the top of the flange of the liner to a location at which the flange is compressed between the engine block and head. Particular shapes are shown for the packing ring.

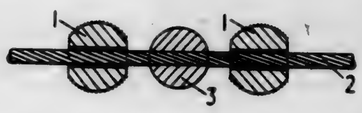


3,661,136
BOW CORD RETRACTING AND RELEASING DEVICE
Melvin H. Bradshaw, 62 N. 4th East, Monb, Utah
Filed Aug. 26, 1970, Ser. No. 67,022
Int. Cl. F41c *19/00*
U.S. Cl. 124—35 **6 Claims**



A unitary rigid body shaped to provide a hand grip portion and a bowstring-engaging trigger member disposed forwardly of the grip portion and interconnected therewith by a stem portion. The hand grip portion is held in an upright position when the body is being used to retract a bow string. The trigger member is elongate longitudinally of the bow string when engaged and is rearwardly channeled longitudinally thereof but canted outwardly of the stem from one end of such trigger portion toward the opposite end thereof the trigger member terminates in a smooth and tapering mergence with the adjacent lateral face of the trigger member, preferably intermediate the length thereof, to provide an outwardly canted hook formation capable of securely holding the bow string until the rigid body is tipped forwardly to effect easy and smooth release of such bow string.

3,661,137
SAW ELEMENTS
Derek Henry George Prowse, and Stephen Derek Prowse, both of Marina-Di-Carrara, Italy, assignors to Industrial Distributors (Sales) Limited, London, England
Filed Oct. 7, 1969, Ser. No. 864,506
Claims priority, application Great Britain, Oct. 18, 1968, 49,578/68
Int. Cl. B28d *1/08*
U.S. Cl. 125—21 **10 Claims**



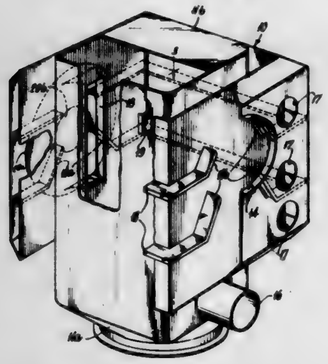
A saw element in which an elongate carrying member for example a wire has threaded thereon a plurality of hard

beads free to rotate on the wire and having outer abrasive surfaces which are convex in the direction of the carrying member, with these abrasive elements which preferably include diamond particles as an abrasive medium being interspersed with non-abrasive spacer elements which grip the wire.

3,661,138
EXTERIOR WALL STRUCTURAL MEMBER FOR A HEAT EXCHANGER IN A HOT-AIR HEATER

Vernon M. Barnes, Jr., Richmond, Va., assignor to Texaco Inc., New York, N.Y.

Filed June 29, 1970, Ser. No. 50,575
Int. Cl. F24c *3/00*; F24h *3/06*
U.S. Cl. 126—91 R 4 Claims

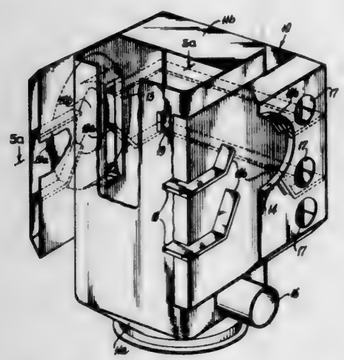


An outside wall panel for a heat exchanger in an air heater furnace wherein the cross-over port structure from the first stage of a heat exchanger is an elongated rectangular inlet into the second stage of the heat exchanger, which has a number of spaced flanges therein for guiding the flow of the products of combustion more evenly in their passage to the outlet of the second stage, the panel having a pair of concave-convex deformations joined together by gradual curves to define a dimple.

3,661,139
EXTERIOR WALL STRUCTURAL MEMBER FOR A HEAT EXCHANGER IN A HOT-AIR HEATER

Newton P. Randall, and Brian J. Lewis, both of Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed June 29, 1970, Ser. No. 50,576
Int. Cl. F24c *3/00*; F24h *3/06*
U.S. Cl. 126—91 R 5 Claims

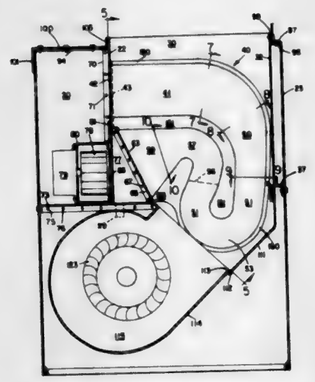


An outside wall panel for a heat exchanger in an air heater furnace wherein the cross-over port structure from the first stage of a heat exchanger is an elongated rectangular inlet into the second stage of the heat exchanger, which has a number of spaced flanges therein for guiding the flow of the products of combustion more evenly in their passage to the outlet of the second stage, the panel having one or more deformations or corrugations based on an isotherm pattern and raised from a flat surface or may be in the form of a pair of concave-convex deformations joined together by gradual curves to define a dimple, this pair also being based on an isotherm pattern.

3,661,140
GAS-FIRED FURNACE

William F. Raleigh, Hacienda Heights, Calif., assignor to Carrier Corporation, Syracuse, N.Y.

Filed June 17, 1970, Ser. No. 47,041
Int. Cl. F24h *3/06*
U.S. Cl. 126—110 R 7 Claims



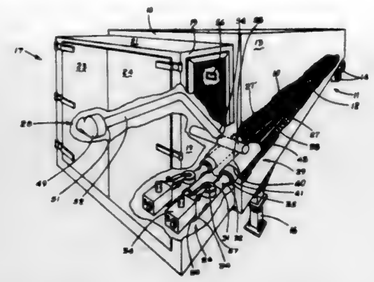
Each heat exchanger cell mounted in the heat tunnel has an elongated flue gas passage of serpentine form. One end of the passage is formed with a burner inlet combustion chamber with means to receive a burner, and the opposite end of the passage communicates with a flue gas discharge opening connected to an induced draft system. The intermediate portion of the flue gas passage extends through a return bend section which is located at the inlet end of the heat tunnel. The sides of the heat cell diverge in a direction from the return bend portion toward the inlet combustion chamber. A blower creates an air flow against the return bend portion and through the tunnel in contact with the sides of the cells. The heat exchanger cells and the sides of the heat tunnel are arranged to provide a vaned-diffuser effect in the heat tunnel.

3,661,141
HEATING SYSTEM FOR STORAGE TANK

Willard L. Salemink, 209 W. Sixth Street, West Liberty, Iowa

Filed July 10, 1970, Ser. No. 53,756
Int. Cl. E01c *19/45*
U.S. Cl. 126—343.5 A 3 Claims

A system for heating asphaltic cement in a storage tank. The system including a burner, a pipe fluidly connected to the burner and submerged in the cement, a dissipator enclosing the pipe adjacent to the burner to prevent "coking" of the cement disposed adjacent thereto, and a vacuum pump fluidly connected to the pipe for circulating heated gases through the pipe. The dissipator is fluidly connected to the pipe and to the atmosphere such that the vacuum pump also draws atmospheric air into the dissipator to cool the pipe adjacent the burner, which air is heated thereby and drawn

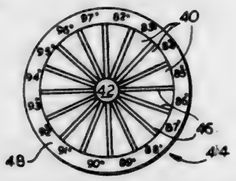


through the system to aid in heating the cement. Controls may be provided to automatically activate the burner and pump.

3,661,142
TEMPERATURE-SENSING PATCH

Eric Flam, East Brunswick, N.J., assignor to Johnson & Johnson

Filed Feb. 5, 1970, Ser. No. 8,902
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 H 16 Claims

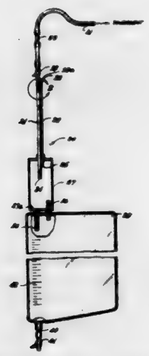


This temperature-sensing patch comprises a flexible backing web having a pressure-sensitive adhesive coated on one side and a plurality of discrete temperature-sensitive, color-responsive indicators adhered on the other side thereof. Each of the indicators comprises a layer of encapsulated liquid crystals which change in color responsive to temperature changes within a predetermined temperature range.

3,661,143
MEDICAL APPARATUS FOR DRAINAGE, COLLECTION AND MONITORING OF BODY FLUIDS

Melvyn L. Henkin, 19640 Greenbriar Drive, Tarzana, Calif.

Filed June 23, 1969, Ser. No. 835,619
Int. Cl. A61b *5/10*
U.S. Cl. 128—2 59 Claims



A sealed fluid drainage system, particularly well adapted for urine drainage, collection and monitoring, including parallel drainage tubes in fluid communication via a venting passage, the tubes and associated drip chambers being physically arranged to provide a difference in hydrostatic pressure for initiating liquid flow and completely draining liquid from the tubes and chambers. Highly reliable valving and flexible drip chamber configurations enable further enhancement of unidirectional flow and system line clearing capabilities. An effective gas gap is also provided to minimize the possibility of ascending infections in the system. Fluid collection is accomplished in a sealed, multi-chamber, flexible, calibrated container, with fluid being first directed into the smallest chamber and overflowing successively or being deliberately emptied into larger capacity chambers. Suitably located drain tubes permit selective sampling of liquid from the smallest chamber or complete emptying of the container from the largest chamber.

3,661,144
SUCTION APPARATUS FOR BODY CAVITIES

Jorgen Albrecht Jensen, Sonderborg, and Jorgen Gars Jensen, Farum, both of Denmark, assignors to Hans Gram, Klampenborg, Denmark

Filed Sept. 16, 1969, Ser. No. 858,305
Claims priority, application Denmark, Sept. 17, 1968, 4454/68
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 B 5 Claims



An apparatus for removal, by scraping or cutting, of a sample of the internal wall of body cavities and collecting the sample in a container. It consists of a cylindrical container, adapted to be held in one hand and carrying a cannula, the end of which is closed, with a sharp-edged slot being provided closely behind the end. The cannula, during use, is rigidly connected with the container so that it can be manoeuvered therewith using the container as a handle device. The container has a sieve to longitudinally divide the container and to retain the sample, while permitting passage of liquids therethrough, and is connectable with a vacuum tube.

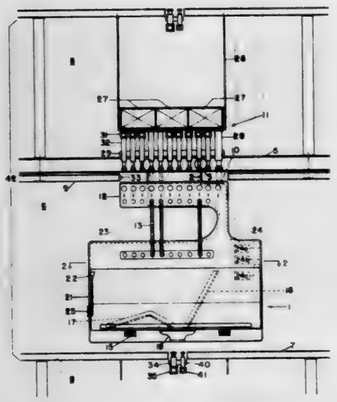
3,661,145
ENVIRONMENTAL CONTROL CAPSULE AND SYSTEM THEREFOR

William N. Breger, 193 West 10th Street, New York, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,791
Int. Cl. A61b *19/00*
U.S. Cl. 128—2 7 Claims

A capsule for the storage and movement of patients in hospitals providing all necessary life support systems in a controlled environment for the patient, as well as all necessa-

ry monitoring of the patient's need as a part of the system, together with a plurality of other similar capsules movably mounted on track means so that the patient, while in the capsule, can be moved to various areas within a hospital such as

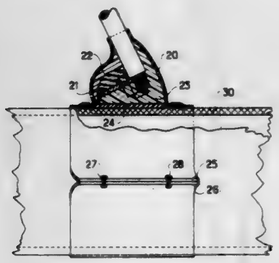


the nursing area, the operating room, the radiology room and so forth, on either the same or separate levels, together with control means for operating the capsule and its movement within the various areas.

3,661,146
TRANSDUCER ARRANGEMENT FOR MEASURING BLOOD FLOW

Pierre Peronneau, Paris, and Fernand Leger, Gif-sur-Yvette, both of France, assignors to Compagnie Generale D'Electricite, Paris and Agence Nationale de Valorisation de la Recherche (Anvar), Recherche (Anvar), France

Filed Dec. 31, 1969, Ser. No. 889,401
Claims priority, application France, Dec. 31, 1968, 183135
Int. Cl. A61b 5/02
U.S. Cl. 128—2.05 F 1 Claim



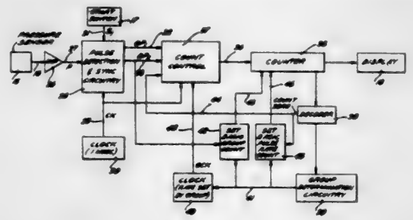
Perivascular transducer whose piezoelectric plate is bordered on one side thereof by a reflecting and/or absorbing mass and which is equipped with two plastic bands adapted to form a collar around the vessel which is intended to be subjected to the measurement.

3,661,147
PULSE RATE COUNTER AND DISPLAY AND METHOD OF OPERATION

William L. Mason, 1630 West Oak Avenue, Fullerton, Calif., and Donald J. Lantz, 1520 Dana Place, Fullerton, Calif.

Filed Nov. 10, 1969, Ser. No. 875,285
Int. Cl. A61b 5/02
U.S. Cl. 128—2.05 T 17 Claims

A pulse rate counter and display applicable for indicating pulse rate of the human body. A counter is advanced at a preset clock rate to measure the time duration between two consecutive pulse beats. Appropriate circuitry determines within which of a group of pulse rate ranges this measured time duration falls. The minimum time per pulse for the determined group is set into the counter and the counter decremented to zero at the preset clock rate. The maximum

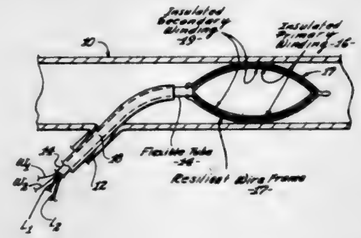


pulse rate of the group then is preset into the counter and the counter decremented at a selected rate corresponding to the approximate slope of the curve of pulse rate versus time per pulse for the determined group. Decrementing terminates upon occurrence of the third consecutive pulse beat, the contents of the counter then indicating the measured pulse rate.

3,661,148
INDUCTION TYPE ARTERY GAGE

Alexander Kolin, Bel Air, Calif., assignor to Regents of the University of Calif., Berkeley, Calif.

Filed Apr. 13, 1970, Ser. No. 27,516
Int. Cl. A61b 5/02
U.S. Cl. 128—2.05 P 5 Claims



An improved induction type gage is provided which is intended to be used to measure the diameter of a blood vessel within a living subject, and to provide a means for detecting and measuring slight pulsating variations in the diameter of the blood vessel. The gage includes, for example, a collapsible frame and primary and secondary electric inductance windings attached to the frame. The gage may be introduced percutaneously, for example, into the blood vessel to be measured, and it is constructed to constrict as it is so introduced and subsequently to expand when it has entered the blood vessel to span the inner diameter of the blood vessel. An alternating electric current is then passed through the primary winding and the resulting voltage induced in the secondary winding is measured and is an indication of the diameter of the blood vessel.

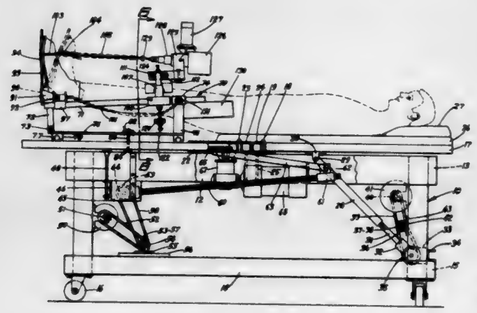
3,661,149
MECHANICAL EXERCISING DEVICE

Charles A. Ferries, 403 West Avenue, South, La Crosse, Wis.

Filed May 27, 1970, Ser. No. 40,864
Int. Cl. A61h 1/02
U.S. Cl. 128—25 R 15 Claims

A mechanical exercising or physical therapy device for the controlled progressive stretching and exercise of the legs of

persons afflicted by diseases characterized by contracture of tendons and muscles of the legs and back. The device includes a table on which the patient may lie. It is provided with a pivoted back rest which can be raised and lowered mechanically and two individual leg rests which can be raised and lowered and also swung to either side, either individually or together. Each leg rest includes a frame in which the leg is

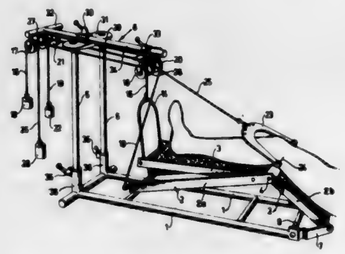


supported. At its extremity, there is a mechanism for shackling the foot. An adjustable bridge member over the knee permits application of pressure to the knee in controlled increments to force the knee down to straighten the leg and stretch the muscles. A further adjustable mechanism is provided for pivoting the foot on its ankle to stretch the heel cords.

3,661,150
SPLINT FOR THE TREATMENT OF FRACTURED LEGS

Curt Y. G. Petersson, O. Vallgat. 49, Lund, and Goran A. Widolf, KSA 43012, Apelvikastrand, both of Sweden

Filed Nov. 24, 1969, Ser. No. 879,024
Claims priority, application Sweden, Nov. 26, 1968, 16065/68
Int. Cl. A61f 5/04
U.S. Cl. 128—85 6 Claims



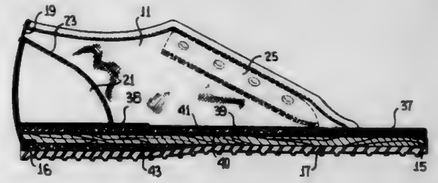
A synergical splint for the treatment of fractured legs is provided with a frame, a support for the femur pivotally connected to the frame and a support for the tibia-fibula pivotally connected to said femur support, said supports being pivotable independently of each other.

3,661,151
SURGICAL SHOE

Errol A. Schoenbrun; Murray M. Lichtenstein, and Bernard Podos, all of El Paso, Tex., assignors to PSL Industries, Inc., El Paso, Tex.

Filed Feb. 6, 1970, Ser. No. 9,199
Int. Cl. A61f 5/04
U.S. Cl. 128—87 R 7 Claims

A shoe converted to aid post-operative rehabilitation of the foot and to serve as a splint or cast for foot fractures is provided with rigid plywood midsole to restrict undesirable foot movement during ambulation. The shoe upper is modified by eliminating the conventional toe box and tongue so that the shoe can be readily adjusted to compensate for swelling of the foot constriction loosening lacing placed through eyelets in the upper. Elimination of the toe box and

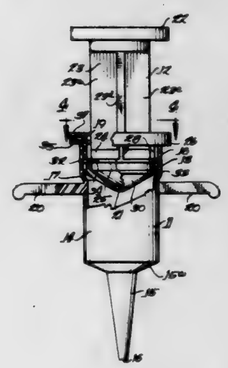


tongue a also decreases post-operative constriction of the foot within the shoe contributing to undesirable swelling. In all other respects the shoe remains unmodified, to allow both feet to be the same height for the walking surface when a normal shoe is worn on the other foot, for cosmetic purposes, and to permit ambulation with maximum comfort and convenience.

3,661,152
SYRINGE WITH SELF-RETURNABLE PLUNGER

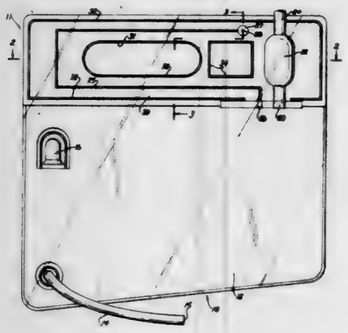
Frank R. Belch, Wilmette, and Glenn L. Beall, Garnee, both of Ill., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed May 8, 1970, Ser. No. 35,846
Int. Cl. A61m 1/00
U.S. Cl. 128—235 12 Claims



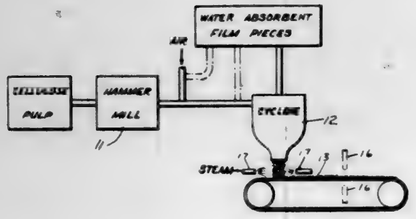
A plunger-type syringe is provided in which the plunger returns after it is depressed. The syringe includes an elastic membrane which is received by the tubular barrel and interposed between the barrel and the plunger. A portion of the membrane is secured to the end of the barrel and is thereby restrained against longitudinal movement, and another portion is engagable with the plunger for longitudinal movement therewith within the barrel. As the plunger is depressed, the membrane is stretched and provides a force tending to return the plunger to its original position. When the plunger is released, the elastic membrane returns the plunger.

3,661,153
BODY FLUID DRAINAGE BAG
Edgwin R. Polk, Ferde, N.J.; Sidney Polansky, Great Neck, N.Y., and Louis Mirando, Upper Saddle River, N.J., assignors to Packaging Associates Inc.
Filed Mar. 27, 1970, Ser. No. 23,146
Int. Cl. A61f 5/44
U.S. Cl. 128—275 7 Claims



A drainage bag including a limp fluid receptacle portion and a stiffer header secured to the upper edge of the receptacle portion. The header is integrally formed with a drip chamber, and may also be formed with an air vent, a carrying and suspension hole, and stiffener ridges.

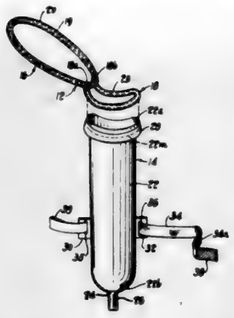
3,661,154
WATER-ABSORBING MATERIAL
David Torr, P. O. Box 1, Oyster Bay, N.Y.
Continuation-in-part of application Ser. No. 784,699, Dec. 18, 1968, now abandoned. This application May 26, 1969, Ser. No. 830,205
Int. Cl. A61f 13/16
U.S. Cl. 128—284 6 Claims



A sheet which is a blend of water-insoluble fibers and pieces of film of a dry material which converts to a gel quickly on contact with a large amount of water. The blend is formed by suspending the fibers and film pieces in air. The sheet is useful in structures designed for absorbing body fluids, e.g. disposable diapers.

3,661,155
FEMALE URINARY INCONTINENCE DEVICE
Rosemary Lindan, 1404 Dorsh Road, Cleveland, Ohio
Filed Feb. 24, 1970, Ser. No. 13,684
Int. Cl. A61f 5/44
U.S. Cl. 128—295 11 Claims

A female urinary incontinence device including a pessary-like support, a deformable loop extending outward from the support and a flexible container removably secured to and opening through the loop. The deformable loop is adapted to



encircle the urethral orifice of a wearer to hold the container in a desired position when the pessary-like support is received and retained within the vagina.

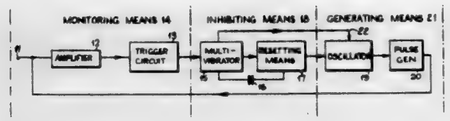
3,661,156
URINARY DRAINAGE DEVICE
Gladys M. McLaughlin, 8 Westerly Street, Jamaica Plain, Mass.
Filed Feb. 5, 1969, Ser. No. 796,831
Int. Cl. A61f 5/44
U.S. Cl. 128—295 7 Claims



A urinary drainage device adapted to be slipped over and held on the penis of an incontinent patient to permit the patient to urinate and direct the urine to a container which comprises a stretchable neck portion adapted to hold the device on the penis, a hollow bulblike body portion for the penis and a narrow end portion adapted to be connected to a drainage tube.

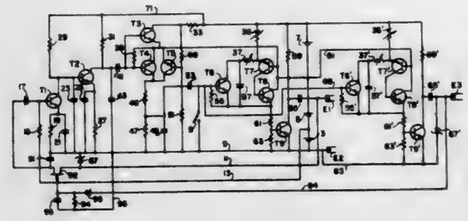
3,661,157
INHIBITED DEMAND PACER WITH A TWO-RATE PULSE GENERATOR
John William Fyson, Newbury; John Raymond Truscott, Reading, and George Edgar Sowton, London, all of England, assignors to National Research Development Corporation, London, England
Filed Apr. 16, 1970, Ser. No. 29,016
Claims priority, application Great Britain, Apr. 16, 1969, 19,547/67
Int. Cl. A61n 1/36
U.S. Cl. 128—419 P 16 Claims

In a pacer for artificial heart stimulation, the stimulating pulses produced are inhibited when the pacer detects that natural heartbeats are present. If the pacer detects electrical pulses at a frequency higher than a predetermined threshold frequency, resulting from external interference, the inhibition is suspended, and stimulating pulses are supplied. When in-



terference is detected, the pacer may be arranged to generate stimulating pulses at a frequency higher than normal to avoid the possibility of the artificial pulses competing with natural stimulating pulses.

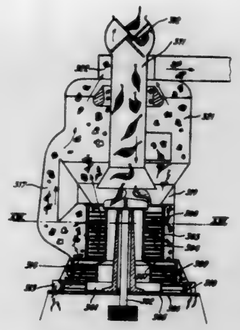
3,661,158
ATRIO-VENTRICULAR DEMAND PACER WITH ATRIAL STIMULI DISCRIMINATION
Baroub V. Berkovits, Newton Highlands, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Dec. 15, 1969, Ser. No. 884,825
Int. Cl. A61n 1/36
U.S. Cl. 128—419 P 24 Claims



An atrial and ventricular demand pacer. The demand pacer of the present invention provides atrial stimulation and also protects against ventricular asystole. In patients with atrial bradycardia but normal AV conduction, only the atria are stimulated. When the condition is complicated with AV block, both the atria and the ventricles are pacer controlled. The pacer does not compete with spontaneous ventricular contractions. An improved design eliminates the need for a refractory period following each atrial stimulus so that even a ventricular depolarization which coincides with an atrial stimulus can be detected.

3,661,159
APPARATUS FOR STEMMING TOBACCO LEAVES AND SEPARATING THE PRODUCTS OBTAINED
Andre Pietrucci, Loiret, France, assignor to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France
Original application Nov. 2, 1966, Ser. No. 591,606, now Patent No. 3,513,858, dated May 26, 1970. Divided and this application Apr. 21, 1970, Ser. No. 30,427
Claims priority, application France, Nov. 3, 1965, 37153; Nov. 17, 1965, 38785; Aug. 26, 1966, 74210; Sept. 20, 1966, 76911
Int. Cl. A24b 05/10
U.S. Cl. 131—146 6 Claims

Apparatus for stemming tobacco leaves and for segregating the lighter and heavier parts of the resulting mixture comprises a stemming chamber for a rotary stemming unit serving to stem tobacco leaves which are admitted by way of a first inlet of the stemming chamber. The latter has at least one second inlet for admission of a current of separating air, at least one outlet for evacuation of heavier parts, and at least one outlet for evacuation of lighter parts with the air current. The distribution of outlets is such that the direction in which the lighter parts are evacuated with the air current



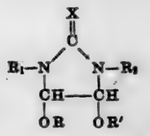
is at least substantially counter to the direction of evacuation of heavier parts. This can be achieved by using the inlet or inlets for air as outlet or outlets for heavier parts.

3,661,160
TOBACCO SMOKE FILTER
Deger Tunc, Edison, N.J., assignor to Johnson & Johnson
Filed Jan. 28, 1970, Ser. No. 6,644
Int. Cl. A24b 15/02; A24d 01/06
U.S. Cl. 131—266 2 Claims

A filter for tobacco smoke which is capable of removing nicotine and other constituents from the smoke is disclosed. The filter element is composed at least in part of cellulose sulfate compound of the formula R-cellulose-OSO_2X wherein R is one or more functional groups selected from the group consisting of methyl, ethyl, propyl, butyl, hydroxyethyl, hydroxylpropoxyl and hydroxylbutoxyl, and X is selected from the group consisting of hydrogen, sodium and potassium. The preferred compound is sodium ethylcellulose sulfate.

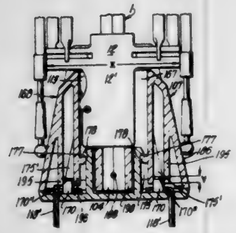
3,661,161
PROCESS FOR SETTING HAIR WITH POLYCONDENSABLE UREA AND THIOUREA COMPOUNDS
Gregoire Kalopissis; Henry Philippe De Beaulieu; Jean-Louis Abegg, and Giuliana Ghilardi, all of Paris, France, assignors to Societe Anonyme dite L'Oreal, Paris, France
Filed Dec. 3, 1969, Ser. No. 881,903
Claims priority, application Luxembourg, Dec. 4, 1968, 51.454
Int. Cl. A61k 7/10
U.S. Cl. 132—7 4 Claims

Hair is set by impregnating the same, in the presence of an acidic catalyst, with a polymerizable compound having the formula



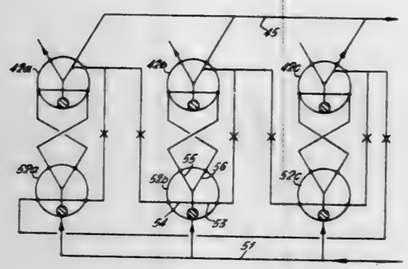
wherein X is oxygen or sulfur and R, R', R_1 and R_2 each are hydrogen or lower alkyl, winding the hair on rollers and drying the hair.

3,661,162
UMBRELLA HANDLE
Heinz Weber, Hilden, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada
Filed Mar. 27, 1970, Ser. No. 23,278
Claims priority, application Germany, Mar. 29, 1969, P 19 16 342.9; Nov. 6, 1969, P 19 55 779.0
Int. Cl. A45b 25/00
U.S. Cl. 135—20 10 Claims



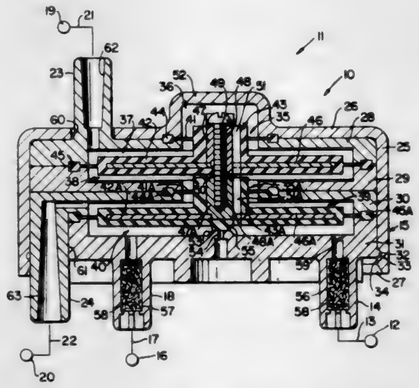
An umbrella handle comprising a hollow handle body and a snap-lock cap adapted to engage the body and a handle strap anchored to the cap. Snap-lock means in the cap are adapted to anchor with the cap and the strap to the interior of the handle body.

3,661,163
FLUID DISTRIBUTORS
John Grant, Risley Warrington, and Martin John Fisher, Cranfield, Bedford, both of England, assignors to United Kingdom Atomic Energy Authority, London, England
Filed Dec. 14, 1967, Ser. No. 690,464
Claims priority, application Great Britain, Dec. 29, 1966, 58,224/66
Int. Cl. F15c 1/12
U.S. Cl. 137—81.5 2 Claims



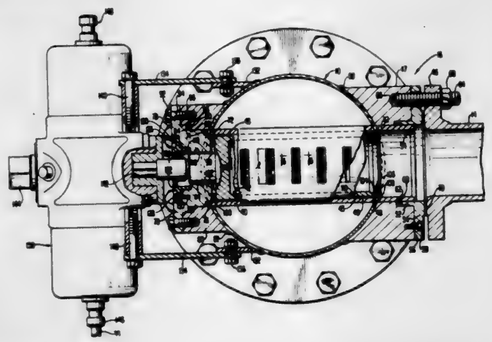
According to one aspect of the present invention a flow distributor comprises a series of fluid switch devices each adapted to receive a respective input flow, coupling paths connecting the devices into a chain, and two common output regions to one or other of which the input flows are routed through the device according to the conditions of the device, the coupling paths being arranged to divert from each device to the next in the chain, a diversionary flow which tends to propagate from the one device to the next the condition prevailing in the former.

3,661,164
PNEUMATICALLY OPERATED AVERAGING RELAY CONSTRUCTION AND SYSTEM UTILIZING THE SAME
Kenneth G. Kreuter, and Walter J. Berleyoung, both of Goshen, Ind., assignors to Robertshaw Controls Company, Richmond, Va.
Filed Aug. 13, 1970, Ser. No. 63,475
Int. Cl. F15b 5/00; G05d 16/00
U.S. Cl. 137—85 16 Claims



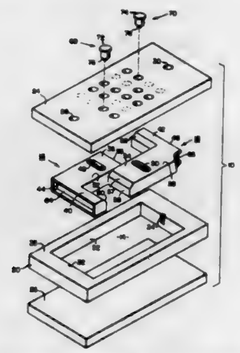
A housing means carrying a plurality of diaphragm members disposed in stacked relation and cooperating with the housing means to define a plurality of chambers disposed in stacked relation and separated from each other by the diaphragm members. Each diaphragm member has a central post means and a plurality of integral diaphragm portions axially spaced on the post means and extending radially outwardly therefrom in substantially parallel spaced relation to each other. Interconnecting means interconnect the post means of the diaphragm members together whereby the diaphragm members are adapted to move in unison in the housing means.

3,661,165
SYSTEM FOR MIXING GASES AND SPARGER VALVE FOR ACCOMPLISHING SAME
Herbert A. Rainbird, Ramsey, N.J., and William E. Gordon, Pittsburgh, Pa., assignors to National Distillers and Chemical Corporation, New York, N.Y.
Filed July 21, 1970, Ser. No. 56,866
Int. Cl. G05d 16/14
U.S. Cl. 137—100 15 Claims



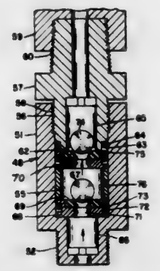
In a vinyl acetate manufacture reactor feed line, oxygen is admixed with gaseous hydrocarbons in the process stream by discharging the oxygen through jets facing downstream within the hydrocarbon gas flow, with the oxygen jet velocity maintained substantially higher than the velocity of the hydrocarbon gas. Variations in oxygen mass flow are made by varying the area of the jet orifices while maintaining a predetermined pressure drop across the same. The pressure within the oxygen feed line is controlled to control the pressure drop across the orifices with the oxygen flow rate in turn varying with variations in the orifice size.

3,661,166
FLUID LOGIC CONTROL SYSTEM
Ronald K. Dickason, Newark, N.Y., assignor to Garlock, Inc., Palmyra, N.Y.
Filed Jan. 12, 1970, Ser. No. 1,996
Int. Cl. F16k 11/20
U.S. Cl. 137—269 20 Claims



A fluid logic control system for controlling the operation of, for example, industrial machines. The system includes a plurality of fluid-operated components, each of which includes a casing having a chamber, a movable spool in the chamber, ports in the casing, and passageways in the spool. The components include: a fluid logic gate capable of performing any one of the four logic functions: AND, OR, NOT, NOR ; a multiple pole relay; a differential pressure relay; a micro-valve differential pressure relay; a pilot light; a selector switch; and a push button relay. The spools are self-sealing and the casings are interchangeable.

3,661,167
CHEMICAL FEED PUMP WITH IMPROVED VALVE MEANS
Norman R. Hussey, Amesbury, Mass., assignor to A & D Fabricating Company, Inc., Lowell, Mass.
Filed May 25, 1970, Ser. No. 40,082
Int. Cl. F16k 15/04
U.S. Cl. 137—269.5 1 Claim



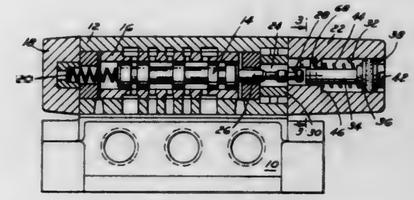
A diaphragm or piston type chemical feed pump has an influent valve and an effluent valve connected to the pumping chamber each having in some combination a single or multiple ball check valve system.

The valves of the pump are doubled and reversible within separable casings having oppositely disposed ball recesses so that the same set of parts can be assembled into an inlet or outlet ball check valve. For precise sealing, each valve has a resilient, self cleaning ball valve seat.

Extensive testing shows a ball diameter of five-sixteenths or 0.3125 and a hole diameter of 0.190 ± 0.006 to be the optimum ball to hole diameter combination.

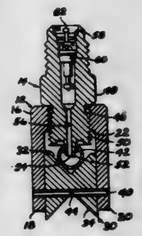
Additional testing shows that the ball to hole diameter can be scaled up or down in proportion for larger or smaller pumps with greater or lesser flows.

3,661,168
OVERRIDE CONTROL FOR PNEUMATIC VALVES
Donald E. McGeachy, Highland, Mich., assignor to Numatics, Incorporated, Highland, Mich.
Filed Aug. 6, 1970, Ser. No. 61,634
Int. Cl. F16k 11/07
U.S. Cl. 137—270 4 Claims



An override control for pneumatic valves which permits a valve to be manually actuated by manipulation of a plunger in an end cap of a valve housing, the invention being characterized by a selective positioning arrangement wherein the plunger can be either in a manual no-lock slot where it has strictly an in-and-out function or the plunger may be in a manual lock slot where it can have an out position and an in position at will. A further feature is that the plunger may not be shifted from one condition to another without removing the end cap, thus avoiding accidental change of condition.

3,661,169
LINE CLAMPING SELF-TAPPING SERVICE VALVE
John W. Mullins, P.O. Box 20524, Oklahoma City, Okla.
Filed Apr. 13, 1970, Ser. No. 27,559. The portion of the term of the patent subsequent to May 5, 1987, has been disclaimed.
Int. Cl. B23b 41/08
U.S. Cl. 137—318 2 Claims



A U-shaped member straddles a line to be tapped. The legs of the U-shaped member project beyond the line and are transversely drilled for receiving a pin which journals a rectangular block between the legs. Opposing faces of the block are provided with a line receiving recess for use with a

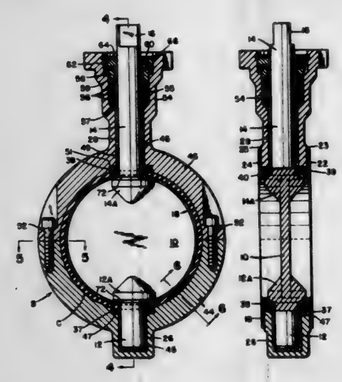
plurality of different sizes of lines. The bight portion of the U-shaped member is centrally drilled and threaded perpendicular to the axis of the straddle line for threadedly receiving a centrally bored air valve core equipped housing having a coaxial line piercing core projecting into the line.

3,661,170
AIR START SYSTEM FOR AIRPLANES
Robert W. Mitchell, Houston, Tex., assignor to Stewart & Stevenson Services, Inc., Houston, Tex.
Filed Dec. 2, 1970, Ser. No. 94,377
Int. Cl. B67d 5/36
U.S. Cl. 137—351 10 Claims



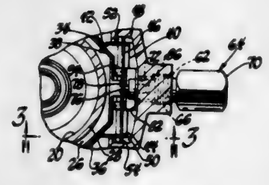
A pair of air lines including rigid portions connected together in the form of a pantograph adapted to be carried by a vehicle in a retracted position and extended for use and having a flexible air hose connected to each end of the outer ends of the rigid portions for connection to the airplane to provide air for starting the airplane engines. A self-propelled vehicle having an air generating means and a pivoting air manifold connected to and carrying a pair of air lines including a plurality of rigid portions connected together in the form of a pantograph with means for pivoting the air manifold and means for expanding the pantograph towards an airplane and retracting the pantograph towards the vehicle for carrying with flexible air hoses connected to the outer ends and casters on one side of the pantograph for supporting the air hoses as they move along the ground.

3,661,171
BUTTERFLY VALVE
Russell G. Smith; William G. Sonderman, and Paul D. Templin, all of Cincinnati, Ohio, assignors to Xomox Corporation, Cincinnati, Ohio
Filed May 12, 1970, Ser. No. 36,643
Int. Cl. F16k 1/226
U.S. Cl. 137—375 23 Claims



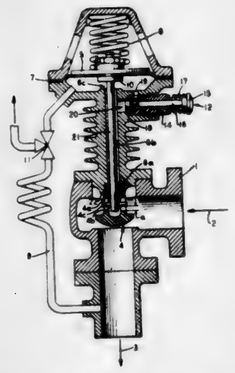
A pre-formed flexible protective liner characterized by its durability, resistance to corrosion, and inherent self-lubricating qualities, is disposed between the body bore and the valving member of a butterfly valve; and resilient back-up means are provided between the body bore and liner for yieldably expanding the liner into fluid-tight sealing relationship with the valving member periphery when in closed position.

3,661,172
HINGE PIN RETAINER CLIP
Robert J. Miller, 28924 Ursuline, St. Clair Shores, Mich.
Filed Jan. 26, 1970, Ser. No. 879,892
Int. Cl. F16k 31/18
U.S. Cl. 137—434 7 Claims



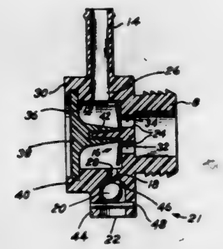
A carburetor having a body with a fuel reservoir, fuel inlet valve assembly, a float within the fuel reservoir connected to a lever assembly and a hinge pin operatively connected to the lever assembly and received within support recesses formed in the reservoir, has a relatively resilient clip having relatively resilient arcuate arms engaging the hinge pin, a tab carried by the clip abuttingly engages a clearance passageway formed about the fuel inlet valve assembly and effectively resiliently urges the clip and arms downwardly against the hinge pin in order to hold it in assembled relationship within the recesses; an aperture formed through the clip body permits the extension therethrough of the fuel inlet valve assembly if such is necessary.

3,661,173
HIGH SPEED STOP VALVE
Helmut Bauer, Basel, Switzerland, assignor to Airco, Inc., New York, N.Y.
Filed Jan. 29, 1970, Ser. No. 6,817
Claims priority, application Switzerland, Jan. 31, 1969, 1553/69
Int. Cl. F16k 17/24
U.S. Cl. 137—462 6 Claims



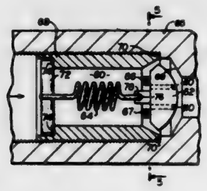
This invention relates to a high-speed valve positioned in a pipe normally conducting liquid oxygen under pressure. The valve is actuated to a closed position when there is a pipe failure with attendant pressure drop.

3,661,174
CHECK VALVE WITH MEANS FOR RELIEVING FLUID PRESSURE FROM THE CONTROL CHAMBER
Maxwell L. Cripe, South Bend, Ind., assignor to The Bendix Corporation
Filed Aug. 5, 1970, Ser. No. 62,238
Int. Cl. F16k 15/14
U.S. Cl. 137—512.3 1 Claim



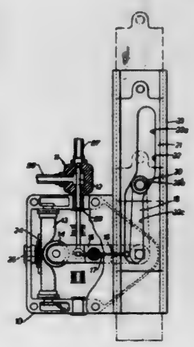
A check valve for a power braking system having a housing containing a flexible member in a control chamber. The flexible member overlies an inlet to the system and permits fluid flow only from the system to the control chamber. An outlet port is connected to the vacuum of the manifold of an automobile. A tubular projection adjacent an opening in the control chamber contains a ball member which is loosely held in position by a pin member in the projection. The loosely held ball member will permit present at the manifold resulting from the operation of the car and carried to the control chamber to escape to the atmosphere around the ball without damaging the system.

3,661,175
CONTAMINATION RESISTANT FLUID FLOW FUSE
Alfred Tillman, Mount Tabor, N.J., assignor to Marotta Scientific Controls, Inc., Boonton, N.J.
Filed May 25, 1970, Ser. No. 40,297
Int. Cl. F16k 17/34
U.S. Cl. 137—517 12 Claims



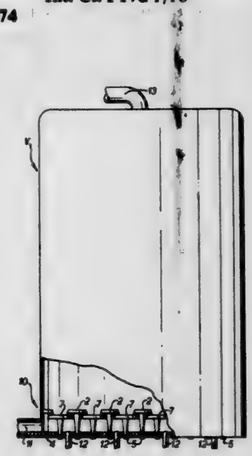
This specification discloses a fluid flow fuse, including some modified constructions, with a valve element that moves between open and closed positions without the use of any close fitting guide for the valve element. The valve element is loose in the passage that it controls so that when the valve element remains continuously in open position for long periods of time, contamination deposits that accumulate in the passage (particularly in water passages) do not stick the valve element to a guide so that it can not operate when fluid flow in the passage reaches a velocity at which the fuse was originally designed to close. Abutments with which the valve element contacts when yieldably held in open position have line contact, or small areas of contact with the valve element, so that the valve element can not become firmly stuck to its limit stops.

3,661,176
LEVELING VALVE
Charles B. Lowe, Parklands, England, assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Aug. 27, 1970, Ser. No. 67,462
Claims priority, application Great Britain, Sept. 3, 1969, 43,602/69
Int. Cl. F16d 63/00
U.S. Cl. 137—560 7 Claims



A leveling valve for use in an air-suspension system of a vehicle seat. An air-flow control valve is operated by displacement of a seat part. A damper, comprised of a roller biased laterally into a flexible tube containing fluid and traveling parallel to the tube introduces a delay into the operation of the leveling valve in response to movement of the seat part.

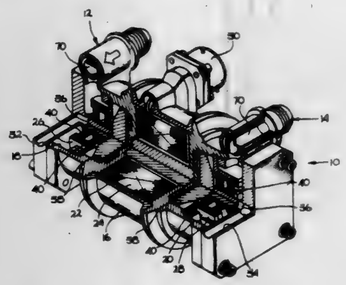
3,661,177
FLUID DISTRIBUTORS
Gerald Moss, Oxford, and Graham L. Johnes, Wantage, both of England, assignors to Esso Research and Engineering Company
Filed May 12, 1970, Ser. No. 36,586
Claims priority, application Great Britain, May 14, 1969, 24,581/69
Int. Cl. F17d 1/10
U.S. Cl. 137—574 9 Claims



A distributor for distributing fluids substantially uniformly into a hollow vessel for physical and/or chemical process, the distributor having two layers of tiles. The bottom layer of tiles generally fit together but leave apertures in the layer

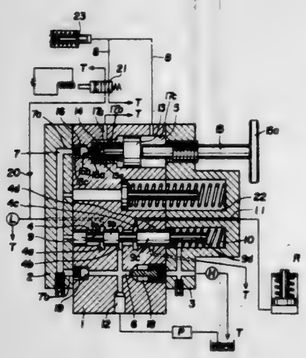
from place to place for the passage of fluid, and each tile in the upper layer is located over, and spaced from a respective aperture, so that fluid passing through the apertures is deflected substantially uniformly over the top of the bottom layer of tiles.

3,661,178
MAGNETICALLY LINKED BIPROPELLANT VALVE
Horst Wichmann, Canoga Park, Calif., assignor to CCI Aerospace Corporation, Van Nuys, Calif.
Filed Jan. 9, 1970, Ser. No. 1,738
Int. Cl. F16k *11/10*, *31/02*; H01f *7/06*
U.S. Cl. 137—595 17 Claims



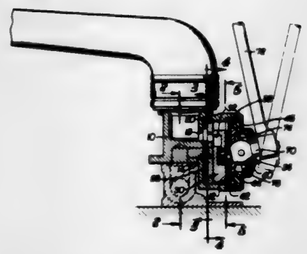
A plurality of valve elements, each valve element functioning to open and close a fluid passage, all valve elements operating simultaneously by a common magnetic field, each valve element being supported by an axial guidance flexure comprising a plurality of discs with spaces therebetween, each disc having a plurality of grooved cut-out sections which permit limited axial movement of the outer circumference of the disc with respect to the inner portion of the disc.

3,661,179
AUTOMATIC OIL PRESSURE SWITCH VALVE
Kingo Hasumi, Omiya, Japan, assignor to Sanwa Tetsuki Kogyo Kabushiki Kaisha, Tokyo-To, Japan
Filed June 9, 1970, Ser. No. 44,750
Claims priority, application Japan, Feb. 20, 1970, 45/14175
Int. Cl. F16k *11/10*
U.S. Cl. 137—596.12 1 Claim



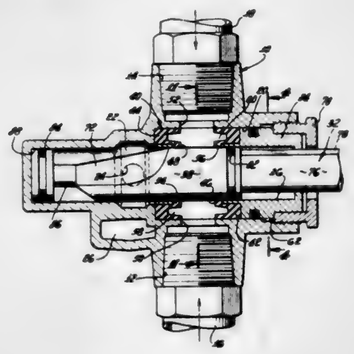
An automatic oil pressure switch valve adapted to an oil supply system and being operative by pushing merely the switch for regulating an electro-magnetic switch valve whereby an oil pressure press is actuated and when a desired pressure is attained, a ram is moved backward to stop the press so that only a pushing of the switch is sufficient each time to fix the means being handled and hence there occurs no excessive strain on the switch valve to actuate so that such component will not easily break down. A pilot pressure is regulated by being introduced into a low pressure passage from an extaordinarily high pressure pump whereby a satisfactory precision of regulation is possible without employing a special electro-magnet and pressure switch.

3,661,180
ANTIFRICTION LINER FOR CERAMIC VALVE PLATES OF SINGLE-HANDLED MIXING VALVE
John K. Lyon, Pasadena, Calif., assignor to Price-Pfister Brass Mfg. Co., Pacoima, Calif.
Filed Aug. 31, 1970, Ser. No. 68,075
Int. Cl. F16k *19/00*
U.S. Cl. 137—625.17 3 Claims



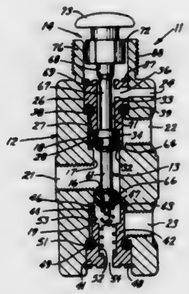
A ceramic valve plate is provided with a plastic liner cap that cooperates first, with the operating arm so as to minimize contact pressure and second, with a plastic back bearing so as to minimize sliding friction. The operating arm carries a cylindrical cross bar that fits into the recess of the valve plate lined by flanges of the liner cap.

3,661,181
LIP SEALING MIXING VALVE FOR LAVATORIES, SINKS, ETC.
Patsy B. Palmer, Granada Hills, and Julius L. Tolnai, Los Angeles, both of Calif., assignors to Price-Pfister Brass Mfg. Co., Pacoima, Calif.
Filed Dec. 7, 1970, Ser. No. 95,506
Int. Cl. F16k *19/00*
U.S. Cl. 137—625.17 9 Claims



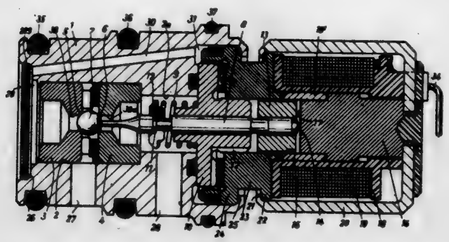
This invention relates to a single-handled valve for controlling both combined volume and relative proportion of hot and cold water. A control valve stem extends through a moldable sleeve-like sealing member, the sleeve-like sealing member cooperating with hot and cold water inlet openings. The axial and angular positions of the stem determine the combined volume and relative proportion while the sleeve-like sealing member performs all of the sealing functions between the inlet openings and the valve outlet.

3,661,182
FOUR-WAY VALVE WITH BLOCKED CENTER
Stanley M. Loveless, Oshtemo, Mich., assignor to General Gas Light Company, Kalamazoo, Mich.
Filed Feb. 24, 1970, Ser. No. 13,325
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.48 11 Claims



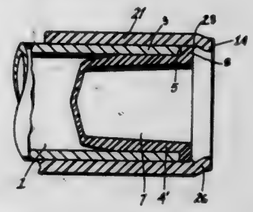
A valve assembly having a valve spool shiftably mounted within a housing and provided with an alignment sleeve surrounding the spool. The alignment sleeve is supported on the housing by a resilient seal ring for permitting limited relative movement between the sleeve and the housing. The alignment sleeve and the housing define axially therebetween a narrow ring-like passage surrounding the valve spool for providing communication between a pair of ports formed in the housing. The valve spool has a resilient seal ring positioned thereon, which seal ring is adapted to completely cover the ring-like passage when the valve spool is shifted between its extreme positions.

3,661,183
ELECTROMAGNETICALLY OPERATED VALVE WITH TWO SEATS
Iwan Komaroff, Korntal; Ewald Ziegler, Leonberg, and Waldemar Hans, Ludwigsburg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed June 12, 1970, Ser. No. 45,825
Claims priority, application Germany, July 15, 1969, P 19 34 212.2
Int. Cl. F16k *31/06*
U.S. Cl. 137—625.65 7 Claims



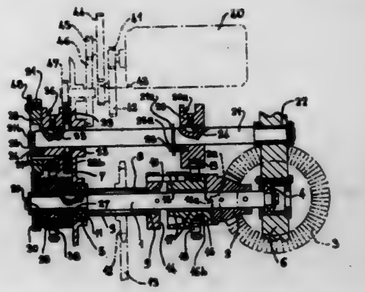
An electromagnetically operated valve wherein a spherical valve member normally engages one of two seats to thereby connect a port for spent fluid with a port which is connected with a consumer of pressurized fluid. The valve member is held in such position by the plunger of an armature which is accommodated in a fluid-filled chamber provided in the valve housing and communicating with a fluid-admitting port. When the winding of the electromagnet is energized, the plunger is retracted to permit movement of the valve member into engagement with the other seat whereby the port which is connected to the consumer communicates with the fluid-admitting port. The plunger can be held in a position in which the valve member engages the one seat by fluid pressure in the chamber and/or by a spring.

3,661,184
TUBULAR CONSTRUCTION
Wilhelm Lachenmayer, Berlebeck, near Germany, assignor to Benteler-Werke AG, Krs. Paderborn, Schloss Neuhaus, Germany
Filed Oct. 10, 1969, Ser. No. 865,283
Claims priority, application Germany, Nov. 26, 1968, P 18 10 957.4
Int. Cl. F16l *57/02*; B65d *59/02*
U.S. Cl. 138—89 11 Claims



An elongated tubular member having open ends with radial end faces surrounding the respective open ends. A corrosion-resistant and protective plug member having a flange portion is received in each of the open ends with the flange portion overlying the respective radial end face. An insulating jacket surrounds the tubular member and has its end portions formed into radially inwardly extending circumferential beads which abut against and are sealed to the respective flange portions of the plug members so as to fixedly secure the latter in the open ends.

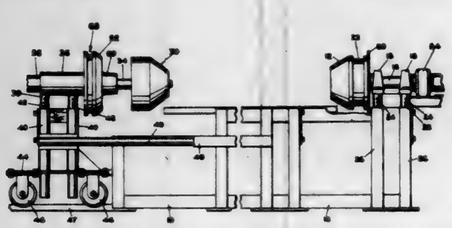
3,661,185
DRIVING DEVICES FOR LOOM SHED-FORMING MECHANISMS
Joseph Fumat, Lyon, France, assignor to Verdol S. A., Rhone, France
Filed Feb. 22, 1971, Ser. No. 117,303
Claims priority, application France, Mar. 9, 1970, 7008259
Int. Cl. D03d *51/00*
U.S. Cl. 139—1 E 8 Claims



A device to be inserted between a loom and its shed-forming mechanism to permit of rotating the latter backward or

forward independently of the loom when required and thereafter to resume normal weaving with proper timing of the mechanism with respect to the loom, comprises a rotating member connected with the loom so as to effect one revolution for each pick thereof, a single-tooth clutch to connect this member with a main shaft connected with the shed-forming mechanism, during normal weaving, and coupling means to connect the said main shaft with a gearing adapted to rotate this shaft by successive complete revolutions. These coupling means include a first element rigidly carried by the said shaft, and a second element which may be engaged with or disengaged from the first one. The gearing comprises a driving gear wheel having a toothed sector and a smooth blocking sector, and a corresponding pinion having a toothed sector and a concave depression to receive the smooth blocking sector. The pinion is affixed to the second element of the coupling means, while the gear wheel is carried by an auxiliary driving shaft connected with an appropriate auxiliary motor, and this shaft carries cams adapted to control the single tooth clutch and the coupling means. When the auxiliary motor is started, during a first step the second element of the coupling means is blocked by the smooth sector and the cams disconnect the main shaft from the rotating member and connect it with the second element of the coupling means. During a second step the toothed sectors cooperate to rotate the main shaft through one revolution. Then during a third and last step, the smooth sector again blocks the pinion and the second element of the coupling means, while the cams reestablish the initial connections.

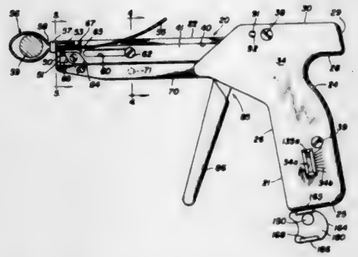
3,661,186
APPARATUS AND PROCESS FOR MAKING CONCRETE PIPE REINFORCEMENT MEMBER
Alfred A. Nordgren, Holland, Mich., assignor to W. E. Dunn Manufacturing Company, Holland, Mich.
Filed Dec. 29, 1969, Ser. No. 888,466
Int. Cl. B21f *15/08, 33/00*
U.S. Cl. 140—107 **13 Claims**



Apparatus for and a process of welding and forming metal grid work into a reinforcing cage, having a driven mandrel and two idling mandrels, the latter of which are axially adjustable relative to each other and to the driven mandrel by means of a hydraulically actuated sleeve telescoping over the idling shaft and a hydraulically actuated carriage, respectively. One of the two idling mandrels bells the cage end, and this mandrel is recessed circumferentially to cooperate with a hand bending tool to complete the belling.

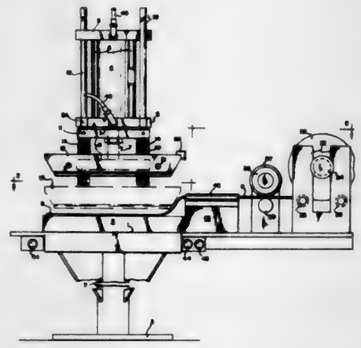
3,661,187
STRAP-TENSIONING AND SEVERING TOOL
Jack E. Caveney, Chicago, and Roy A. Moody, Flossmoor, both of Ill., assignors to Panduit Corp., Tinley Park, Ill.
Continuation of application Ser. No. 772,441, Oct. 21, 1968, now abandoned, Continuation of application Ser. No. 474,563, July 26, 1965, now abandoned. This application July 28, 1969, Ser. No. 870,190
Int. Cl. B21f *9/00, 11/00, 21/00*
U.S. Cl. 140—123.6 **27 Claims**

There is disclosed a hand tool for tensioning and severing straps of the type used in binding bundles of wires into cables, such straps including a connector adjacent one end thereof and the other end being free and adapted to be wrapped around the bundle to be bound and thereafter slid through the connector in a tightening movement, the tensioning and severing tool has a pair of jaws, one of which engages the connector and the other of which engages the free strap and extending beyond the connector, drive mechanism for tensioning the strap by moving the jaws apart and for thereafter actuating a strap-severing blade after the application of a predetermined force between the jaws, the tool of the present invention including mechanism for applying a restraining force upon the severing blade drive mechanism of a character which will prevent blade severing movement until the aforementioned predetermined tension is reached in the



strap, after which means is provided that serves substantially instantaneously to relieve or reduce the restraining force in the blade drive mechanism, whereby the blade drive mechanism immediately and quickly actuates the blade to sever the strap; a combined trigger-type drive mechanism is provided which ensures that the same tension is produced in the strap at the cut-off no matter how the handle actuating the drive mechanism is gripped by the user; the blade drive mechanism is such that immediately upon cut-off, and before the blade actually cuts through the entire strap, the drive tension is released so that the blade never strikes the anvil or backup for the strap; finally, a novel adjustment mechanism is provided for adjusting the predetermined tension at which cut-off of the free strap end is effective.

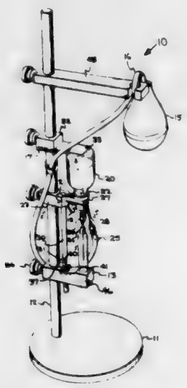
3,661,188
MACHINE FOR INSERTING WIRE SCREENING
Harold E. Gaug, 3907 Gibbons Street, Vancouver, Wash.
Filed May 8, 1970, Ser. No. 35,743
Int. Cl. B21f *33/02*
U.S. Cl. 140—109 **5 Claims**



A machine including a foot assembly for powered movement downwardly into close confinement within an opening

within which the wire screening is to be installed. Laterally displaceable injectors act to forcefully engage marginal screen segments and drive same into the walls defining the opening. Cooperating wedge shaped components translate downward movement of the foot assembly to lateral injector movement and spring means retract the screen injectors to permit foot assembly removal from the opening. Also disclosed is screen supply arrangement for advancing screen into place on the block. A method of screen placement is also disclosed.

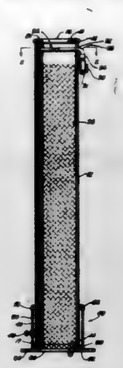
3,661,189
LIQUID DISPENSER
Gary L. Bowser, and Roger D. Lenhardt, both of Toledo, Ohio, assignors to Owens-Illinois, Inc.
Filed June 23, 1970, Ser. No. 49,070
Int. Cl. B65b *3/14*
U.S. Cl. 141—1 **7 Claims**



Method and apparatus for dispensing a precise amount of liquid from a sealed container into a syringe, open at one end, without engaging the syringe plunger. A positive and negative pressure is successively applied to the liquid in the sealed container forcing it through a conduit into the syringe. The predetermined position of the conduit in the syringe determines the level of the liquid in the syringe.

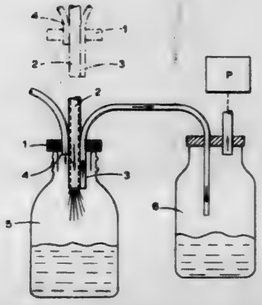
3,661,190
REDUCTION OF AIR CONTAMINATE EMISSIONS FROM STORAGE VESSELS
Neal C. Burmaster, Yorba Linda; Bruce A. Harbolt, Northridge, and Delbert W. Block, Palos Verde Estates, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.
Filed Sept. 11, 1970, Ser. No. 71,307
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—11 **8 Claims**

A method and apparatus is disclosed for reducing the emission of volatilized constituents from vessels, particularly vessels used to transport liquid solutions, as they are being filled with a liquid solution containing the volatile constituent. The apparatus comprises a packed column having universal means to temporarily mount the column in a vertical position over a vapor discharge port of the vessel with means to introduce solvent into the column in countercurrent flow therein to the vessel vapor effluent. The solvent from the column enriched with the volatile constituent is discharged



directly into the vessel and the purified gas effluent is released to the atmosphere.

3,661,191
APPARATUS FOR FILLING CONTAINERS
Gerald Brunswick Harley, 8a Landscape Road, Warlingham; Graham Harley, Mallory Grove, The Chase, Kingswood, and Peter Brunswick Harley, 32 Grenville Court, Rymers, London, all of England
Filed July 17, 1970, Ser. No. 55,730
Claims priority, application Great Britain, Aug. 6, 1969, 39,412/69
Int. Cl. B65b *3/18, 3/30*
U.S. Cl. 141—41 **6 Claims**

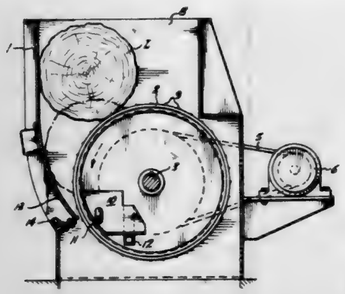


Apparatus, particularly for filling bottles with liquid, is provided with a device both for withdrawing gas from above the liquid entering the bottle and for simultaneously supplying gas to the space above the liquid. Therefore, when the liquid rises to a suction probe through which the gas is withdrawn, and so stops the withdrawal of gas, an immediate gas pressure rise occurs in the said space. This pressure rise is sensed and the filling operation consequently terminated.

3,661,192
PERIPHERAL CHIPPER FOR ROUND LOG SECTIONS
Thomas W. Nicholson, Mercer Island; Ray B. Jorgensen, and Stanley Donald Vanek, both of Seattle, all of Wash., assignors to Nicholson Manufacturing Company, Seattle, Wash.
Filed Dec. 8, 1969, Ser. No. 883,038
Int. Cl. B27l *11/02*
U.S. Cl. 144—176 **6 Claims**

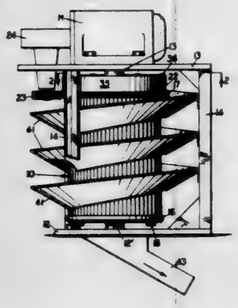
A rotating chipping drum carrying a spiral row of bits is mounted in a hollow body with a portion of its periphery ex-

posed to a chipping chamber for holding log sections to be chipped. The rotative axis of the chipping drum may be inclined to urge a log section toward one end of the chipping



chamber. Each bit includes side plate portions arranged at dihedral angles to a central plate portion and is clamped between bit-holding blocks with the bit cutting edge projecting beyond the periphery of the chipping drum.

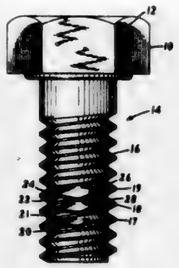
3,661,193
MACHINE FOR REMOVING STEMS AND CAPS FROM CERTAIN BERRIES AND FRUITS
Robert D. McLauchlan, 1145 Lancaster Drive, Salem, Oreg.
Filed June 29, 1970, Ser. No. 50,732
Int. Cl. A23n *15/02*
U.S. Cl. 146—55 1 Claim



The berries or fruits to be treated are caused to move in a spiral downwardly-extending path in constant contact with a series of individually rotating rollers forming the wall of a cylindrical drum assembly, while the cylindrical drum assembly as a whole is rotated on a vertical axis. The rollers in the cylindrical drum assembly are arranged in pairs with the rollers in each pair rotating oppositely and having cooperating surfacings so as to cause contacted stems and caps to be drawn between them and removed.

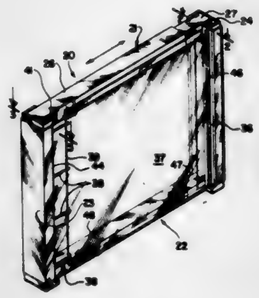
3,661,194
PREVAILING TORQUE FASTENER
Donald B. Macfarlane, Troy, and Gary T. Rathka, Sterling Heights, both of Mich., assignors to Standard Pressed Steel Co., Jenkintown, Pa.
Filed Jan. 2, 1970, Ser. No. 257
Int. Cl. F16b *39/30*
U.S. Cl. 151—22 11 Claims

A prevailing torque fastener including a threaded section having a plurality of thread convolutions and a leading end that makes initial engagement with a mating thread when the fastener is tightened on a mating member. Some of the thread convolutions have a projection formed thereon extending axially of the fastener toward the leading end of the



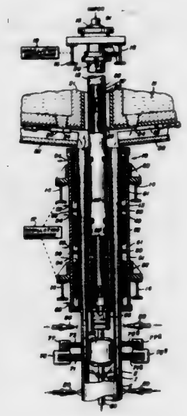
threaded section. The projections progressively increase in size from the leading end of the fastener so that the projections nearer the leading end are smaller than the adjacent projections nearer the other end of the fastener.

3,661,195
WINDOW DRAFT PREVENTING DEVICE
Emanuel M. Fischer, 11 Waverly Place, New York, N.Y.
Filed Dec. 28, 1970, Ser. No. 101,452
Int. Cl. E06b *3/00*
U.S. Cl. 160—373 2 Claims



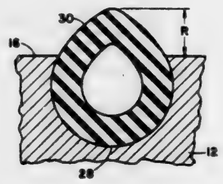
This window draft preventing device is of an adjustable spring biased construction including upper and lower spring biased frame assemblies joined together at their outer ends by upwardly extending end frame members of which a closure sheet of plastic and transparent material is extended and wrapped to make two or more passes between the end frame members with one end of the closure sheet being anchored to one of the end frame members and the free end of the closure sheet being anchored to the other member through spring tension means. The frame members may be either of square or rectangular section or of tubular section seen with the different forms of the device and the connection to the end frame members of the ends of the closure sheet may be effected through vertically extending rods connected either to the end frame members or to the top and bottom members. One of the end frame members may include a curtain-like tension roll as a tensioning means for the closure sheet. The closure sheet sufficiently long and arranged to have actual engagement with the side faces of the window frame at either the lower window or upper window and also provision is made for effecting a detachable sealing engagement of the upper and lower edges of the closure sheet with the upper and lower frame assemblies.

3,661,196
METHOD AND APPARATUS FOR CONTINUOUSLY CASTING HOLLOW ROUNDS
Karl E. Kummant, Amherst, Ohio, assignor to United States Steel Corporation
Filed Oct. 2, 1970, Ser. No. 77,470
Int. Cl. B22d *11/02*
U.S. Cl. 164—85 9 Claims



A method and apparatus for continuously casting a hollow round for manufacturing seamless tubing. Apparatus includes an open-ended tubular water-cooled mold and a tubular water-cooled lance suspended within the mold, leaving an annular cavity therebetween. Molten metal is poured into the cavity. Outside and inside skins solidify on the metal, at first leaving a liquid core between the two skins. There is a problem that the inside skin tends not to remain concentric with the outside skin. Invention provides magnetic means acting on plugs within the inside skin to hold the two skins in a concentric relation.

3,661,197
COREBOX AND SEAL
Edwin F. Peterson, 119 Main Street, Neponset, Ill.
Filed Feb. 9, 1970, Ser. No. 9,899
Int. Cl. B22c *7/06*
U.S. Cl. 164—228 6 Claims



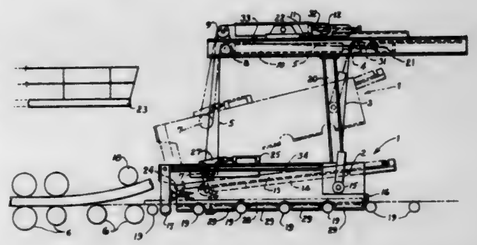
A seal for surrounding the cavity in a core box made up of a pair of mating members meeting at an interface in which a cavity-surrounding channel of greater than semicircular section is formed in but one of the members. The channel carries coextensively therewith a tubular elastomer seal of somewhat greater diameter than the channel so as to initially project from the channel in parabolic fashion, the parabolic portion being deformed into the channel as the two members are brought tightly together.

3,661,198
APPARATUS FOR MAKING PONTIC CORES
Roger A. Evenson, 3607 May Lane, San Jose, Calif.
Filed Jan. 31, 1969, Ser. No. 795,563
Int. Cl. B22c *7/02*
U.S. Cl. 164—246 5 Claims



This invention relates to the preparation of artificial teeth. Significant reductions in weight and cost of pontics are achieved by using a hollow metallic core filled with porcelain. The tooth has a greater flexural strength because of the greater compressive strength of the procelain filling in the metallic core. Vaporizable forms for making the hollow metallic cores are provided in various sizes in sheet form.

3,661,199
DUMMY BAR STORAGE APPARATUS
Georg B. Bollig, Buederich, Germany, assignor to Schloemann Aktiengesellschaft, Duesseldorf, Germany
Filed Oct. 21, 1969, Ser. No. 868,029
Int. Cl. B22d *11/08*
U.S. Cl. 164—274 6 Claims

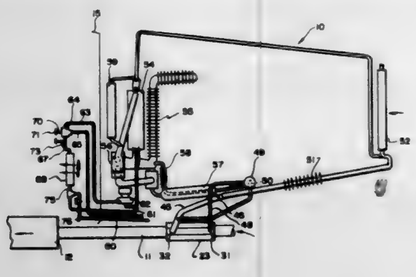


In a continuous-casting machine the dummy bar storage apparatus comprises a frame movable into the path of a dummy bar and a rocker storage section pivoted at the rear, downstream end of said frame and adapted to receive thereon a dummy bar which has passed through a withdrawal roll unit for the cast strand. Hoisting means for lifting the frame is adapted to lift the rear end twice as much as the front end and includes means for independently lifting the front end. The hoisting means is thus operable for adjusting the angular position of the frame to the angular position of the dummy bar emerging from the withdrawal roll unit and also for lifting the front end of the frame for disconnecting the dummy bar from the cast strand.

3,661,200
ABSORPTION REFRIGERATION AND AIR CONDITIONING SYSTEM
Thomas J. McNamara, 317 Harding Ave., Des Plaines, Ill.
Filed Nov. 17, 1969, Ser. No. 877,373
Int. Cl. B60h *3/00*
U.S. Cl. 165—42 7 Claims

An absorption refrigeration and air conditioning system using a mixture of water and ammonia and helium to maintain a constant vapor pressure and wherein the system uses a generator for the refrigeration circuit which is fitted to the exhaust line of a vehicle and wherein the space to be cooled or refrigerated has a heat transfer unit. This unit is supplied with a liquid from a chiller in the refrigeration circuit and with liquid from a cooling system of the vehicle, with both

liquids including an anti-freeze mixture, such as ethylene glycol and wherein a mixing valve controls the mixture of the



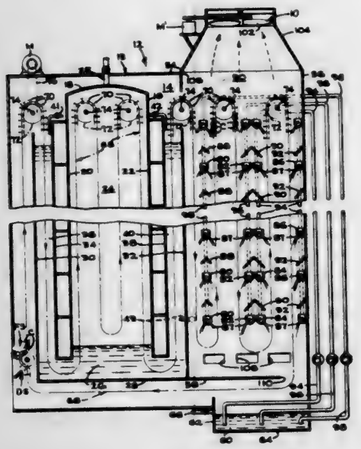
liquids from the two sources to provide a desired temperature within the space to be cooled.

3,661,201

EVAPORATIVE COOLING SYSTEM FOR HYDROSTATIC COOKER

Winston D. Bash, Hoopeston, Ill., and Frank D. Hickey, San Jose, Calif., assignors to FMC Corporation, San Jose, Calif.

Filed May 6, 1970, Ser. No. 34,956
Int. Cl. F28c *3/00*
U.S. Cl. 165—60 4 Claims



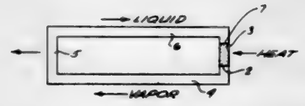
An evaporative cooling system for a hydrostatic cooker having an endless conveyor for moving rows of hot containers along a vertical zig-zag path through a vertically elongated cooling chamber. The system includes a plurality of vertically spaced troughs for directing cooling water against hot containers being processed, a sump for collecting the cooling water, pumps for recirculating the cooling water from the sump to the troughs, and means for adding make-up water to the sump. The system also includes a high volume-low velocity exhaust fan mounted on the upper end of the cooling chamber for drawing air upwardly through the cooling chamber to reduce the pressure within the cooling chamber below atmospheric and thereby increase the rate of evaporative cooling to such an extent that the cooling temperature becomes stable and make up water is required only to compensate for water loss through evaporation.

3,661,202

HEAT TRANSFER APPARATUS WITH IMPROVED HEAT TRANSFER SURFACE

Robert David Moore, Jr., 817 West Camino Road, Arcadia, Calif.

Original application July 6, 1970, Ser. No. 52,642, now Patent No. 3,598,180, dated Aug. 10, 1971. Divided and this application May 14, 1971, Ser. No. 143,459
Int. Cl. F28d *15/00*
U.S. Cl. 165—105 20 Claims



A heat transfer device, defined here as a heat link, having a capillary vaporizer adjacent a heat source, transfers heat to a heat sink by vaporization and condensation of a heat transfer fluid within the device. A first passage is provided for conveying vapor from the capillary vaporizer to the heat sink. Another passage which is essentially a continuation of the first passage, conveys condensed liquid from the heat sink to the vaporizer, thus allowing the distance that the liquid must flow through capillary material to be quite short. Contact of the returning liquid with the surface of the vaporizer is assured by providing means for maintaining the temperature of the liquid in the return line at a sufficiently low temperature that any vapor will condense; or, alternatively, by having means for extracting any vapor formed in the returning liquid. In this manner, the heat link operates with high heat flux without any substantial resistance to liquid flow through a long capillary flow path. By thus replacing almost all of the liquid return wick, with its high resistance to fluid flow, of heat pipes with a low flow resistance liquid passage or conduit, the heat flux capacity of the heat link is greatly increased over that of the heat pipe while the quantity of porous material used and the heat link weight are considerably reduced so that a heat link typically has 10 to 1,000 times the heat flux capacity of a heat pipe having the same weight. "Boosted" embodiments of the heat link employing additional means for circulating the fluid, such as vapor jet pumps, powered at least in part by vapor from the capillary vaporizer, are also described. Some "boosted" heat links are capable of handling heat fluxes in the multi-megawatt range while having no moving parts except for check valves and the fluid itself.

3,661,203

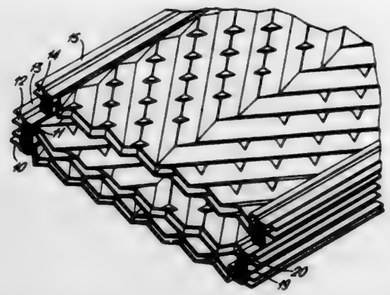
PLATES FOR DIRECTING THE FLOW OF FLUIDS

Terry Bernard Mesher, Kent, England, assignor to Parkson Corporation, Fort Lauderdale, Fla.

Filed Nov. 21, 1969, Ser. No. 878,607
Int. Cl. F28b *3/08*
U.S. Cl. 165—167 5 Claims

A plate for directing the flow of fluids which is shaped so as to provide contact points capable of spacing it from and supporting it against similar plates, is also provided with further contact points so that by suitable arrangement of the plates, the spacing therebetween can be varied. The basic contact points on the standard plate are provided by a herring-bone pattern of V-shaped hill and valley corrugations and, preferably, the further contact points are formed by

stamping the plate so that portions of the hill structure of the corrugations are provided with reversed hill and valley formations, although they may be formed by studs or projections attached to the plate.

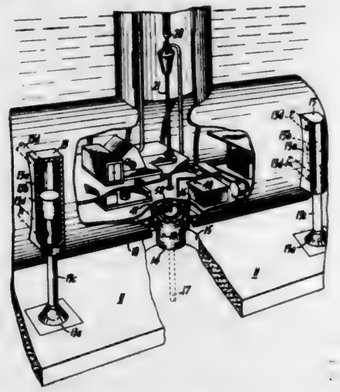


3,661,204

UNDERWATER DRILLING METHODS AND APPARATUS

John E. Blanding, Old Lyme, Conn.; Edmund C. Trageser, Webster, N.Y., and James Vincent Harrington, Groton, Conn., assignors to General Dynamics Corporation, New York, N.Y.

Original application Sept. 11, 1967, Ser. No. 671,532, now Patent No. 3,503,443, which is a division of application Ser. No. 193,040, Apr. 26, 1962, now Patent No. 3,353,364, which is a continuation-in-part of application Ser. No. 81,543, Jan. 9, 1961, now abandoned. Divided and this application Mar. 23, 1970, Ser. No. 21,976
Int. Cl. E21b *7/12, 43/01*
U.S. Cl. 166—.5 18 Claims



Broadly, three embodiments are disclosed: a first involving drilling a well from a submersible vessel, a second specifically adapted to drilling a well in shallow water, and a third specifically adapted to drilling a well in deep water. In the second and third embodiments, drilling may be accomplished by workmen on the surface of the water.

In each embodiment, an anchor pad is first installed at the selected site of the wellhead. Means is disclosed for performing the cementing of the anchor pad underwater. Drilling is effected through a hollow, watertight capsule, which is secured directly or indirectly to the anchor pad, and casing is lowered into the well. In the second and third embodiments, casing extension is mounted on the wellhead within the capsule and run to the surface of the water.

After completion of the drilling operation, the casing extension, if used, is removed, a christmas tree is installed in the capsule, and the capsule is sealed to protect the wellhead during the production cycle.

A service chamber facilitates return of workmen periodically to the capsule for inspection and repair. Chambers and adaptors facilitating underwater separation of oil and gas and storage of the oil are provided, and a floating production buoy facilitating support of wellhead equipment and product collection by a tanker is also provided.

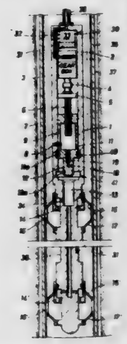
Hydraulic apparatus with suitable electrical actuating means is disclosed for facilitating remote control of a number of operations including positive hold-down of one chamber mounted underwater atop another, sealing of one chamber to another, raising and lowering of the christmas tree within the capsule, and the coupling together of product-bearing lines in one chamber to product-bearing lines in an adjacent chamber.

3,661,205

WELL TOOL ANCHORING SYSTEM

Roger Belorgey, Taverny, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Apr. 16, 1971, Ser. No. 134,775
Int. Cl. E21b *43/00, 23/00*
U.S. Cl. 166—65 R 10 Claims



An illustrative embodiment of the invention includes upper and lower anchoring members for temporarily securing a well tool in a well bore. The upper and lower anchoring members are pivotally supported from the central body member of the tool and respectively coupled to upper and lower movable slide blocks or driven pistons. The slide blocks are, in turn, moved by a two phase hydraulic transmission system whose pressure is controlled by a movable driving piston having two different cross sectional piston areas. The driving piston's motion is provided by a reversible electric motor via a gear box and threaded driving screw. This arrangement provides for low pressure fast moving initial deployment of the anchoring means followed by subsequent high pressure, low displacement anchoring force.

3,661,206

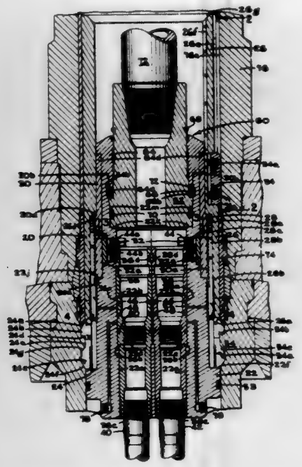
UNDERWATER COMPLETION EXPANDING TUBING HANGER

Samuel W. Putch, and Carl R. Hutchison, both of Houston, Tex., assignors to FMC Corporation, San Jose, Calif.

Filed July 13, 1970, Ser. No. 54,527
Int. Cl. E21b *33/03, 23/00*
U.S. Cl. 166—85 27 Claims

An apparatus for suspending a string of pipe in an oil or gas well at the wellhead, and particularly for hanging one or more tubing strings in the casing head of an offshore underwater well. Included are an assembly for hanging the tubing strings, a tool assembly for running and retrieving the tubing hanger assembly, and a tool assembly for running and

retrieving a tubing hanger coupling and for completing the well. The apparatus facilitates running, aligning, and landing



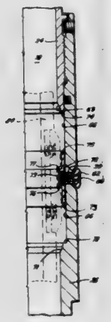
all the tubing strings, pressure testing the tubing hanger, and locking the hanger down, all in one trip.

3,661,207

SLIDING SLEEVE ASSEMBLY FOR A HYDRAULICALLY SET WELL PACKER

James H. Current, and Marion D. Kilgore, both of Houston, Tex., assignors to Camco, Incorporated, Houston, Tex.

Filed Nov. 27, 1970, Ser. No. 93,112
Int. Cl. E21b *23/06, 33/12*
U.S. Cl. 166—120 5 Claims



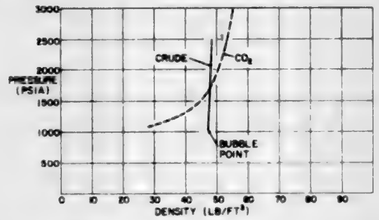
A sliding sleeve assembly for opening the setting port of a hydraulically set well packer which may be positioned for actuation in either an upwardly or downwardly direction. A shearable plug initially blocking the setting port and positioned in an elongate recess in the packer which extends equal distances on either side of the setting port with a shoulder at each end of the recess and a sliding sleeve telescopically positioned in the recess and in engagement with the plug whereby when the sleeve is longitudinally moved the plug is sheared. The sleeve including two actuation shoulders facing in opposite directions for moving the sleeve in either direction. The shoulders at the ends of the recess being tapered for retracting a setting tool after the sleeve is shifted in the recess.

3,661,208

CONTROL OF GRAVITY SEGREGATION BY HIGH DENSITY FLUID INJECTION

J. O. Scott, and Charles L. Hern, both of Tulsa, Okla., assignors to Cities Service Oil Company

Filed June 2, 1970, Ser. No. 42,898
Int. Cl. E21b *43/22*
U.S. Cl. 166—274 7 Claims



Gravity segregation is controlled and oil recovery enhanced by the controlled injection of a high density miscible fluid, such as carbon dioxide, into an oil bearing formation. Pressure within the formation is maintained so that the density of the injected fluid is equal to or as close to that of the oil as possible. Generally, the density of the miscible fluid should be maintained within about 10 percent of the density of the oil to be displaced. Mixtures of the miscible fluid and displaced oil are produced from the lower portions of the reservoir so that the miscible fluid will sweep the entirety of the reservoir and thereby avoid bypassing oil by gravity segregation of oil and miscible fluid.

3,661,209

METHOD FOR COMPACTLY PLACING MATERIAL IN A WELL

James R. Solum, Huntington Beach, Calif., assignor to B & W Incorporated, Torrance, Calif.

Filed Dec. 23, 1968, Ser. No. 786,283
Int. Cl. E21b *43/04*
U.S. Cl. 166—278 4 Claims



A method for compactly placing a material such as gravel in a well bore exteriorly of a casing at a substantial depth by vibrating the stationary casing through the use of one or more devices positioned in the casing that are actuated by manipulation, rotation or reciprocation, of a drill pipe extending to the surface of the well. The device includes a member which is spring biased and movable relative to the drill pipe with a latch element for repeatedly biasing and releasing the member to impact the casing during continued manipulation of the drill pipe.

3,661,210

INCREASING INJECTIVITY AND PRODUCTIVITY INDEXES OF A GAS WELL

Walter B. Kirk, Robinson, Ill., assignor to Marathon Oil Company, Findlay, Ohio

Filed Mar. 19, 1970, Ser. No. 21,203
Int. Cl. E21b *43/25*
U.S. Cl. 166—305 D 16 Claims

The injectivity and productivity indexes of a well in fluid communication with a subterranean hydrocarbon reservoir used for the storage of hydrocarbon is enhanced by injecting 1–500 gallons of a micellar dispersion per vertical foot of reservoir and then displacing the micellar dispersion out into the reservoir. Preferably 0.1–50 volumes of water per volume of micellar dispersion is injected after the micellar dispersion and preferably gas is injected behind the water to displace substantially all of the water out into the reservoir and to reestablish a gas phase in the immediate vicinity of the well bore.

3,661,211

FIREFIGHTING APPARATUS

Gene A. Powers, Greybull, Wyo., assignor to Powers and Hawkins Enterprises, Inc., Greybull, Wyo.

Filed June 17, 1970, Ser. No. 46,929
Int. Cl. A62c *31/00*
U.S. Cl. 169—2 R 11 Claims



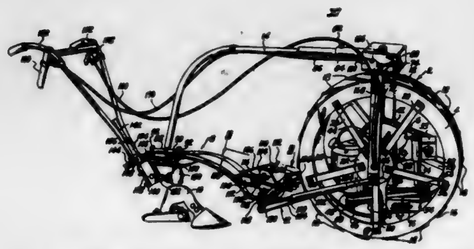
A firefighting bucket carried by a helicopter has flexible walls and a collapsible frame facilitating transportation and storage. Slide fasteners in the flexible walls may be opened to reduce the capacity of the bucket. Doors in the bottom of the bucket are operated by a fluid-operated ram which is connected to a pressurized fluid source in the aircraft. The ram may be laid flat when the frame is collapsed.

3,661,212

GARDEN TRACTOR

Fred Lee Johnson, Route 2, Box 14, New Bern, N.C.

Filed Oct. 22, 1970, Ser. No. 83,022
Int. Cl. A01b *69/00, 51/00*
U.S. Cl. 172—258 13 Claims



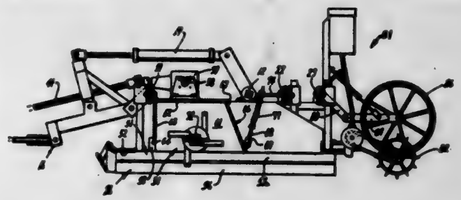
An engine and transmission assembly, within a traction wheel, is suspended by hollow trunnions on which the traction wheel is journalled. An inverted U-shaped yoke, fixed to the trunnions, straddles the wheel and combined draft, stabilizing and steering means connect the yoke to an implement frame for relative tilting about a fore-and-aft axis and for steering the wheel relative to the frame. A reaction member is universally pivoted to the top of the yoke and is connected to the implement frame. Articulated controls for the engine and transmission extend from the implement frame through the hollow trunnions.

3,661,213

AGRICULTURAL APPARATUS FOR SHAPED BEDS

Clyde L. Taylor, 1545 South Chinowith Road, Visalia, Calif.

Continuation of application Ser. No. 716,577, Mar. 27, 1968, now abandoned. This application Mar. 19, 1970, Ser. No. 19,544
Int. Cl. A01b *33/02, 33/16*
U.S. Cl. 172—72 6 Claims



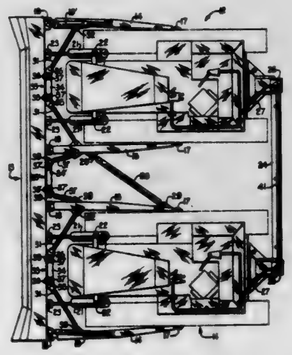
Agricultural apparatus for shaped beds having a rotatable mulcher assembly adapted to engage the top surface of the bed and to break up the top surface of the bed to form a relatively fine mulch on the top of the bed and having a housing which overlies the bed and encloses the upper extremities of the mulcher assembly, the housing having an opening to the rear and means for enclosing the opening so that all the clods on the top surface of the bed cannot exit from the housing and are broken up or pulverized by the mulching assembly.

3,661,214

SIDE-BY-SIDE TRACTOR COMBINATION

Robert A. Peterson, San Leandro, Calif.; Frank A. Groose, Morton, Ill.; William C. Morgan, Chillicothe, Ill.; Robert N. Stedman, Chillicothe, Ill., and Max J. Teasdale, Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

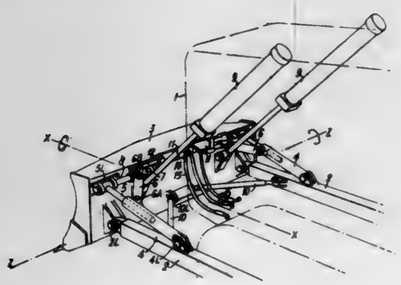
Continuation of application Ser. No. 635,803, May 31, 1971, now abandoned. This application Dec. 7, 1970, Ser. No. 95,978
Int. Cl. E02f *3/76*
U.S. Cl. 172—801 9 Claims



Two or more tractor vehicles are disposed in a highly stable unitized side-by-side relationship to apply increased trac-

tive effort to a single working implement such as a bulldozer blade. Disengageable bracing structure couples the adjacent tractors to maintain parallelism and a pre-determined longitudinal relationship without subjecting localized regions of the assembly to excessive stress. In a preferred form, the bracing maintains these relationships while providing for independent oscillations of the tractors in response to terrain irregularities.

3,661,215
TILTING DOZER BLADE
Pietro Penza, Milan, Italy, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles
Filed Jan. 29, 1970, Ser. No. 6,870
Claims priority, application Italy, Feb. 4, 1969, 12423 A/69
Int. Cl. E02f 3/76
U.S. Cl. 172—804 5 Claims



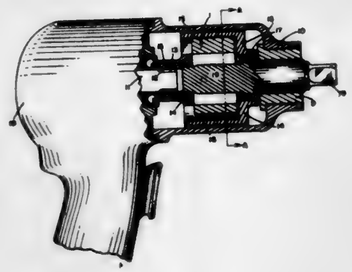
A bulldozer construction for a tractor comprises a dozer blade extending across the front of the tractor, a pair of strut assemblies each connected at one end to receive a thrust from the blade and to transmit it to the tractor. Each assembly includes a strut of fixed length and a sub-assembly of variable length and hydraulic actuators operable by the tractor driver without dismounting from the tractor, to vary the effective length of the two sub-assemblies in unison to give a pitching movement to the blade. The actuators are also operable to vary the effective length differentially to give a tilting movement to the blade.

3,661,216
IMPACT AIR DRIVEN TOOL
Takanobu Yamanaka, Yao, Japan, assignor to Nippon Pneumatic Manufacturing Company Limited, Osaka Prefecture, Japan
Filed May 6, 1970, Ser. No. 35,193
Claims priority, application Japan, Sept. 10, 1969, 44/86476; 44/86477; Feb. 25, 1970, 45/18877; 45/18878
Int. Cl. E21b 1/00
U.S. Cl. 173—17 6 Claims

An impact air driven tool having a cylinder including a piston member slidable therein and capable of being reciprocated by the action of compressed air. A handle cap unit is mounted on the upper end of said cylinder, and a chisel holding unit including a chisel member slidably supported therein is mounted on the lower end of said cylinder. A plurality of bolts are provided for fastening said cylinder, handle cap unit and chisel holding unit together, and a nut is threaded onto one end of each of said bolts adjacent to said handle cap. A socket member is threaded to the other end of each bolt adjacent to said chisel holding unit and has a contact surface on its outer periphery engageable with a supporting surface formed in a cut-out portion of the chisel holding unit whereby the relative rotation of said socket member with respect to said supporting surface is restricted. A stopper member for each nut has a polygonal opening through which the nut extends, and a collar member covers each nut and is held by a split pin extending through the collar and the nut, so that the stopper members and collars are prevented from disengaging.

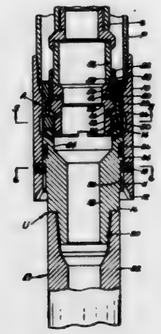


3,661,217
ROTARY IMPACT TOOL AND CLUTCH THEREFOR
Spencer B. Maurer, Chagrin Falls, Ohio
Continuation-in-part of application Ser. No. 852,574, Aug. 25, 1969, now abandoned. This application July 7, 1970, Ser. No. 52,826
Int. Cl. B25d 15/00
U.S. Cl. 173—93.5 23 Claims



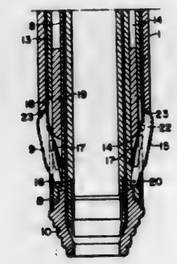
This invention pertains to a rotary impact tool and a clutch therefor, wherein a motor drives a cage member within which is pivotally mounted a swinging hollow hammer member. An output shaft extends through the cage member and through the hollow hammer member and includes forward and reverse impact anvil surfaces. The hammer member is mounted to swing in respect to the cage as it rotates with the cage, and it carries forward and reverse impact jaws on its internal surface. As the clutch is driven in the forward direction by an air motor or the like, the forward impact jaw is moved in and out of the path of the anvil jaw on the output shaft by cam action and during an impact blow the inertia of the rotating hammer member acts as automatic means to hold the impact jaw in engagement with the anvil jaw. A second embodiment includes a pair of hammers arranged to simultaneously strike a pair of anvil jaws on the anvil.

3,661,218
DRILLING UNIT FOR ROTARY DRILLING OF WELLS
Cicero C. Brown, 5429 Sturbridge Dr., Houston, Tex.
Filed May 21, 1970, Ser. No. 39,226
Int. Cl. E21b 3/12
U.S. Cl. 175—107 6 Claims



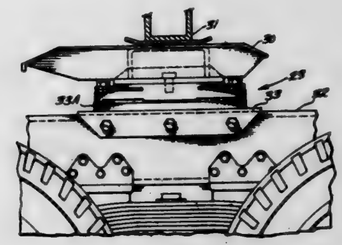
A drilling unit for rotary drilling of wells using casing as the drill string. The drilling unit is a self-contained assembly designed to be bodily inserted and withdrawn through the bore of a well casing string and comprises releasable latch means for non-rotatively locking the structure to the casing; a rotary power unit supported by the latch means and rotatively connected to a bit assembly. The latter comprises a main or pilot bit and a plurality of radially extendible and retractable underreamers actuated by fluid pressure which may first be employed for driving the power unit.

3,661,219
DRILLING SYSTEM
Yasushi Okuyama; Sho Takano, both of Tokyo, and Ryokuya Suzuki, Nihama, all of Japan, assignors to Sumitomo Metal Mining Company Limited, Tokyo, Japan
Filed June 9, 1970, Ser. No. 44,731
Claims priority, application Japan, June 27, 1969, 44/50423
Int. Cl. F21b 9/26
U.S. Cl. 175—260 6 Claims



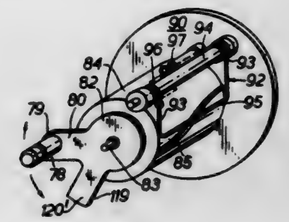
This invention relates to a drilling system wherein a latching device is integrally provided with a bit and a reaming device and is engaged with a drill stem so that the rotating force and propelling force of the drill stem may be transmitted directly to the bit and blades of the remaining device from the lower end of the drill stem.

3,661,220
WEIGHING DEVICE FOR LOGGING TRUCKS OR THE LIKE
Carl R. Harris, Kirkland, Wash., assignor to Electro Development Corporation, Lynnwood, Wash.
Filed Nov. 1, 1971, Ser. No. 194,273
Int. Cl. G01g 19/08
U.S. Cl. 177—136 7 Claims



A load cell system including a strain gage mounting assembly to be located between the bolster and frame of a truck such as used in the logging industry. A heavy steel block having longitudinal slots cut therein is secured to the bolster to transmit forces to the frame in a manner such that a sensing beam is created. Sensing devices secured to the assembly respond to stresses of the beam to provide force indications to an indicator which shows the weight of the load on the truck.

3,661,221
WEIGHING APPARATUS
Edward George Barrett, Witney, England, assignor to Smiths Industries Limited, London, England
Filed July 15, 1970, Ser. No. 54,940
Int. Cl. G01g 19/08, 3/14
U.S. Cl. 177—137 11 Claims



Weighing apparatus incorporated in a vehicle to be responsive to the load on the vehicle's axle(s) and to be used when the vehicle is in motion, which comprises mechanical low pass filtering means to attenuate sudden variations of the relative displacement between the vehicle's load carrying structure and axle(s) at least when the moving vehicle is heavily laden so that only the average value of this varying relative displacement is utilized in giving an indication of the load carried by said structure.

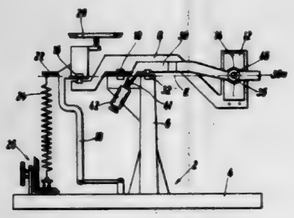
The mechanical low pass filtering means comprises high rate spring means and mechanical damping means that have two closely spaced generally concentric cylindrical surfaces defining an annular gap which contains a silicone substance in fluid or compound form.

3,661,222

BEAM BALANCE WITH A TARE SPRING AND A DEVICE FOR COMPENSATION OF LEVELLING ERRORS

Ludwig Weickhardt, Bovenden, Germany, assignor to Sartorius-Werke GmbH (und Vormals Gottinger Prazisionswaagenfabrik GmbH), Gottingen, Germany

Filed Feb. 5, 1971, Ser. No. 112,883
Claims priority, application Germany, Mar. 13, 1970, P 20 11 912.4
Int. Cl. G01g 23/32
U.S. Cl. 177—178 2 Claims



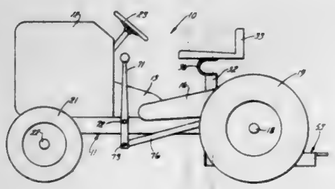
A beam balance has a tare spring acting upon a beam upon which is mounted a microscale a section of which can be projected on a screen by a projecting device whose lens is mounted on a pendulum arm. The pendulum arm has an effective length less than that of the beam arm and is pivotable about an axis located outside of the beam axis and parallel thereto. The beam balance has a device for the compensation of levelling errors. The effective length of the pendulum arm and the position of its supporting axis are such that any tipping of the balance stand about an axis parallel to the beam supporting axis brings about equal displacement of the entire pendulum and microscale screen in directions parallel to each other.

3,661,223

TRACTOR FRAME STRUCTURE

John C. Jensen, 559 Monroe Blvd., South Haven, Mich.

Filed Dec. 5, 1969, Ser. No. 882,550
Int. Cl. B60k 9/00; B60d 1/00
U.S. Cl. 180—54 D 8 Claims



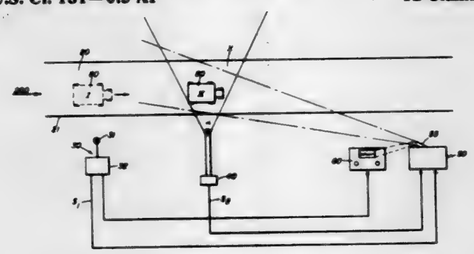
A tractor and, in particular, a tractor having an improved frame structure for permitting same to be easily assembled and maintained by nonskilled personnel. The frame structure comprises a rectangular frame having an upwardly extending seat support member, the lower ends of the seat support member having a draw bar device pivotally mounted thereon. The tractor is provided with a rear axle housing which has a pair of substantially parallel bracket plates fixedly secured thereto, which bracket plates are releasably connected to the rearward end of the rectangular frame.

3,661,224

NOISE MONITORING APPARATUS

Richard G. Allen, Pound Ridge, N.Y.; Benjamin B. Bauer, Stamford, and Emil L. Torick, Darien, both of Conn., assignors to Columbia Broadcasting System, Inc.

Filed Sept. 14, 1970, Ser. No. 71,729
Int. Cl. G08g 1/10
U.S. Cl. 181—0.5 AP 12 Claims



An apparatus for monitoring the noise level of passing vehicles and for automatically photographing a vehicle which emits noise that exceeds a predetermined threshold level. The apparatus includes a vehicle sensor which acoustically determines when a passing vehicle reaches a chosen target area. In a preferred embodiment of the invention the vehicle sensor includes a pair of microphones and an acoustic delay line which feeds one of the microphones. The microphone outputs are correlated to determine when the vehicle enters the target area.

3,661,225

EAR-PROTECTING DEVICE

Marshall N. Anderson, Grayslake, Ill., assignor to Sellstrom Manufacturing Company, Palatine, Ill.

Filed Aug. 26, 1970, Ser. No. 66,926
Int. Cl. G10k 11/04; A61f 11/02
U.S. Cl. 181—33 R 8 Claims



An ear-protecting device is provided which is adapted to protect the wearer when disposed in an environment having a high and disturbing noise level. The device is provided with a manually controlled means whereby the wearer may with a simple manipulation vary the sound resistant characteristics of the device, when desired, to provide comfort for the wearer and/or in order to permit the wearer to engage in conversation with another without having to remove the device from its ear-protecting position.

3,661,226

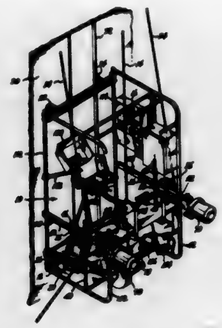
SUSPENDED STAGING HOLD-IN APPARATUS

Sidney L. Fisher, Renton, Wash., assignor to Spider Staging, Inc., Seattle, Wash.

Original application Sept. 29, 1969, Ser. No. 861,757.
Divided and this application Dec. 10, 1970, Ser. No. 96,912
Int. Cl. E04g 3/10
U.S. Cl. 182—142 6 Claims

One or more tensioned hold-in lines hold the staging inwardly against the object on which welding work is being

done. Each hold-in line rides on a sheave which is automatically controlled to move either towards or away from the ob-



ject for the purpose of maintaining proper tension in the hold-in line.

3,661,227

DRAINAGE COLLECTION CONTAINER

Raymond B. Rebel, Candy Cove Road, and Richard M. Walsh, Route 3, Box 270 Red Oak Hill, both of Prior Lake, Minn.

Filed Jan. 12, 1970, Ser. No. 2,025
Int. Cl. F16n 31/00; B65d 5/22
U.S. Cl. 184—106 7 Claims



A drainage collection container formed by a sheet of foldable material having flap extensions along the side edges thereof and dimensions greater than the dimensions of a vehicle with which it is to be used. The flap extensions wrap around elongated strips of resilient material to form curbs and seal the container along the sides and corners with means in one of the sides for forming a discharge spout therefrom. The container is adapted to be driven over by the vehicle and the sides are made resilient to compress as the vehicle passes over the same and return to the container shape and collect drainage from the vehicle when positioned thereon.

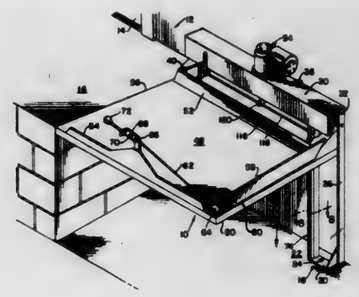
3,661,228

WHEEL CHAIR LIFT

Jay L. Glasser, 2305 Martha Ave., N.E., Canton, Ohio

Filed Dec. 23, 1969, Ser. No. 887,583
Int. Cl. B66b 11/04
U.S. Cl. 187—25 10 Claims

A vertical wheelchair lift including a vertically movable horizontal platform having edge wheel curbs to prevent wheelchair dislodgement therefrom one of the curbs constituting a loading and unloading ramp selectively adjustable to a lowered wheelchair loading and unloading position and a raised curb position, and means on said lift selectively operable for raising and lowering the ramp, and for vertical movement of the platform. Operating control means are so located as preferably to be operable by a wheelchair occupant, but



readily accessible for external use. The lift is ideally suited for use in conjunction with structures having entrance or other steps between levels which are not normally negotiable solely by a wheelchair user.

3,661,229

LEVELING DEVICE

James H. Stonhaus, 919 E. Holland, Fresno, Calif.

Filed Nov. 9, 1970, Ser. No. 87,917
Int. Cl. B60t 3/00
U.S. Cl. 188—32 9 Claims



A leveling device adapted to be placed beneath the wheels of a camper trailer or the like providing a tapered supporting block having an upper, inclined, wheel supporting ramp surface and a tapered wheel positioning block adjustably mounted on said supporting block having an upper surface oppositely inclined from said ramp surface of the supporting block in angularly facing cradling relation to the wheel of the trailer.

3,661,230

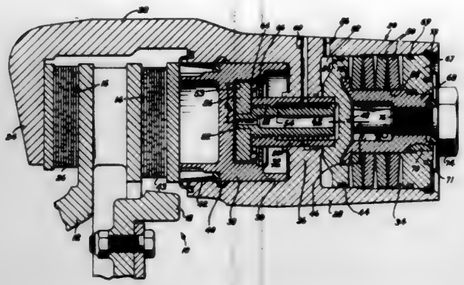
DISC BRAKE WITH ACTUATING MEANS AND MANUALLY RELEASABLE ADJUSTING MEANS

Richard T. Burnett, South Bend, Ind., assignor to The Bendix Corporation

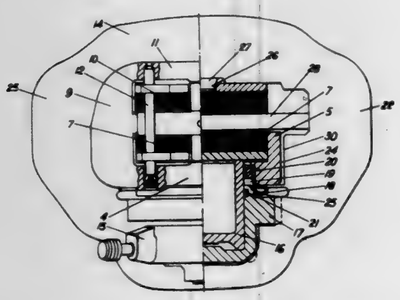
Filed May 18, 1970, Ser. No. 38,459
Int. Cl. F16d 65/56
U.S. Cl. 188—71.9 9 Claims

A disc brake is disclosed which has a spring actuator in addition to the usual hydraulic actuator. When the brake is functioning normally, fluid pressure opposes the spring actuator to permit normal hydraulic operation of the brake. However, when a malfunction in the vehicle's hydraulic system prevents operation of the hydraulic actuator, the spring actuator automatically applies the brake to immobilize

the vehicle. A mechanical release mechanism for the spring actuator is provided so that the vehicle may be moved if the spring actuator applies the brake in an inconvenient location. The spring actuator may also be used as a parking brake.



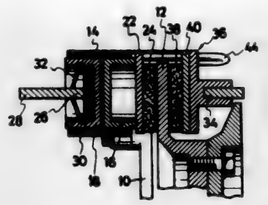
3,661,231
SPOT-TYPE DISC BRAKE
Hans Albert Beller, Bad Vilbel, and Jochen Burgdorf, Offenbach, M., both of Germany, assignors to ITT Industries, Inc., New York, N.Y.
Filed July 13, 1970, Ser. No. 54,178
Claims priority, application Germany, July 24, 1969, P 19 37 555.4
Int. Cl. F16d 55/18
U.S. Cl. 188—72.4 9 Claims



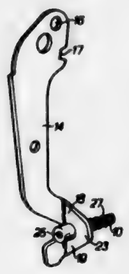
A floating spot-type disc brake for vehicles having a fixed carrier extending over the edge of the disc, brake shoes slidably mounted on each side of the carrier and a hydraulic actuator on one side of the disc with a frame for transmitting the actuating force to the brake shoe on the other side of the disc, the actuator being supported by a bore in the carrier in which the front of the piston is slidable. The frame is supported on one side by the actuator housing and on the other side by the brake shoes.

3,661,232
SPOT TYPE DISK BRAKE
Toshio Kondo, Hekikai, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Aich Pref., Japan
Filed Mar. 24, 1970, Ser. No. 22,331
Claims priority, application Japan, Mar. 29, 1969, 44/26844
Int. Cl. F16d 65/20
U.S. Cl. 188—73.4 4 Claims

A spot type disk brake for wheels comprising a rotatable disk, two friction linings and backing plates secured thereto on mutually opposite flat sides of the disk, one of which is located between one of two pistons slidably fitted in a cylinder and the disk, two parallel pins for supporting the friction linings and backing plates, a reaction transfer plate engaged with the other piston and with a support member which abuts back to back the other backing plate whereby the worn out linings with the backing plates may be easily detached from the brake mechanism after removing the pins.



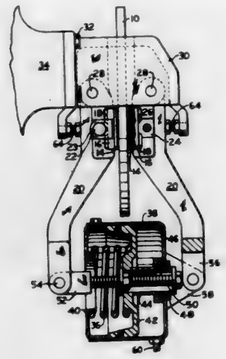
3,661,233
INTERNAL SHOE DRUM BRAKES
Hugh Greaville Margetts, and Gordon Alfred Habgood, both of Warwickshire, England, assignors to Girling Limited, Birmingham, England
Filed Feb. 24, 1970, Ser. No. 13,597
Claims priority, application Great Britain, Mar. 1, 1969, 11033/69; Dec. 12, 1969, 60631/69
Int. Cl. F16d 65/22
U.S. Cl. 188—106 A 13 Claims



A mechanical actuator for separating adjacent ends of shoes of a shoe-drum brake includes an angularly movable lever pivotally connected to one of the shoes. The lever is constructed from a blank having a body portion of substantial length which is formed at one end with an outwardly extending lug. The lug and an adjacent part of the body portion are provided with an opening having portions of different dimensions to permit the insertion and retention therein of a boss at the free end of a brake applying member for which at least a part of the lug forms an abutment.

3,661,234
DISC BRAKE
Herbert Moederndorfer, and George E. Schubert, both of Aurora, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed May 22, 1969, Ser. No. 826,802
Int. Cl. F16d 65/24
U.S. Cl. 188—170 4 Claims

A disc brake of the type in which friction pads or small friction surfaces are carried on opposite sides of the disc which rotates with a vehicle wheel or other rotatable part of the vehicle. The friction pads are spring urged into contact with the disc to retard or stop the vehicle and are normally held out of contact with the disc by fluid pressure.

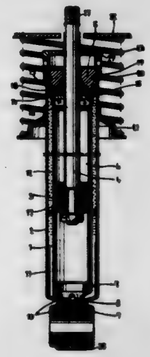


3,661,235
BRAKE DISC AND HUB COMBINATION
Anthony William Harrison, Birmingham, England, assignor to Girling Limited, Birmingham, England
Filed Mar. 17, 1970, Ser. No. 20,359
Claims priority, application Great Britain, Mar. 22, 1969, 15,173/69; July 4, 1969, 33,747/69
Int. Cl. F16d 65/12
U.S. Cl. 188—218 XL 9 Claims



A brake disc for use in a disc brake and a method of manufacture thereof is characterized in that the bell and annulus are separately manufactured with complementary abutting datum surfaces and are engaged together by projections on one which mesh in slots to hold the two members together against relative axial and rotational movement. Preferably the projections engage the sides of the slots and not the roots so that there is some rotational preloading. The projections can be provided on a continuous or discontinuous skirt integral or welded to the bell and the slots are on a surface of the annulus opposite to the datum face thereof. The projections may be partially sheared from a continuous skirt.

3,661,236
HYDROPNEUMATIC SHOCK ABSORBER
Felix Woessner, Schweinfurt am Main, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany
Filed Mar. 10, 1970, Ser. No. 18,229
Claims priority, application Germany, Mar. 13, 1969, P 19 12 781.2
Int. Cl. F16f 9/06, 9/34, 9/40
U.S. Cl. 188—315 8 Claims

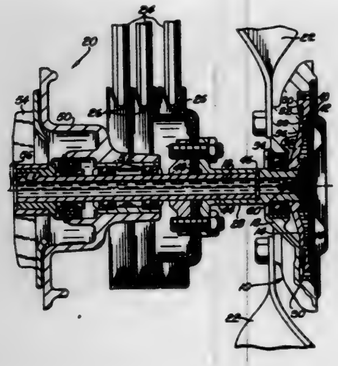


The cylinder of a shock absorber is spacedly enveloped by a coaxial, axially substantially coextensive cylindrical outer shell. A piston in the cylinder carries a piston rod which passes in sealing engagement through an annular first axial end wall of the cylinder and the shell. The cylinder cavity and the annular chamber between shell and cylinder are connected near the second imperforate axial end wall of the shock absorber which is below the annular wall in the normal operating position. A resilient sleeve in the chamber seals the cylinder to the first end wall and serves as a check valve on bore, in the cylinder for radially outward flow of gas. A compressed gas cushion occupies the upper portion of the chamber. The remainder of the chamber, the cylinder cavity, and axial throttling passages in the piston are filled with liquid. Gas reaching the cylinder cavity is quickly returned to the chamber through the check valve during operation of the shock absorber.

3,661,237
WATER-COOLED VISCOUS COUPLING
Owen R. Thompson, Lexington, Ky., assignor to Eaton Corporation, Cleveland, Ohio
Filed Nov. 19, 1969, Ser. No. 878,136
Int. Cl. F16d 35/00, 13/72
U.S. Cl. 192—58 B 11 Claims

A viscous coupling includes an input and an output member which define a shear space therebetween. Viscous fluid in the shear space operates to transmit torque between the input and output members. When torque is transmitted between the input and output members, heat is generated. One of the members has a cooling medium chamber to receive a cooling medium from a cooling medium conduit. The conduit is positioned substantially in alignment with the rotational axis of the input and output members. The cooling

medium gravitates toward the outer peripheral surfaces of the cooling medium chamber and vaporizes upon application



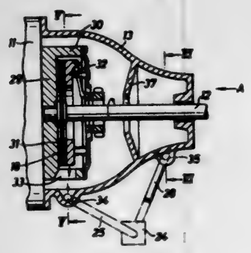
of sufficient heat thereto. The vapor gravitates toward the rotational axis of the members and is subsequently cooled.

3,661,238

HEAT DISSIPATING MEANS FOR USE WITH FRICTION CLUTCHES OF MOTOR VEHICLES

David A. Davies, Leamington Spa, England, assignor to Automotive Products Company, Limited, Leamington Spa, Warwickshire, England

Filed Oct. 30, 1969, Ser. No. 873,770
Claims priority, application Great Britain, Oct. 30, 1968, 51,474/68
Int. Cl. F16d 13/72
U.S. Cl. 192—113 A 6 Claims



A motor vehicle (10) has a friction clutch (18) housed within a chamber defined in part by a bell housing (13). A hollow casing (24) is mounted below the bell housing (13) with its interior in communication with the interior of the bell housing (13) through two conduits (25 and 28) which each terminate in a corresponding one of two ports (26 and 27) which are spaced apart axially of the bell housing (13). In operation of the motor vehicle (10) air heated by operation of the clutch (18) flows from the high pressure region (22) at the radial periphery of the clutch (18) through the hollow casing (24) to the low pressure region (23) at the other end of the bell housing (13) and is cooled by heat exchange within the hollow casing with the relative air stream caused by movement of the vehicle (10).

3,661,239

UNDERGROUND REFUSE COLLECTION SYSTEM

Robert J. Freeman, 1049 North Highland, Fullerton, Calif.

Filed Sept. 9, 1970, Ser. No. 70,670
Int. Cl. B65g 47/00
U.S. Cl. 198—20 3 Claims



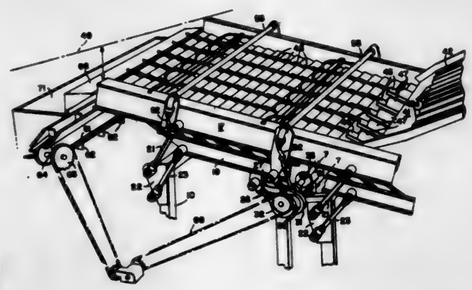
An underground refuse collection system including a tunnel extending beneath a plurality of dwellings and terminating at a common collection facility. Refuse from each dwelling is lowered to the tunnel, wherein appropriate conveyor means transports the refuse to the collection center. In a preferred embodiment, the refuse is placed on a reusable tray having a detachable connector associated therewith. The tray is lowered down a shaft to the tunnel, wherein a driven endless belt catches the detachable connector and pulls the refuse on the tray to the collection center.

3,661,240

SHUFFLE FEED MECHANISM

Paul H. Baumann, San Jose, Calif., assignor to Genevieve I. Hanscom (formerly Genevieve I. Magnuson) and Genevieve I. Hanscom, Robert Magnuson, Louis J. Thomson (formerly Louis J. Duggan), as trustees of the estate of Roy M. Magnuson part interest to each

Filed Jan. 19, 1970, Ser. No. 3,875
Int. Cl. B65g 25/04
U.S. Cl. 198—33 R 4 Claims



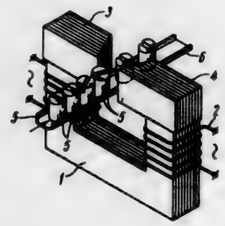
A shuffle feed mechanism for elongated articles such as bread sticks wherein a conventional shuffle feed mechanism is provided with a series of lanes defined by elements projecting from the article advancing faces of the shuffle feed members and is mounted in inclined relation one side to the other. A fluid operated realigning mechanism is provided for aligning articles which are being fed with their length disposed parallel to the length of the shuffle feed mechanism to pivot these articles around until they are arranged at right angles to the direction of feed.

3,661,241

APPARATUS FOR THE SIMULTANEOUS CONTACTLESS SEPARATION OF INDIVIDUAL NON-MAGNETIC ELECTRICALLY CONDUCTIVE BODIES FROM A CONTINUOUS FLOW AND ORIENTATION THEREOF

Benyamin Alexandrovich Ioffe, ulitsa Raunas, 45/2, kv. 81; Vyacheslav Semenovich Doroteev, ulitsa Frunzes, II, kv. 5, and Eduard Prokofievich Davydenko, ulitsa Lenina, 136, kv. 5, all of Riga, U.S.S.R.

Filed Dec. 16, 1969, Ser. No. 885,537
Claims priority, application U.S.S.R., Dec. 25, 1968, 1289053
Int. Cl. B68g 47/24
U.S. Cl. 198—33 AB 6 Claims



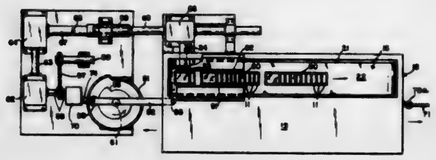
An apparatus for orientation electrically conductive bodies, preferably, non-magnetic ones, in a magnetic field, comprising an electromagnet connected with a source of alternating current, the pole pieces of this electromagnet defining therebetween a zone where the successively fed bodies are oriented, this apparatus providing for contactless separation of the successive ones of these bodies from the continuous stream in which they are fed toward the orientation zone, this apparatus further providing for selectively either grouping these successive bodies into a continuous stream, after they have passed this orientation zone, or spacing them after they have passed that zone; this invention being particularly suitable for the aims of introducing automation into such operations, when diverse objects are to be fed into all kinds of processing equipment.

3,661,242

PACKAGING APPARATUS

David Clancy, Canaan, Conn., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed May 28, 1970, Ser. No. 41,306
Int. Cl. B65g 47/26
U.S. Cl. 198—34 18 Claims



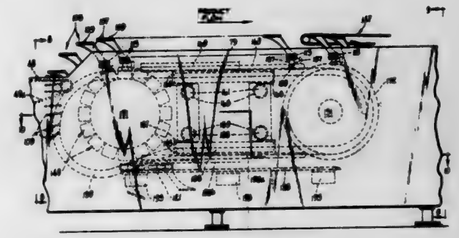
Envelope-type packages are detached from a packaging machine and deposited in overlapped relation in longitudinally distinct groups each containing the same number of packages on a continuously moving conveyor belt. Group separation is accomplished by periodic cam actuated displacement of the conveyor belt so that a package deposited upon the belt after a group of a predetermined number have been deposited in overlap will lie on the belt in definite spacial relation to that group and will be the leading package of the next group. The cam speed may be varied to select the number of packages in a group.

3,661,243

CONVEYOR SYSTEM

Robert J. Piatek, Prospect, Ill., assignor to Kraftco Corporation, Chicago, Ill.

Original application Feb. 23, 1967, Ser. No. 621,095, now Patent No. 3,479,024, dated Nov. 18, 1969. Divided and this application Nov. 17, 1969, Ser. No. 877,110
Int. Cl. B65g 47/26
U.S. Cl. 198—34 4 Claims



An apparatus for transferring a plurality of individual units from a conveyor having one velocity in a given direction and changing the velocity of the units to a second value in the same direction. The units are engaged individually by elements of a second conveyor having a velocity component in the given direction the same as that of the units at the time of engagement of the elements with the units.

3,661,244

AUTOMATIC CIRCULAR WINDING AND RELEASING BELT CONVEYOR

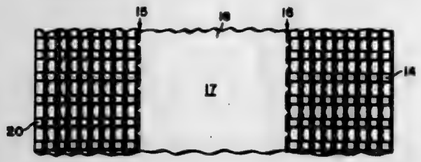
Masaaki Koyama, No. 2265-20, Kawashimacho, Hodogaya-ku, Yokohama, Japan

Filed Apr. 18, 1969, Ser. No. 817,388
Claims priority, application Japan, June 28, 1968, 43/44683
Int. Cl. B65g 15/08
U.S. Cl. 198—184 1 Claim



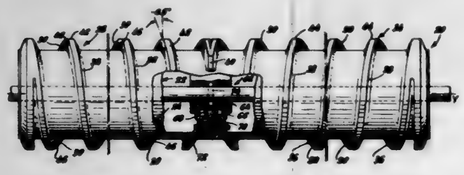
A belt conveyor or the like carries the object to be forwarded on the belt surface by means of a mechanically operated pulley provided with an electric motor as a motive power. The belt conveyor prevents scattering of lightweight powder or grains due to wind at the time of their conveyance, and at the same time, it prevents water leakage due to rain and snow, and also enables a steep slope conveyance as well as an entirely new and progressive plane detour wherein the belt automatically takes the form of a cylinder as to envelop the object to be carried.

3,661,245
ABRASION-RESISTANT CONVEYOR BELT
Edward K. Mol, Grand Rapids, and Marvin D. Stahl, Belmont, both of Mich., assignors to A. J. Sparks & Company, Grand Rapids, Mich.
Filed June 18, 1969, Ser. No. 834,418
Int. Cl. B65g 15/30
U.S. Cl. 198—193 5 Claims



A conveyor belt with multiple surface areas providing both traction and resistance to abrasion and cutting, and a method of manufacturing the belt.

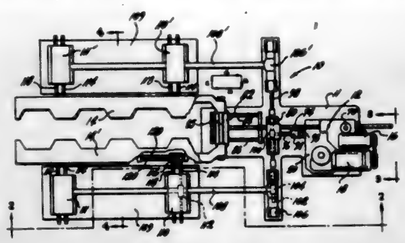
3,661,246
TRAINING IDLER
Stuart F. Faunce, 169 Paterson Road, Fanwood, N.J.; William E. Stout, 40 Brookside Avenue, Hawthorne, N.J., and Harold W. Koehler, 7 Grandview Drive, West Paterson, N.J., assignors to Hewitt-Robins Inc., Stamford, Conn.
Filed Mar. 26, 1970, Ser. No. 22,985
Int. Cl. B65g 15/62
U.S. Cl. 198—202 8 Claims



A skewing, rigid urethane spiral training idler and method of forming the same wherein the idler has right and left hand threads with continuous helical lands extending from the ends of the roll to the center of the roll where the threads merge and terminate. The training idler is pivotally mounted on a bearing in such a manner that the idler automatically skews to produce a training effect when a belt starts to detrain. For any longitudinal cross-sectional normal to a first plane that includes the longitudinal centerline of the idler, the sidewalls of the threads are substantially normal to the plane with a sight positive draft and as a result of this configuration the roots of the threads are offset with respect to each other at this plane even though the thread lands are continuous spirals. The idler roll is cast by injecting urethane compound between a pair of mold sections having their parting line coincident with the plane and an internal steel tube coated with a bonding agent. Due to the unique thread configuration relative to the mold parting line, the mold halfs are readily separated from the idler once the initial curing operation is completed even though the idler has the left-and right-hand threads thereon.

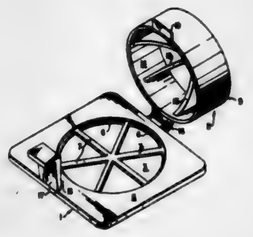
3,661,247
TRANSFER DEVICE
Bernard J. Wallis, 25200 Trowbridge Avenue, Dearborn, Mich.
Filed Aug. 28, 1970, Ser. No. 67,908
Int. Cl. B65g 25/04
U.S. Cl. 198—218 22 Claims

A transfer device for indexing work-pieces between stations in a press-mounted die having longitudinally and laterally reciprocating workpiece-engaging finger bars. The drive means for both longitudinal and lateral motions comprises a single cam track engaging two cam followers. The longitudinal stroke is accurately maintained by reciprocating



a shiftable rod between fixed stops and providing a yieldable member between the rod and drive means for absorbing overtravel of the drive means. The device is so constructed that substantially only the finger bars are shifted thereby reducing the inertia of the moving elements.

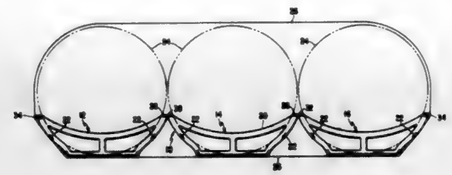
3,661,248
CONTACT LENS CASE
Allan A. Isen, and Fredric M. Kirchner, both of Buffalo, N.Y., assignors to Griffin Laboratories Inc., Buffalo, N.Y.
Filed Oct. 19, 1970, Ser. No. 81,855
Int. Cl. A45c 11/00; B65d 85/54
U.S. Cl. 206—5 A 3 Claims



A case for storing a contact lens, particularly a semi-scleral type lens, comprises a bottom and a cover hinged thereto. The bottom has a recess or depression formed therein to receive the base of the contact lens. The cover is provided with a domed recess to generally conform to the conical top surface of the lens. Thus, the lens is positioned in the closed case, with its base in the recess and its upper conical surface in contact with the complementary inner domed surface of the cover, whereby the danger of catching the base of the lens between the bottom and cover and causing damage thereto is eliminated.

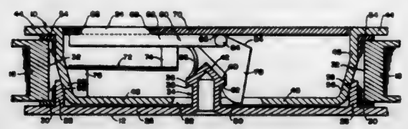
3,661,249
PACKAGING ARRANGEMENT
Philip M. Clemens, 1835 Pemberton Drive, Fort Wayne, Ind.
Filed Jan. 5, 1970, Ser. No. 736
Int. Cl. B65d 65/16
U.S. Cl. 206—45.33 8 Claims

The specification discloses a packaging arrangement especially adapted for use with food products, such as cookies or donuts, biscuits, rolls, candy, or the like. The packaging arrangement comprises a tray made up of portions which can be broken apart and with each portion adapted to receive and support respective articles. A sleeve like wrapper is provided for the tray and the tray may have serrations formed on one end to facilitate tearing the wrapper open at a desired



place so the tray can be slid endwise from the wrapper and, if desired, returned thereto.

3,661,250
REEL CASE WITH LOCK
George F. Lyman, Weston, Mass., assignor to Data Packaging Corporation, Cambridge, Mass.
Filed May 28, 1970, Ser. No. 41,222
Int. Cl. B65d 45/00, 85/67
U.S. Cl. 206—52 F 13 Claims



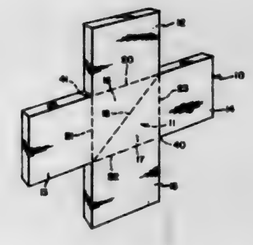
This disclosure relates to improvements in cases for tape reels and the like. In particular, the improvements relate to a simplified construction of a lock to secure the separable halves of a tape reel case together. The lock includes only a single moving part which is located within a handle formed centrally within one of the halves of the case. The moving art of the lock cooperates with an upstanding post formed integrally with the other half of the reel case to lock the halves of the case together. The moving part of the lock also includes a release button which is exposed through the handle in the case and is disposed on the handle to facilitate gripping of the handle and operation of the release button.

3,661,251
STRIP OF FASTENERS IN A PREDETERMINED SEQUENCE
Ronald Waeltz, Hatboro, Pa., assignor to Standard Pressed Steel Co., Jenkintown, Pa.
Continuation of application Ser. No. 8,106, Jan. 20, 1970, now abandoned, which is a division of application Ser. No. 641,754, May 29, 1967, now Patent No. 3,495,315. This application Apr. 22, 1971, Ser. No. 136,589
Int. Cl. B65d 83/00
U.S. Cl. 206—56 DF 6 Claims



Equipment for setting fasteners in a tape or strip of flexible and resilient material from which the fasteners may be automatically inserted into workpieces. The fasteners are carried in holes in the tape which are formed to accommodate different types or size fasteners. In addition, these holes may be barrelled to enhance the alignment of the fasteners for their insertion into the workpieces.

3,661,252
PROTECTION OF ARTICLES IN TRANSIT
Philipp J. Weichberger, 463 West St., New York, N.Y.
Filed June 16, 1970, Ser. No. 46,786
Int. Cl. B65d 85/46
U.S. Cl. 206—62 R 5 Claims



A device for protecting rectangular panels in transit includes a resilient sheet of substantial thickness having a substantially square central portion and four peripheral portions secured to the respective marginal edges of the central portion. In operation, the central portion is folded diagonally against itself so that pairs of adjacent peripheral portions overlie each other. The folded portion of the sheet is placed between two aligned panels at the corners and the respective pairs of coplanar peripheral portions are folded sequentially over the adjacent panel and secured to each other against the outwardly facing panel surface, the respective panels being maintained apart and the panel corners being protected.

3,661,253
RETAINING TRAYS FOR SEMICONDUCTOR WAFERS AND THE LIKE
Paul W. Cronkhite, St. Charles, Mo., assignor to Monsanto Company, St. Louis, Mo.
Continuation-in-part of application Ser. No. 764,472, Oct. 2, 1968, now Patent No. 3,482,682, which is a continuation-in-part of application Ser. No. 644,966, June 9, 1967, now abandoned. This application Dec. 4, 1969, Ser. No. 882,179
Int. Cl. B65d 81/00, 85/30
U.S. Cl. 206—65 R 10 Claims



A series of marginally registrable plastic trays having a plurality of wells for accommodating semiconductor wafers and similar elements. The retaining wells are provided with a wall having a surface configuration such that the critical surface of the wafer does not contact the well. A removable cap is disposed over each of the retaining wells and is provided with means for engaging the upwardly presented surface of the semiconductor wafer. Each of the trays is registrable with like trays so that a series of these trays can be stacked, wrapped, and shipped as a unit.

3,661,254

PROCESS FOR SEPARATION OF SILICEOUS AND PHOSPHATIC MATERIAL FROM IRON ORE

Aurelio F. Sirianni, and Ira E. Puddington, both of Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Apr. 28, 1969, Ser. No. 819,600
Claims priority, application Canada, June 7, 1968, 022,002
Int. Cl. B03d 3/06
U.S. Cl. 209—5 3 Claims

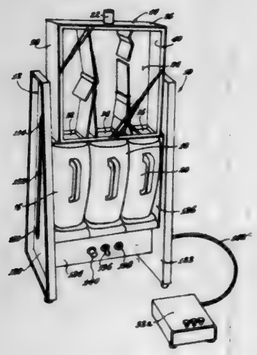
Siliceous and phosphatic material is separated from iron ore by subjecting a finely ground body of such ore in aqueous suspension to treatment with a conditioning agent which causes selective species in the ore body to become hydrophobic, and a hydrocarbon oil is employed with agitation to cause preferential agglomeration of the hydrophobic particles. Water may be added during the treatment to decrease the pulp density. There is thus formed a densely packed phase agglomerated by the oil, and a residual aqueous phase, the oil phase being rich in P or iron and the other phase being rich in iron or phosphorous, respectively. These agglomerates are easily separated to recover the desired products. The pH of the mixture is suitably adjusted during the treatment and separation steps for most effective results by additions of certain acids and alkalis.

3,661,255

SORTING APPARATUS

John E. Toth, San Diego, Calif., assignor to Delta Design, Inc., La Mesa, Calif.

Filed Feb. 2, 1970, Ser. No. 7,534
Int. Cl. B07c 3/02
U.S. Cl. 209—74 5 Claims



A sorting apparatus having a support structure, three containers, and a sorting mechanism. The sorting mechanism comprises two rotatable partitions as well as three fixed partitions thereby providing the capability of selectively directing a device to be sorted along one of three paths in response to a signal.

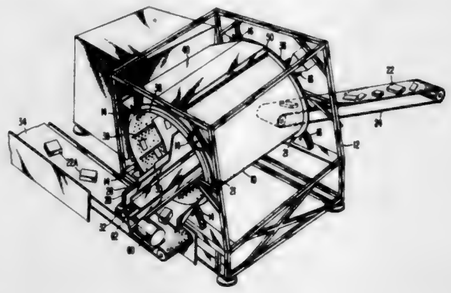
3,661,256

MAIL HANDLING AND SEPARATING APPARATUS

Eugene T. Hain, St. Davids, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 6, 1970, Ser. No. 35,086
Int. Cl. B07c 5/20
U.S. Cl. 209—74 4 Claims

An automatic vacuum culling apparatus for separating relatively large, bulky items from relatively thin, flat, lightweight items in which a vacuum is created through perforations along a portion of the side wall of a tilted, rotating drum. Lightweight, relatively flat items are attracted by suction against the side wall of the drum and are rotated to the top thereof where the vacuum terminates. These items then drop into a chute which funnels the items to a conveyor for transportation outwardly away from the culler. Heavyweight



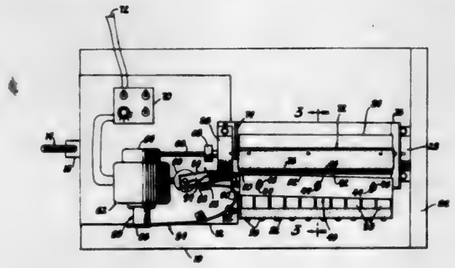
and relatively bulky items, being too large to be adhered by suction against the side wall of the rotating drum, tumble out the lower end of the tilted drum onto a second conveyor belt for transportation away from the culler.

3,661,257

PART CLASSIFYING DEVICE

Maclin S. Hall, Okemos, and Robert H. Moore, Williamston, both of Mich., assignors to Owens-Illinois, Inc.

Filed Oct. 24, 1969, Ser. No. 869,190
Int. Cl. B07b 13/04
U.S. Cl. 209—101 10 Claims



A device for classifying parts according to size by utilizing a motor rotated cylinder and a gauge blade, which is adjustable positioned relative to the periphery of the cylinder to form an open runway that progressively increases in size. A hopper with the parts to be classified, discharges the parts unto the runway and gravity and the rotating cylinder combine to cause the parts to move along the runway. When a part reaches an opening of a size corresponding to the part size, the part drops down into a bin which collects and stores all parts of this size. The same motor that rotates the cylinder is also employed to vibrate the hopper to facilitate the transfer of the parts from the hopper unto the runway.

3,661,258

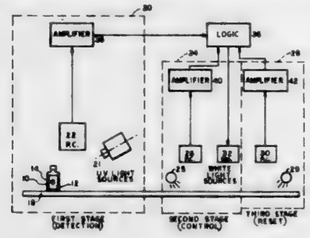
ULTRAVIOLET LIGHT LABEL MONITORING SYSTEM

Michael Madaio, Whitehouse Station, N.J., and William H. Marlow, Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 12, 1970, Ser. No. 18,945
Int. Cl. B07c 5/342
U.S. Cl. 209—111.7 5 Claims

A three-stage ultraviolet light label detection unit is provided for monitoring articles to detect and separate articles

having luminescent, i.e., fluorescent or phosphorescent, imprints located thereon. The first detection stage uses ultraviolet light to sense the presence of luminescent imprints; the second control stage uses white light sensing to control



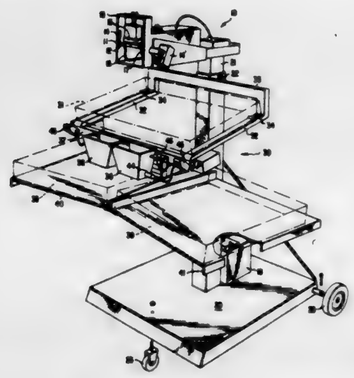
the movement of articles passing thereby; the third reset stage also uses white light sensing to reset the control stage. Each stage acts through a logic circuit adapted to provide the desired detection and separation of luminescent from non-luminescent articles.

3,661,259

CHICK SORTING AND COUNTING APPARATUS

Lamar W. Reynolds, Gainesville, Ga., assignor to Beak-O-Vac, Inc., Gainesville, Ga.

Filed June 17, 1970, Ser. No. 47,032
Int. Cl. B07c 7/00
U.S. Cl. 209—123 3 Claims



Apparatus for supporting a chicken vaccination device and for facilitating a sorting of the male and female baby chicks into separate trays subsequent to the vaccination thereof, which additionally provides a system for counting the chick as they are deposited into each of the respective trays and actuating an alarm device for indicating to the operator or vaccine administrator that a tray contains a pre-determined number of chicks and accordingly, that a new tray must be substituted therefor.

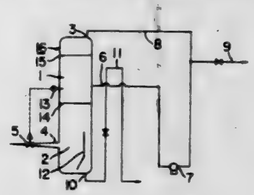
3,661,260

CONTINUOUS SLURRY SEPARATION

Michio Koga, and Kiyobumi Ando, both of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan

Filed May 6, 1970, Ser. No. 35,100
Claims priority, application Japan, May 14, 1969, 44/36579
Int. Cl. B01d 21/10
U.S. Cl. 210—74 8 Claims

A mixture of an oil slurry phase and an aqueous phase is continuously supplied into a tower constituting a separation chamber and is retained in it for a time to stratify into respective upper and lower layers, from which the slurry and aqueous phase, respectively, are continuously drawn off and a portion of the drawn-off slurry is tapped and continuously discharged as a slurry product, while the remainder is con-



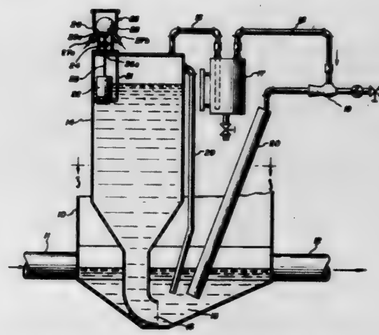
tinuously recirculated to the upper-layer slurry in the chamber. The mixture supply, slurry product discharge, and aqueous phase drawoff are so controlled as to establish and maintain a flow-continuity equilibrium in the chamber whereby the retained quantities of the slurry and aqueous phase are maintained constant.

3,661,261

METHOD AND APPARATUS FOR FLUSHING SEWERS

Arthur A. Lemke, Evanston, Ill., assignor to FMC Corporation

Filed Dec. 31, 1970, Ser. No. 103,075
Int. Cl. B01d 21/00
U.S. Cl. 210—83 8 Claims



This application describes method and apparatus for creating a flow of aqueous waste periodically which will eliminate from sewers and manholes any settled solids accumulated therein, which consists of a sewage accumulation tank positioned in a manhole and communicating with the liquid sump thereof at a level below that of the outlet sewer conduit. The tank is adapted with vacuum means to induce flow of sewage into the accumulation tank and means for introducing air into the tank to eliminate the vacuum and to release the accumulated sewage rapidly to join with the normal sewage flow to produce a flushing surge of liquid flowing in the sewer conduit.

3,661,262

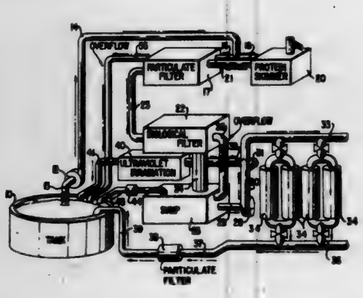
FILTRATION AND CIRCULATION SYSTEM FOR MAINTAINING WATER QUALITY IN MARICULTURE TANK

Graham Hodge Sanders, Elizabeth City, N.C., assignor to Oceanography Mariculture Industries, Inc., Riviera Beach, Fla.

Filed Aug. 25, 1970, Ser. No. 66,826
Int. Cl. F04h 3/20; A01k 63/00
U.S. Cl. 210—169 16 Claims

A filtration and circulation system for maintaining the water quality in a fish tank favorable for promoting the

production and growth of fish therein and for circulating water therethrough at a rate designed to provide a high rate of water exchange in the tank. The system includes particulate, biological and activated charcoal filters serially arranged in pressurized and unpressurized sections thereof for convert-



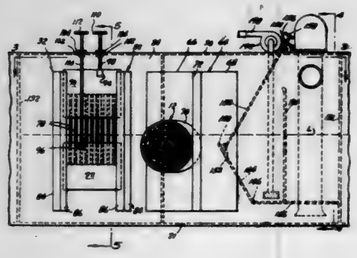
ing or removing ammonia, waste food and excrement from the water. In addition, parallel flow paths from these filters through a protein skimmer and an ultraviolet sterilizer section, respectively, are provided for lower volume treatment of the water being circulated therethrough.

3,661,263

APPARATUS FOR SEPARATING AN OIL SLICK FROM A LARGE BODY OF WATER

David L. Peterson, 1121 Arrowhead Rd., Anchorage, Alaska, and Clifford M. Cole, Route 6, Box 6197, Bainbridge Island, Wash.

Filed Nov. 17, 1969, Ser. No. 877,169
Int. Cl. C02b 9/02
U.S. Cl. 210—242 6 Claims



A V-shaped oil slick sweeping system including a log boom as one arm and an oil barge as the other arm, and wherein the barge is outfitted and compartmentalized to receive mixed water and oil, and wherein means is provided on the barge to separate the oil from the water, and to retain the former while discharging the latter.

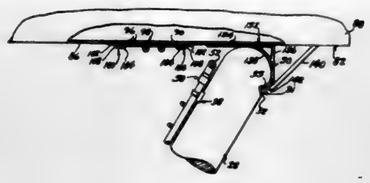
3,661,264

LOG BOOM SYSTEM FOR SWEEPING OIL SLICKS FROM A LARGE BODY OF WATER

David L. Peterson, 1121 Arrowhead Rd., Anchorage, Alaska, and Clifford M. Cole, Route 6, Box 6197, Bainbridge Island, Wash.

Filed Dec. 1, 1969, Ser. No. 881,163
Int. Cl. C02b 9/02
U.S. Cl. 210—242 7 Claims

A log boom for sweeping an oil slicked body of water, the boom being formed of a buoyant material and being connected in towing relationship with a suitable vessel, the boom being provided with jet nozzles submerged below the oil slicked surface and connected with a fluid source, water for example, to induce a current flow on the oil slick to force the oil slick in a direction away from the leading side of the



boom for collection in the vessel, the fluid under pressure preventing oil slick leakage under, through or over the boom due to the existence of currents, waves or winds.

3,661,265

SERUM SEPARATOR TYPE CONTAINER

Donald J. Greenspan, Riverside, N.J., assignor to Contemporary Research and Development Corporation, Philadelphia, Pa.

Filed July 27, 1970, Ser. No. 58,557
Int. Cl. B01d 33/00; C01b 21/06
U.S. Cl. 210—359 13 Claims



Following mechanical or chemical separation of serum or plasma from the formed elements of blood, the serum or plasma is physically isolated from the precipitated formed elements by inserting a plug into the collection tube. The plug consists of a fibrous filter disc fastened to a rubber member having perforations which open when the pressure underneath the plug is greater than the pressure above the plug, but which are otherwise closed. A handle for manipulating the plug functions as a container to collect and remove serum or plasma. In an alternative embodiment, the handle is removably attached to the plug so that the plug can be left in place in the collection tube, maintaining isolation between the serum and the formed elements. In another alternative, the plug is provided with a container for collecting and storing serum. A similar plug inside the container is used to effect an additional filtration step.

3,661,266

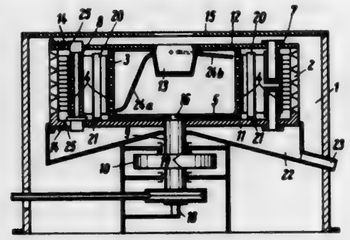
FILTER BELT CENTRIFUGE

Julius Von Rotel, Dortmund-Wambel, Germany, assignor to Reinveld N.V., Delft, Netherlands

Filed Oct. 26, 1970, Ser. No. 83,744
Claims priority, application Germany, Nov. 4, 1969, P 19 55 274.0
Int. Cl. B04b 3/08
U.S. Cl. 210—370 11 Claims

A filter belt centrifuge comprising filter belts moving in a rapidly rotating cage, said belts being tensioned by rollers

and driven at their inner pass contacting the outer surface of a drive drum. The perforated drive drum is centrically positioned within the cage and rotates with slightly different speed of rotation. The filter belts are tensioned with constant force and in proportion to the generated centrifugal force by



tension rollers acting on the inner surface of the outer belt pass.

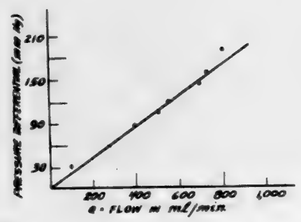
A distribution pot or cylinder having a pair of conical sections supplies the material to be filtered in two vertical planes onto the width of the filter belts uniformly distributed thereon by means of tubes attached to its major diameter.

3,661,267

SOLID FILTERS

Finley W. Markley, Naperville, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 3, 1970, Ser. No. 86,444
Int. Cl. B10d 39/14
U.S. Cl. 210—510 4 Claims



A rigid open-cell plastic foam body useful, for example, as a filter is prepared by mixing equal parts of a diglycidal ether of bisphenol A epoxy resin and the reaction product of an excess of a polyfunctional amine and a polyfunctional fatty acid with two parts of water while avoiding the entrapment of air in the mixture to form an emulsion in which water is the continuous phase, casting the emulsion in the desired form and curing the emulsion.

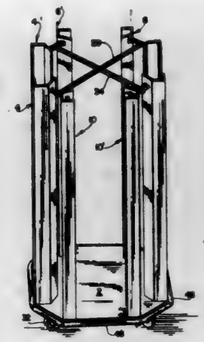
3,661,268

STORAGE RACK FOR CLOTHES HANGERS

Benjamin Steven Boley, Richmond, Va., assignor to Thalhimer Brothers, Incorporated, Richmond, Va.

Filed May 7, 1970, Ser. No. 35,475
Int. Cl. A47f 7/00
U.S. Cl. 211—49 R 9 Claims

A storage rack for clothes hangers comprising a base, at least two pairs of stacking columns each mounted substantially perpendicular to the base and shaped to receive the outer portions of a clothes hanger, at least one of the stacking columns of each pair being slidably mounted on the base to adjust each pair of stacking columns to a size that accommodates the hanger to be stored. A bracket interconnects adjacent members of adjacent pairs of the stacking columns and when the bracket connects to a slidably



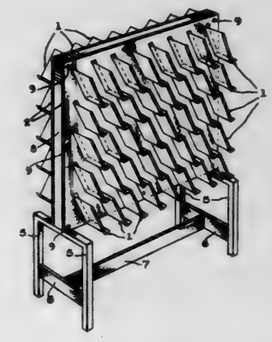
mounted stack column it is both slidably mounted of each on the interconnected stack columns and also slidably adjustable between the interconnected stack columns.

3,661,269

DISPLAY RACK FOR PERIODICALS AND THE LIKE

Robert K. Scherzer, Liverpool, N.Y., assignor to Gaylord Bros., Inc., Syracuse, N.Y.

Filed Nov. 6, 1970, Ser. No. 87,494
Int. Cl. A47f 7/00
U.S. Cl. 211—49 R 5 Claims



A periodical display rack comprising a plurality of inclined shelf units anchored to a common vertical support, each of said shelf units being constructed from a one-piece sheet metal blank providing a generally rectangular flat back-rest having a mounting flange extended perpendicularly thereto along one lateral edge thereof, a second flange extended perpendicularly thereto along the opposite lateral edge and serving as a combined stiffener and label supporting surface for the back-rest, and also having a toe-flange extended perpendicularly thereto along the bottom edge of the back-rest to be engaged by the lower edges of periodicals when the latter are placed flat against the inclined back-rest for displaying the periodicals in a position disposed edgewise to the common shelf support. The common shelf support may have the form of a vertical wall or other flat surface such as a panel, and in the case of panel type supports, the panels may be attached directly to a wall like a large picture, or alternatively may be provided with supporting legs or any other desired type of self-sustaining supporting base or stand, with the base preferably forming storage compartments to store periodicals therein when not displayed on the shelf units. The shelf units

may also be provided with quickly attachable and detachable extender shelves of larger size than the regular shelf units to accommodate periodicals of larger size than those normally displayed on the regular shelf units, each of said extender shelves including a flat back-rest having a toe-flange corresponding to the regular shelves, and having yieldable clamping means anchored to the rear face of the extender back-rest to detachably clamp the same to the back-rest of any of the regular shelf units.

3,661,270

COLLAPSIBLE COAT RACK - UMBRELLA STAND UNIT

Roberto Lucci, and Paolo Oriandini, both of Milan, Italy, assignors to Velca S.p.A., Milan, Italy

Filed May 12, 1970, Ser. No. 36,617
Claims priority, application Italy, Jan. 20, 1970, 20532 B/70
Int. Cl. A47g *25/12*
U.S. Cl. 211—62 **1 Claim**



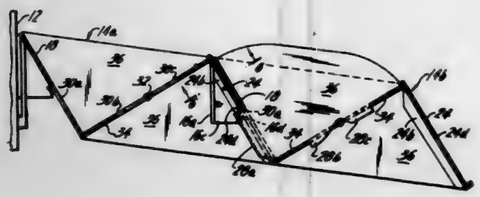
A coat rack - umbrella stand unit consisting of a hollow base having in its upper surface a number of peripheral holes for umbrellas and a central hole in which is placed a tubular element at whose upper end is placed a coat rack element. The tubular element can be dismantled into a number of parts and the individual parts fitted into the umbrella holes, the coat rack being rested on them to reduce the bulk of the packaging.

3,661,271

MERCHANDISE DISPLAYS

Robert Fisher, Whitestone, and Milton W. Herzog, Valley Stream, both of N.Y., assignors to H. Goodman & Sons, Inc., Kearny, N.J.

Filed Oct. 6, 1969, Ser. No. 864,124
Int. Cl. A47f *3/14, 5/08*
U.S. Cl. 211—88 **11 Claims**



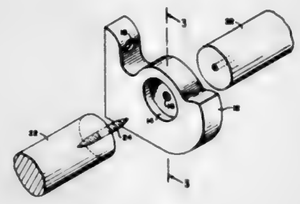
Multiple merchandise display trays are interlocked front-to-back and side-by-side. The front-to-back assembly utilizes integral interlocking formations of the trays. Barbed spring clips maintain the side-by-side assembly. Brackets at the rear of the back trays support the assembly on slotted uprights, and the brackets provide a latitude of adjustment to accommodate the positions of the uprights to the size of the tray assembly. Brackets can also be used to support the rear trays on standard apertured board.

3,661,272

CURTAIN ROD SUPPORT

Edward G. Di Panni, Jr., Warwick, R.I., assignor to Kenney Manufacturing Company, Warwick, R.I.

Filed Oct. 19, 1970, Ser. No. 81,640
Int. Cl. A47h *1/02*
U.S. Cl. 211—105.1 **9 Claims**



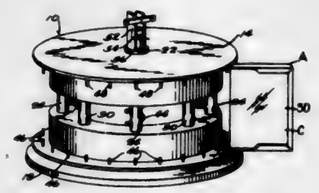
A curtain rod, supported by brackets at each end, is provided with a central support which both supports the midportion of the rod and holds the rod in a position of balanced symmetry with respect to its supports. The center support comprises a base element that can be mounted on a wall and which has sides which extend outwardly from the wall. Each side has a socket cut into it and the sockets are axially aligned and adapted to receive the end of a curtain rod. Also an axially aligned hole is provided, communicating between the two sockets. Before mounting, a curtain rod is cut into two sections. One section is then inserted respectively into each socket and held in place by a fastening device which attaches to each rod end and passes through the hole.

3,661,273

THEFTPROOF MERCHANDISE DISPLAY HAVING HOLDING ADAPTOR

Louis John Crosslen, Grafton, Wis., assignor to Frank Mayer & Associates, Inc., Grafton, Wis.

Filed July 20, 1970, Ser. No. 56,507
Int. Cl. A47f *5/02, 5/10*
U.S. Cl. 211—169 **5 Claims**



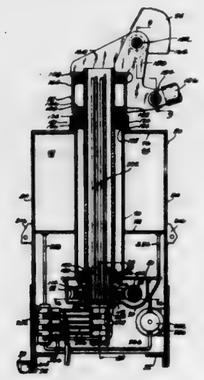
An adaptor for holding an article to be displayed on a theftproof merchandise display. The adaptor comprises the article to be displayed and holds it in locked position in the display and when the display is unlocked, and shifted to a releasing position, the adaptor is readily removed from the article it holds, thus freeing the article. The adaptor is made from a plastic such as polypropylene and is formed with living hinges which permit the adaptor to be repeatedly folded around the article and removed therefrom without damage to the adaptor; there is no need for special hinges or the use of tabs in holding the movable parts of the adaptor together.

3,661,274

VEHICLE MOUNTED HOIST

Frank G. Woodside, 1721 E. Fox Lane, Milwaukee, Wis., and Richard F. Uren, P. O. Box 303-E-H 3, Bowling Green, Ohio

Original application Jan. 14, 1969, Ser. No. 798,573, now Patent No. 3,589,526, dated June 29, 1971. Divided and this application Aug. 31, 1970, Ser. No. 68,413
Int. Cl. B66c *23/84*
U.S. Cl. 212—68 **1 Claim**



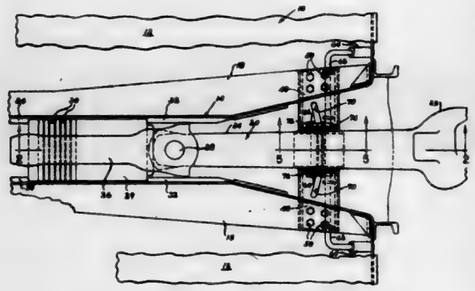
A box frame reinforced by the walls of oil reservoirs has a prefabricated tubular core sleeve on which mast bearings are assembled in inherent alignment. The structure of the main and jib booms is such as to yield high ratio of strength in relation to weight and the tying of the hinge points of the boom and operating cylinder to each other as well as to the mast gives stability. A worm gear connected to the lower end of the mast provides for 360° rotation accommodated by swiveled hydraulic manifold connections. The stabilizer legs are not only strong per se but brace the hoist frame.

3,661,275

COUPLER POSITIONING DEVICE FOR RAILWAY CARS

Robert W. Randolph, St. Charles, Mo., assignor to ACF Industries Incorporated, New York, N.Y.

Continuation of application Ser. No. 801,921, Feb. 7, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 715,592, Mar. 25, 1968, now abandoned. This application Dec. 7, 1970, Ser. No. 95,878
Int. Cl. B61g *7/12*
U.S. Cl. 213—20 **16 Claims**



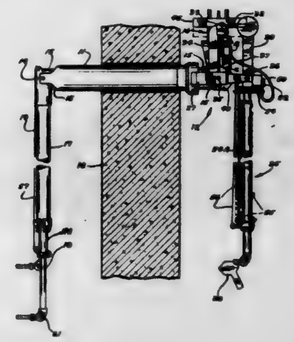
A coupler positioning device for railway cars comprising an elastomeric member connected to the shank of a coupler for lateral movement therewith and deflecting in shear upon such lateral movement. The lower surface of the elastomeric member is held against movement at a preselected position beneath the coupler shank and the upper surface of the elastomeric member is connected to the coupler shank for lateral movement with the coupler. Such lateral movement of the coupler is against the bias of the elastomeric member and the elastomeric member deflects in shear. After the deflection of the elastomeric member, the coupler is returned by the bias of the elastomeric member to the preselected position with respect to the longitudinal axis of the center sill. A coupler carrier adjacent the open end of the center sill is spaced from the coupler by the elastomeric member and acts as a stop to limit the downward movement of the coupler upon lateral swinging of the coupler and a vertical compression of the elastomeric member.

3,661,276

EXTENDED REACH COUNTERWEIGHT

Robert W. Wiesener, Roseville, Minn., assignor to Programmed & Remote Systems Corporation, St. Paul, Minn.

Filed Nov. 14, 1969, Ser. No. 876,899
Int. Cl. B25j *3/00*
U.S. Cl. 214—1 CM **8 Claims**



In an extended reach master-slave manipulator a counterweight mounted on the master side of the unit which automatically compensates for additional counterweighting needed when the slave arm is changed in length relative to the master arm. Mounting the counterweight on the master side of the unit reduces the total amount of counterweighting necessary, eliminates many parts which previously controlled the extended reach counterweight on the slave arm, and still accomplishes the feature of having the counterweight automatically adjust for differential extension of the slave arm as well as for an offset between the slave and master arm.

3,661,277

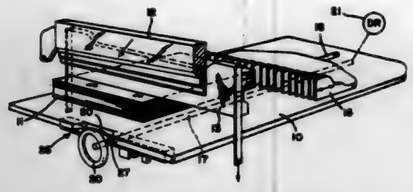
POSITIONING MEANS FOR MATERIAL CUTTER

Dorse James Young, Centerville, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Jan. 8, 1970, Ser. No. 1,506
Int. Cl. B23q *7/00*
U.S. Cl. 214—1.6 **3 Claims**

A material cutting device having a backgauge which may be manually positioned by means of a hand wheel accessible to the operator also includes a position indicating tape upon which visible indicia representing the backgauge position are printed or engraved. The visible indicia may be referred against an index mark located adjacent a circular scale

mounted to rotate with the hand wheel. The close proximity of the circular scale, the index mark, and the visible indicia



on the control tape facilitates the positioning of the backgauge by the operator.

3,661,278

APPARATUS FOR REMOVAL FROM A PILE OF THE LOWERMOST CARDBOARD BLANK

Martin Hammerle, Mullheim, Baden, Germany, assignor to Rheinmetall GmbH, Dusseldorf, Germany

Filed July 8, 1970, Ser. No. 53,259

Claims priority, application Germany, July 19, 1969, P 19 36 778.3

Int. Cl. B65g *59/06*

U.S. Cl. 214—8.5 K **3 Claims**



An apparatus for removal from a pile of cardboard blanks the lowermost of the blanks, which comprises two separating members supporting and releasing forwardly the lower edge of the pile of cardboard blanks and thereby gripping the blank next to the lowermost of the blanks. A slide removes the blank released from the blank column out of the pile. The separating members comprise an engaging ledge supporting the blank column and a row of needles fixing by piercing the blank column next to the lowermost of the blanks at the end face, both of the separating members are suspended by means of angle members on different carrying rods with the same pivot point and swing in and out alternately by means of a common driving means.

3,661,279

DEVICE FOR TRANSLOADING FLOATING CONTAINERS

Karl Macrander, Wilhelmshaven, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

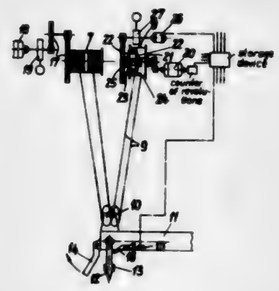
Filed May 25, 1970, Ser. No. 39,985

Claims priority, application Germany, Nov. 12, 1969, P 19 56 743.2; June 11, 1969, P 19 29 523.9; Mar. 19, 1970, P 20 13 082.9

Int. Cl. B65g *67/58*

U.S. Cl. 214—15 R **15 Claims**

A transloading system, especially for ships, in which a support frame has coupling devices for connection thereof to a container while a crane has winches from which cables lead downwardly to the support frame and over idlers thereon and then back up to drums on the crane. Drive motors reversibly actuate the winches while the drums can be biased in cable take-up direction while being prevented from moving in cable pay-out direction, or can be permitted to move in either direction. The drums provide the means for holding the cables taut when a floating container rises and falls due



to wave action. Special coupling devices are shown to connect the support frame to the containers and a control system is provided to monitor the rise and fall of a floating container and initiate control actions in conformity therewith.

3,661,280

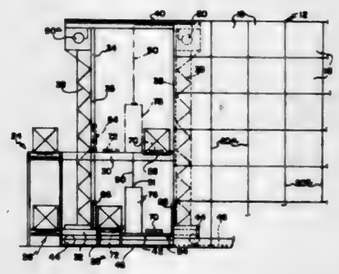
AUTOMATIC STORAGE AND SEMI-AUTOMATED ORDER PICKING SYSTEM

Wayne G. Atwater, Willoughby, Ohio, assignor to The Triax Company, Cleveland, Ohio

Filed Aug. 27, 1969, Ser. No. 853,325

Int. Cl. B65g *1/06*

U.S. Cl. 214—16.4 A **13 Claims**



An automatic warehousing system for storing and unstoring loads in which the movable load carrier unit for the system comprises an elevator portion having spaced load carrying extractor mechanisms mounted thereon for lateral movement with respect to the elevator portion for movement into and out of selected storage bins or spaces. An operator's station or cage is disposed between the extractor mechanisms and so arranged to provide accessibility to the extractor mechanisms from either side of the operator's cage so that order picking of stock supported on one of the extractor mechanisms after having been removed from storage by the latter extractor mechanism and deposited on the other of the extractor mechanisms, can be accomplished by the operator from his work station or cage. The arrangement is such that the operator's station is also movable vertically relative to the elevator portion. A multi-level conveyor system is provided for feeding loads into and out of the system.

3,661,281

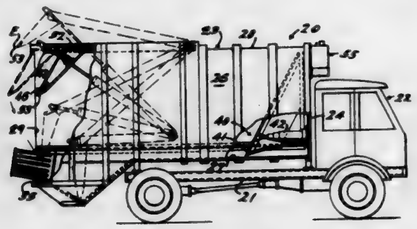
REFUSE COLLECTING VEHICLE

William A. Herpich; Glenn S. Park, and George W. Palmer, all of Galion, Ohio, assignors to Peabody Galion Corporation, Galion, Ohio

Filed Apr. 15, 1970, Ser. No. 28,566

Int. Cl. B65f *3/00*

U.S. Cl. 214—83.3 **7 Claims**



This invention relates to a rear end loader type of refuse collecting vehicle. There is no tailgate and the loading hopper, rather than being in the tailgate, is in the rear of the vehicle body. A packing blade moves refuse from the hopper into the forward portion of the body and in one embodiment may be reversed to sweep refuse from the hopper to a point exterior of the vehicle. A longitudinally movable ejector panel is mounted transversely of the body. During the discharging of refuse from the open rear end of the body the packer blade is in an elevated position and the refuse is discharged by the ejector panel between the elevated packer blade and the hopper. In some embodiments an auxiliary floor is provided in the hopper.

3,661,282

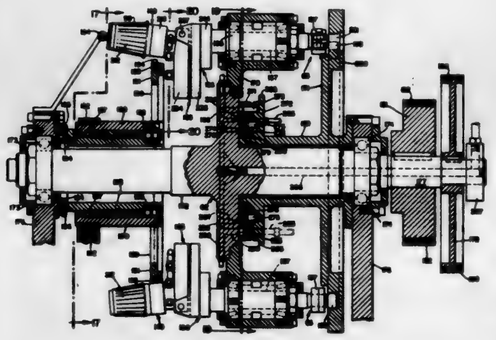
METHOD OF CONTINOUSLY MOVING CONTAINERS THROUGH A TREATMENT PROCESS

Eric S. Buhayar; James E. Hazard, both of Swarthmore; John J. Jaugus, Broomall; Fred W. Werner, Media; Robert W. Wheeler, Milmont Park, all of Pa., and Robert C. Crowe, Cherry Hill, N.J., assignors to Scott Paper Company, Delaware, Pa.

Original application June 9, 1967, Ser. No. 644,955, now abandoned. Divided and this application Mar. 4, 1970, Ser. No. 16,356

Int. Cl. B66c *1/02*

U.S. Cl. 214—152 **7 Claims**



A method and apparatus is disclosed for printing on the sidewalls of containers such as cups having a generally circular cross-section and a cylindrical or frusto-conical shape. The apparatus is designed for continuous operation as distinguished from indexed operation. Methods and apparatus are disclosed which are used to accomplish certain portions of the over-all printing method, which form parts of the over-all printing apparatus, and which also have separate utility in other applications. Among these are a method and apparatus for individually separating and feeding containers from axially aligned or nested relationship in a stack, a turret assembly and a method for moving containers in supported condition through a treatment station, a print blanket assembly including a method and means for controllably pivoting the print blankets during printing, a method and apparatus for removing containers from an orbiting mandrel without contacting the printed sidewall, and a method and apparatus for drying decorating material on the sidewalls of printed containers.

The feeding apparatus employs several successive container conveying sections, two of which operate at an increased speed to separate containers from a line or stack and feed them to a remote position. The turret assembly comprises a rotatable frame carrying a plurality of rotatably mounted mandrels through an orbital path including a treatment section and includes a friction wheel for accelerating the mandrels to a given rotational velocity in a section of the orbital path prior to the treatment section. Cam means are provided to control the direction of tilt of the axis of each mandrel as it passes through the treatment section when the surfaces of hollow frusto-conical objects are to be treated. The printed blanket assembly includes apparatus for pivoting the print blankets during contact with the moving surface to be printed so that contact with the moving surface is maintained for a longer time. The apparatus for removing containers includes a suction cup moveable through an orbital path and operating on the end of the container to transfer successive containers to gripping belts which feed it rapidly onto a conveyor substantially free from any bouncing action or other motion disturbance. The container drying apparatus includes guides to cause containers to follow a skewed path along and across a conveyor in a manner which rotates the container about its axis and substantially uniformly exposes its sidewall, and a number of radiant heaters and coolers arranged to circulate air over the exterior sidewall of the container as it rotates and moves axially in a skewed path along and across the conveyor.

3,661,283

METHOD OF AND APPARATUS FOR STORING A FLUENT MATERIAL

Eduard F. Fischer, West Vancouver, British Columbia, Canada; Edwin Farnworth, Everett, and Elmer Christensen, Kirkland, both of Wash., assignors to The Black Clawson Company, Hamilton, Ohio

Filed May 6, 1970, Ser. No. 35,180

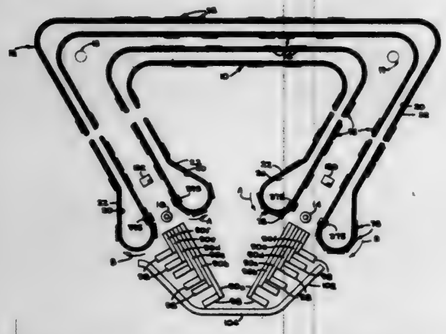
Int. Cl. B65g *65/28*

U.S. Cl. 214—152 **4 Claims**



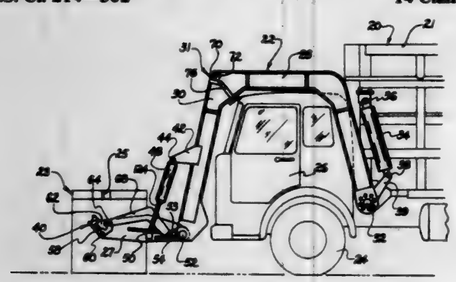
Wood chips or other fluent materials are stored in an annularly shaped pile by means of a boom mounted, pneumatically fed pipe. The boom is supported by a stationary tower, and the boom and pipe are provided with coincident pivotal and rotational joints which permit the boom and pipe assembly to be driven in vertical and horizontal planes separately or simultaneously by drive mechanism located on the tower to control the annular ad transverse dimensions of the pile.

3,661,284
CONVEYOR SYSTEM
Robert J. Traube, San Mateo, Calif., assignor to FMC Corporation, San Jose, Calif.
Original application Aug. 21, 1968, Ser. No. 754,443, now Patent No. 3,640,412. Divided and this application Nov. 17, 1969, Ser. No. 871,297
Int. Cl. B65g 47/10
U.S. Cl. 214—152 9 Claims



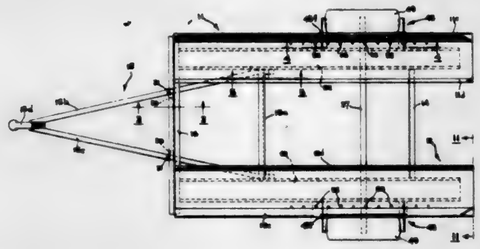
A storage and retrieval system for goods has two power operated conveyors movable in separate endless loops past two (or more) spaced apart picking stations, each picking station common to both conveyors. Each conveyor has bins with compartments in which goods are stored. Although the bins on each conveyor remain in the same sequence, the bins are movable relative to each other on the conveyor to define "buffer" zones which permit simultaneous picking by two spaced apart pickers. The control system for the conveyors includes a reader which receives digital data concerning a group of orders to be picked from a stack of cards, each card giving the identity, quantity, and distribution of one of the articles to be picked. The two conveyors are automatically stopped alternately with the bins containing ordered goods at the picking stations, and the operator at each picking station picks goods from the bins in accordance with a read-out unit which displays the card data. A plurality of packing lanes originate at each picking station and terminate at a plurality of packing stations. Each picker distributes goods to the separate packing lanes in accordance with the read-out unit at the picking station.

3,661,285
REFUSE HANDLING APPARATUS
William S. Appleman, Galion, Ohio, assignor to Harsco Corporation, Camp Hill, Pa.
Filed Aug. 5, 1970, Ser. No. 61,113
Int. Cl. B65f 3/04
U.S. Cl. 214—302 14 Claims



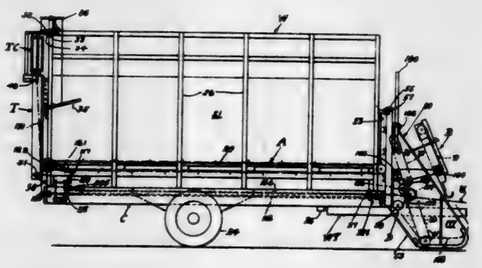
A refuse handling vehicle of the front-loading type provided with improved lift and dump apparatus for dumping waste materials from containers into the container of the vehicle. The machine is characterized by improved lift arms which are constructed to be resiliently yieldable so as to absorb shocks and stresses encountered during the pick-up and dumping of refuse containers.

3,661,286
VEHICLE TRAILER
Marjorie Ann M. Smith, 1441 West 190th Street, Gardena, Calif.
Filed June 1, 1970, Ser. No. 42,015
Int. Cl. B60p 3/10
U.S. Cl. 214—506 7 Claims



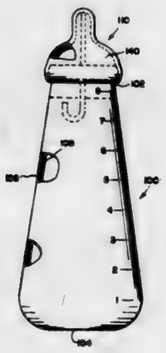
A vehicle trailer has a pair of parallel runners for supporting the vehicle to be towed, these runners being joined together to form an integral structure by means of cross braces. A triangular tongue member for connecting the trailer to a towing vehicle is pivotally attached to each of the runners by means of hinge devices so as to allow the tilting of the runner structure relative to the tongue, means further being provided to lock the tongue to the runners for normal towing. The device further includes a simple wheel-axle structure which is removably attached to the runners for ready adjustment of its longitudinal position therealong for optimum handling of the load.

3,661,287
BALE WAGON
Horace G. McCarty, Leola; Keith B. Anderson, Terre Hill, and David D. Stoltzfus, Gap, all of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed Apr. 2, 1970, Ser. No. 25,137
Int. Cl. B60p 3/00
U.S. Cl. 214—520 4 Claims



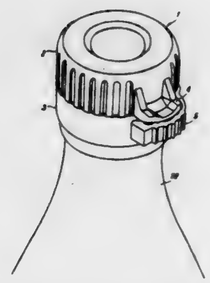
A bale wagon having bale pick up and bale thrower mechanism for picking up bales from the ground and for throwing them into the wagon and bale deflecting means associated with the pick up and thrower mechanism to direct bales to particular locations in the wagon.

3,661,288
INSULATED NURSING BOTTLE
Evelyn Noll, 937 Lincoln Boulevard, Santa Monica, Calif.
Filed Aug. 3, 1970, Ser. No. 60,393
Int. Cl. A61j 9/00; B65d 39/02
U.S. Cl. 215—11 R 4 Claims



An insulated nursing bottle, characterized by its portability while fully insulated to retain for substantial periods of time the imposed temperature of the fluid ingredients contained therein. Of especial significance is the means provided herein for substantially full consumption of the contents by the infant, less the intake of disturbing quantities of air. More especially, the particular adaptation of the rigidized nipple portion hereof is readily removable, replaceable and cleansable.

3,661,289
BOTTLE CAP SEAL DEVICE WITH A TEAR-OFF SAFETY STRIP
Bruno Segmuller, Niederfeld, Switzerland, assignor to Segmuller AG, Stein am Rhine, Switzerland
Filed Aug. 26, 1970, Ser. No. 67,127
Claims priority, application Switzerland, Sept. 21, 1969, 15732/69; Germany, Apr. 2, 1970, P 20 15 780.6
Int. Cl. B65d 41/22
U.S. Cl. 215—41 7 Claims



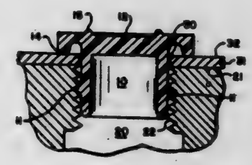
A snap-on bottle cap seal device is made of a elastic material, such as a plastic, and is formed of a reusable sealing cap and a ring-shaped safety strip detachably secured to and extending circumferentially about the lower end of the cap when it is initially secured on a bottle. A lifting lug is formed on the lower edge of the sealing cap and a tear-off tab, attached to the safety strip, is secured by small web sections to the lug.

3,661,290
WORKING CHAMBER
Arthur Clyde Davenport, P. O. Box 327, Broussard, La.
Continuation-in-part of application Ser. No. 791,630, Jan. 16, 1969, now abandoned. This application June 24, 1970, Ser. No. 49,477
Int. Cl. B65d 7/02
U.S. Cl. 220—1 R 4 Claims



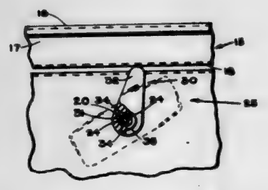
A variable configuration and volume chamber which, in its most basic form, consists of a plurality of first substantially rigid panels the marginal edges of which form a substantially rectilinear acute triangle and a plurality of second substantially rigid panels, the marginal edges of which form a substantially rectilinear obtuse triangle. The chamber is formed by hinge-joining marginal edges of respective panels in a particular arrangement such that the jointure of the second rectilinear obtuse triangle panels together with the obtuse vertices of the joined second panels intersect at the longitudinal axis of the chamber whereby rectilinear movement of the intersection is maintained in a plane of symmetry of the chamber throughout actuation of the chamber.

3,661,291
FASTENERS AND CLOSURES
Harry Hetzer, Depew, N.Y., assignor to GTI Corporation, Meadville, Pa.
Continuation-in-part of application Ser. No. 873,584, Nov. 3, 1969, now Patent No. 3,578,200. This application Aug. 24, 1970, Ser. No. 66,223. The portion of the term of the patent subsequent to May 11, 1988, has been disclaimed.
Int. Cl. B65d 39/04; F16l 57/00; B65d 59/02
U.S. Cl. 220—42 B 6 Claims



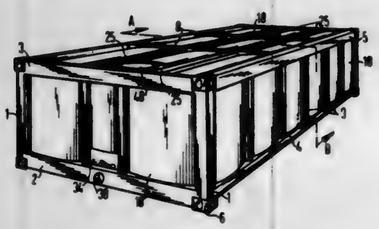
A fastener and closure is provided for areas surrounding threaded openings comprising a cover member having openings matching said threaded openings, a resilient cylindrical member adapted to slidably fit within said opening and having an interrupted thread on the exterior thereof intermediate the ends engaging the threads in said threaded opening, a circular end cap covering one end of said cylindrical member and extending beyond the periphery forming an annular radial flange, a depending ring at the outer periphery of the flange, spaced from the cylinder and engaging the surface surrounding the port and spacing the flange therefrom when the cylinder is in place in said opening whereby the cylinder is under axial tension between the thread and end cap.

3,661,292
CAN WITH LID OPENER
Albert R. Chappell, Jerseyville, Ill., assignor to The Metalife Company, Wentzville, Mo.
Filed Sept. 25, 1970, Ser. No. 75,454
Int. Cl. B65d *43/04*
U.S. Cl. 220—43 R 1 Claim



A lid opener lifts a replaceable can lid from the inside. An exterior lever and interior lifter arm made of aluminum are connected by a ribbed steel rivet driven through them and through the upper wall of the can. Turning the internal lever presses one of the lifter arms against the inner lid surface. The rivet ribs transmit adequate lifting torque.

3,661,293
RECTANGULAR FREIGHT CONTAINER FOR INTERNATIONAL COMBINED TRAFFIC, PARTICULARLY FOR FLOWABLE BULK GOODS
Helmut Gerhard, Weitefeld/Sieg, and Hans-Helmut Reichmann, Wahlbach/Siegen, both of Germany, assignors to Westerwalder Eisenwerk Dr. Paul Gerhard KG, Weitefeld am Sieg, Germany
Filed Feb. 26, 1969, Ser. No. 802,391
Claims priority, application Germany, Nov. 14, 1968, P 18 08 755.3; Feb. 27, 1968, W 41 737/81c
Int. Cl. B65d *7/04*, *7/44*
U.S. Cl. 220—71 33 Claims



A rectangular transcontainer for flowable goods, comprising a frame closed in itself and a tank liquid-tight on all sides, wherein part cylindrical outwardly cambered wall elements are connected to said frame in such a manner as to form therewith a liquid-tight box girder resistant to bending, twisting and buckling, the connections and fittings for access to the interior of the tank being located within the contour of said frame.

3,661,294
RETAINING WALL FOR FLUIDS AND METHOD FOR PRODUCTION
Lee E. Pearson, Newark, and Jerl O. Clark, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation
Continuation of application Ser. No. 62,678, Feb. 14, 1967, now abandoned. This application Aug. 10, 1970, Ser. No. 62,678
Int. Cl. B65d *7/46*, *11/24*
U.S. Cl. 220—83 12 Claims

A composite wall of reinforced synthetic resin, for retaining both gases and liquids, that is particularly adapted for underground use in gasoline storage tanks, which are resistant to external compression forces; such as, water flooded earth. The wall is characterized by a very high stiffness factor, produced by a combination of spaced ribs of filament wound material and that are hollow, retained on top of a chopped strand-resin wall, where the chopped strand bridges the spaces between the ribs.

A process involving the steps of forming a tank end cap on



a mandrel and thereafter supporting the end cap in space and laying up a resin-rich wall layer of chopped strand and resin in joined relation to the end cap, and curing the wall partially; then forming over the outer surface of the wall a hollow shell structure which comprises a combination of woven roving and filament wound layers superimposed and saturated with wet resin. Then completely curing the composite wall to produce a monolithic structure.

3,661,295
EXPLOSION RELIEF VALVE
Eduard Grunwald, Port Washington, and Walter J. Tuymer, Forest Hills, both of N.Y., assignors to Hoerbiger Ventilwerke Aktiengesellschaft, Vienna, Austria
Filed Mar. 12, 1970, Ser. No. 19,040
Claims priority, application Austria, Feb. 13, 1970, 1308/70
Int. Cl. B65d *25/00*
U.S. Cl. 220—88 A 4 Claims



An explosion relief valve for use especially to be applied to a crankcase of internal combustion engines and consisting of a spring loaded closing plate built into a limiting wall of the crankcase and having a flame barrier in the form of stacked metal strips cooperating with the valve seat.

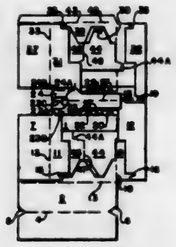
3,661,296
POT, PAN OR SIMILAR VESSEL FOR DOMESTIC USE WITH A HANDGRIP, AND A METHOD FOR MAKING SUCH A VESSEL
Emile Paul Eliza Hamer, 12 Princes Beautrixlaan, Wezep, Netherlands
Filed Feb. 13, 1970, Ser. No. 11,064
Int. Cl. B65d *25/28*
U.S. Cl. 220—94 A 6 Claims

An assembly for attaching a handle or the like to a pot, pan or similar vessel consists of two metal parts secured to the walls of the vessel at circumferentially spaced locations. A handle of a generally U-shaped configuration has recesses in the legs thereof which receive the metal parts. Fastening means extend through the handle and engage the metal parts within the recesses to secure the handle to the metal parts in



a manner so that no part of the handle is in contact with the vessel wall.

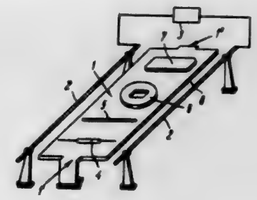
3,661,297
ARTICLE CARRIER
Prentice J. Wood, Jonesboro, Ga., assignor to The Mead Corporation
Filed Dec. 21, 1970, Ser. No. 99,731
Int. Cl. B65d *75/00*
U.S. Cl. 220—113 5 Claims



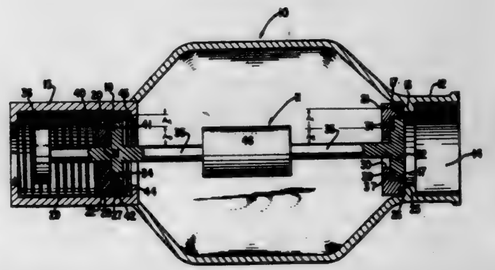
A basket style article carrier is disclosed having a bottom wall, side walls joined to opposite side edges of the bottom wall, end wall panels joined to the end edges of the side walls and extending inwardly therefrom, riser panels foldably joined to the inner edges of the end wall panels and extending inwardly of the carrier, a handle secured to the riser panels at one end along vertical fold lines and at the other end by a pair of positioning flaps foldably joined to the other end of the handle and disposed in inwardly enveloping relation relative to the adjacent riser panels which are interconnected with each other, and partition structure secured to each side wall and to the riser panels on each side of the handle, the partition structures being formed by supplemental separate blanks.

3,661,298
METHOD OF ORIENTING BODIES IN AN ELECTRIC FIELD AND APPARATUS FOR PERFORMING SAME
Benyamin Alexandrovich Ioffe, ulitsa Raunas, 45/2, kv. 81.; Robert Karlovich Kalnin, ulitsa Gorkogo, 53, kv. 19.; Vyacheslav Semenovich Dorofeev, ulitsa Frunzes, II, kv. 5.; Ivan Avgustovich Trusheils, ulitsa B. Aluksnes, 3, kv. 27., all of Riga; Bruno Domenikovich Zheigur, ulitsa Miera, 18, kv. 7., Latviiskaya SSR, Rizhsky raion, Salaspils; Anatoly Andreevich Ivanov, ulitsa Krasnoflotskaya, 53, kv. 33., Gorky, and Vladimir Viktorovich Preis, prospekt Lenina, 82, kv. 12., Tula, all of U.S.S.R.
Filed Dec. 15, 1969, Ser. No. 885,189
Claims priority, application U.S.S.R., Dec. 25, 1968, 1,289,064
Int. Cl. B23q *7/12*
U.S. Cl. 221—171 6 Claims

A method of orienting bodies in an electric field and apparatus for performing such method. Bodies are oriented in an electric field generated by a pair of electrodes defining therebetween an orientation zone, the bodies being oriented under the action of a non-uniform alternating electric field, the non-uniformity of which, in a plane extending perpendicularly to the direction from the beginning to the end portion of the orientation zone, is similar to the non-uniformity of an electric field created by two electrically charged points in a plane including these two charged points.



3,661,299
FRICTIONLESS BI-DIRECTIONAL INERTIA RESPONSIVE GAS DISPENSING APPARATUS
Gerald Durstewitz, Passaic, N.J., assignor to Walter Kidde & Company, Inc., Belleville, N.J.
Filed July 15, 1970, Ser. No. 54,912
Int. Cl. B67b *7/00*
U.S. Cl. 222—3 3 Claims

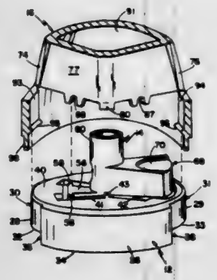


Apparatus for dispensing pressurized gas in response to a change in velocity including a container having an outlet opening and a second opening aligned therewith, and a valving device for sealing both of the openings. The valve device includes a large diameter first piston element at one end which engages an annular flange at the outlet, a smaller diameter second piston element at the other end which engages an annular member at the second opening, and a valve member moveable with respect to the first and second pistons. The first piston element has a central opening and a surrounding sealing surface facing the outlet. The valve member has a third piston element contacting this sealing surface and a fourth piston element contacting the surface of the second piston element. The third and fourth piston elements are interconnected by a rod which carries a mass element. The piston elements are provided with face seals and the pressure within the container normally holds the seals in contact with the surfaces they butt against to seal the openings. The valve member is of sufficient mass to overcome the pressure forces and open the container in response to a predetermined increase or decrease in velocity of the container.

3,661,300
DISPENSING PACKAGE

Louis V. Nigro, Saugus, Mass., assignor to The Gillette Company, Gillett Park, Boston, Mass.

Filed Oct. 2, 1969, Ser. No. 863,094
Int. Cl. B65d *83/14*, *47/10*
U.S. Cl. 222—80 12 Claims



An actuating assembly for actuating a tubular valve stem in a pressurized dispensing package which comprises, in its preassembled state, a base engageable with the package container, a depressible actuating member which has a discharge portion for connection to the tubular valve stem and includes a discharge passage communicating with the valve stem exit port, frangible means extending between the actuating member and the base for supporting the member on the base so that the discharge portion of the actuating member is aligned for assembly with the valve stem, and cooperating structure, engageable with the container or base, including a destructing member operating on the frangible means to separate the actuating member entirely from the base after the discharge portion of the actuating member has been attached to the tubular valve stem.

3,661,301
FLEXIBLE TUBES

Roger Couland, Fontenay-aux-Roses, France, assignor to Societe de Conditionnement en Aluminium Scal GP, Paris, France

Filed Feb. 20, 1970, Ser. No. 13,111
Claims priority, application France, Mar. 3, 1969, 6905587
Int. Cl. B65d *35/00*
U.S. Cl. 222—92 6 Claims

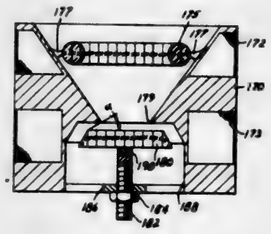


A flexible container comprising a flexible sidewall defining a conical tube which is open at one end wherein the sidewall has a section at the open end in which the tube has an expanded or increased diameter to thereby provide a section with the configuration of a truncated cone to facilitate stacking of a plurality of tubes one inside another.

3,661,302
SOLIDS DISPENSER HAVING MAGNETIC VALVE IN THROAT

David L. Braun, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Mar. 12, 1970, Ser. No. 18,892
Int. Cl. G01f *11/00*
U.S. Cl. 222—226 8 Claims

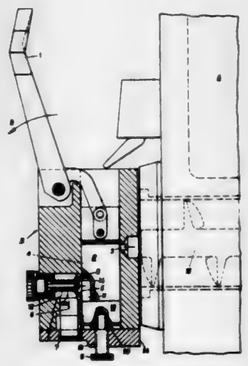


A magnetic valve for controlling the flow of solids is provided. It consists essentially of an orifice feeding tube with a magnetizing coil surrounding it, so that lines of force of the coil are generated axially of the throat and a spindle fitting into the throat of the tube and having its geometrical axis parallel with the direction of flow through the tube and a magnetic axis at right angles thereto. In addition an anti-bridging and anti-loading device is provided above the spindle to prevent bridging of the orifice at that point by packing of the dry powder and packing of powder against the spindle.

3,661,303
ICECREAM DISPENSER

Otto Prosenbauer, Vienna, Austria, assignor to Hollstein & Fuhrmann Ges.m.b.H., Vienna, Austria

Filed Aug. 12, 1969, Ser. No. 849,337
Claims priority, application Austria, Aug. 19, 1968, A 8057/68; Feb. 4, 1969, A 1112/69
Int. Cl. G01f *11/06*
U.S. Cl. 222—309 16 Claims

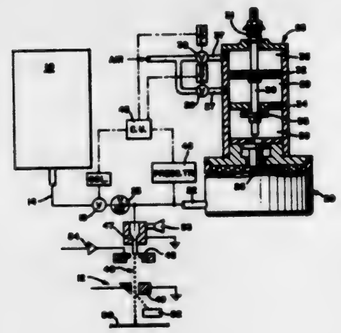


A housing is formed with a cylinder and with an inlet opening communicating with said cylinder. A stationary wall extends across the cross-section of said cylinder and is spaced from said inlet opening in the axial direction of said cylinder. The housing and wall are formed with an inlet opening which communicates with said cylinder and is spaced from said inlet opening in the axial direction of said cylinder on the same side of said inlet opening as said wall. A discharge piston is slidably mounted in said cylinder for movement between first and second limiting positions and arranged to define with said stationary wall a metering chamber which communicates with said inlet and outlet openings when said piston is in said first limiting position and to engage said stationary wall and close said inlet opening when said piston is in said second limiting position. A valve is arranged to control said outlet opening, closing it when the piston is withdrawn to unblock the inlet opening.

3,661,304
PRESSURE IMPULSE APPARATUS FOR INITIATING FORMATION OF FLUID DROPS

Esteban Martinez, Lambertville, N.J.; Gerald T. Davis, and Russell H Van Brimer, both of Chillicothe, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Aug. 3, 1970, Ser. No. 60,394
Int. Cl. B65d *83/14*
U.S. Cl. 222—394 4 Claims

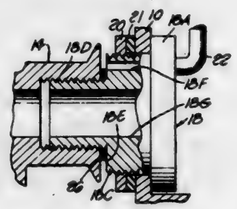


To avoid large initial globs of liquid, or misdirected initial
ts or liquid filaments, when starting one or more liquid drop
nerators, the flow through the orifice of the generator(s) is
itiated with an abrupt and substantial pressure rise time, as
applying an initial hydraulic shock in starting the flow.

3,661,305
DISPENSER WITH VENTING MEANS

rl E. Frahm, and Shirley E. Frahm, both of 1428 Oak Meadow Road, Arcadia, Calif.

Filed Aug. 4, 1969, Ser. No. 847,029
Int. Cl. B67d *3/00*
i. Cl. 222—481 3 Claims

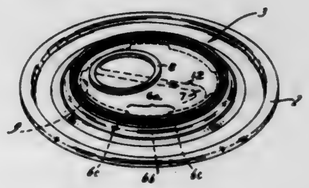


liquid container has a special fitting onto which either a
ure member or a dispensing valve may be threaded.
en the closure member is in place it seals a main
ensing bore as well as a vent bore. When the dispensing
valve is in place it presses a sealing washer against a shouldered portion to prevent leakage through the main bore and also such sealing washer spaces the valve from the vent bore to allow the interior of the container to be vented to the atmosphere.

3,661,306
CLOSURE FOR CONTAINERS AND DEVICE UTILIZING SUCH CLOSURE

Alexander Kuckens, Bellevue 20, 2 Hamburg, 39, Germany

Continuation-in-part of application Ser. No. 6,670, Jan. 21, 1970. This application Dec. 16, 1970, Ser. No. 98,766
Int. Cl. B65d *47/10*
U.S. Cl. 222—504 10 Claims



A tear-away closure is in form of a member of synthetic plastic which is to be fluid-tightly connected with a wall of a container, spanning an opening therein. An annular marginal portion of the member surrounds an aperture and is provided at that axial side thereof which will normally face the interior of the container with circumferentially spaced coupling portions which can engage with cooperating coupling portions on an auxiliary element with which the container is to be connected via the closure member. An inner portion of the member is located within the confines of the annular marginal portion and spans the aperture thereof in the region of the other axial side of the aperture. An annular weakened portion is unitary and fluid-tightly connects the inner and annular marginal portions and comprises first and second circumferentially spaced arcuate sections which are respectively located on an inner and an outer imaginary circle, and third sections which extend at least substantially normal to and connect each second section with two adjacent first sections to define at circumferentially spaced locations a plurality of radial notches which are to afford access to the coupling portions. A gripping portion is in form of a strip of the inner portion which is bounded at its lateral sides by weakened lines one of which merges with the annular weakened portion, and a ring-shaped part of the strip projects from the inner portion and is to be engaged by the fingers of a user.

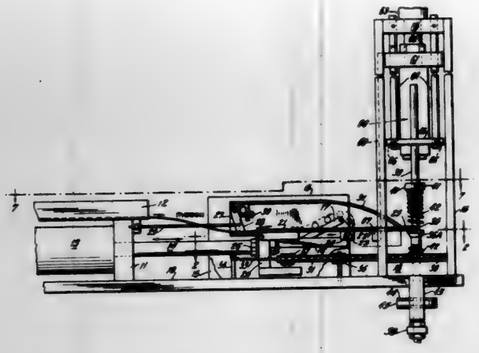
3,661,307
DECORATIVE BOW MAKING APPARATUS WITH SHAPED STAPLING ANVIL

Eugene Jacobson, Englewood, N.J., assignor to Sun Chemical Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 19,904, Apr. 4, 1960, now Patent No. 3,545,656. This application Aug. 30, 1970, Ser. No. 60,479
Int. Cl. A41h *43/00*
U.S. Cl. 223—46 8 Claims

The top surface of the rotating spindle of a bow making machine is cup-shaped in cross-section and serves as an anvil

to deflect the legs of a staple which staples together a



completed bow regardless of the angular position of the spindle relative to the staple source.

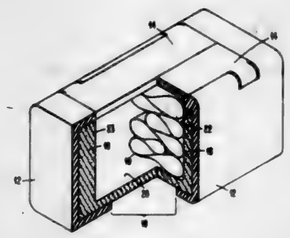
3,661,308
CAMERA AND BINOCULAR CHEST SUPPORT FRAME
Samuel Walters, 3134 Dona Emilia Drive, Studio City, Calif.
Filed Mar. 23, 1970, Ser. No. 21,805
Int. Cl. A45f *5/00*
U.S. Cl. 224—5 V 4 Claims



A support frame for attachment to the lower portion of the chest, for supporting a viewing device such as a camera or pair of binoculars, and having adjustable means for locating the viewing device in a convenient viewing position, the support frame including a generally rectangular body plate which is vertically disposed with its rearward side surface being slightly concave in the horizontal plane, a support arm attached to the lower front central portion of the body plate and extending horizontally forwardly from the body plate, a vertically disposed collapsible post for supporting the viewing device at its upper end with the lower end of the post being attached to the support arm, the post being generally parallel to the body plate and being adjustable both as to its vertical height and as to its horizontal separation from the body plate, and at least one strap for supporting the frame from the person of the viewer.

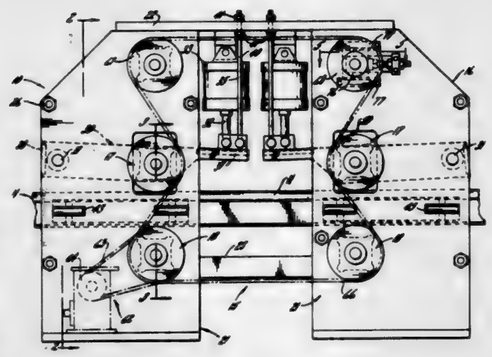
The purpose of the above abstract is to provide a nonlegal technical statement of the disclosure of the contents of the instant patent application and thus serve as a searching-scanning tool for scientists, engineers and researchers. Accordingly, this abstract is not intended to be used in understanding or otherwise comprehending the principles of the present invention hereinafter described in detail, nor is it intended to be used in interpreting or in any way limiting the scope or fair meaning of the claims appended hereto.

3,661,309
LOADING AND UNLOADING AN ENDLESS WEB IN A CARTRIDGE
Paul J. Arseneault, Longmont, and Louis B. Felerabend, Boulder, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 30, 1970, Ser. No. 51,091
Int. Cl. B65h *17/32*
U.S. Cl. 226—97 8 Claims



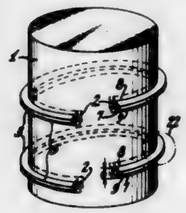
Two cartridges are shown herein which have the capability of storing a folded endless loop of tape. The cartridges are designed so that by pneumatic pressure the loop of tape may be unloaded from the cartridge by a controlled unfolding and reloaded into the cartridge by a controlled folding. Two cartridges are shown, one containing a porous wall to permit the appropriate air flow to control the folding and unfolding, and the other containing air passages in non-porous walls to control the folding and unfolding.

3,661,310
RAIL FEEDING DEVICE
Maurice J. Gross, Rockford, Ill., assignor to Chemetron Corporation, Chicago, Ill.
Filed Aug. 14, 1970, Ser. No. 63,764
Int. Cl. B65h *17/20*
U.S. Cl. 226—108 7 Claims



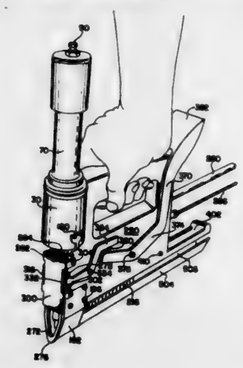
A device for feeding a railway rail with a substantially I-shaped cross section along a substantially horizontal path through a station in which a work operation may be performed on the rail. Two pair of vertically spaced, power driven rollers, the upper of each pair being vertically movable, press the rail between themselves and are power rotated to push the rail along the path. A flexible drive powers all the rollers and accommodates the vertical movement of the upper rollers. So that the rollers can engage the uneven surfaces of the rail in tight frictional engagement therewith, each roller comprises a plurality of discs positioned face-to-face and movable individually to adjust to the surface of the rail. The discs are mounted between power rotated end plates by three pins spaced angularly about the rotational axis of the end plates. To allow individual radial movement of the discs, a sleeve of resiliently deformable material is telescoped over each pin. As each roller is pressed against the rail, each disc presses against the sleeves to deform the latter as that disc comes into contact with the rail to allow the other discs to move relative to the rail until they make contact.

3,661,311
RECORD MEDIUM GUIDE
Henry Ray Warren, Indianapolis, Ind., assignor to RCA Corporation
Filed Mar. 21, 1969, Ser. No. 809,256
Int. Cl. B65h *23/32*; G11b *15/60*
U.S. Cl. 226—198 4 Claims



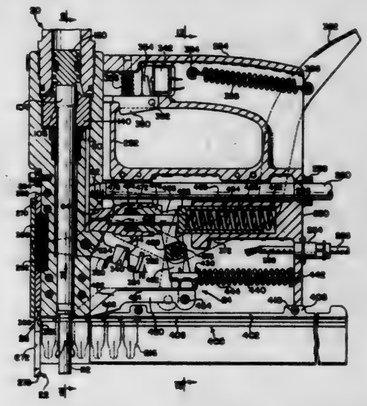
A device for guiding a record medium in a recorder-reproducer system. The arrangement includes guide members intersecting the supporting surface of the record medium, to provide an uninterrupted edge guiding surface along the path of the record medium.

3,661,312
DETECTION AND CUTOFF MECHANISM FOR POWER DRIVEN DEVICES
Henry Pomernacki, Northbrook, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed July 22, 1970, Ser. No. 57,246
Int. Cl. B25c *1/04*
U.S. Cl. 227—8 10 Claims



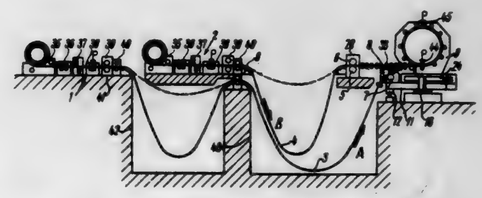
A power device for operating hand tools of the type having a reservoir of stored energy and a means for automatically releasing the energy to operate a drive piston and a hand tool carrying a collated strip of fasteners, the device being fully operable only when it is properly positioned with respect to a workpiece or structure and has detection means for deactuating the releasing of the stored energy to the drive piston if the power device is not so properly positioned. The detection means also includes cutoff means for separating scrap portions of the carrying medium of the collated strip from the balance of the strip which is within the hand tool and still carrying fasteners.

3,661,313
POWER DEVICE HAVING IMPROVED FEED MECHANISM
Henry Pomernacki, Northbrook, and Oliver E. Saari, Niles, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.
Filed July 22, 1970, Ser. No. 57,211
Int. Cl. B25c *1/04*
U.S. Cl. 227—136 6 Claims



A power device having an improved feed mechanism for advancing collated strips of fasteners in sequential fashion to a power actuated driving mechanism.

3,661,314
MILL TO PRODUCE SPIRAL-WELDED DOUBLE LAYER PIPES
Alexandr Ivanovich Tselikov, ulitsa Chernyakhovskogo, 4, kv. 127; Nikolai Alexeevich Grum-Grzhimailo, Sharikopodshipnikovskaya ulitsa, 2-a, kv. 7; Vadim Anatolievich Verderevsky, Volgogradsky prospekt, 171, kv. 35, all of Moscow; Alexandr Borisovich Vernik, prospekt Lenina, 30, 13, kv. 54, Elektrostal Moskovskoi Oblasti; Boris Pavlovich Skorupsky, ulitsa Pushkina, 19/16, kv. 68, Elektrostal Moskovskoi Oblasti; Igor Illarionovich Kazakevich, prospekt Lenina, 28, kv. 44, Elektrostal Moskovskoi Oblasti, and Ivan Vasilievich Kuznetsov, ulitsa Sovetskaya, 42, kv. 14, Novomoskovsk, all of U.S.S.R.
Filed Dec. 18, 1969, Ser. No. 886,268
Int. Cl. B23k *1/20*
U.S. Cl. 228—15 3 Claims

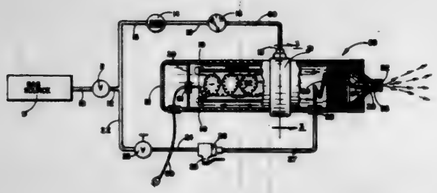


A mill to produce spiral-welded double layer pipes, wherein the strip feeding rolls are combined into two groups each of which feeds one of the strips, and the axes of the rolls rotation are horizontally disposed, these rolls being mounted at an angle, the value of which depends on the pipe diameter and the width of the strips.

3,661,315
MATERIAL REMOVING DEVICE

Charles J. Helton, Santa Ana, Calif., assignor to North American Rockwell Corporation

Filed June 13, 1969, Ser. No. 833,046
Int. Cl. B23k *1/00, 5/22*
U.S. Cl. 228—20 24 Claims

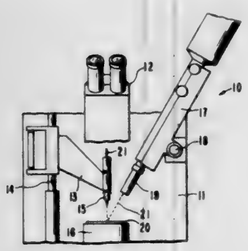


An apparatus for removing material from a workpiece having a first source of heated gas and a second source of gas. The first and second gas sources are housed such that the two sources of gas are selectively dischargeable to heat and remove the material, materials, or materials and components from a workpiece.

3,661,316
AIMING DEVICE FOR SEMICONDUCTOR BONDING APPARATUS

Frederick W. Kulicke, Jr., and John J. Lepone, both of Philadelphia, Pa., assignors to Kulicke and Soffa Industries, Inc., Fort Washington, Pa.

Filed Apr. 13, 1970, Ser. No. 27,955
Int. Cl. B23k *5/22*
U.S. Cl. 228—56.5 9 Claims



Apparatus for aiming a tool used to perform a mechanical operation on a semiconductor device, including a light pencil which directs a thin beam of light in the area where the tool is to be aimed. The position of the light beam indicates one of the positions of the moveable tool.

3,661,317
PLASTIC CONTAINER FOR EGGS

Hikoji Noguchi, 1251-10, Oaza-Narahashi Yamato-machi, Kitatama-gun, Tokyo, Japan

Filed July 20, 1970, Ser. No. 56,437
Int. Cl. B65d *1/00, 5/48*
U.S. Cl. 229—2.5 4 Claims

A plastic container for eggs comprising a main body with cavities and a cover body with cavities which receive eggs in cooperation with the corresponding cavities provided to the main body, said cover body being foldable to the main body and secured to said main body, during the conveyance or handling of the container from a raiser to retailer, mainly by means of a plurality of projections one ends of which are made integral with one of said main body or cover body and the other ends of which are weldable to the other of the main body or cover body and auxiliary by means of convex and concave projections formed on the cover and main body which are snapped to each other when the cover body is folded to the main body, the projections one ends of which

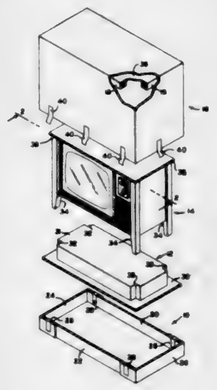


are welded to either one of the cover or main body being releasable by his fingers when a consumer wishes to open the container, and said convex and concave projections acting to secure the cover body to the main body when the container is opened by the consumer for taking out therefrom a desired number of eggs by releasing the welded projections and preserves the remaining eggs within the container.

3,661,318
LIFT-OFF SHIPPING CARTON FOR TELEVISION CABINET

Arthur Peter Miller, Cheektowaga, N.Y., and Leslie Robert Ryan, Smithfield, N.C., assignors to Sylvania Electric Products Inc.

Filed Oct. 21, 1969, Ser. No. 868,002
Int. Cl. B65d *5/50, 85/30*
U.S. Cl. 229—23 BT 1 Claim

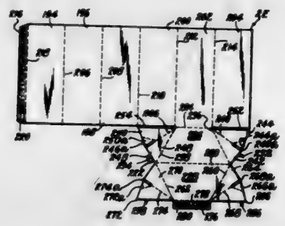


A shipping carton for a television cabinet or the like comprising a bottom tray having upwardly extending sidewalls, a pallet press fitted within the tray, a cover having downwardly extending sidewalls adapted to slidably engage the exterior of the bottom tray sidewalls, a pad member press fitted into the top of the cover. When assembled, the carton encloses the cabinet in an interlocked stacked assembly with the cover secured to the bottom tray by strips of tape or a vertically surrounding band. The assembly permits reopening for complete access to the cabinet by merely cutting the tape or band and lifting off the cover.

3,661,319
EXPANSIBLE AND COLLAPSIBLE MULTI-SIDED STRUCTURES AND BLANKS THEREFOR

Albert O. Koehler, 1217 Durham Road, Riegelsville, Pa.

Filed Mar. 2, 1970, Ser. No. 15,624
Int. Cl. B65d *5/02, 5/36*
U.S. Cl. 229—37 31 Claims



Multi-sided containers having side walls and a bottom wall, formed from a stamped or di-cut integral blank and characterized by having, in certain embodiments of the invention, horizontally projecting feet extending from the bottom wall that serve as stabilizers for the structures. The feet may be defined in part by a lock-slot providing a tab that can be folded upwardly to retain the structure in expanded, although collapsible condition. Alternatively, the lock-slot can be omitted and the feet folded from a horizontal into an upright position and secured to the confronting side wall to provide a permanently erected or expanded structure. In all embodiments of the invention, the blanks are designed so that the bottom wall is collapsible inwardly and upwardly and may be formed by a single bottom section, or by two similar cooperating bottom sections.

3,661,320
EGG CARTON

David Donaldson, 1500 North Van Buren, Wilmington, Del.

Continuation-in-part of application Ser. No. 705,194, Feb. 13, 1968, now abandoned. This application Jan. 19, 1970, Ser. No. 4,146
Int. Cl. B65d *5/66, 1/00*
U.S. Cl. 229—44 1 Claim

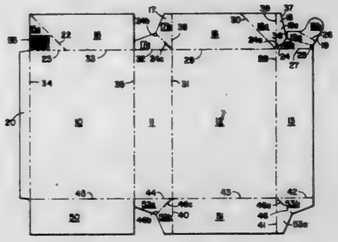


A one-piece egg carton formed from molded material comprising a hollow tray member having a plurality of egg receiving pockets; a hollow cover member having a front wall; a lock flap hinged to and upstanding from the front edge of the tray member and adapted to be contained within the cover member behind the front wall thereof when the carton is in closed condition with the front surface of the lock flap disposed against the rear surface of the cover member front wall; the cover member front wall having a rearwardly extending abutment received within a forwardly facing pocket presented by the lock flap to maintain the carton in closed condition. The lock flap has a longitudinally extending latching bar integral therewith adapted to be received within a longitudinally latching opening situate along intermediate portions of the rearwardly extending abutment in the cover.

3,661,321
CARTON HAVING GUSSETED SIDE FLAPS

Raymond G. Tessner, Jr., Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed June 29, 1970, Ser. No. 50,772
Int. Cl. B65d *5/54*
U.S. Cl. 229—51 SC 4 Claims

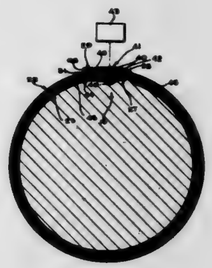


A carton and the method of folding the closure flaps for adhesive application and closing the carton. Gusset side flaps are first folded out and the major flap to which the side flaps are connected is folded in. This forms a virtual coplanar surface to which adhesive is applied. Next the gusset side flaps are folded in and under the major flap to which they are attached. The second major flap is then folded down over the first major flap. Two cut-score lines which operate in conjunction with a grip tab integrally connected to one side flap provide an easy-open feature which makes a triangular opening.

3,661,322
PACKAGE SEAL

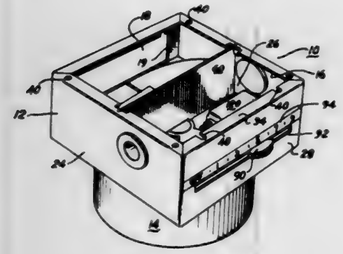
Donald E. Norman, Springfield, Mo., assignor to Kraftco Corporation, New York, N.Y.

Filed Apr. 6, 1970, Ser. No. 25,898
Int. Cl. B65d *35/10*
U.S. Cl. 229—55 10 Claims



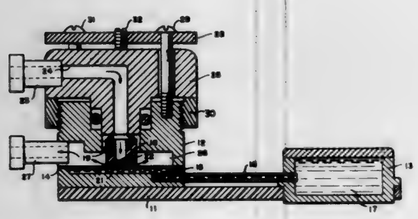
The invention discloses a packaging development providing enhanced resistance to splitting or opening of a seam or seal in a multi-ply wall flexible film package. A chub package having a cylindrical multi-ply wall of flexible film gathered at the end by clenched metal bands is set forth, the package having a seal formed at offsetting marginal strips on the inner and outer plies of the multi-ply wall. In a preferred method of forming a package, a marginal strip on each ply is offset from an adjacent edge of the adjacent ply prior to forming the seal and the seal is formed by heat sealing the marginal strips to opposite edges of the same ply.

3,661,323
ODOR NEUTRALIZING DEVICE
Richard W. Farris, 1508 Indiana Avenue, La Porte, Ind.
Filed June 10, 1970, Ser. No. 44,997
Int. Cl. A61l 9/04
U.S. Cl. 236—93 17 Claims



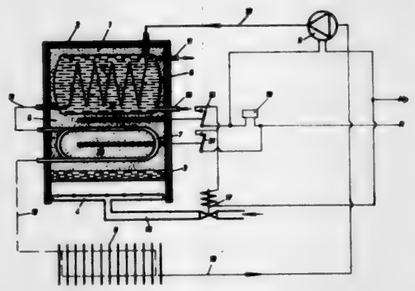
An odor neutralizing device for use with a heating and/or air conditioning system having an air return duct and a blower for use in a self-contained apparatus having an air passage with a fan or blower. The device includes a housing having an air inlet and an air discharge chamber and a container for the odor neutralizing material attached to the housing and communicating with the two chambers and forming an air passage therebetween. A thermostatically controlled valve senses the temperature of the air flowing through the chambers and varies the flow of air to maintain a substantially constant odor neutralizing vapor-to-air ratio regardless of air temperature.

3,661,324
TEMPERATURE SENSOR FOR SPACE SUIT
James B. Starr, St. Paul, Minn., assignor to The United States of America as represented by the Secretary of the Navy
Filed Dec. 10, 1970, Ser. No. 96,874
Int. Cl. G05d 23/02
U.S. Cl. 236—98 3 Claims



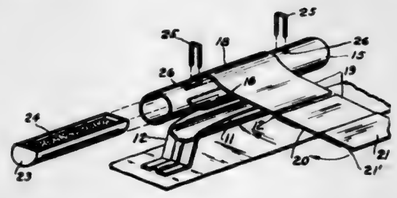
A temperature sensor having a liquid-filled temperature bulb for actuating a diaphragm which positions a hollow cylindrical valve plug. The hollow cylindrical valve plug is provided with an open end and a closed end having a small orifice therein whereby fluid flowing into said hollow cylindrical valve plug and out of said orifice provides a film of fluid between the closed end of the valve plug and the diaphragm thereby reducing sliding friction between the valve plug and the diaphragm.

3,661,325
VACUUM EVAPORATION TYPE WATER HEATER
Helmut Schmidt Auf Altenstadt, Remscheid-Reinshagen, Germany, assignor to Jos. Vaillant KG, Remscheid, Berghauser, Germany
Filed Oct. 19, 1970, Ser. No. 81,728
Claims priority, application Germany, Oct. 29, 1969, P 19 54 296.2
Int. Cl. F24d 3/08
U.S. Cl. 237—8 R 2 Claims



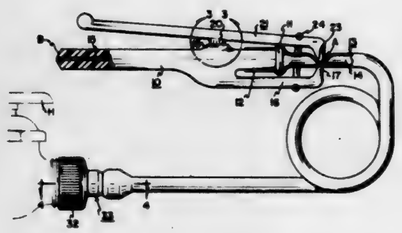
The service water boiler has a conduit for the space heating system extending through it and downstream from the boiler the conduit is exposed to the steam in the vacuum heating tank which also houses that boiler. The space heating thermostat switch is in series with a switch operated by a sensor in the tank with the two being arranged so that the gas to the burner heating the tank is shut off when a given temperature is reached at said sensor. A second sensor in the tank will, at a temperature lower than the given temperature, actuate a second switch also connected to shut off the gas to the burner provided that the thermostat switch is not calling for heat.

3,661,326
INSECTICIDE AND REPELLANT HOLDER FOR ATTACHMENT TO GARBAGE CAN LID
Milton A. Wilson, 12265 S.W. Webster, Seattle, Wash.
Filed Jan. 7, 1970, Ser. No. 1,129
Int. Cl. B05b 3/16
U.S. Cl. 239—60 1 Claim



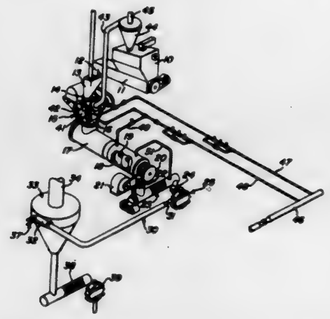
A tube of suitable size to lie snugly within the concave upper part of the handle on a garbage can lid is adapted to receive a boat shaped receptacle containing insecticide or repellant, the vapor or odor of which will tend to drive insects and animals away from the garbage can and a pliable tape is secured to the tube and used to attach the tube to the handle on the lid of the can.

3,661,327
LIQUID STORAGE AND DISPENSING DEVICE
Jordy Z. Adamson, 2932 Zenith Circle, Salt Lake City, Utah, and Charles B. Palmer, 580 North 750 West, Provo, Utah
Filed Apr. 7, 1970, Ser. No. 26,225
Int. Cl. B05b 1/30
U.S. Cl. 239—569 6 Claims



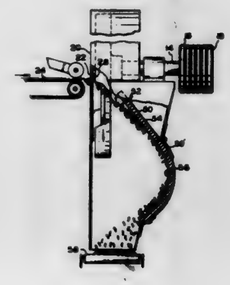
The present invention relates to portable devices for storing and intermittently dispensing liquid such as water. The device can be used as a child's toy, if desired. The rearmost portion of the device includes a one-piece, one-way valve that prevents the flow of contained liquid from the device when the same is charged preparatory to use. The elastomeric tubular storage member affixed to the one-way valve is expandable both longitudinally and radially in accordance with admission of liquid contents therein. The liquid charge is stored under pressure, by virtue of the elastomeric, resilient nature of the tubing, and is selectively released through the nozzle structure of the invention by intermittent hand pressure upon the actuating handle of the device. Such actuating handle is cradled or pivoted to a nozzle member constructed in a very simplified manner so as to minimize manufacturing and assembling costs.

3,661,328
PULP REFINING SYSTEM AND PROCESS
Raymond A. Leask, Springfield, Ohio, assignor to The Bauer Bros. Co., Springfield, Ohio
Filed Mar. 30, 1970, Ser. No. 23,592
Int. Cl. B02c 7/02
U.S. Cl. 241—18 30 Claims



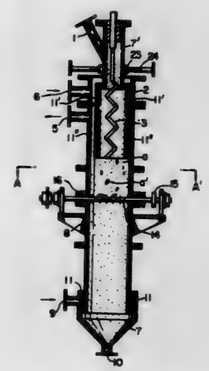
A unique system and process for producing an improved refiner groundwood from a great variety of raw fibrous material including both softwoods, hardwoods and their waste residuals, characterized by a multi-stage disc refining of the raw materials. The first stage refining is effected in a pressurized environment and features an absence of liquid except for that moisture embodied in the raw material per se in delivery to the refiner. The first stage refining is conducted under controlled conditions providing a moderate elevated pressure and subsequent disc refining is effected under atmospheric pressure conditions. The unique result is a bright fiber yield equal to that available in straight atmospheric refining. More importantly, the yield is achieved with a minimum of power. A most significant result of the invention process is an unexpected reduction in bulk of the fiber furnished.

3,661,329
MEANS AND METHOD FOR PRODUCING WOOD CHIPS
William C. Smith, and Wilfred Farnworth, both of Vancouver, British Columbia, Canada, assignors to Rader Pneumatics & Engineering Co. Ltd., Municipality of Burnaby, Canada
Continuation of application Ser. No. 782,585, Dec. 10, 1968, now abandoned. This application July 9, 1970, Ser. No. 56,173
Int. Cl. B27l 11/02
U.S. Cl. 241—28 11 Claims



Rotary chipper for producing chips for pulp making is constructed to cause impact of chips from rotary disc cutter at angle such as to cause breakup of cards but minimizing production of pins and fines.

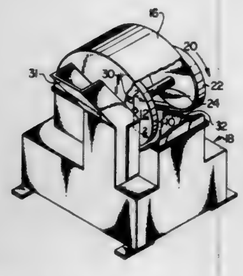
3,661,330
APPARATUS FOR DRYING POLYESTER PARTICLES
Seibi Yamada, and Yoshiharu Asada, both of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan
Filed Jan. 22, 1970, Ser. No. 10,679
Claims priority, application Japan, Aug. 23, 1967, 42/53755
Int. Cl. F26b 17/12, 17/22
U.S. Cl. 241—65 10 Claims



Apparatus for drying polyester particles comprising the first zone of heating and crystallizing non-crystalline polyester particles which are packed in such a manner that they are movable downwards by their own weight, at tem-

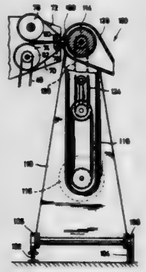
peratures ranging 120°–200° C., with mechanical agitation, until at least the surfaces of the particles are substantially crystallized, and the immediately succeeding zone of heating and drying the particles maintained under the packed state but without agitation, each zone having a separate hot air inlet with a common outlet therebetween.

3,661,331
WOOD CHIPPER
Earl Ballew, Route 2, P.O. Box 160, Blue Ridge, Ga.
Filed Sept. 8, 1969, Ser. No. 856,063
Int. Cl. B02c *18/06*
U.S. Cl. 241—92 **7 Claims**



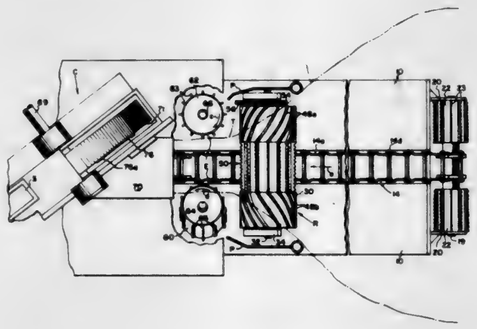
Wood chipper having a rotary disc with spirally mounted L-shaped wing knives to effectively sequentially slice the surface of the wood stock into a plurality of elongated segments which are automatically broken into chips, each segment being produced by cutting the wood surface simultaneously in multiple directions and at a predetermined depth. Thus, initial orientation of the bulk waste is unnecessary.

3,661,332
APPARATUS FOR GRANULATING SYNTHETIC MATERIAL
Rudolf Paul Fritsch, Stuttgart-Weilimdorf, Germany, assignor to C. F. Scheer & Cie, Stuttgart-Feuerbach, Germany
Filed Mar. 27, 1970, Ser. No. 23,329
Claims priority, application Germany, Mar. 29, 1969, P 19 16 219.7
Int. Cl. B02c *18/06*
U.S. Cl. 241—222 **10 Claims**



First and second cutting means can be shifted together between a first position in which the first cutting means is located in a path along which ropes consisting of a synthetic material are fed, and a second position in which the second cutting means is located in the path, and cuts the transported ropes. The respective other cutting means is available for servicing, and it is preferred that only the operating cutting means be driven by a motor, while the respective other cutting means, which is idle, is disconnected by a clutch from the motor.

3,661,333
TREE DESTROYER
Leward N. Smith, Remus, Mich., assignor to Morbark Industries, Inc., Winn, Mich.
Filed Jan. 22, 1971, Ser. No. 108,933
Int. Cl. B02c *18/06*; **B27l** *11/02*
U.S. Cl. 241—281 **44 Claims**



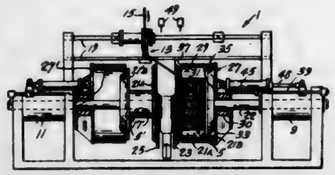
Tree destroying apparatus for reducing felled trees directly to chips comprising a log chipper for cutting the trunks and branches into chips, and apparatus for feeding the trees forwardly, trunk-first, toward the chipper, entrance opening including a tree supporting feed bed with a power driven conveyor, a generally laterally extending endlessly driven member above the feed bed cooperating with the conveyor to form a tree feeding drive nip, and upstanding laterally spaced limb and branch folding members positioned on opposite sides of the conveyor for folding the tree branches laterally toward the tree trunk.

3,661,334
DEVICE FOR REDUCING CONTACT PRESSURE OF A BOBBIN CONTACTING A DRIVE DRUM OF A THREAD WINDING ARRANGEMENT
Felix Graf, Winterthur, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Switzerland
Filed Oct. 14, 1969, Ser. No. 866,346
Claims priority, application Switzerland, Oct. 21, 1968, 15742/68
Int. Cl. B65h *54/42*
U.S. Cl. 242—18 DD **9 Claims**



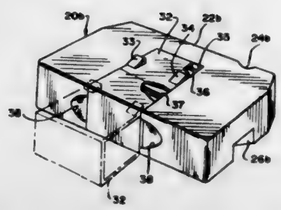
There is disclosed a device for reducing the contact pressure of a bobbin contacting a drive drum of a winding arrangement for threads or the like. The inventive device comprises a machine frame, a pivotable bobbin support arm and loading spring means cooperating with said bobbin support arm for providing the bobbin contact pressure. A lever is pivotably arranged on the machine frame and a guide element determines the position of said lever. According to an important aspect of the invention, the loading spring means is attached to the bobbin support arm in the vicinity of the bobbin and is hinged to the machine frame via the aforesaid lever, so that the guide element of the bobbin support arm deflects this lever and the loading spring means over a certain distance while the bobbin support arm is tilted.

3,661,335
ANTI-RICOCHET WIRE GUARD
John Joseph Stefaniszyn, Pointe Claire, Quebec, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada
Filed Apr. 24, 1970, Ser. No. 31,554
Int. Cl. B65h *54/02*
U.S. Cl. 242—25 A **6 Claims**



An apparatus for winding wire or rod on a reel having a shield, at least a portion of which is movable, to substantially enclose and protect wire wound on the reel when the wire is cut. A circumferential gap is provided between an edge of the shield and a flange of the reel through which the cut end of the wire can extend.

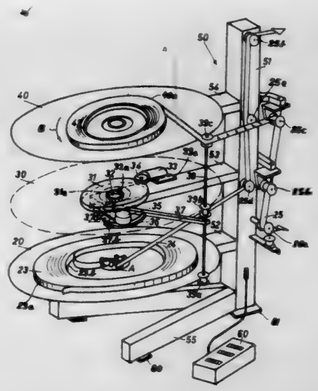
3,661,336
MINIATURE CARTRIDGE AND MEANS FOR INSTALLING AND REMOVING THE SAME
Melvin A. Lace, Prospect Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed May 1, 1970, Ser. No. 33,633
Int. Cl. B65h *17/48*
U.S. Cl. 242—55.19 A **8 Claims**



A miniature tape cartridge for stereo eight-track tape players with a housing of conventional width and height to fit pre-existing tape players, but which is shortened to terminate within a range from between anywhere inwardly of the front wall of the tape player to approximately 1 inch outwardly of the front wall of the tape player, and which has means extensible from the cartridge to facilitate grasping of the cartridge for removal and/or insertion thereof into the tape player.

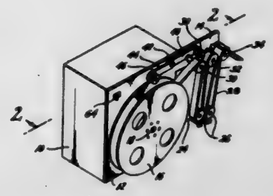
3,661,337
SUPPLY AND TAKEUP SYSTEM FOR FILM AND THE LIKE
Willi Burth, Kaufmannein, Marienplatz 4, Ravensburg, Germany
Filed Nov. 5, 1969, Ser. No. 874,334
Claims priority, application Germany, Oct. 18, 1969, P 19 52 592.9
Int. Cl. B65h *17/48*
U.S. Cl. 242—55.19 R **7 Claims**

A reel system for film and the like includes a pair of film plates or disks mounted on respective horizontal arms of an upright support carrying a pair of turntables drivable by respective electric motors. A payout device is fixed in the



middle of one of the disks to controlledly draw the film continuously from the interior of the coil and/or to coil the film on the external periphery of the other disk.

3,661,338
HIGH SPEED WINDER
Paul E. Becking, San Mateo, Calif., assignor to Data-Link Corporation, San Mateo, Calif.
Filed Nov. 3, 1969, Ser. No. 873,378
Int. Cl. B65h *23/18, 25/32, 23/16*
U.S. Cl. 242—67.1 **7 Claims**

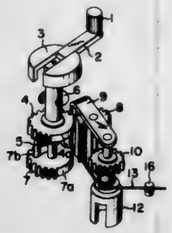


Tape winding apparatus including a motor-driven reel and means for stopping the reel in response to increased tension on the tape, including a tension control arm which is movable to control tape tension, and including automatic cut-off means when the tape breaks and when the reel is filled.

3,661,339
FILM REWINDING MECHANISM FOR CAMERAS
Terushige Shimizu, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Mar. 17, 1970, Ser. No. 20,327
Claims priority, application Japan, Mar. 27, 1969, 44/26698
Int. Cl. G03p *1/04*
U.S. Cl. 242—71.6 **5 Claims**

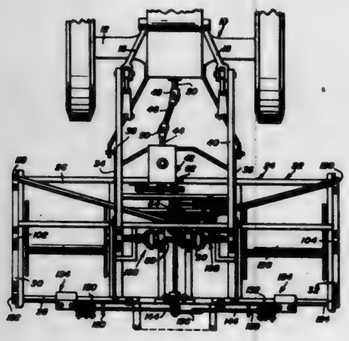
A film rewinding mechanism for underwater cameras comprises a rewinding shaft adapted to engage film rewind gearing for film rewinding and to disengage from the gearing during film advancement. The shaft is provided with two coaxial gears having areas formed without teeth. During film advancement, the areas without teeth are in alignment to disen-

gage the shaft from the rewind gearing; and during rewinding, the areas without teeth are out of alignment to form a



continuous toothed gear in engagement with the rewind gearing.

3,661,340
DOUBLE SPOOL WIRE WINDER WITH AUTOMATIC SPOOLING MECHANISM
Earl R. Trussell, Syracuse, Kans.
Filed Mar. 17, 1970, Ser. No. 20,168
Int. Cl. B65h *75/40*
U.S. Cl. 242—86.8 6 Claims



A support frame for support from a tractor hitch. The frame includes a rotatable transverse winding drum to be driven from a tractor power take-off and supported from the frame for easy removal therefrom. The frame further includes spooling guide structure for guiding wire being wound on the winding drum and the spooling guide structure includes structural features which enable it to be rendered inoperative and stored in an out-of-the-way position when it is desired to unwind wire from the drum.

3,661,341
COLLAPSIBLE REEL
Stephen L. Elfrid, 641-61st Place, La Grange, Ill.
Filed Nov. 24, 1969, Ser. No. 879,211
Int. Cl. B65h *75/22, 75/14*
U.S. Cl. 242—115 12 Claims

A reel for wire, rope, or similar materials having two rigid flat flanges spaced apart in parallel planes normal to a common axis and connected at angularly spaced points around the axis by a plurality of elongated fingers which are formed of a foldable or flexible material permitting movement of the flanges toward each other and which are of a length correlated with the length of an axially rigid spacer surrounding



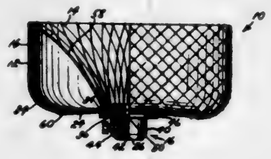
the fingers and engaging the flanges to hold them in spaced relation while the fingers are under tension.

3,661,342
OPERATIVE WINDING SEPARATOR
Charles K. Sears, Chicago, Ill., assignor to Jackson Controls Company, Inc., Chicago, Ill.
Filed Aug. 19, 1970, Ser. No. 64,995
Int. Cl. B65h *75/14*; H01f *27/30*
U.S. Cl. 242—118.41 12 Claims



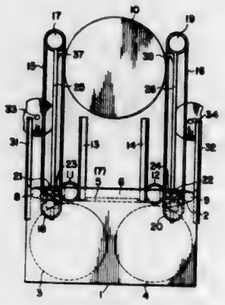
A partition mountable on a core to form winding spaces on a bobbin, the partition having a plurality of coacting surfaces cooperatively operative to captivate and conduct a strand being wound on the core from one side of the partition to the other.

3,661,343
PAD FOR A CONE
Jakier Barski, 9 Weller Terrace, Saddlebrook, N.J.
Filed June 8, 1970, Ser. No. 44,118
Int. Cl. B65h *49/36*
U.S. Cl. 242—141 9 Claims



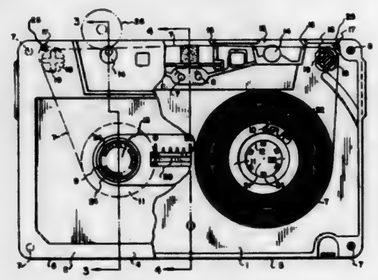
A pad for a yarn cone to catch unravelled yarn in excess of that required by the knitting machine. An open cylindrical frame is closed at one end, the end having a central aperture. An elastic mesh netting is placed over the frame, being retained by sleeve means in the aperture. The pad is positioned beneath the cone on the support rod. The stretched net inside the frame forms a soft, resilient, yet firm surface to catch yarn unravelling due to inertial forces from sudden stops or slowdowns on the yarn fed into the knitting machine.

3,661,344
MAGNETIC RECORDING AND REPRODUCING DEVICE
Takahiro Nakamura, Neyagawa; Osahiko Yano, Kadoma, and Hideki Sakumoto, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 18, 1970, Ser. No. 38,359
Claims priority, application Japan, May 24, 1969, 44-40299; 44-40300; 44-40301; 44-40302; 44-40303; 44-40304
Int. Cl. G03b *1/04*; G11b *15/32, 23/04*
U.S. Cl. 242—199 4 Claims



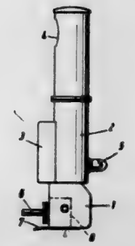
A magnetic recording and reproducing device of the cartridge loading type utilizing for its operation a movement of the magnetic tape magazine in which a magnetic tape is wound on a reel at the time the cartridge is inserted in and removed from the device. Specifically, a video tape recorder adapted to be mounted with a tape magazine has a mechanism for drawing the tape out of the tape magazine and for bringing the tape into contact with a tape guide provided with a rotary magnetic head or with a stationary magnetic head in response to the movement of the tape magazine when it is inserted in the magnetic tape recorder, a mechanism for removing the magnetic tape from the tape guide, stationary magnetic head or the like and returning it into the magazine in response to the movement of the tape magazine when it is removed from the recorder, a mechanism for bringing the tape out of contact with the tape guide, stationary magnetic head or the like for reducing the friction exerted on the running tape when the tape is fast forwarded or rewound, and a mechanism for making it easy to insert the tape cartridge in and remove it from the tape recorder.

3,661,345
HUB TO HUB TAPE CARTRIDGE
Theodore Ritz, Jr., 3691 Whitfield, Waterford, Mich., and Joseph M. Richtarcik, 20021 Avalon, St. Clair Shores, Mich.
Filed May 15, 1968, Ser. No. 729,469
Int. Cl. G11b *23/08*; B65h *75/28*
U.S. Cl. 242—199 5 Claims



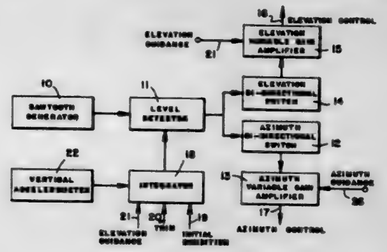
A hub to hub tape cartridge is disclosed comprising a housing having a component having locator pin apertures therein used in assembly of said cartridge; and a hub having a particular construction of tape lock means thereon; said component having male and female cross posts which mate without locking in a sliding fit to form a pair of spaced apart corner-turning posts for guiding the moving tape; said component also having an integrally formed solid and continuous thinned walled viewing section.

3,661,346
DEVICE FOR PRODUCING MISSILE GUIDING SIGNALS
Arnold Stangl, Ottobrunn, Germany, assignor to Bolkow Gesellschaft mit beschrankter Haftung, Ottobrunn near Munich, Germany
Continuation of application Ser. No. 729,215, May 15, 1968. This application Oct. 10, 1969, Ser. No. 866,139
Claims priority, application Germany, May 23, 1967, B 92667
Int. Cl. F41g *7/00*
U.S. Cl. 244—3.16 2 Claims



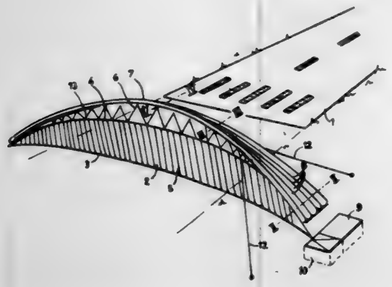
A device for producing signals for guiding a jet-propelled missile includes a periscope associated with an infrared goniometer, the periscope having an eyepiece and being mounted on a support plate. A hand lever is provided for manual guidance of the missile in the event that infrared guidance is ineffective and is positioned to extend in the direction of the line of sight of the periscope. This handle is positioned above the support plate of the periscope and on the side of the periscope opposite that having the eyepiece, for easy and comfortable operation by an operator.

3,661,347
GAIN CHANGER
William H. Woodworth, and Jack A. Crawford, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed July 16, 1969, Ser. No. 844,732
Int. Cl. B64c *13/50, 15/00*
U.S. Cl. 244—77 D 3 Claims



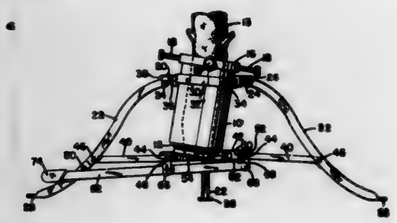
A device for adjusting the gain of the amplifier which drives the control surfaces of an aerodynamic vehicle to compensate for changes in lateral acceleration of the vehicle wherein the acceleration component of the commanded guidance is compared to the measured acceleration normal to the longitudinal axis of the vehicle. If the commanded acceleration is higher than that measured, the gain of the variable gain amplifier which drives the control surfaces of the aerodynamic vehicle is increased.

3,661,348
SUPPORTING MEANS FOR ELEVATABLE AIRCRAFT NET BARRIERS
Leif Mathias Borehag, Norrkoping, Sweden, assignor to Borgs Fabriks AB, Norrkoping, Sweden
Filed Nov. 5, 1970, Ser. No. 87,099
Claims priority, application Sweden, Nov. 14, 1969, 15,626/69
Int. Cl. B64c *25/68*
U.S. Cl. 244—110 C **8 Claims**



An arrangement for supporting an elevatable aircraft barrier net comprising a supporting means consisting of a convex arcuate structure consisting of at least one or more inflated gas or air-filled tubes to which a barrier net is attached, the tubes when inflated raising into an arcuate support for the net, causing the central portion of the net, or that part which is contacted by the aircraft, to be brought to a position where it is then the highest portion of the net.

3,661,349
ADJUSTABLE CHRISTMAS TREE STAND
Robert W. De Vries, Grand Rapids, Mich., assignor to Wolverine Industries, Inc., Grand Rapids, Mich.
Filed Mar. 30, 1970, Ser. No. 23,685
Int. Cl. A47g *33/12*
U.S. Cl. 248—46 **17 Claims**



The tree stand is collapsible for storage, and includes means to positively latch the tree shaft receptacle in adjusted positions of tilt, thereby minimizing the risk of accidental release of the receptacle and possible overturning of the assembly.

3,661,350
FLORAL CARRIER
Richard C. Eckler, Wayland, Mass., and Frank H. Amirault, Lynn, Mass., assignors to Fredrick Brasco, Weston, Mass.
Filed Mar. 19, 1970, Ser. No. 20,997
Int. Cl. A47g *7/00*
U.S. Cl. 248—146 **5 Claims**

A carrier designed for accepting a wide variety of vases employed in the floral trade is conveniently formed from plastic. The carrier configuration provides for ready adaptation to a wide range of vase sizes and shapes and prevents tipping during transportation and delivery of floral arrangements. Two general types of carriers are disclosed, a first



type being used generally for most shapes and sizes of floral vase, and the other type being employed specially for a class of irregular shapes, such as for bulky oblong or rectangular vases.

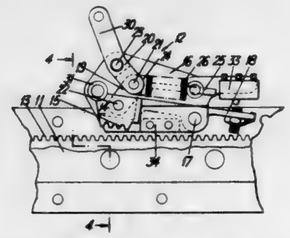
3,661,351
LADDER MOUNTED PAINT PAIL SUPPORT
Olaf L. Olsen, 5325 116th Avenue, N.E., Kirkland, Wash.
Filed Dec. 23, 1969, Ser. No. 887,633
Int. Cl. E06c *7/14*
U.S. Cl. 248—210 **3 Claims**



An inclined panel member including a hook at its upper end for embracingly engaging and canting relative to the side rail of a ladder for support of the panel member from the ladder side rail with the panel member inclined downwardly and outwardly to the outside of the ladder side rail. The lower marginal edge portion of the panel member includes outwardly projecting extensions for underlying a first pair of peripherally spaced portions of an inwardly projecting peripheral rim assembly of a paint can and the inclined side edges of the panel member include notches therein for embracingly and clampingly engaging a second pair of peripherally spaced portions of the cam rim assembly spaced slightly closer together than the first pair of rim assembly peripheral portions. In addition, the lower edge portion of the panel member includes a centrally disposed laterally outwardly struck tongue which projects from the undersurface side of the panel member and includes a free end portion for underlying still another portion of the peripheral rim assembly of the paint can spaced centrally intermediate both

the first and second pairs of peripherally spaced portions of the rim assembly of the can. In addition to providing a means for suspending a paint can from a ladder side rail, the panel member also functions as an inclined drain surface for draining paint clinging to a brush may be wiped to remove excess paint and the horizontally opening upper hook portion of the panel member defines a support from which a paint brush may be supported when the can is not being supported from a ladder, the handle portion of the paint brush being received through the hook and canted relative thereto with the bristles of the brush disposed over the top of the associated can.

3,661,352
ADJUSTABLE SLIDE MEMBERS, ESPECIALLY TO ACCOMODATE VEHICLE SEAT TRAVEL
Arthur Herbert McFarlane, Basildon, England, assignor to Teleflex Limited, Basildon, Essex, England
Filed June 4, 1970, Ser. No. 43,480
Claims priority, application Great Britain, July 10, 1969, 34,872/69
Int. Cl. F16m *13/00*
U.S. Cl. 248—429 **10 Claims**



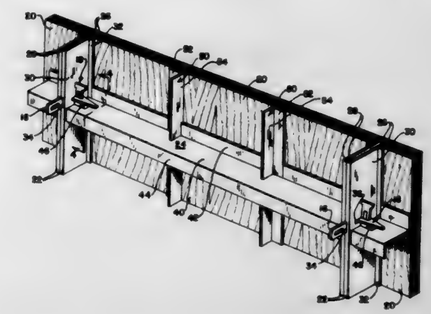
An improved locking device comprising two assemblies relatively slidable with respect to each other, one of said assemblies having a support means extending in the direction of relative sliding and having thereon a first position holding means, the other of said assemblies having thereon a second position holding means for operative engagement with said first position holding means and biasing means attached to a toggle link means, said toggle link means being connected to said second position holding means for shifting it into and out of engagement with said first position holding means.

3,661,353
TRAY HAVING CONTAINERS FOR FORMING ICE CUBES AND THE LIKE
Robert Newsteder, W. Orange, N.J., assignor to Monogram Ice Company, Inc., Orange, N.J.
Filed Aug. 24, 1970, Ser. No. 66,425
Int. Cl. B41b *11/62*
U.S. Cl. 249—103 **2 Claims**



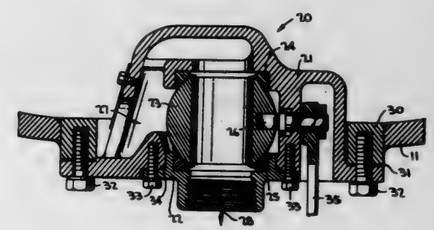
A tray having a plurality of apertures with containers disposed therein. The containers include a rim with a well depending therefrom which is shaped to form letters of the alphabet. The well sides each have a draft and locking means are on each container for selectively locking it into its respective aperture. The bottom of the containers are in a common plane and can all be placed in direct contact with a cooling surface.

3,661,354
REINFORCED CONCRETE WALL FORM PANEL
Richart T. Dagiel, Elk Grove Village, and David L. Cody, Hoffman Estates, both of Ill., assignors to Symons Corporation, Des Plaines, Ill.
Filed July 13, 1970, Ser. No. 54,501
Int. Cl. E04g *11/06*
U.S. Cl. 249—192 **8 Claims**



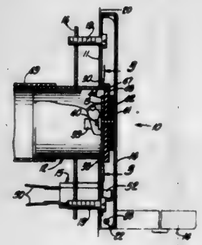
A reinforced concrete wall form panel of the "Steel-Ply" type and consisting of a steel-studded rectangular plywood facing which is reinforced by horizontally disposed, vertically, spaced, transverse crossbars which define included openings therebetween. Additional vertically disposed, horizontally spaced, longitudinal backbone members extend the full length of the panel, intersect the transverse crossbars, extend across the included openings and provide a plate action which limits the deflection of the plywood facing to substantially the deflection of such crossbars, while at the same time preventing rotation of the crossbars.

3,661,355
INTERNAL BALL VALVE
William W. Rawstron, Northboro, Mass., and Edwin S. Carlson, Chicago, Ill., assignors to Jamesbury Corporation, Worcester, Mass., by said Rawstron
Filed Feb. 2, 1967, Ser. No. 629,043
Int. Cl. F16k *5/06*; B60p *3/22*
U.S. Cl. 251—144 **6 Claims**



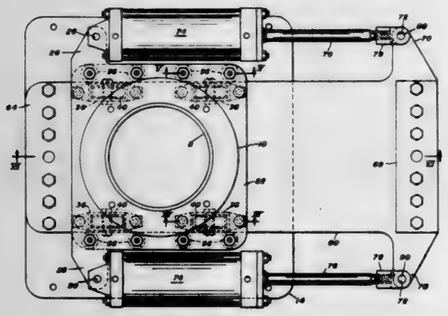
The disclosure herein is directed to valving means of the type commonly used in highway and railway tank cars. The operating mechanism of the valve is positioned within the tank with only the actuator of the valve projecting beyond the tank surface. Accordingly, in the event of a wreck or the like, the valve will not be damaged. The valve, comprising a ball positioned in a body portion between a pair of resilient lip seals, is conveniently actuated from a side thereof or from the bottom by means of a valve stem which is in engagement with the ball of the valve.

3,661,356
INLET VALVE ASSEMBLY FOR PNEUMATIC SYSTEM
Council A. Tucker, Glendale, Calif., assignor to Natter Manufacturing Corporation, Temple City, Calif.
Filed Feb. 9, 1970, Ser. No. 9,892
Int. Cl. F16k 1/16; F16l 5/00
U.S. Cl. 251—299 9 Claims



An inlet valve assembly for a pneumatic system having a mounting plate securable to a room wall. A one piece tubular inlet member is provided with integral keeper means for holding it detachably assembled to the mounting plate and provides a valve seat for a valve member mounted on the inner side of a pivoting cover plate for the assembly. A concealed control switch for the pneumatic system is operated automatically by opening and closing the cover plate.

3,661,357
DUST VALVE
Floyd Armstrong, Jr., Gary, Ind., assignor to United States Steel Corporation
Filed June 1, 1970, Ser. No. 42,170
Int. Cl. F16k 3/16, 25/00
U.S. Cl. 251—62 11 Claims



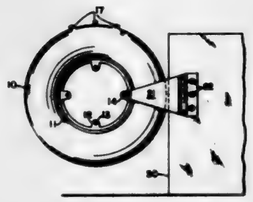
A dust valve for use between the hopper of dust catching equipment and the dust disposable system includes two spaced plates having a slide plate therebetween. The slide plate has an opening which is movable into and out of alignment with the dust conveying conduits. The opening walls are so shaped as to provide a shearing action across the bottom of the top plate to prevent or lessen dust build up. The height of the space is greater than the thickness of the slide plate which is held against the bottom of the top plate by means of spring biased rollers extending into the space. The longitudinal edges of the slide plate are in contact with roller guides. The slide plate is actuated by means of two air cylinders having their piston rods attached to opposite sides of the slide plate.

3,661,358
CABLE PULLING METHOD
Marcus J. Dill, Dallas, Tex., assignor to The Western Company of North America, Fort Worth, Tex.
Filed Oct. 13, 1969, Ser. No. 865,648
Int. Cl. E21c 29/16
U.S. Cl. 254—134.3 R 9 Claims



Elongated objects such as cables, wire, and the like, are passed through relatively tight-fitting tubular members by initially applying an aqueous mixture of a particulate hydratable polymer having a molecular weight of at least about 200,000 to each elongated object and thereafter passing the object through the tubular member by means of a pulling line. For example, an aqueous slurry containing from about 0.5 to about 4 weight percent of an admixture of a copolymer of acrylamide and vinylpyridine, and sodium carboxymethylcellulose is applied to the surface a telephone cable as it is being pulled through an underground conduit. The slurry will adhere tenaciously to the conduit, to reduce the frictional forces which normally inhibit the pulling operation, and is non-deleterious to conventional cable jacket material.

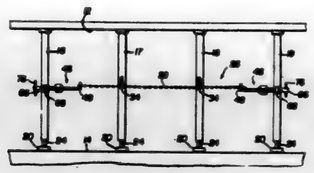
3,661,359
ENERGY ABSORBER
Brooks Walker, 1280 Columbus Avenue, San Francisco, Calif.
Filed Jan. 12, 1970, Ser. No. 2,327
Int. Cl. E01f 15/00
U.S. Cl. 256—1 8 Claims



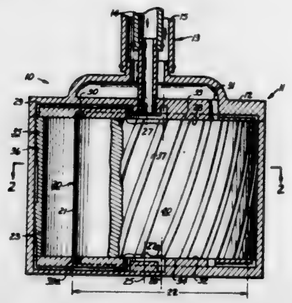
The object of this invention is to form an energy absorber of used auto tires and rims mounted so as to receive the impact on the tire tread and collapse the rim with enough energy, the tires to be filled with liquid with holes and blow-out plugs, the rims and plugs to be cheap enough to be thrown away after a serious accident.

3,661,360
STRESSED CHAIN FENCE
Edward F. Windham, Fort Lauderdale, Fla., assignor to General Safety Inc., Ft. Lauderdale, Fla.
Filed Nov. 12, 1970, Ser. No. 88,844
Int. Cl. E04h 17/02
U.S. Cl. 256—37 4 Claims

A tightening arrangement for a chain adapted to be strung rigidly between adjoining pluralities of post members; a screw type tightening device is attached to the first and last of the plurality of post members which have bracket means to which the ends of the chain can be releasable attached so that when the screw type tightening means are turned the chain is drawn in opposite direction to tighten the chain; the intermediate post members between the end posts are each provided with a hook for hooking attachment of said chain thereto between adjoining chain links; the intermediate hook members on the intermediate posts are pivotable to permit take-up of any slack in the chain between adjoining posts.

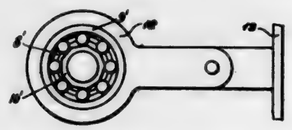


3,661,361
FLUID-ACTUATED VIBRATOR WITH HELICALLY-SHAPED FLUID PASSAGEWAYS
George Lester Malan, 560 East Rowland, Covina, Calif.
Filed Sept. 18, 1970, Ser. No. 73,409
Int. Cl. B01f 11/00
U.S. Cl. 259—1 R 4 Claims



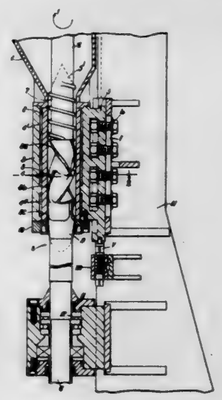
A free-rotor vibrator of the class which includes an outer case containing an internal cylindrical race wherein there orbits a free rotor of lesser diameter. Actuating fluid at relatively high pressure and exhaust fluid at relatively low pressure are respectively supplied to the rotor and exhausted therefrom simultaneously at both ends thereof in order to provide power for the orbital propulsion of the rotor. This is accomplished by providing helically-shaped passages between the race and the case, whereby the radical centrifugal forces of the rotor are resisted by helically-shaped separators, there always being at least one which resists the cantilever-type flexure of the race between the separators.

3,661,362
ROTARY VIBRATOR
Peder Ulrik Poulsen, Lonholt Ladegaard 3480 Fredensborg, Lyngby, Denmark
Filed Dec. 9, 1969, Ser. No. 883,434
Claims priority, application Denmark, Dec. 10, 1968, 6047
Int. Cl. B01f 11/00
U.S. Cl. 259—1 R 9 Claims



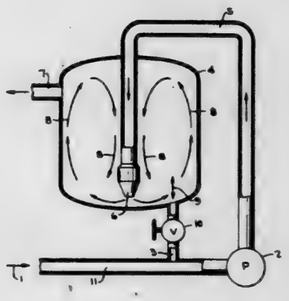
A rotary vibrator in which energy from a rotating shaft is converted to mechanical vibrations between a rotor member and a stator member, one of which is formed as a prism the cross-section of which is a regular polygon with rounded vertices while the other is provided with a plurality of balls or rolls axially parallel to the prism, retained in such relative positions that they are positioned at the vertices of a regular polygon the face number of which differs from the face number of the prism, preferably by one.

3,661,363
CONTINUOUS MIXER
Renato Aletti, Via Sempione 14, 21100 Varese, Italy
Filed May 15, 1969, Ser. No. 824,995
Claims priority, application Italy, May 18, 1968, 16671 A/68
Int. Cl. B01f 7/24, 7/08
U.S. Cl. 259—7 10 Claims



A mixer for use particularly in the dispersion of powders in gelatinous masses and for the handling of the resultant mixtures, applicable especially to the rubber and plastics industries in general, in which a single mixing chamber is used together with a single rotor consisting of a number of sections inside said chamber.

3,661,364
DEVICE FOR CONTINUOUS MIXING OF MATERIALS
Jaime Richard Lage, Umiken, Switzerland, assignor to F. Barry Haskett, Versoix, Geneva, Switzerland
Filed Jan. 31, 1969, Ser. No. 795,529
Claims priority, application France, Feb. 2, 1968, 139497
Int. Cl. B01f 5/12
U.S. Cl. 259—95 2 Claims

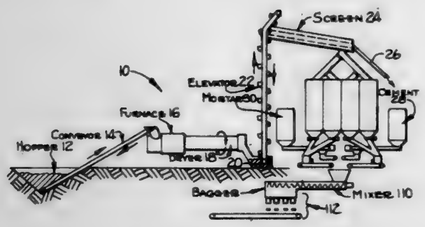


A method and a device for the continuous mixing of at least two materials of which one can be pumped and providing a tank for the mixing process in which the material to be mixed is caused to circulate by means of a feed pump.

3,661,365
APPARATUS FOR PROPORTIONING DRY PARTICULATE MATERIALS

Fayette J. Cloud, Jr., Lilesville, N.C., assignor to W. R. Bonsal Company, Lilesville, N.C.

Filed Nov. 30, 1970, Ser. No. 93,539
Int. Cl. B28c 7/04
U.S. Cl. 259—154 10 Claims

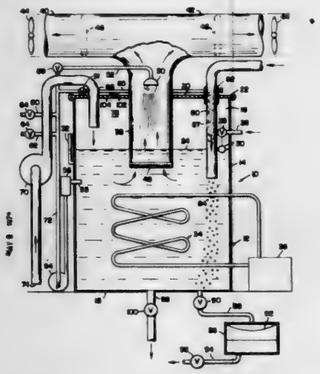


An apparatus for continuously combining and mixing a plurality of dry particulate materials, such as the various constituents in dry concrete or mortar mixes, in accurate preselected proportions. The apparatus includes a separate bin adapted to store a relatively large quantity of each constituent, a rotatable and vibratable screw conveyor for feeding one of the constituents from its bin at a constant preselected volumetric flow rate, and means for feeding a second constituent from its bin at a constant preselected gravimetric flow rate. The gravimetric feeding means includes a conveyor adapted to be translated at a constant speed, means for monitoring the weight of the constituent carried on the conveyor, and control means to adjust the rate of delivery of the constituent onto the conveyor to maintain a substantially constant weight thereof on the conveyor.

3,661,366
FLUID CLEANING AND COOLING APPARATUS AND METHOD

Cletus W. Shinkle, 600 Lewis Road, Santa Rosa, Calif.

Continuation of application Ser. No. 734,772, June 5, 1968, now abandoned. This application Mar. 1, 1971, Ser. No. 120,038
Int. Cl. B01d 47/02
U.S. Cl. 261—5 12 Claims

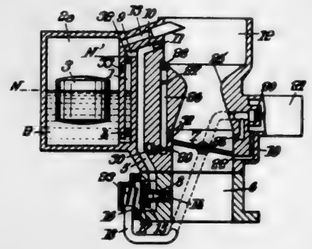


Apparatus and method for cleaning and cooling a fluid, such as ambient air, wherein a tank adapted to contain a coolant, such as water or the like, is provided with an air inlet conduit and an air discharge conduit, whereby air to be cleaned and cooled is directed into the tank through a portion of the coolant, and then outwardly of the tank. During the time the fluid passes through the tank, it is cleaned and cooled and, if the fluid is solvent-laden air, the solvent is separated from the air and thereafter recooled so that it can be used again. A coolant spray is utilized to clean and cool the fluid still further as it passes out of the tank through the discharge conduit.

3,661,367
CARBURETORS FOR INTERNAL COMBUSTION ENGINES

Andre Louis Mennesson, Neuilly-sur-Seine, France, assignor to Societe Industrielle De Brevets Et D'Etudes S.I.B.E., Neuilly-sur-Seine, France

Filed Apr. 7, 1971, Ser. No. 131,940
Claims priority, application France, Apr. 17, 1970, 7014054
Int. Cl. F02m 7/22
U.S. Cl. 261—41 D 1 Claim



The carburetor has a fuel/air mixture supply circuit constituted by the sequence of an ascending channel connected to a float chamber through an immersed calibrated orifice and a descending channel with an opening into the intake pipe of the carburetor downstream of the main throttle member of this pipe. The descending channel is controlled by a member which opens it only during periods of deceleration of the engine. The linking zone between the two channels is above the constant level of the float chamber and connected through an air passage having a second calibrated orifice, to an air intake zone of the carburetor other than that connected to the upper portion of the float chamber. The ascending channel has a further calibrated orifice above the constant level and communicates with the space above the constant level through a passage of small cross-section opening into the ascending channel between its two calibrated orifices and also itself above the constant level. The assembly reduces the suction in the ascending channel to an extent insufficient or sufficient to stop the fuel being sucked into the descending channel according as the closure member is open or not.

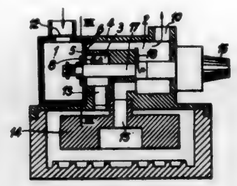
3,661,368
GASEOUS FLUX DISTRIBUTOR

Robert Metivier, 49 rue du Docteur Blanche, Paris, France

Filed Aug. 4, 1969, Ser. No. 847,352
Claims priority, application France, Aug. 9, 1969, 162554
Int. Cl. A61m 17/00; B01d 47/02
U.S. Cl. 261—63 2 Claims

This device consists of an enclosure subdivided internally by a partition perforated by a great number of holes having parallel axes and opening on one side into a single chamber and on the other side into two separate chambers by a longitudinal partition. A suitable shutter permits of covering in said single chamber holes corresponding to one of said

separated chambers and at the same time uncovering the equivalent number of holes opening into the chamber 3 for

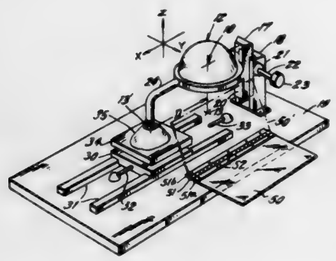


the purpose of varying the proportion of the outputs of the two fluxes.

3,661,369
HEATING APPARATUS HAVING SIMPLIFIED FOCUSSING MEANS

Bernard J. Costello, Ringoes, N.J., assignor to Argus Engineering Company, Inc., Hopewell, N.J.

Filed May 1, 1970, Ser. No. 33,725
Int. Cl. F27b 9/14, 3/06
U.S. Cl. 263—2 R 17 Claims



Heating apparatus including a radiation source and reflector means for focussing reflected rays at an image focus. The source of radiant energy and reflector means are mounted upon an adjustable support which is linearly movable in a vertical direction to position a heating apparatus above a working surface.

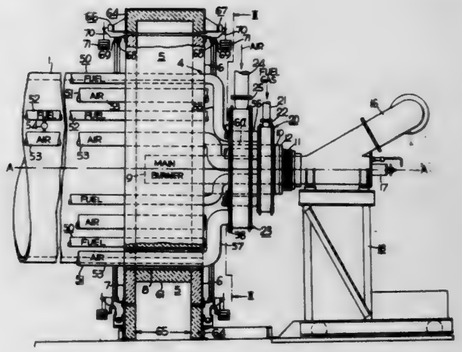
The working surface is comprised of means movable in two mutually perpendicular directions within a plane perpendicular to the direction of movement of said heating apparatus. Said means is further adapted to receive and support the object to be heated. Indicator means located outside of the heating area, is coupled to the heating apparatus and includes pointer means adaptable to be positioned immediately above the region of the object to be heated. The support assembly is initially moved to a first position. The object to be heated is placed upon the supporting means which, together with the eating apparatus is adjusted to place the indicator so as to rest upon the object to be heated. After adjustment, the supporting apparatus is then moved to a second working position whereby the adjustments previously made rapidly and accurately locate the object to be heated exactly in the focal image of the reflector means.

Further means may be provided for locking the supporting surface in position to prevent its jarring when moved into the working position. Also, novel reflector means may be provided for projecting the object being heated upon a screen for viewing purposes to accurately control the level of heating required whereby the radiation employed for heating is utilized as the illuminating source for the projection apparatus.

3,661,370
GAS DELIVERY MANIFOLD AND PROCESSED MATERIAL DISCHARGE ASSEMBLY FOR ROTARY KILN

Eugene F. Rossi, Wauwatosa, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Dec. 24, 1970, Ser. No. 101,282
Int. Cl. F27b 7/00
U.S. Cl. 263—33 R 8 Claims



A rotary kiln is disclosed with a rotary firing hood mounted concentrically over the material discharge end of the kiln to rotate with the kiln. A main burner assembly projects axially through a neck formed by a rear wall of the hood and a plurality of burners project radially through the kiln shell. Fuel gas conducting tubes for supplying the kiln shell burners, are mounted on the outer periphery of the kiln shell and extend axially through the hood and rear wall thereof. The fuel tubes each have portions that project radially inward along an outer surface of the hood rear wall and axially away from the rear wall to an annular fuel gas manifold box mounted close around the hood rear wall neck. The annular manifold box has a pair of axially spaced radial walls connected to rotate with the rotary hood and a nonrotating outer sleeve connected to a stationary fuel gas delivery conduit. An annular air manifold box, similar in construction to the fuel gas manifold box, is mounted close around the axially extending portions of the fuel tubes and between the fuel gas manifold box and the rear wall of the firing hood. Air conducting tubes mounted on the kiln shell also extend axially through the rotary hood and rear wall thereof and have portions which project radially inward and axially away from the rear wall to the annular air manifold box. The kiln is provided with a pair of radial discharge ports, circumferentially spaced 180° apart, for discharging processed material twice each revolution of the kiln. The air and fuel gas tubes are arranged along the kiln shell in two groups, with each group of tubes being on one side of the kiln and between the pair of kiln discharge ports to be spaced away from hot processed material discharged through the ports.

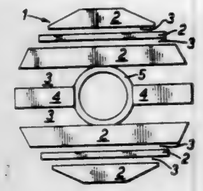
3,661,371
CONVECTOR PLATES

Leslie George Victor Skelton, Port Talbot; Godfrey Hunt Thomas, Porthcawl, and Hedley Brynmor Jenkins, Port Talbot, all of Wales, assignors to Skelton-Thomas Limited, Port Talbot, Wales

Filed May 12, 1970, Ser. No. 36,559
Claims priority, application Great Britain, May 13, 1969, 24,379/69
Int. Cl. C21d 1/00
U.S. Cl. 266—5 R 6 Claims

A convector plate for use in heat treatment furnaces comprising a plate of substantially circular configuration with an upper and lower surface each of which includes a plurality of

gas passage means of channel section, the passage means in one face being mutually parallel and each means in one face being mutually parallel and each having substantially parallel

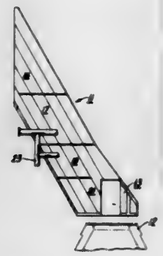


wall means, wherein the passage means in the upper surface are disposed mutually at right angles to the passage means in the lower surface.

3,661,372
WATER-COOLED PANEL

Hartman Mitchell, and Joseph A. Vietorisz, both of Pittsburgh, Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Oct. 27, 1970, Ser. No. 84,343
Int. Cl. C21c *5/40*
U.S. Cl. 266—15 **14 Claims**

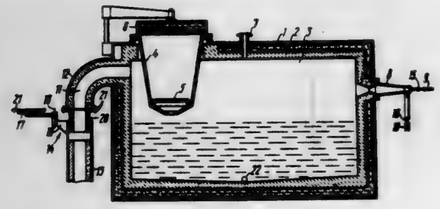


A hollow panel through which cooling water flows comprises a rectangular box having one undulating surface that is exposed to heat, such as the heat of exhaust gases from a BOF converter.

3,661,373
APPARATUS FOR FILTRATION OF MOLTEN METALS AND ALLOYS CONTAINING A SOLID PHASE

Vasily Mikhailovich Cheltsov, prospekt Kosmonavtov, 38, korpus 2, kv. 92; Sergei Petrovich Kosarev, Nalichnaya ulitsa, 39, korpus 1, kv. 20, and Nina Voldemarovna Didrikh, Moskovsky prospekt, 220, kv. 26, all of Leningrad, U.S.S.R.

Filed Aug. 28, 1970, Ser. No. 67,788
Int. Cl. C21c *7/00*
U.S. Cl. 266—34 T **2 Claims**

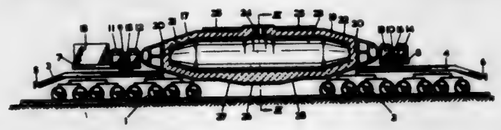


An apparatus is proposed for filtration of molten metals and alloys characterized in that the metal collector of the apparatus is made in the form of a hermetically sealed lined chamber provided an internal gas heating system and with a device for removing the products of combustion.

3,661,374
CAR WITH A VESSEL FOR THE CONVEYING OF HOT SUBSTANCES, PARTICULARLY MOLTEN PIG IRON

Wilhelmus Lambertus Van Wierst, Santpoort, Netherlands, assignor to Koninklijke Nederlandsche Hoogovens En Staal Fabrieken N.V., Djmuiden, Netherlands

Filed Oct. 2, 1969, Ser. No. 863,182
Claims priority, application Netherlands, Oct. 7, 1968, 6814343
Int. Cl. C21c *1/06*
U.S. Cl. 266—39 **6 Claims**

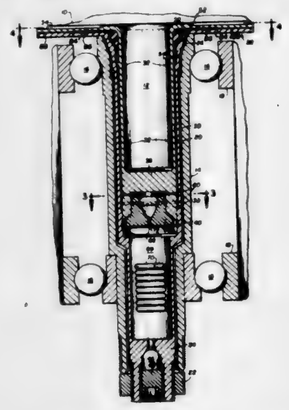


The refractory lined vessel is elongated and carried by wheeled bogies to be tiltable about a horizontal axis, and includes the improvements, severally and in various combinations, that the vessel shell is bulged and the lining is thickened opposite the opening, preferably over at least 40 percent of the length of the vessel and about half of its peripheral extent, producing a longer lived vessel and one which is cheaper and more readily manipulated in respects set forth in detail.

3,661,375
SHOCK AND VIBRATION ISOLATOR AND DAMPING SYSTEM

Walter J. Krupick, Succasunna; Allan B. Pilger, W. Caldwell, and Robert J. Dickie, Maywood, all of N.J., assignors to The Singer Company, New York, N.Y.

Filed May 7, 1970, Ser. No. 35,318
Int. Cl. F16f *15/10*
U.S. Cl. 267—137 **17 Claims**

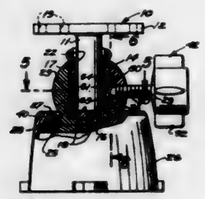


A system for connecting between two members to provide isolation and damping of relative movement between the members, the system including a pair of spaced telescoped coupling sleeves respectively secured to said members. A damping means is disposed in the space between the sleeves, and an effective spring resistance to radial and axial movement is provided between the sleeves.

3,661,376
SUPPORT HAVING THREE AXES OF ADJUSTMENT AND A SINGLE LOCKING HANDLE

Dwight A. Hill, 1740 Huntington Drive, South Pasadena, Calif., and Otto F. Colbert, 6309 South Pickering Avenue, Whittier, Calif.

Filed Apr. 9, 1970, Ser. No. 27,039
Int. Cl. B23q *1/04*
U.S. Cl. 269—75 **10 Claims**



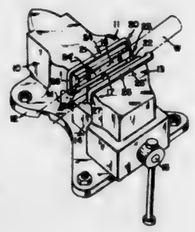
A work support device has a base structure, a split carrier rotatably mounted on the base structure, a post, and a split bushing for releasably receiving the post and for selectively gripping the post. The split bushing is mounted within the split carrier for turning movement about an axis, and the split carrier, the split bushing and the post are selectively arrestable and subsequently releasable upon actuation of a single clamp device.

To increase the range of adjustment, and decrease the requisite power for adjustment and adjustment friction, a leaf spring is provided in force transmitting relationship with the split bushing and resiliently bendable toward the split bushing at the above mentioned axis of movement of the split bushing. The clamp device then includes a bolt which has a certain cross-section and a tip portion which is in force transmitting relationship with the leaf spring within an area of force transmission that is several times smaller than the bolt cross-section and that has a center located substantially on the axis of movement of the split bushing.

3,661,377
WORK BRACE FOR VICE

John D. Fuller, 1044 Laurent Street, Santa Cruz, Calif.

Filed Nov. 16, 1970, Ser. No. 89,618
Int. Cl. B25b *1/24*
U.S. Cl. 269—88 **4 Claims**

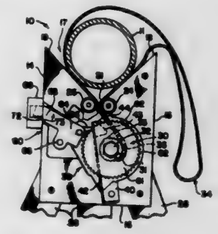


A work brace vice attachment for a custom jeweler's mandril and the like for achieving a three point support for such mandril between the jaws of such vice and on a sling under the working end of the mandril and consisting of a U shaped sling having leg portions adapted to overly the respective jaws of the vice and end portions cooperating with the sling for embracing the vice jaws such that one leg portion serves as an attaching means for attaching the brace to the fixed jaw, the other leg portion serving as a stabilizer guide for the movable jaw of the vice.

3,661,378
GRIPPING DEVICE

Harry G. Dodge, and Leonard P. Spontelli, both of Painesville, Ohio, assignors to Crawford Fitting Company, Solon, Ohio

Filed Sept. 30, 1969, Ser. No. 862,296
Int. Cl. B25b *1/20*
U.S. Cl. 269—131 **17 Claims**

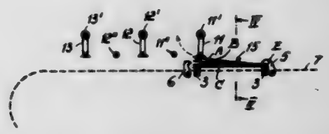


A vise-like apparatus for securing a workpiece with a flexible, elongated, extensible binding member is disclosed as having a body which includes a pair of opposed side faces and a work supporting cradle, an opening in the body, and means providing a binding member having one portion secured within the body and having another portion in communication with the opening for securing the workpiece. Guide means are disposed adjacent the opening for guiding the binding member through the opening. The guide means include a pair of guide rollers disposed beneath and adjacent to the opening. The supply means for the binding member includes a spool secured between the side faces of the body. In one embodiment, one end of the binding member is secured to the spool while the other end is capable of being extended from the spool through the opening to envelop a workpiece and be reinserted into the opening for reengagement with that portion of the binding member remaining on the spool. In an alternative embodiment, the binding member is secured to the spool so that two free ends are exposed. Adhering means, such as adhesives or fastening tape, are secured to the respective ends of the binding member for rapid connection of the ends after disposition about the workpiece. Torquing means are provided to tension the binding member about the workpiece. Locking means are provided to prevent inadvertent loosening of the band from the workpiece. Release means are provided for releasing the locking means when the operator desires to free the workpiece.

3,661,379
METHOD AND APPARATUS FOR OPENING SIGNATURES

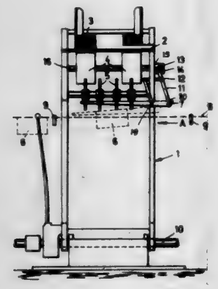
Leonardo Dolfini, via Boscovich, Milan, Italy

Filed May 14, 1970, Ser. No. 37,087
Claims priority, application Italy, May 26, 1969, 17341 A/69
Int. Cl. B65h *39/02*
U.S. Cl. 270—54 **14 Claims**



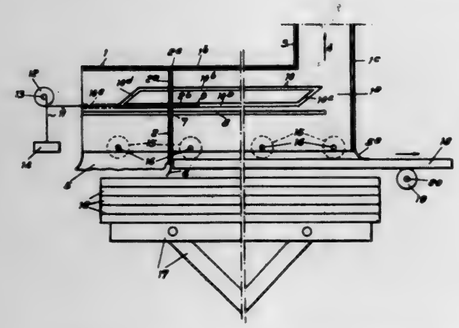
Signatures are opened up during travel on a conveyor in a substantially horizontal plane by means of suction heads which lift all sheets above the lower center sheets of successive signatures. The thus opened signatures are transferred onto a wedge-like support which extends into the space between the center sheets.

3,661,380
APPARATUS FOR LOADING SHEETS ON A CONVEYOR
Hans Muller, Zofingen, Switzerland, assignor to Grapha Maschinenfabrik Han Muller AG, Zofingen, Switzerland
Filed Mar. 6, 1970, Ser. No. 17,123
Claims priority, application Switzerland, Mar. 7, 1969, 3500/69
Int. Cl. B65h *5/04*
U.S. Cl. 271—14 11 Claims



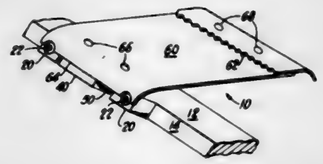
Folded sheets are partly unfolded and deposited in a straddling position on a holder bar which is reciprocated along a conveyor so that the sheet is accelerated and moves at a minimum speed relative to the conveyor when in the direction of movement of the conveyor when stripped from the holder bar. During movement of the holder bar and sheet in a forward stroke in the direction of movement of the conveyor, the leading end of the holder bar is moved toward the conveyor to facilitate the transfer.

3,661,381
PNEUMATIC CONVEYORS
Bernard Kuzniak, Place J. B. Moulin, Lezoux, France
Filed Mar. 19, 1970, Ser. No. 20,906
Claims priority, application France, Apr. 18, 1969, 6912139
Int. Cl. B65h *3/08*
U.S. Cl. 271—26 12 Claims



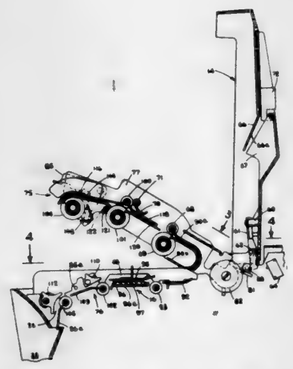
A conveyor operating by suction for transporting flat or longitudinally corrugated rectangular articles placed on an elevating table, with a suction source, means for advancing each article to be transported in sealing contact with a box or chamber having the form of a rectangular parallelipiped open over the whole of its lower side and in communication with the suction source and means for only permitting the suction to be usefully applied to the article in the part of the chamber against which the article is located at a given moment. The means for advancing the product and the means for allowing the suction to be applied usefully to the product comprise a common device which forms a movable end wall of the box or chamber opposite a fixed wall beyond which the product is transported. The suction mechanism is connected to the end of the box or chamber adjoining the fixed wall, and the movable wall is able to move in a practically fluid-tight manner along the box or chamber. The open side of the chamber has sealing means which engage the article to be displaced, and the movable wall carries guide rollers which cooperate with slots disposed respectively in vertical walls of the box or chamber, the displacement of the movable wall being effected through the action of suction. Means are also provided to urge the movable wall towards its position of rest.

3,661,382
TORSIONALLY SPRING LOADED FEEDER PLATES
Gordon M. Spicer, Baltimore, Md., assignor to Koppers Company, Inc., Pittsburgh, Pa.
Filed Oct. 6, 1970, Ser. No. 78,421
Int. Cl. B65h *3/24*
U.S. Cl. 271—44 7 Claims



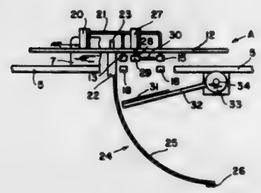
An apparatus for sequentially removing sheets from the bottom of a stack with a reciprocating feeder bar including means for pivotally mounting feeder plates at laterally spaced intervals along the bar. Coil springs are used to spring load the feeder plates with respect to the bar and permit relative motion between the plates and the bar without substantial flexing of the plates.

3,661,383
DOCUMENT HANDLING APPARATUS FOR PHOTOCOPY MACHINES
Douglas I. Morrison, Norwalk, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.
Filed Jan. 22, 1970, Ser. No. 4,945
Int. Cl. B65h *5/06*
U.S. Cl. 271—51 9 Claims



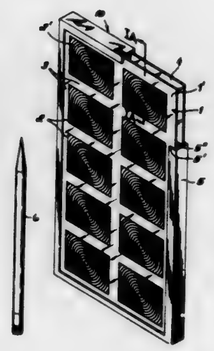
Compact original document sheet handling apparatus for photocopy machines is adapted such that various opposed sheet feeding and guiding elements can be conveniently, manually separated to render substantially the entire sheet feed path readily accessible, thereby facilitating retrieval of stranded original sheets therefrom.

3,661,384
ARCUATE STACKER
Kenneth O. Morton, Troy, N.Y., assignor to Cluett, Peabody & Co. Inc., Troy, N.Y.
Filed June 12, 1970, Ser. No. 45,763
Int. Cl. B65h *31/10, 31/26*
U.S. Cl. 271—88 6 Claims



This invention is directed to a stacker for garment work pieces in which each work piece is fed to an arcuate receiver by controlled air jets and is deposited in the receiver by a mechanical presser bar against the resistance of a radially disposed movable table carried by a radial arm concentric with the receiver.

3,661,385
OPTICAL-ILLUSION DEVICE
Henry Schneider, 221 East 32nd Street, New York, N.Y.
Filed Aug. 3, 1970, Ser. No. 60,702
Int. Cl. A63j *15/00*
U.S. Cl. 272—8 M 1 Claim



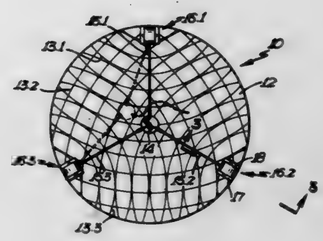
A device for creating optical illusions comprising a transparent sheet, a plurality of fresnel screens spaced apart and in a regular array on the sheet, a condensing lens formed by each of the fresnel screens and a reflecting surface juxtaposed with the sheet.

3,661,386
ROUNDABOUT
William I. Green, 179 Putman Avenue, Brooklyn, N.Y.
Filed Aug. 17, 1970, Ser. No. 64,507
Int. Cl. A63g *1/12*
U.S. Cl. 272—33 R 8 Claims



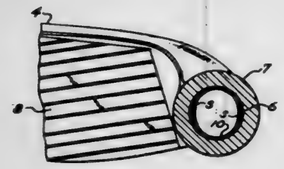
Riding occupant propelled roundabout for amusement parks and the like wherein an automobile rear axle and differential assembly function as a combined vertical support structure and gear reducer.

3,661,387
REACTION GAME APPARATUS
James M. Winey, and Karen L. Winey, both of 1017 6th Street West, White Bear Lake, Minn.
Filed July 30, 1970, Ser. No. 59,598
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 M 10 Claims



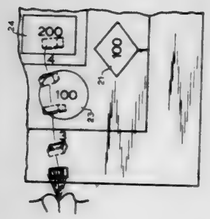
An action game apparatus having a board with a playing surface and a game element suspended above the surface by taut, substantially horizontal filaments releasably anchored at the board periphery and tending to pull the game element. On a given signal each player tries to be the first to release his filament thus causing the game element to move away from him and drop to the board surface. The game element is a magnet and the board surface is of magnetic material to hold the game element, when engaged, from sliding across the playing surface which has scoring indicia and markings thereon. In one embodiment the filaments are resilient to provide the motive force to move the game element and in a second embodiment the motive force is provided by magnetic attraction between the game element and a ring magnet encircling the central area of the board.

3,661,388
STRIKING IMPLEMENT AND HEAD ASSEMBLY THEREFOR
Gurdon Leslie, North Madison, Ohio, assignor to True Temper Corporation, Cleveland, Ohio
Filed Oct. 29, 1969, Ser. No. 872,274
Int. Cl. A63b *53/02*; A01b *1/22*; B25g *3/10*
U.S. Cl. 273—80.2 9 Claims



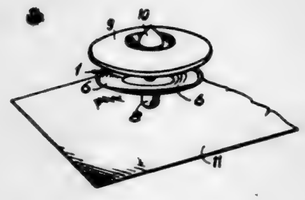
A shaft or handle has a shank portion of oblong cross section force fitted into a cylindrical socket in the head of a striking implement, there being spaces at the sides of the oblong shank between the shank and the socket wall containing epoxy bonding compound or other adhesive.

3,661,389
GAME HAVING TARGET AREAS AND PIECES TO BE BLOWN TOWARD THESE AREAS
Thomas L. Harris, Route 4, P.O. Box 69; Joyce W. Boone, Route 4, P.O. Box 311, and Allen G. Thomas, 1717 Westwood Avenue, all of Wilson, N.C.
Filed Feb. 9, 1971, Ser. No. 113,893
Int. Cl. A63b *63/00*
U.S. Cl. 273—95 C 4 Claims



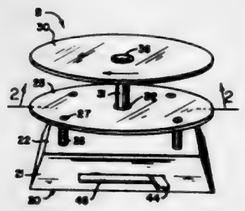
A game includes a game board having variously shaped target areas thereon and light-weight, variously shaped, game pieces which are placed on the game board and upon which puffs of air are directed by participants. Participants' skills are directed according to rules of the game toward causing the game pieces to jump through the air and come to rest within the target areas.

3,661,390
RESILIENT BOUNCER DEVICE FOR PIN TABLE BUMPERS
Claudio Cecchetti, Via Verdi 50, Cernusco sul Naviglio, Province of Milan, Italy
Filed Oct. 2, 1969, Ser. No. 863,232
Claims priority, application Italy, Nov. 30, 1968, 24445 A/68
Int. Cl. A63b *71/00*
U.S. Cl. 273—129 4 Claims



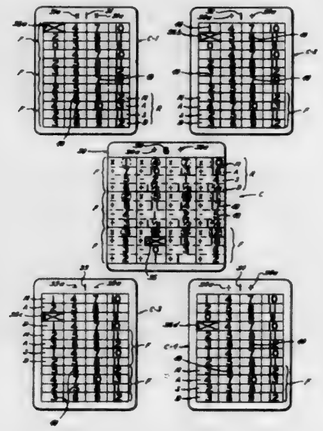
This disclosure relates to a bouncer device for pin table bumpers and compriaes a resilient metallic substantially concave or cup shaped plate having a plurality of equidistant peripheral slots and mounted with its axis substantially vertical on the stem of a pin table bumper, the peripheral edge of the metallic plate having a greater inclination than the other portions thereof. When struck by a ball, the cup shaped plate deforms elastically and causes the ball to bounce away from the bumper.

3,661,391
VARIABLE PATTERN THREE-DIMENSIONAL GAME BOARD
John M. Henshaw, Salina Star Route, Boulder, Colo.
Filed Mar. 2, 1970, Ser. No. 15,614
Int. Cl. A63f *3/02*
U.S. Cl. 273—131 A 6 Claims



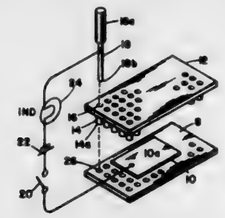
A game board having a plurality of decks one above the other with correlated markings upon the decks to permit a game to be played on both decks. The decks are shiftable with respect to each other so that the relative position of the markings of one deck will change with respect to the markings of the other deck in accordance with a selected pattern. In the preferred embodiment of this invention, the decks are made symmetrical about a common axis in order to effect the shifting action by rotation of one deck with respect to the other. This rotation of one deck with respect to the other is effected through a ratchet mechanism to permit the rotation to be stepwise to maintain the correlation of one deck with respect to the other at all positions.

3,661,392
ARITHMETIC CARDS AND GAME UTILIZING SUCH
Thomas M. Abney, 611-7th Street, Humble, Harris County, Tex.
Filed Aug. 10, 1970, Ser. No. 62,335
Int. Cl. A63f *1/02*
U.S. Cl. 273—152.1 5 Claims



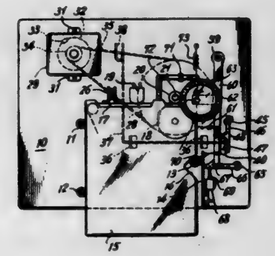
A new and improved card specifies arithmetical relationships in a manner permitting a new and improved arithmetic game to be played for education or entertainment using a plurality of such cards.

3,661,393
PROBE GAME
Arthur W. Skebeck, 802 Karylou Circle, Kingsville, Md.
Filed Feb. 16, 1970, Ser. No. 11,664
Int. Cl. A63g *9/06*
U.S. Cl. 273—153 R 3 Claims



A game is comprised of an unknown geometric shape overlaid and hidden by a perforated plate means. A probe is used to probe through the perforations of the perforated plate so as to discover the extent and hence the shape of the geometric figure.

3,661,394
TAPE RECORDER WITH POINTER DRIVE
Imre Siller, Nuernberg, Germany, assignor to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt Inhaber Max Grundig, Furth Bayern, Germany
Filed Apr. 14, 1970, Ser. No. 28,426
Claims priority, application Germany, Apr. 15, 1969, G 69 14 932
Int. Cl. G11b *15/32*
U.S. Cl. 274—4 C 10 Claims

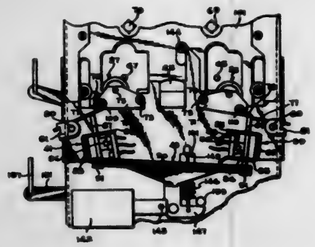


A tape cartridge is inserted into a pivotally mounted opened holding lid and assumes a preliminary position in which a coupling means in the cartridge is aligned with a coupling means on a drive shaft projecting from the tape recording housing. When the holding lid is closed, the coupling means engage each other and the drive shaft drives a pointer-operating transmission through the engaged coupling means.

3,661,395
MAGNETIC TAPE FAST FEED CONTROL APPARATUS
Itsuki Ban, 829 Higashi-Otzumimachi Nerima-ku, Tokyo, Japan
Filed May 5, 1970, Ser. No. 34,736
Claims priority, application Japan, May 8, 1969, 44/34785
Int. Cl. G11b *5/54*; B65h *17/20*, *17/48*
U.S. Cl. 274—4 B 6 Claims

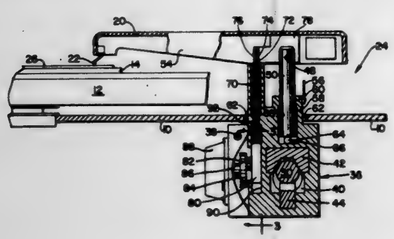
An endless tape cartridge is insertable on the deck of a recording and reproducing device provided with a normal drive speed and timed fast forward speed. The device drives the tape by a capstan driven by a motor rotatable at either a fast or low speed and having large and small driving pulleys either of which is connected by a drive belt to the flywheel of the capstan. To advance the tape rapidly, the fast forward drive is actuated by control curcuitry including a timer operated switch which actuates a solenoid to in turn pivot a belt shifting lever to move the belt from the small to the large diameter pulley and to simultaneously electrically operate the motor at a fast speed. An associated stopper lever latches the belt shifting lever in its fast position while suitable linkage pivots the device's magnetic head clear of the tape. The fast forward operation continues until the timer operated switch actuates curcuitry controlling a release lever which is connected through suitable linkage to shift the stopper lever to allow the belt shifting lever to return the belt and motor speed back to the normal, lower speed.

3,661,396
DIRECTIONAL CONTROL SWITCH MEANS FOR A CASSETTE CHANGER
Glenn E. Sterly, Carol Stream, Ill., assignor to Ampex Corporation, Redwood City, Calif.
Filed Nov. 10, 1969, Ser. No. 875,375
Int. Cl. G11b 15/26
U.S. Cl. 274—4 D 7 Claims



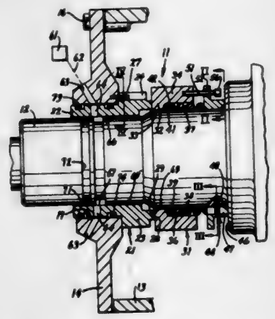
A cassette changer, which is shiftable between a pause mode and an operational mode, is provided with directional control switch means which remain in given positions during shifting to a pause mode to assure that the same direction of tape drive is resumed upon termination of the pause mode. Preferably, the directional control switches are interconnected by a mechanical means in the form of a rocker arm which extends between the switches to shift and to assure that the switches are mutually exclusively operated to opposite positions.

3,661,397
ADDRESSING MECHANISM
Edward L. Worth, Lexington, and Allan B. Chertok, Cambridge, both of Mass., assignors to EG & G Inc., Bedford, Mass.
Filed July 25, 1969, Ser. No. 845,022
Int. Cl. G11b 3/00, 25/04, 25/06
U.S. Cl. 274—9 RA 9 Claims



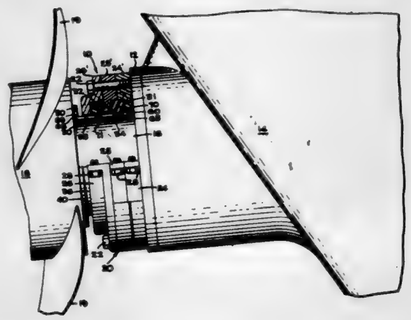
A device for retrieving selected informational material stored in a groove formed in a rotatable recording element. A stylus, which is disposed above the recording element, is mounted at a fixed, reference position to a transport mechanism which may be moved to position the stylus over that portion of the groove at which the particular information is stored. The device then lowers the stylus into the groove. When in the lowered position, the stylus is permitted limited freedom of movement so that it may track in the groove as the recording element is rotated. After the desired information has been retrieved the stylus is raised to the reference position.

3,661,398
SANITARY SEAL
Herbert B. Hummer, Kalamazoo, Mich., assignor to Durametallic Corporation, Kalamazoo, Mich.
Filed Sept. 21, 1970, Ser. No. 73,721
Int. Cl. F16j 15/30, 15/38, 15/40
U.S. Cl. 277—74 10 Claims



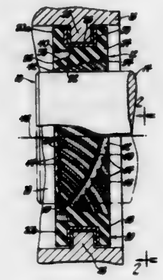
An improved cartridge-type seal construction, particularly for use under conditions requiring a high level of sanitation, same having an annular insert fixedly secured to a housing and an annular seal ring nonrotatably secured relative to a shaft. The seal ring is nonrotatably connected to a collar by means of headed drive pins which prevent the collar and seal ring from being axially separated. A spring is confined within and coacts between the collar and the seal ring for resiliently urging the seal ring into abutting, sealing engagement with a mating face on the insert. The corners and recesses on the seal ring and insert are preferably provided with rounded, substantially smooth contours for preventing collection of bacteria or other contaminating material. The collar and seal ring, together with the spring confined therebetween, are removable from the shaft as a unit to facilitate assembly or disassembly of the seal construction. The insert and seal ring surround and cooperate with the shaft so as to define an internal chamber, which chamber communicates with the interface area between the abutting seal faces and is connected to a supply of cleaning fluid, particularly steam, whereupon the cleaning fluid supplied to the chamber flows radially outwardly between the abutting seal faces for cleaning same.

3,661,399
SHAFT SEAL WITH SPLIT SLEEVE
Edward J. Krisak, and Stephen Strozak, both of Indiana, Pa., assignors to FMC Corporation, San Jose, Calif.
Filed Jan. 13, 1971, Ser. No. 106,188
Int. Cl. F16j 15/34
U.S. Cl. 277—94 5 Claims



A shaft seal of a type suitable for use on marine vessels to enclose a propeller shaft between a stern tube and a propeller hub has a stationary housing fastened to the stern tube, a sleeve split longitudinally into diametrically opposed segments which fit around the propeller shaft and extend from the propeller hub into the stationary housing, and at least one seal element secured circumferentially about the sleeve within the stationary housing.

3,661,400
HYDRODYNAMIC SEAL WITH LEAKAGE CONTROL RIB
Louis H. Weinand, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 8, 1970, Ser. No. 79,007
Int. Cl. F16j 15/32, 15/48
U.S. Cl. 277—134 4 Claims



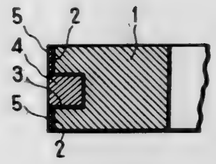
A hydrodynamic seal for rotating shaft is provided with a supplemental leakage control rib inclined opposite to the hydrodynamic ribs for returning leaking fluid by gravitational, adhesion, and surface tension forces to the sealing interface and the pumping influence of the ribs.

3,661,401
GASKET
Robert G. Farnam, New Lisbon, Wis., assignor to F. D. Farnam Co., Lyons, Ill.
Filed May 25, 1970, Ser. No. 40,112
Int. Cl. F16j 15/10
U.S. Cl. 277—227 3 Claims



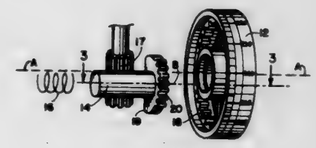
A method of manufacturing tailored gaskets and the article produced thereby wherein a suitable gasket material is provided with a coating applied in such a manner that there is little loss of coating material, and manufacturing costs are lowered. Ideally, the gaskets are formed from materials in the sheet, blank or web form using single or multiple die-cutting operations before and after the gasket material in various forms is coated with a fluid-impermeable coating.

3,661,402
PISTON RING
Kouichi Iizuka, Kamio, Japan, assignor to Nippon Piston Ring Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 10, 1970, Ser. No. 62,347
Claims priority, application Japan, Aug. 15, 1969, 44/64209
Int. Cl. F16j 9/00
U.S. Cl. 277—235 A 3 Claims



A piston ring with a highly wear-resistant sliding surface of tungsten-cobalt electrodeposit and a sliding ring of a sintered mixture of iron oxide and carbon powder.

3,661,403
PRECISION INDEXING FIXTURE
Robert R. Path, Santa Monica, Calif., assignor to Path Industries, Inc.
Filed Apr. 27, 1970, Ser. No. 32,152
Int. Cl. B23b 5/22, 5/34, 31/36
U.S. Cl. 279—5 6 Claims

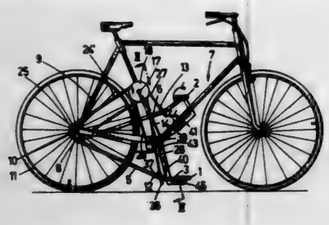


An indexing fixture for use in machine shops includes a casting mounting an indexing wheel enabling desired rotative positioning of a work held within a collet holder spindle on the fixture. The indexing wheel includes internal serrations defining a ring gear for cooperation with a plunger membe. mounted in a bore in the casting for movement towards the ring gear. The plunger member includes gear teeth dimensioned to mesh with a corresponding number of teeth on the ring gear, the gear teeth being tilted slightly to result in a wedging action of the plunger gear teeth with the ring gear when the plunger member is moved into meshing engagement with the ring gear. A positive locking of the plunger member to the index wheel results even through the teeth may become worn so that desired consistent indexing of a part or work can be realized.

3,661,404
BICYCLE

Camille M. Bossaer, Baron Ruzettelaan 265, Saint Michiels, Belgium

Filed May 11, 1970, Ser. No. 36,369
Claims priority, application Belgium, May 13, 1969, 732.960
Int. Cl. B62m 1/04
U.S. Cl. 280—255 2 Claims

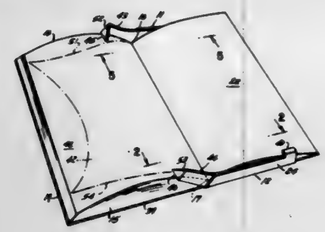


A bicycle with alternating-motion pedals the movement of which is converted by particular chain means into a rotating motion which is applied to the driving wheel of the bicycle.

3,661,405
HOLDER FOR OPEN BOOKS

Alexander M. Brown, 715 South Beach Street 309-D, Daytona Beach, Fla.

Filed Dec. 28, 1970, Ser. No. 101,578
Int. Cl. B42d 9/00
U.S. Cl. 281—42 7 Claims



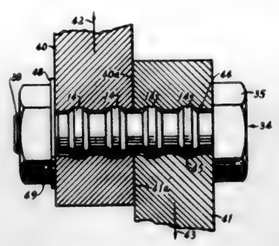
A holder for an open book of the paperback type has a pair of spaced leaf edge contact components that are interconnected by an expandable connecting component adapted for insertion between pages of the held book. The leaf edge contact components feature bendable portions that are equipped with a detent that overlies portions of one of the open pages and one of the contact components has a tab that overlies a portion of the other open page. Page guiding edges are provided on the detents and provisions are made for preventing withdrawal of the interconnecting component during use of the device.

3,661,406
RETENTION MEANS

Joseph J. Mele, 188 Warner Road, Huntington, N.Y.

Filed Oct. 21, 1969, Ser. No. 868,120
Int. Cl. F16b 5/02
U.S. Cl. 287—189.36F 1 Claim

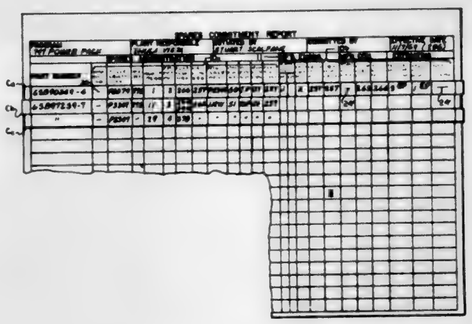
A shaft is provided with a plurality of peripheral lands which are press fitted into an aperture formed in a plate, housing or other structure. The lands are intersected by inclined surfaces which together with the surface of the shaft and aperture define spaced regions adjacent to the lands. Said press fitting subjects the material of the plate, housing or other structure to stress which urges said material to flow into said spaced regions, thereby relieving said stress and interfering with relative movement between the shaft and the plate, housing or other structure accommodating the shaft.



3,661,407
RECORD KEEPING SYSTEM AND METHOD EMPLOYING PLURAL FORMS AND CO-OPERATING REUSABLE ADHESIVE STRIP

James R. Warren, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed June 1, 1970, Ser. No. 41,930
Int. Cl. B42d 15/00
U.S. Cl. 283—55 7 Claims

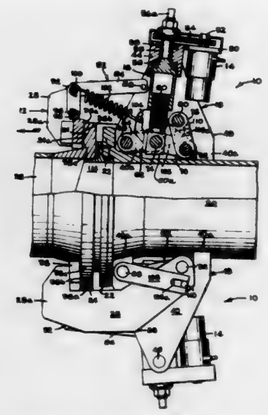


Two different, but related form sheets are provided for use in sequence by different departments. EAch form sheet has two separate pluralities of headings thereon, one for each department. Each form sheet has also one or more strip receiving spaces extending transversely across both pluralities of headings thereon. A plurality of strips of re-usable, adhesive backed writing material are provided, each strip being of a size to fit onto, and to extend the entire length of, one of said spaces. With one of the strips adhesively applied to its space on a first form sheet, data entries are made on the strip by the originating department in register with each of the headings of the first plurality thereof. The strip is then peeled off and forwarded to a follow-up department, where the strip is adhesively applied to one of the spaces provided on a second form sheet and entries are made on the strip by the follow-up department in register wit each of the headings of the second plurality thereof. The completed strip is then peeled off of the second form sheet and returned to the originating department, where it is adhesively reapplied to its previous space on the first form sheet for billing and filing as a permanent record of the complete procedure.

3,661,408
POWER-ACTUATED PIPE COUPLER

Harold M. Gibbons, Long Beach, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Apr. 13, 1970, Ser. No. 27,913
Int. Cl. F16l 35/00
U.S. Cl. 285—18 14 Claims

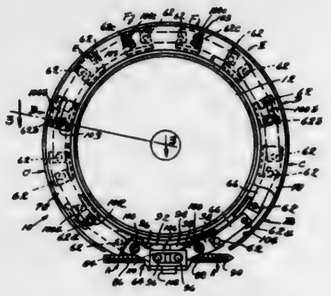


A power-actuated pipe coupler for quickly, securely, and releasably coupling together two flanged conduits, such as a marine loading arm and an oil tanker's manifold, in fluid-tight coaxial relationship. The coupler includes a plurality of clamp assemblies mounted on and spaced circumferentially around the end flange of the arm, and power supplied by a hydraulic, pneumatic or electric motor is transmitted through a belt, chain or gear drive unit, a screw shaft, and a toggle link assembly to open and close hook-shaped clamp arms about the manifold flange.

3,661,409
MULTI-SEGMENT CLAMP

Robert T. Brown; Don E. E. Vogler, and Gerald A. Marsh, all of Houston, Tex., assignors to Gray Tool Company, Houston, Tex.

Filed Aug. 14, 1969, Ser. No. 850,169
Int. Cl. F16l 17/06
U.S. Cl. 285—82 11 Claims

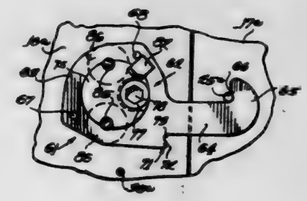


The clamping wedges are composed of similar tapered segments joined together by link bars and pins to form an unending chain whose circumference is varied by a threaded drive screw joining the end segments. Decreasing the chain circumference forces the wedges onto mating tapers on the conduit joint, drawing them together by mechanical advantage. Structure is provided for permitting limited axial movement of the clamps during joint make-up to facilitate drawing together the parts to be joined from a separated position.

3,661,410
PANEL LATCHING MECHANISM

Robert S. Larson, and Joseph Stechke, both of Rockford, Ill., assignors to Keystone Consolidated Industries, Inc., Peoria, Ill.

Filed July 7, 1970, Ser. No. 52,897
Int. Cl. F16b 2/18
U.S. Cl. 287—20.924 8 Claims

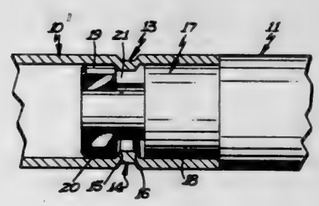


A latching mechanism between adjacent panels of a sectional cabinet or building construction where a pair of opposing latch housings are imbedded in the facing edges of the panels with one housing containing a rotatable latch bolt and the opposite housing containing a transverse latch pin or strike cooperating with the hook end of the bolt. The bolt structure includes a generally circular body with an offset and outwardly extending arm terminating in a latching hook and has a central circular opening for a rotating cam. The cam has an offset hub or shaft received in aligned bearings in the housing, a tab extending from one flat surface cooperating with projections on the bolt body, and spring means retaining the cam within the opening in the bolt.

3,661,411
JOINT CONSTRUCTION

Kenneth E. Flick, New Brighton, Minn., assignor to Jewell Manufacturing Company, St. Paul, Minn.

Filed Nov. 16, 1970, Ser. No. 89,750
Int. Cl. F16b 7/20
U.S. Cl. 287—103 A 3 Claims

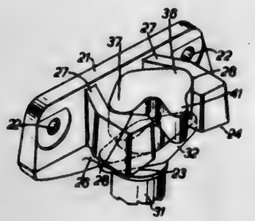


A scaffold coupling of the bayonet joint type in which internal ridges in the female member are formed by depressing material inwardly to form ridges of the desired shape. The portion of the male member extending into the female member is of substantially the same external diameter as the internal diameter of the female member so that the two members are held firmly together. The male member may either be secured to a base plate or within a tubular member of the same external diameter as the female member. The male member may be formed by machining or casting.

ERRATUM

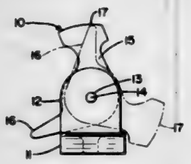
For Class 287—189.36 F see:
Patent No. 3,661,406

3,661,412
FASTENING MECHANISM FOR DOORS
Barry S. Morris, New Town, near Walsall, England, assignor to The Bloxwich Lock and Stamping Company Limited, Bloxwich, Walsall, England
Filed July 8, 1970, Ser. No. 53,142
Int. Cl. E05c *3/04*
U.S. Cl. 292—218 **5 Claims**



In door fastening mechanism, particularly for the doors of freight containers or vehicles, comprising a bar mounted for angular movement about its axis on a door and carrying at its ends fastening members adapted to engage with keepers on the door frame, the fastening members are opposed forks which engage with spaced lugs on the keepers, the lugs having oppositely inclined surfaces which are engaged by limbs of the forks to urge the door towards the closed position.

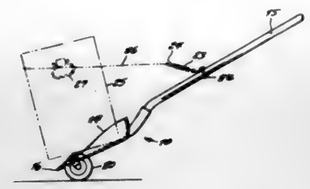
3,661,413
DOOR STOP MEANS
Manuel D. Silva, 21440 Oak Street, Hayward, Calif.
Filed Sept. 11, 1970, Ser. No. 71,454
Int. Cl. E05c *3/04*; E05d *13/04*
U.S. Cl. 292—238 **8 Claims**



Door stop means for sliding doors or the like whereby one of the doors slides relative to another. Means is provided for holding the sliding door in a partly open position by mounting a device having a weighted member adapted to selectively engage either the sliding door itself or a stop thereon to prevent the door from opening past a desired position.

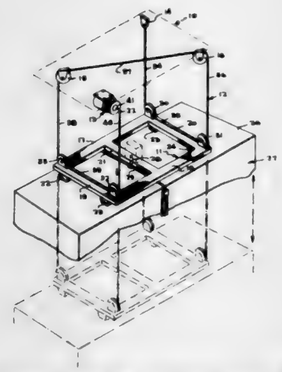
3,661,414
SHOVEL CART
Frank Roth, 6840 Thomas Street, Hollywood, Fla.
Filed June 17, 1970, Ser. No. 47,016
Int. Cl. B62b *1/12*, *1/14*
U.S. Cl. 294—59 **2 Claims**

A cart readily formed from any square shovel by removably securing therebelow a carriage comprised of a telescopic axle shaft mounted at its opposite ends upon a pair of wheels, and the axle shaft end sections each including a spring band clamp for attachment over one of the opposite ends upon a pair of wheels, and the axle shaft end sections



each including a spring band clamp for attachment over one of the opposite side edges of the shovel.

3,661,415
HOIST SYSTEM
Frank N. Piasecki, Tunbridge Road, Haverford, Pa.
Filed Dec. 5, 1969, Ser. No. 882,687
Int. Cl. B66c *1/00*
U.S. Cl. 294—81 R **3 Claims**

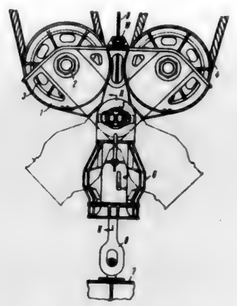


A hoist system including elevated means having spaced contact points, carrier means disposed below the elevated means, having similarly arranged contact points, cable means operatively interconnecting the contact points for carrying the carrier means below the elevated means, means for varying the effective length of the cable means disposed at a selected contact point, one end of the cable means being fixedly secured to a selected contact point and the opposite end thereof being operatively connected to the cable length varying means whereby upon operation of the cable length varying means the effective length of the cable means will be varied correspondingly to vary the vertical displacement of the carrier means relative to the elevated means.

3,661,416
LOAD-GRIPPING ATTACHMENT OF LIFTS
Boris Antonovich Bukarkin, ulitsa Frunze 15, and Valery Nikolaevich Kovalev, ulitsa Foleevskaya, both of Nikolaev, U.S.S.R.
Continuation of application Ser. No. 783,221, Dec. 12, 1968, now abandoned. This application Mar. 31, 1971, Ser. No. 129,978
Int. Cl. B66c *1/38*
U.S. Cl. 294—83 **6 Claims**

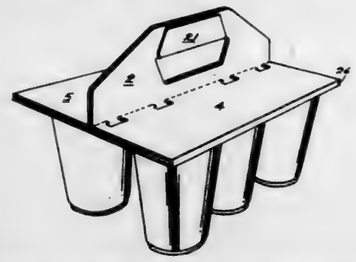
A load-gripping attachment for lowering small craft from the mother ship and lifting them back onto the latter ship comprising a body having a longitudinal axis. A liner is installed in the body for movement along the longitudinal axis

of the body. Side ports are provided in the liner and swivelling thrust elements are mounted in the liner and located in the side ports of the liner. Side ports are also pro-



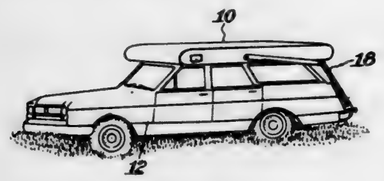
vided in the body and are intended for receiving the swivelling thrust elements when the liner is moved by the rod head of the small craft. The rod head enters the liner in the process of gripping operation.

3,661,417
CARRIER AND FOLDABLE BLANK FOR MAKING SAME
Richard B. Inman, 3155 Spaulding Drive, Dunwoody, Ga.
Filed Apr. 24, 1970, Ser. No. 31,724
Int. Cl. B65d *71/00*
U.S. Cl. 294—87.2 **9 Claims**



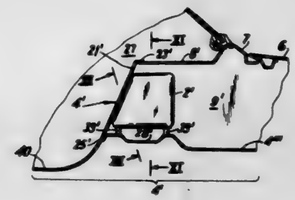
A carrier for beverage cups comprising a foldable paperboard blank having holes through which the cup bodies fit but which engage enlarged cup rims. Portions of the blank are foldable to form a cover over the cups, handles and locking tabs. Access to the cups is provided by tearing along perforations.

3,661,418
PORTABLE CAMPING UNIT
Ray S. Stewart, Waukegan, Ill., assignor to Willard C. Rogers, Lawndale, Calif.
Substitute for application Ser. No. 771,871, Oct. 30, 1968, now abandoned. This application Oct. 22, 1970, Ser. No. 83,225
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 MC **1 Claim**



A portable camping unit which can be collapsed into a small compact package carried on the roof of a vehicle, and when assembled, can be self supporting away from the vehicle for use as a tent like structure.

3,661,419
REAR BODY CONSTRUCTION FOR AN AUTOMOBILE
Rakuzo Mitamura, Hekikai-gun; Masatoshi Yamaya, and Masakatsu Suzuki, both of Okazaki, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 4, 1970, Ser. No. 86,796
Claims priority, application Japan, Dec. 9, 1969, 44/98321
Int. Cl. B60r *5/04*
U.S. Cl. 296—24 R **12 Claims**



An automobile includes a rear body portion with a trunk space in which a fuel tank is disposed immediately behind the closure wall for the passenger compartment. The backing of the rear seat is formed by a continuation of the passenger compartment floor plate upwardly in a curve behind the seat location. The backing or end wall and the passenger compartment floor are advantageously made of a single plate thereby forming a seal of the passenger compartment in respect to the rear trunk space behind the end wall. A fuel tank is mounted within the trunk space directly behind the curved plate end-wall and it is located over a trunk floor having an opening to the exterior to provide means for dumping the gasoline outwardly below the trunk space in the event of an accident and a rupture of the gas tank. The rear portion of the body is simply formed by tack welding of the upwardly curved rear plate, forming a continuation of the passenger compartment floor at each of its sides to extension of an interior tire housing and to a shelf portion formed at the rear of the vehicle above the trunk space. The tire housing on each side is easily spot welded immediately to both sides of the backing plate and the floor plate. With the method of the invention, the floor plate with the upwardly extending protection wall formation is easily tack welded to extensions of a tire housing on each side of the vehicle to complete the interconnection of a floor assembly to a side assembly of the vehicle at the rear thereof.

3,661,420
CONTRA-LEVERAGE CONSTRUCTION FOR A TRUCK-AND-LIKE STAKE
Raymond W. Swanson, 14515 Cornishcrest Road, Whittier, Calif.; Marvin M. Yaffe, deceased, 5542 Sierra Vista Avenue, Los Angeles, Calif., and Beverly Ruth Yaffe, administratrix, 1165 S. O. M. Center Road, #305 Mayfield Heights, Ohio
Filed July 19, 1968, Ser. No. 746,043
Int. Cl. B60p *7/06*
U.S. Cl. 296—43 **1 Claim**

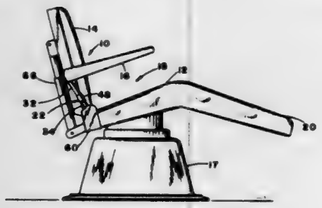
For a combination of a truck with horizontally positioned load platform, a truck stake, a truck stake receptacle and a truck load over said platform a means for tilting the truck stake towards the truck load for increasing the truck stake resistance to the truck load leverage pressure thereagainst

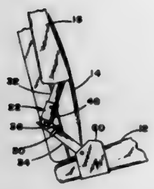
when an end section of the truck stake is inserted into the truck stake receptacle and the truck stake receptacle is



secured with the horizontally positioned load platform and the load is loaded over the latter.

3,661,421
CHAIR ARM STRUCTURE
Philip C. Johnson, Cincinnati, Ohio, assignor to Dentsply International Inc., York, Pa.
Continuation-in-part of application Ser. No. 863,085, Oct. 2, 1969, now abandoned. This application Sept. 23, 1970, Ser. No. 74,308
Int. Cl. A47c 7/54
U.S. Cl. 297—417 13 Claims

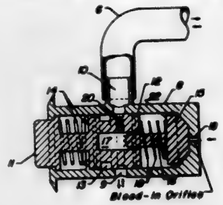




A support for chair arms pivoted to the back, respectively at one or both sides, for movement between a lower arm-supporting position and an elevated position to facilitate ingress and egress to and from the seat of the chair. The support includes link means operable in tension to support the arm in said lower position to minimize danger from accidental movement of the arm to a lower position and also provide desired clearance between said arm and chair seat without obstruction by said supporting link means.

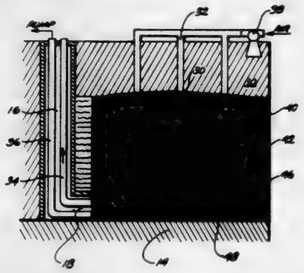
3,661,422
SELF-ADJUSTMENT FOR BODY SUPPORT CUSHION
Joseph Sember, Glendale, Calif., and Eugene R. McGregor, Morris, Conn., assignors to Universal Oil Products Company, Des Plaines, Ill.
Filed July 20, 1970, Ser. No. 56,574
Int. Cl. A47c 7/14, 7/46
U.S. Cl. 297—284 4 Claims

In combination with a body support cushion unit where open-cell foam is used in an air-tight envelope and a manually controllable valving means in a passageway to the envelope is utilized so as to regulate flow of ambient air pressure into and out of the foam, there is additionally provided a special valving device as a part of the valving means for the unit which includes a separate movable blocking member seatable over a separate small bleed-in orifice. Thus, when there is no weight on the cushion unit and no back pressure



on the member over the bleed-in orifice the latter can permit a slow metered flow of air into the open-cell foam as long as it is under a vacuum condition, while, conversely, any pressure on the foam will cause a back pressure condition and a seating of the movable blocking member over the bleed-in orifice.

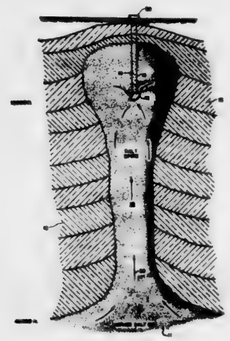
3,661,423
IN SITU PROCESS FOR RECOVERY OF CARBONACEOUS MATERIALS FROM SUBTERRANEAN DEPOSITS
Donald E. Garret, Claremont, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.
Filed Feb. 12, 1970, Ser. No. 10,871
Int. Cl. E21b 43/26
U.S. Cl. 299—2 29 Claims



Subterranean carbonaceous deposits, such as oil shale, are conditioned for in-situ recovery of carbonaceous values by limited undercutting over a large area to leave an overlaying deposit supported by a multiplicity of pillars, if necessary, then removing the pillars and expanding the overlaying deposit to fill the entire void with particles of a uniform size, porosity and permeability. Communication is then established with the upper level of the expanded deposit and a high temperature gaseous media which will liquify or vaporize the carbonaceous values is introduced in a manner which causes the released values to flow downward for collection at the base of the expanded deposit. Convenient media are hot flue gases created by igniting the upper level of the expanded carbonaceous deposit and forcing a flow of hot gases downward through the expanded deposit.

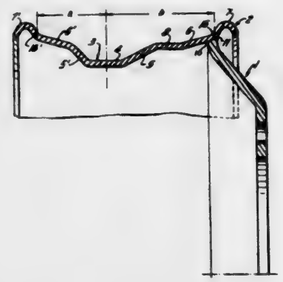
3,661,424
GEOTHERMAL ENERGY RECOVERY FROM DEEP CAVERNS IN SALT DEPOSITS BY MEANS OF AIR FLOW
Charles H. Jacoby, Dalton, Pa., assignor to International Salt Company, Clarks Summit, Pa.
Filed Oct. 20, 1970, Ser. No. 82,231
Int. Cl. E21b 43/28; F28d 21/00
U.S. Cl. 299—4 11 Claims

There is disclosed a method for abstracting geothermal heat from depths below ground that are inaccessible by commercially practicable bore hole drilling techniques. More particularly, the invention is of a method for extracting heat from such an inaccessible source which comprises forming a cavern or reservoir at an accessible depth in a salt dome or spire which is in thermal communication with the otherwise inaccessible heat source, and flowing air at comparatively low speeds through the cavern in heat-exchange relation with the wall surfaces thereof to absorb heat therefrom, and then



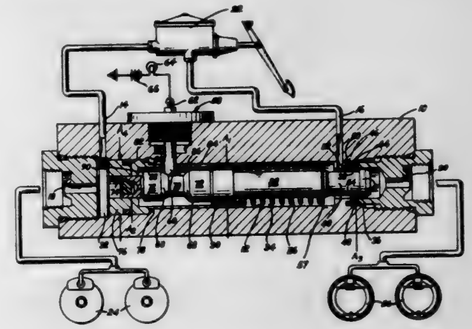
flowing it speedily through a relatively small (compared to the cavern volume) passageway to a point of use above ground, whereby it retains a substantial proportion of the heat energy absorbed in the cavern. Such energy is utilized in any suitable manner, one such preferred use being for the evaporation of brine extracted from the cavern during preparation thereof or obtained from neighboring salt deposits.

3,661,425
HEAVY-DUTY WHEEL
Henri Verdier, Beauregard-L'Eveque, France, assignor to Compagnie Generale Des Etablissements Michelin raison sociale Michelin & Cie, Clermont-Ferrand (Puy-de-Dome), France
Filed Dec. 3, 1969, Ser. No. 881,741
Claims priority, application France, Dec. 11, 1968, 177772
Int. Cl. B60b 3/02
U.S. Cl. 301—63 R 2 Claims



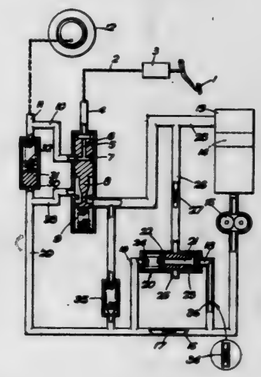
A wheel includes a well base rim, also known as a drop center rim, the well of which is offset from the median plane of the rim so as to be farther from one edge of the rim than from the other. The junction between the rim and the wheel disk is in the vicinity of the edge of the rim that is the farther from the well.

3,661,426
COMBINATION WARNING SWITCH AND PROPORTIONING VALVE
George M. Tam, South Bend, Ind., assignor to The Bendix Corporation
Filed June 1, 1970, Ser. No. 42,110
Int. Cl. B60t 8/26, 11/34, 17/22
U.S. Cl. 303—6 C 11 Claims



A valve for use in an automotive vehicle having two separate braking systems is disclosed which includes a piston slidable in a bore of a housing, dividing the latter into first and second compartments which are in fluid communication with a corresponding one of the vehicle's braking systems. A proportioning seal is provided in one of the chambers, and the piston cooperates with the seal to meter flow of fluid through the chamber, thereby establishing a lower level of fluid pressure on one side of the seal than that existing on the other side of the seal. When a malfunction causes a pressure loss in the other chamber, the piston is urged away from the seal to permit unrestricted flow of fluid through the latter.

3,661,427
BRAKING APPARATUS
Peter Charles Hodge, London, England, assignor to Simms Group Research and Development Limited, London, England
Filed Mar. 4, 1970, Ser. No. 16,286
Claims priority, application Great Britain, Mar. 6, 1969, 11,902/69
Int. Cl. B60t 8/06
U.S. Cl. 303—21 F 7 Claims



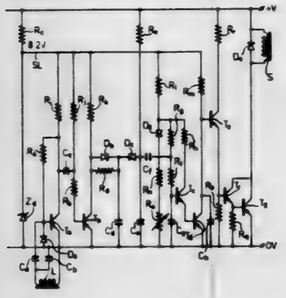
A braking system for a vehicle wheel which system comprises a reservoir, and a pump pumping liquid from the reser-

voir through a conduit and back to the reservoir in relation to the vehicle wheel speed. A progressively closable restriction is provided downstream of a connection to the brakes so liquid pressure upstream of the closable restriction may be increased to apply the brakes. A leakage conduit is provided to by-pass the closable restriction and the connection, and incorporates a variable restriction the opening of which increases with increased vehicle wheel speed.

3,661,428
ELECTRICAL CIRCUIT ARRANGEMENTS FOR CONVERTING A VARIABLE RATE OF PULSE TRANSMISSION INTO A RELATED ELECTRICAL OUTPUT QUANTITY

Denis Sharp, Crawley, Sussex, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 16, 1969, Ser. No. 858,420
Claims priority, application Great Britain, Sept. 18, 1968, 44,276/68
Int. Cl. B60t *8/08, 8/12*
U.S. Cl. 303—21 CF **7 Claims**



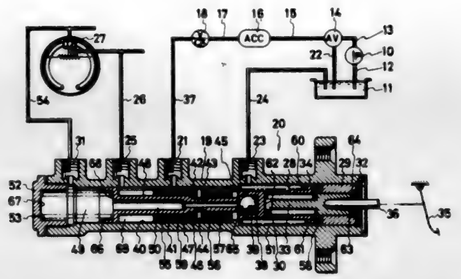
An anti-lock vehicle brake control system comprising a wheel sensor for generating a train of pulses at a frequency proportional to the wheel speed. A switching transistor receives the pulses. A first capacitor is coupled to the output of the switching transistor via a first isolation diode. The switching transistor causes the first capacitor to charge up to a predetermined voltage level for each pulse received. A discharge circuit allows the first capacitor to discharge in the interval between successive pulses. A second capacitor is permanently connected to a source of charging current and is also coupled to the first capacitor via a second isolation diode so that the second capacitor will discharge towards the voltage level on the first capacitor to produce a voltage on the second capacitor that is proportional to wheel speed. The latter voltage is used to actuate a control valve in the vehicle brake fluid pressure system to relieve the braking pressure whenever said capacitor voltage exceeds a given value.

3,661,429
PRESSURE CONTROL DEVICE FOR HYDRAULIC BRAKE SYSTEM OF POWERED VEHICLES

Masahiro Kito, Nagoya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Aichi Pref., Japan

Filed Aug. 11, 1970, Ser. No. 62,823
Claims priority, application Japan, Aug. 26, 1969, 44/67412
Int. Cl. B60t *15/06*
U.S. Cl. 303—54 **5 Claims**

A pressure control device for hydraulic brake systems for use on powered vehicles wherein a pressure fluid passage from a powered pressure source such as an accumulator to the wheel cylinders is provided separately from a fluid passage through which the pressurized fluid is conveyed back from the wheel cylinders to a reservoir, so that the pressure

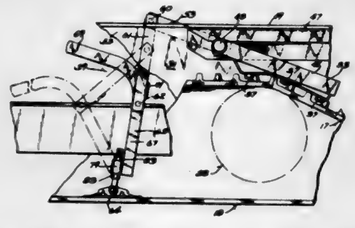


fluid is circulated in the brake system without returning through the same fluid passage.

3,661,430
BRAKE FOR A TRACK VEHICLE

Eldon W. Wooters, Lincoln, Nebr., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed June 12, 1970, Ser. No. 45,617
Int. Cl. B62d *55/00*
U.S. Cl. 305—9 **8 Claims**

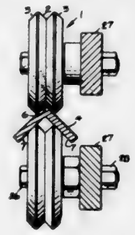


Disclosed herein is a vehicle including a track trained, in part, about a support mounted on a frame, and a brake shoe movable relative to a braking position in opposing relation to said support, and with said track between said support and said shoe, together with means on said frame for moving said brake shoe to and from said braking position.

3,661,431
GUIDE WHEELS AND TRACKS

Warren R. Wisecarver, Walnut Creek, Calif., assignor to Bishop-Wisecarver Corporation, Pittsburgh, Calif.

Filed Aug. 24, 1970, Ser. No. 66,388
Int. Cl. F16c *19/49*
U.S. Cl. 308—6 R **6 Claims**



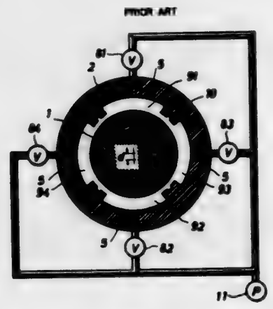
Guide wheels with eccentric adapter bushings to provide precision attachment relatively to tracks. Each guide wheel is

formed in a double V which provides four inclined circular surfaces permitting use both in horizontal and vertical position and adapted to co-operate with tracks of suitable angles both by the enclosed central groove and by the two outside inclined annular surfaces. The eccentric nut and bolt permits the accurate shifting of the wheel for precision adjustment. The mounting surfaces of the track are accurate and held to close tolerances and are interchangeable.

3,661,432
HYDROSTATIC BEARING ASSEMBLY

Kenzo Aihara, Tokyo, Japan, assignor to Ikegai Tekko Kabushiki Kaisha (Ikegai Iron Works, Ltd.), Tokyo, Japan

Filed Feb. 22, 1971, Ser. No. 117,459
Claims priority, application Japan, Feb. 26, 1970, 45/16573
Int. Cl. F16c *17/16*
U.S. Cl. 308—9 **3 Claims**

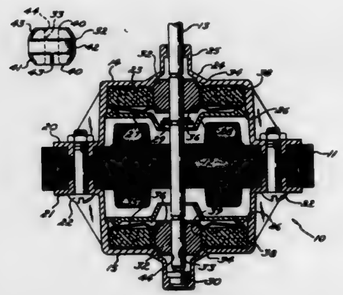


A hydrostatic bearing assembly in which an externally pressurized fluid is pumped to completely separate the bearing from the object which it supports; by utilizing the elastic deformation of a portion of the bearing itself, the flow rate of the pressurized fluid is controlled, and any increase in the pressure in that pocket which is subjected to the load serves to reduce the amount of the passage of this fluid from said pocket as a result of the elastic deformation of the bearing, and thus, the load supporting characteristics of the bearing is improved.

3,661,433
SELF-ALIGNING BEARING

John R. Schuster, Elyria, Ohio, assignor to The General Industries Company, Elyria, Ohio

Filed Jan. 19, 1970, Ser. No. 4,000
Int. Cl. F16c *9/06*
U.S. Cl. 308—72 **5 Claims**

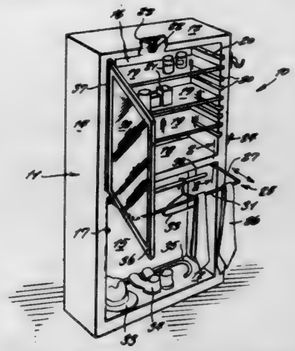


There is disclosed herein a self-aligning bearing for electric motors and the like which embodies a spherical bearing member mounted for universal movement and having an axial opening to accomodate the motor shaft, the bearing having lubricating return grooves across the axially directed ends thereof, said grooves extending partway into the spherical side surface portions of the bearing.

3,661,434
UNITARY MODULAR SHELVING STRUCTURE

Ralph Alster, 2 Washington Square Village, New York, N.Y.

Filed May 28, 1970, Ser. No. 41,361
Int. Cl. F16b *12/02*
U.S. Cl. 312—111 **12 Claims**

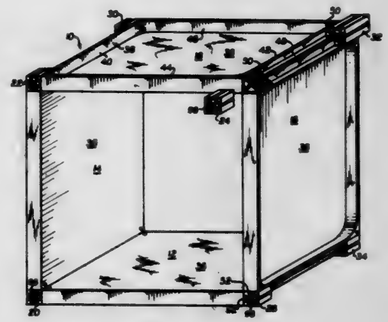


A unitary modular shelving structure comprised of a plurality of plate-like members. The plate-like members are assembled into the unitary modular structure, which may comprise one or more modules, by means of hollow rectangularly configured connectors, or clips, having a plurality of peripherally arranged, equiangularly spaced congruent grooves which are complementary to tongue-like protrusions extending from the modular plate-like member outer walls. The connectors may be common junction points for adjacent modules which may be connected to form a unitary structure comprising a plurality of modules. Threaded members, such as screws, may be utilized to provide additional strength to the unitary structure. Various members may be inserted in portions of the assembled plate-like members so as to alter the structural appearance of the completed structure and/or to add additional utility.

3,661,435
TIE AND DRESSING CABINET

Vivian June Miller, 601 Main Street, Rising Sun, Ind.

Filed Oct. 20, 1969, Ser. No. 867,465
Int. Cl. A47b *77/08*
U.S. Cl. 312—321 **4 Claims**



A cabinet for the storage of neckties and other apparel, the cabinet comprising a case including an upper compartment

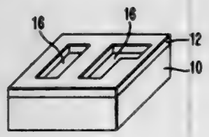
containing adjustable shelves for supporting various items, the compartment being lighted by an electric lamp, and a lower compartment containing a forwardly slidable tie rack, a garment hanger bar and a space for the placement of various objects such as a hat, shoes and a cane.

3,661,436

TRANSPARENT FABRICATION MASKS UTILIZING MASKING MATERIAL SELECTED FROM THE GROUP CONSISTING OF SPINELS, PEROVSKITES, GARNETS, FLUORIDES AND OXY-FLUORIDES

Ronald S. Horwath, Salt Point, and Varadachari Sadagopan, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1970, Ser. No. 51,237
Int. Cl. G02b 5/20
U.S. Cl. 350—1 16 Claims



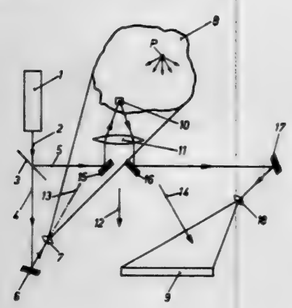
A mask for the manufacture of semiconductor and other very small components. The mask is comprised of patterns of multi-component oxides and fluorides, such as spinels, perovskites, and garnets. In general, the materials are harder than the components being manufactured and are opaque to the wavelength used in photoresist techniques, while being transparent to the visible wavelengths. Materials with an energy gap between approximately 2.8 eV and 5 eV satisfy these optical properties, a particular example being $GaFeO_3$. These masks are not damaged by surface defects on the components and can be visually aligned.

3,661,437

METHOD FOR PRODUCING HOLOGRAMS OF MOVING OBJECTS

Francois Mottier, Zurich, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed June 22, 1970, Ser. No. 48,177
Claims priority, application Switzerland, July 2, 1969, 10120/69
Int. Cl. G02b 27/22
U.S. Cl. 350—3.5 3 Claims



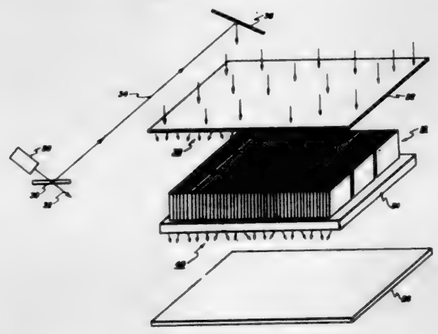
In the method of producing a hologram for an object in which a beam illuminating the object and a reference beam produced by the same light source establish the hologram by interference in a hologram plate between the reference beam and light coming from the object, any inadvertent movement of the object during the exposure time is compensated out by conducting one of the beams over a reflecting surface in the form of a small mirror located on the object in such manner that the difference between the mean path lengths of the rays of the object illuminating beam and of the light from the object to the hologram plate on the one hand, and that of the reference beam on the other hand, remains substantially constant.

3,661,438

HOLOGRAPHIC DATA STORAGE AND RETRIEVAL SYSTEM

Nicholas K. Sheridon, Fairport, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Dec. 12, 1969, Ser. No. 884,418
Int. Cl. G02b 27/22
U.S. Cl. 350—3.5 13 Claims



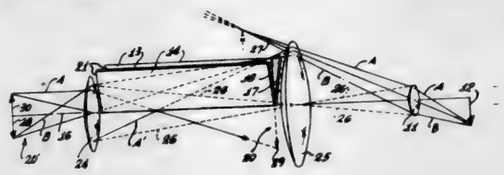
A holographic data storage and retrieval system, wherein by stacking a plurality of surface recorded flat base members and by edge illumination thereof by a coherent light source, a high density holographic image of the plurality of stacked base members can be produced. For readout a similar coated base member would be utilized in the presence of a reconstructing coherent light source to form a readable output image on a surface coating on said base member.

3,661,439

TELESCOPIC KALEIDOSCOPE

John L. Burnside, III, and Henry Hay, both of P. O. Box 8, San Juan Pueblo, N. Mex.

Filed Oct. 30, 1970, Ser. No. 85,375
Int. Cl. G02b 27/08
U.S. Cl. 350—4 24 Claims



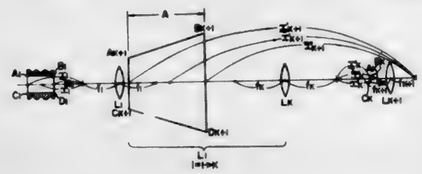
A telescopic kaleidoscope having a converging lens positioned between the objective lens and the front ends of the mirrors. The converging lens focuses the objective lens centrally on the plane of the rear ends of the mirrors to provide substantially equal illumination of the kaleidoscope image array. The array can be projected onto a screen by a projection lens and the kaleidoscope can be used as an attachment for a camera or a projector.

3,661,440

MICROSCOPE FOR INSPECTING SURFACES OF HOLES OR THE LIKE

Kinji Takahashi, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Feb. 12, 1970, Ser. No. 10,914
Claims priority, application Japan, Feb. 17, 1969, 44/11017
Int. Cl. G02b 21/00, 23/00
U.S. Cl. 350—8 5 Claims



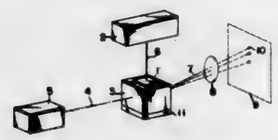
A microscope especially adapted to inspect the surfaces of holes or the like is provided. A group of objectives having shorter focal lengths and including at least one objective having a magnification less than one-half in order to form an image reduced in size is combined with an eyepiece having a shorter focal length, thereby forming a magnified image. Because of the difference in magnifications at both ends of an increased depth of field, the image is exceedingly distorted so as to permit the inspection of surfaces of holes or the like.

3,661,441

ARRANGEMENT FOR ACOUSTO-OPTICAL LIGHT DEFLECTION

Naoya Uchida, Tokyo; Yoshiro Ohmachi, Tokorozawa; Nobukazu Niizeki, Tokyo, and Takahiro Inamura, Yamato, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Oct. 27, 1970, Ser. No. 84,450
Claims priority, application Japan, Nov. 21, 1969, 44/92913
Int. Cl. G02f 1/24
U.S. Cl. 350—149 24 Claims



There has been disclosed a novel use of single crystal paratellurite, that is, tellurium dioxide TeO_2 as a medium for acousto-optical light deflection. The light deflecting medium of the present invention enables light and ultrasonic waves passing therethrough to interact with each other with a higher efficiency than that of the prior art. The present light deflecting medium displays various effects by the several combinations of the propagation directions of light and acoustic waves.

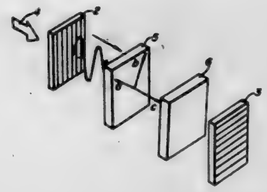
3,661,442

ELECTRICALLY OPERATED OPTICAL SHUTTER

Akio Kumada, Kodaira, and Masashi Koga, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 17, 1970, Ser. No. 20,244
Claims priority, application Japan, Mar. 25, 1969, 44/22094
Int. Cl. G02f 1/26
U.S. Cl. 350—150 12 Claims

An optical shutter comprising a pair of crossed polarizing means, and at least one double-refractive crystal and at least one Z-cut irregular ferroelectric crystal both interposed between the pair of crossed polarizing means, the said crystal having equal retardations, the value of the resulting retardation R of the crystals in the open position of the shutter being $80 \leq R \leq 320$ or $R \geq 2000$, whereby a field at least equal to the magnitude of the coercive field E_c f the irregular ferroelectric crystal or a stress at least equal to the magnitude of the coercive stress Tc of the irregular ferroelectric crystal is applied to the same crystal to rotate the optic axial plane thereof by 90° to pass or stop the natural light transmitted through the shutter as desired.

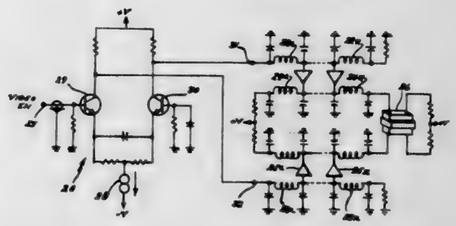


3,661,443

100 MEGAHERTZ BANDWIDTH MODULATOR DRIVER

William C. Harris, Oxford, Conn., and Frank A. Magnante, Yorktown Heights, N.Y., assignors to The United States of America as represented by the Secretary of the Air Force

Filed Aug. 7, 1970, Ser. No. 61,888
Int. Cl. G02f 1/28; H03f 3/26
U.S. Cl. 350—160 R 1 Claim



A modulator driver apparatus for controlling a crystal-modulated optical beam utilizing a push pull distributed amplifier to achieve wideband operation and a power gain sufficient to operate the modulator.

3,661,444

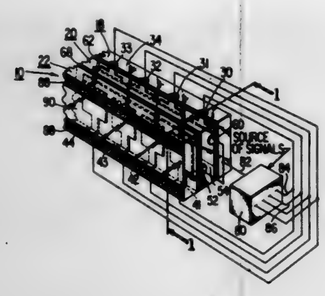
COMPOUNDED LIQUID CRYSTAL CELLS

Dennis Lee Matthies, Princeton, N.J., assignor to RCA Corporation

Filed Dec. 2, 1969, Ser. No. 881,417
Int. Cl. G02f 1/28
U.S. Cl. 350—160 1 Claim

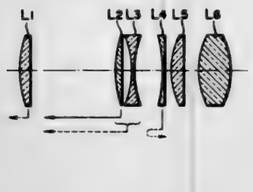
A linear array of compounded liquid crystal cells comprises a first plurality of linearly aligned cells formed between the opposite surfaces of a pair of parallel plates and a second plurality of linearly aligned (compounding) cells formed between a surface of one of the pair of plates and a third

parallel plate. The cells are filled with liquid crystals, and each liquid crystal cell is defined by a pair of oppositely



disposed light-transmitting electrodes on the opposite surfaces, respectively, of the plates that form the cell.

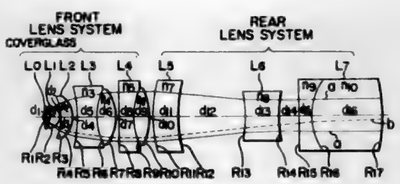
3,661,445
ZOOM LENS SYSTEM
Atsushi Someya, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed June 29, 1970, Ser. No. 50,675
Claims priority, application Japan, July 12, 1969, 44/54834
Int. Cl. G02b *15/18, 15/16, 15/14*
U.S. Cl. 350—186 **2 Claims**



The zoom lens system of this invention is capable of extreme close-up photography, and consists mainly of a focusing lens group having positive refractive power and a negative refractive power variator. The variator is divided into a positive refractive power lens group and a negative refractive power lens group. In phototaking from the infinity to a normal distance, said focusing lens group is shifted for focusing and for focusing a subject located closer than said normal distance, the variator is held in telephoto position and then the positive refractive power lens group of the variator is shifted forward for focusing.

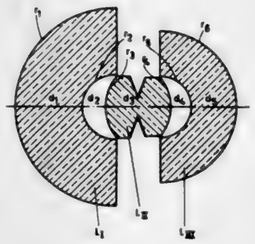
3,661,446
HIGH MAGNIFYING POWER DRY OBJECTIVE MICROSCOPE
Ikuo Mori, and Keiji Matsuki, both of Kawasaki, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan
Filed Sept. 2, 1970, Ser. No. 68,898
Claims priority, application Japan, Sept. 6, 1969, 44/70313
Int. Cl. G02b *21/02*
U.S. Cl. 350—214 **1 Claim**

A high magnifying power dry objective for a microscope capable of a magnifying power of 100×, numerical aperture of 0.9 and working distance 1.9f, where f is the compound focal length of the objective, and which consists of 10 elements in seven groups. The first lens is a positive meniscus whose concave surface faces toward a specimen so that the light rays from the object point on the optical axis traverses



through the rear lenses to be refracted suitably, and the optical aberrations are well corrected.

3,661,447
THREE LENS ELEMENT WIDE ANGLE OBJECTIVE
Erhard Glatzel, Heidenheim/Brenz, Germany; Hans Schulz, deceased, late of Hunibach, Switzerland; Ris Ruth, Im Gehrli 77, Altreu/Selzach, and Heinz-Dieter Schulz, Ch 3762 Erlenbach i. S., both of Germany (heirs)
Continuation-in-part of application Ser. No. 669,463, Sept. 21, 1967. This application Apr. 13, 1970, Ser. No. 28,022
Int. Cl. G02b *9/12*
U.S. Cl. 350—225 **3 Claims**

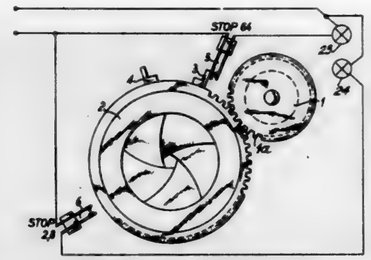


A three lens element objective having a wide picture angle of about 120° and a relative aperture of about 1:8 and comprising two relatively thick and strongly meniscus-shaped dispersive lens elements between which is arranged with axial air spaces a relatively thick collective lens element.

3,661,448
MOTION PICTURE CAMERA WITH MEANS PRODUCING A DISSOLVING EFFECT
Heinz Thiele, Leinfelden (Wurtt.), and Dietrich Becker, Stuttgart-Mohringen, both of Germany, assignors to Zeiss Ikon Aktiengesellschaft, Stuttgart, Germany
Filed Apr. 16, 1970, Ser. No. 29,059
Claims priority, application Germany, Apr. 22, 1969, P 19 20 439.8
Int. Cl. G03b *21/36*
U.S. Cl. 352—91 **3 Claims**

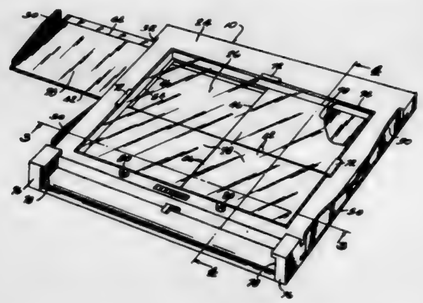
A motion picture camera having a motor operated adjustable diaphragm for the purpose of producing a dissolving effect is provided with means which gradually closes and again opens the diaphragm from an exposure aperture to the smallest aperture and vice versa and during this time period the film gripper withdraws a predetermined length of film from

the delivery spool and after exposure moves the film back onto the delivery spool. The forward and rearward move-



ment of the film takes place in relation to the decrease of the diaphragm aperture and the subsequent increase of the same.

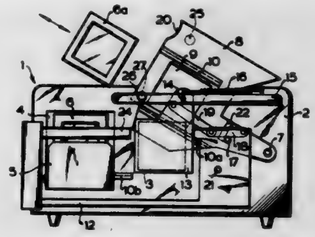
3,661,449
OVERHEAD VISUAL SHUTTER DEVICE
John S. Wright, 6115 North Lake Drive Court, Milwaukee, Wis.
Filed May 19, 1969, Ser. No. 825,902
Int. Cl. G03b *21/14*
U.S. Cl. 353—88 **10 Claims**



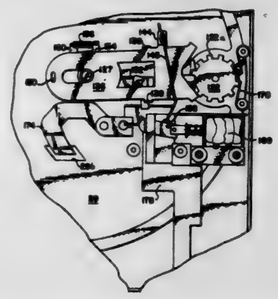
An overhead projector shutter assembly having a frame defining a window and a number of slides movably mounted in the frame to mask the window, the slides being selectively and relatively movable to mask and unmask selected portions of the window or the entire window to project selected portions of the total transparency onto a screen in sequence. The slides are overlapped with each other and with the frame along adjacent edges to completely exclude unwanted light and to promote smoothness of operation on guides which assure accuracy of alignment between the slides and the register pins which locate the transparency.

3,661,450
PHOTOGRAPHIC SLIDE PROJECTORS
Gerhard Brinkmann, and Frohmut Muller, both of Braunschweig, Germany, assignors to Voigtlander Aktiengesellschaft, Braunschweig, Germany
Filed Sept. 22, 1969, Ser. No. 859,683
Claims priority, application Germany, Mar. 22, 1969, P 19 14 700.3
Int. Cl. G03b *23/04*
U.S. Cl. 353—92 **1 Claim**

A photographic slide projector wherein a slide-changer is adapted to shift slides successively from a magazine to a projecting position and then back to the magazine. When each slide is in the projecting position it is held by a slide-holder, and this holder is supported for swinging movement by the housing of the projector. In this way, when the slide-holder is swung outwardly it is accessible to manually receive a slide which then can be manually removed therefrom. On the other hand, the slide-holder can remain in an operative position where it will receive a slide from the slide-changer and return a slide thereto.



3,661,451
SLIDE PROJECTOR INDEXING MEANS
Walter J. Hall, Chicago, Ill., assignor to GAF Corporation, New York, N.Y.
Original application Nov. 20, 1967, Ser. No. 684,202, now Patent No. 3,499,708, which is a continuation-in-part of application Ser. No. 554,071, May 31, 1966. Divided and this application July 30, 1969, Ser. No. 872,788
Int. Cl. G03b *23/06*
U.S. Cl. 353—117 **3 Claims**

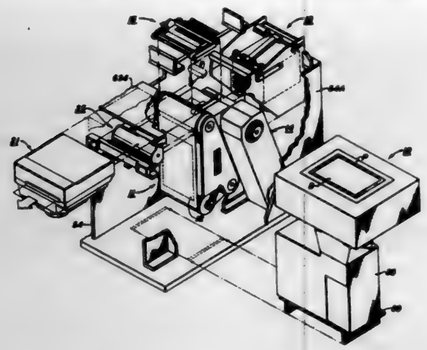


The magazine includes an indexing gear engaged with a series of teeth on the projector for indexing the magazine in forward and reverse directions. The indexing gear is rotated in either direction by indexing means in the projector, such indexing means including a locking member which is yieldably urged into its locked position and positively withdrawn to an unlocked position. The projector also includes an operating member or "Load" button. When this member is depressed, the indexing means are disabled and a latch is withdrawn permitting separation of the magazine from the projector.

3,661,452
XEROGRAPHIC REPRODUCTION MACHINE
Ellsworth D. Hewes, Rochester, and Norbett H. Kaupp, Newark, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed May 24, 1968, Ser. No. 731,934
Int. Cl. G03b *27/10*
U.S. Cl. 355—3 **5 Claims**

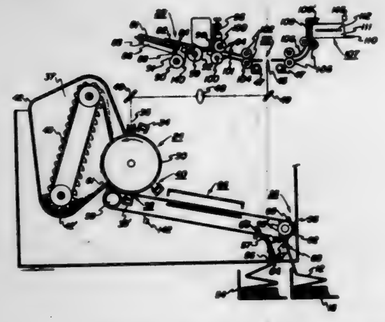
A reproduction machine having a photoreceptor imaging medium in belt configuration which is exposed by a flash illumination system in timed relation to the feeding of sheets of

copy paper prior to image transfer. The belt is arranged to be maintained flat during exposure and development with image



transfer being effected along a curved presentation of the belt between the two flat sections of the belt.

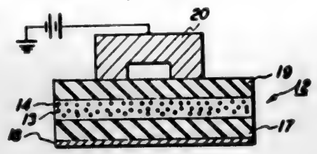
3,661,453
ELECTROSTATIC LABEL PRINTER
John V. McGuire, Deerfield; Donald W. Watson, Arlington Heights; Albert G. Enskat, Barrington, and Herbert C. Artelt, Jr., Wildwood, all of Ill., assignors to Xerox Corporation, Stamford, Conn.
Filed June 22, 1970, Ser. No. 48,362
Int. Cl. G03g *15/00*; B65h *1/06*
U.S. Cl. 355—3 **2 Claims**



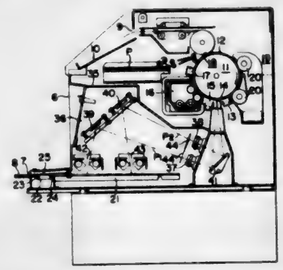
A device is provided for electrostatically printing label information, normally addresses, taken from individual master address cards on a web material for use as an addressing form. The device has a photoconductive member, a scanning station, transport components for feeding the cards forward in shingled relation past the scanning station; a station for developing latent images from the card information on the member; a transfer station, transport components to advance the web material to the transfer station; and a fixing station to fix the transferred image on the web material.

3,661,454
COMBINATION OF ELECTROGRAPHY AND MANIFOLD IMAGING
Harold Ernst Clark, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Original application Jan. 9, 1967, Ser. No. 608,157, now Patent No. 3,573,904. Divided and this application Feb. 2, 1970, Ser. No. 12,499
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **2 Claims**

An apparatus for manifold imaging comprising apparatus to apply an imagewise electric field across a manifold set, apparatus to uniformly expose the manifold set to electromagnetic radiation and apparatus to separate the manifold set.

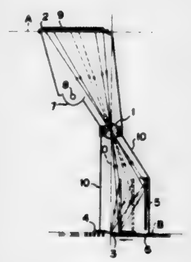


3,661,455
ELECTROPHOTOGRAPHIC COPYING MACHINE
Ryoichi Namiki, Tokyo, and Masao Ariga, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 26, 1971, Ser. No. 119,192
Claims priority, application Japan, Mar. 2, 1970, 45/19548
Int. Cl. G03g *15/04*
U.S. Cl. 355—14 **4 Claims**



An electrophotographic copying machine which makes a plurality of copies from one original in one operation, that is one reciprocation of an original holder. During one going stroke of the original holder, the original is scanned many times through a plurality of slits arrayed in spaced-apart relation with each other by a suitable distance along the path of the original holder and projected upon a photosensitive member which is displaced in synchronism with the original holder, so that a plurality of electrostatic latent images of the same original may be formed upon the sensitive member.

3,661,456
SLIT EXPOSURE OPTICAL SYSTEM
Shigeru Suzuki, Yokohama-shi, Japan, assignor to Kabushiki Kaisha Ricoi, Tokyo, Japan
Filed Feb. 25, 1969, Ser. No. 802,023
Claims priority, application Japan, Feb. 29, 1968, 43/13080
Int. Cl. G03b *27/70*
U.S. Cl. 355—66 **1 Claim**

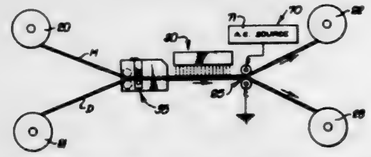


A slit exposure optical system in which an original is held in position on one side of a photocopying lens while a copying paper is arranged to move on the other side of said lens; a reflecting mirror is disposed at a right angle to the copying paper and a slit is arranged to contact with the copying paper; and said reflecting mirror is displaced at a speed of one-half that of the copying paper in the same direction therewith.

ERRATUM

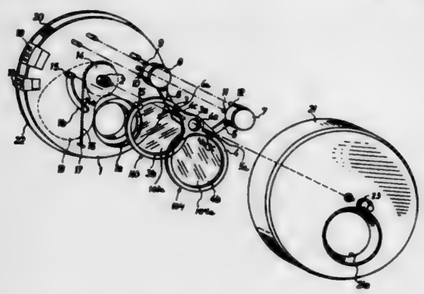
For Class 355—37 see:
Patent No. 3,661,461

3,661,457
ELECTROSTATIC REGISTRATION FOR CONTACT PRINTING
Roger A. Frech, Spring Valley, Calif., assignor to Extek Microsystems, Inc., Van Nuys, Calif.
Filed Mar. 6, 1970, Ser. No. 17,244
Int. Cl. G03b *27/02*
U.S. Cl. 355—78 **11 Claims**



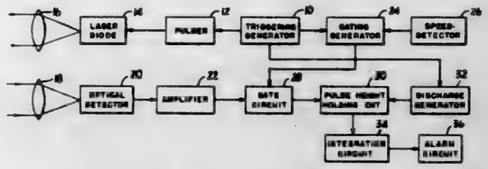
A contact printing apparatus for accurately and precisely maintaining in registry a master image-bearing transparent film and a light-sensitive duplicate. In one embodiment, the master and duplicate comprise two film strips being initially wound on separate supply reels and transported through an exposure zone to take-up reels by a drive mechanism. A pair of high voltage rollers are disposed upstream of the exposure zone in contact with the moving master and duplicate so as to electrostatically charge them causing strong attraction and adherence therebetween. A discharge device is provided downstream of the exposure zone so as to prevent any scintillation when the master and duplicate are separated.

3,661,458
PHOTOGRAPHIC COPYING APPARATUS
Ewald Fred Noemer, Dumont, N.J.; Franz J. Kau, Spring Valley, and Heinz Ludemann, Pearl River, both of N.Y., assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed June 25, 1970, Ser. No. 49,843
Claims priority, application Germany, June 28, 1969, G 69 30 562.0
Int. Cl. G03b *27/04*
U.S. Cl. 355—88 **10 Claims**



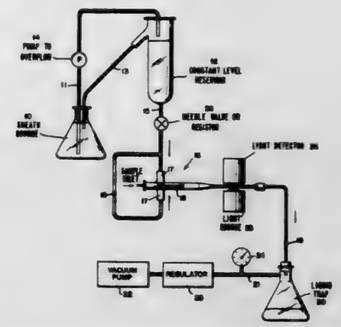
A photographic copying apparatus wherein the shutter blade is moved to open position by the frames of color filters whenever a filter pivots in a direction to move out of registry with the light-admitting opening. The filters are pivoted by rotary electromagnets which are deenergized when the respective filters extend across the path of incoming light. The shutter blade is biased to closed position and is pivotable about the common axis of the filters.

3,661,459
SYSTEM FOR PREVENTING COLLISION OF VEHICLES
Masao Aoki, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Chiyoda-ku, Tokyo, Japan
Filed Sept. 10, 1970, Ser. No. 70,996
Int. Cl. G01c *3/08*
U.S. Cl. 356—4 **2 Claims**



A motor vehicle sends a train of laser light pulses with a fixed repetition period and receives the pulses reflected from a preceding vehicle. The received pulses are converted to an electrical signal and applied to a gate circuit gated with the repetition period of the laser light pulses and with a time delay determined by the speed of the vehicle. Those signal portions resulting from the received pulses and passed through the gate circuit are held in peak value and integrated providing an intervehicular distance indication.

3,661,460
METHOD AND APPARATUS FOR OPTICAL ANALYSIS OF THE CONTENTS OF A SHEATHED STREAM
Alan H. Elking, White Plains; Warren Groner, Whitestone, and Alex M. Saunders, Bedford Village, all of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.
Filed Aug. 28, 1970, Ser. No. 67,819
Int. Cl. G01n *1/00*, *15/02*, *21/06*
U.S. Cl. 356—36 **19 Claims**

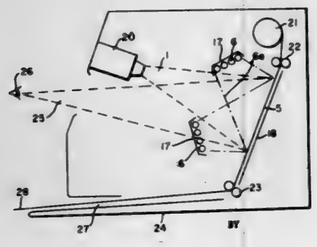


There is provided a method and apparatus for optical analysis by photometry of a substance flowing in a liquid stream within a coaxial sheath stream of a transparent liquid. The sheath stream, flowing in the same direction, entrains the inner stream so as to confine it concentrically. A photometer is used which includes a light source on one side of the sheathed stream in a position to direct light onto the inner stream which is cylindrical, the outer or sheath stream also

being cylindrical. The photometer also includes a light detector externally of the sheathed stream in an angular position to detect the photometric results of impingement of light on the contents of the inner stream. Refraction of light at the interfaces of the sheath stream is compensated by varying the radius of the inner stream through the control of the flow of one stream with reference to the other.

The concept also includes the narrowing of the sheathed stream to a very small diameter in which it is confined by a wall structure in the area of examination.

3,661,461
CO-IRRADIATION SYSTEM FOR PRODUCING POSITIVE IMAGES
Rolf Dessauer, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 26, 1969, Ser. No. 880,301
Int. Cl. G03b 27/76
U.S. Cl. 355—37 **6 Claims**



Method for producing positive images by irradiating photoimageable and photodeactivatable compositions which are characterized by forming color on irradiation with light in a first wavelength range and by being deactivated against color formation on irradiation with light in a different second wavelength range. The method comprises simultaneously exposing such composition disposed as an image-capture surface to radiations in both wavelength ranges, with

1. the deactivating radiation being applied patternwise according to the desired image to be captured,
2. the color-forming radiation being applied over the entire surface to be imaged, and
3. the intensities and the relative intensities of the two radiations being such that

i. the deactivating radiation is itself effective for deactivation and

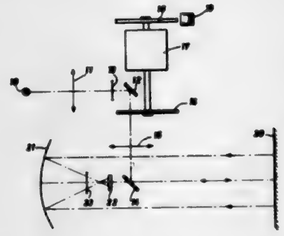
ii. the color-forming radiation is itself effective to cause color formation in other than the co-struck areas but is ineffective in the presence of the deactivating radiation in the co-struck areas to cause substantial color formation.

The composition used is a mixture of

A. color forming components which are responsive to said first wavelength range and thereby produce a first photo-induced oxidation-reduction reaction, and

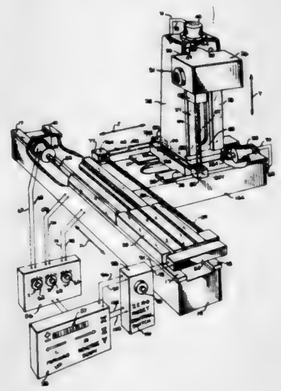
B. deactivating components which are responsive to said second wavelength range and thereby produce a deactivating agent by a second oxidation-reduction reaction, said deactivating agent thus produced being a stronger reducing agent than the reductant member of the color-forming components and thereby preventing the color-forming reaction when the composition is subsequently exposed to the first wavelength range.

3,661,462
SPECTROPHOTOMETER FOR MEASURING THICKNESS OR WEIGHT OF WATER-CONTAINING COATINGS
Luc Yves Natens, Berchem, Belgium, assignor to Gevaert-AGFA N.V., Mortsel, Belgium
Filed Apr. 23, 1970, Ser. No. 31,189
Claims priority, application Great Britain, Apr. 23, 1969, 20,766/69
Int. Cl. G01m 21/34; G01j 3/42
U.S. Cl. 356—51 **9 Claims**



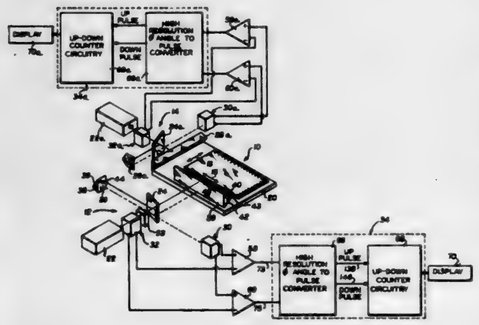
The thickness and/or weight of a water-containing composition is measured by an infrared spectrophotometer wherein the attenuation of radient energy at a measuring wavelength which is substantially absorbed by the coating composition is compared with the attenuation of radient energy at a second reference wavelength not substantially absorbed by the coating composition.

3,661,463
SINGLE INTERFEROMETER MULTIPLE AXIS LASER MEASURING SYSTEM
Wallace E. Brainard, New Berlin, and Charles B. Sipek, Hales Corners, both of Wis., assignors to Kearney & Trecker Corporation, West Allis, Wis.
Filed Mar. 5, 1970, Ser. No. 16,848
Int. Cl. G01b 9/02; G02b 7/18
U.S. Cl. 317—106 **21 Claims**



This invention relates to an extremely accurate measuring system comprising a single laser interferometer and associated single counting apparatus responsive to a multiple axis laser beam reflectively connected to measure one of a plurality of different movements in a multiple axis machine tool. Preferably, the measuring apparatus is incorporated in a machine tool having a frame provided with a worktable movable along an X axis relative to an upright column mounted on the frame for transverse movement along a Z axis. The upright is disposed to carry a spindle head for movement along a vertical or Y axis to effect selective movement of a cutter relative to an associated workpiece mounted on the worktable in the usual manner.

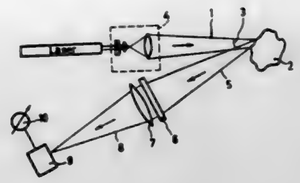
3,661,464
OPTICAL INTERFEROMETER
Charles J. Hubbard, Huntington, N.Y., assignor to Jorway Corporation, Westbury, N.Y.
Filed Mar. 16, 1970, Ser. No. 19,632
Int. Cl. H01s 9/02; G06f 7/38
U.S. Cl. 356—106 **35 Claims**



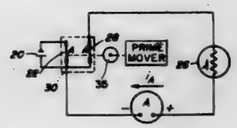
An optical interferometer of the coherent light type with which distances are measured by counting the total number of interference fringes produced when one reflector of a pair in the interferometer is moved through the distance to be measured. The movable reflector which is also translatable normal to the direction of measurement, is a roof prism having its reflective surfaces elongated in this direction. Photoelectric detectors are provided on opposite sides of a beam splitter for each providing a pair of phase displaced sinusoidal interference signals. The outputs of the detectors are combined to produce a single pair of phase displaced sinusoidal interference signals having an average D.C. level of zero volts. Electronic logic circuitry is provided for producing a digital signal representing the amount and direction of the displacement of the movable reflector along the axis of measurement. This circuitry includes a weighted summing means, including an operational amplifier, for providing at least one sinusoidal signal pair from the combined detector outputs, which is a weighted sum of these outputs and which is squared by Schmitt triggers and combined with these outputs in accordance with a predetermined signal pair condition.

3,661,465
METHOD AND AN ARRANGEMENT FOR RECOGNIZING AN OBJECT OR ITS POSITION AND ORIENTATION IN SPACE
Gunther Groh, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 6, 1969, Ser. No. 797,103
Claims priority, application Germany, Feb. 9, 1968, P 16 73 927.8
Int. Cl. G01b 11/00
U.S. Cl. 356—162 **9 Claims**

A method and apparatus for determining the positional changes in the surface of an object by recording a real image and speckle pattern produced by focusing the radiation scattered by the object from a coherent source, and by comparing the object with the recorded image and the resulting speckle pattern.

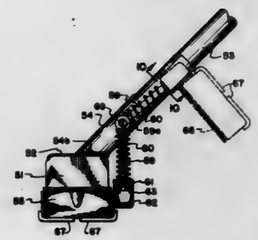


3,661,466
PHOTOMETRIC SYSTEM FOR CAMERAS
Allen G. Stimson, Brighton, N.Y.; John H. Eagle, deceased, late of Irondequoit, N.Y. (by Lee A. Eagle, executrix), and Lincoln Rochester Trust Co., executor, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation of application Ser. No. 337,454, Jan. 13, 1964, now abandoned. This application June 25, 1970, Ser. No. 49,760
Int. Cl. G01j 1/34, 1/36, 1/40
U.S. Cl. 356—217 **5 Claims**



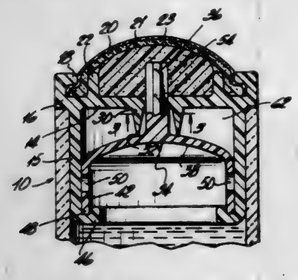
An exposure control system which automatically compensates for variations in background lighting by exposing a single photocell alternately to the subject and then to the background. A reversing switch is operated synchronously with the means for alternating the exposure of the photocell in such a manner to reverse the direction of the current through the exposure control synchronously with the alternation of the photocell exposure to the scene.

3,661,467
MOP WITH RESERVOIR
Gerald J. Dalton, 459 North 250 East, Kaysville, Utah
Filed Aug. 20, 1970, Ser. No. 65,642
Int. Cl. A47l 13/146, 13/22
U.S. Cl. 401—138 **6 Claims**



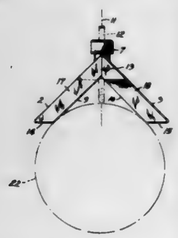
A sponge mop having a firm backed scrubbing surface and a mopping face on a sponge head and means whereby dirty water accumulated by the sponge head during mopping is pressed from the sponge head into a mop reservoir from which it may be poured into an available receptacle.

3,661,468
FLUID APPLICATOR HAVING WINE-CUP SHAPED VALVE ASSEMBLY
Gilbert Schwartzman, 20 Wilmont Circle, Scarsdale, N.Y.
Filed May 25, 1970, Ser. No. 40,261
Int. Cl. A46b 11/02
U.S. Cl. 401—206 4 Claims



A fluid applicator having a wine-cup shaped valve assembly. The valve assembly provides a two-point fluid control arrangement with the cup being disengaged from its valve seat to permit fluid flow through the opening onto a compressed body and thence onto a cover. Flexure of the cup will disengage the cup from engagement with a projecting portion so as to permit fluid flow through suitable apertures into a reservoir space.

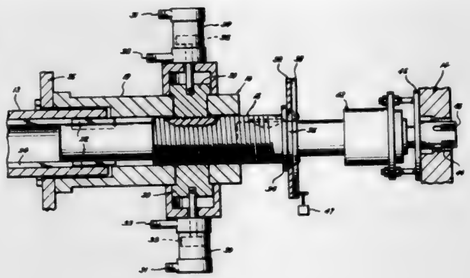
3,661,469
DRILL GUIDE
Millard Leff, Whitehouse Station; Joseph Daniel Malazinsky, Middlesex, and Earl Howard Weigel, Bridgewater, all of N.J., assignors to Ajem Associates, Inc., Somerville, N.J.
Filed June 15, 1970, Ser. No. 46,301
Int. Cl. B23b 49/02
U.S. Cl. 408—72 5 Claims



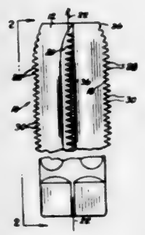
Drill guide bushing supported on legs with inner surfaces defining angle bisected by longitudinal axis of bushing and with flat coplanar bottoms in plane perpendicular to longitudinal axis of bushing. Scribe line on apparatus bisecting sand angle permits visual alignment of bushing with one of two mutually perpendicular center lines on surface to be drilled. Selected edges of legs lie in same plane as longitudinal axis of bushing and permit visual alignment of bushing with other center line. When drilling in flat surface, flat bottoms of legs contact surface. When drilling in curved surface, inner surfaces of legs tangentially contact surface.

3,661,470
THREADING ATTACHMENT
Arthur F. O'Pry, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.
Filed June 1, 1970, Ser. No. 41,827
Int. Cl. B23g 1/16, 1/18, 1/46, 5/16
U.S. Cl. 408—137 1 Claim

A threading attachment for connection to a rotary power takeoff for providing a thread on a workpiece wherein a pair of threaded nuts are actuated to engage a lead screw to drive a thread cutting means towards the workpiece and after threading are released and a spring return provides a quick return in preparation for the next workpiece.



3,661,471
THREAD CUTTING TOOLS
Louis Simonffy, 7253 West Lafayette, Detroit, Mich.
Filed Oct. 12, 1970, Ser. No. 79,841
Int. Cl. B23g 5/04, 5/06
U.S. Cl. 408—220 3 Claims

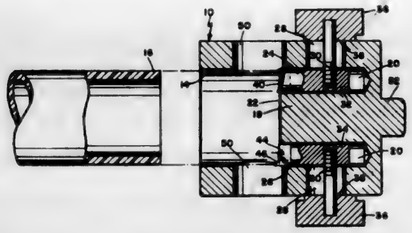


Tools for cutting threads in certain extremely hard materials like the aluminum bronzes, such tool being characterized by four lineal arrays of teeth equally spaced around a longitudinal axis and substantially equidistant therefrom. One pair of said arrays has a series of long teeth interspersed with a series of short teeth, and the other such pair has teeth of uniform length which are slightly shorter than the long teeth in the first mentioned arrays. An inwardly inclined chip clearance surface on each tooth extends rearwardly to a point below the root of the tooth. A flat cutting face on the teeth in each pair of lineal arrays extends below the root thereof, and is disposed at substantially right angles to a transverse medial plane through the other pair of lineal arrays.

3,661,472
FACING AND DEBURRING HANDTOOL
Ronald A. Besuloye, 2217 La Cresta Road, El Cajon, Calif.
Filed Feb. 8, 1971, Ser. No. 113,155
Int. Cl. B23b 5/16
U.S. Cl. 408—231 4 Claims

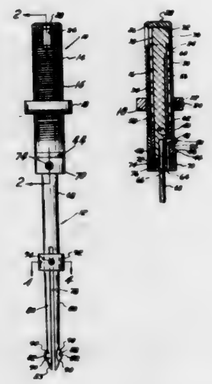
A handtool for facing off and deburring the rough cut ends of plastic pipe, the cutting tool bit structure being mounted parallel to the work-receiving bore and being adjustable by projecting knobs which are also handles to aid the user in rotating the handtool while pressing the same onto the pipe, the casing of the handtool having a work-receiving bore and

a thick block-like portion closing one end of the bore and providing support for the cutting tool bits in the form of



small bores extending parallel to the axis of the pipe rather than in the usual transverse or radial disposition.

3,661,473
EXTENSION TOOL HOLDER
Louis A. Kubicek, Ypsilanti, Mich., assignor to Burr-Ban Tool Service Co., Detroit, Mich.
Filed Dec. 22, 1969, Ser. No. 887,060
Int. Cl. B23b 51/16
U.S. Cl. 408—239 5 Claims



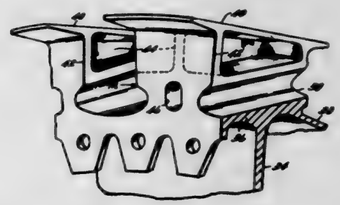
An extension tool holder having a cylindrical outer housing adapted to be inserted into a chuck of a rotary drive machine. A tool holding rod is axially slidably mounted in a bore formed in the housing for rotation about its axis of elongation. A coil spring disposed within the bore around the rod biases the rod into the bore. During the back-stroke of the machine chuck, in the deburring of holes the coil spring compresses due to the engagement of the cutting edge of the deburring tool and the edge of the hole being deburred, allowing the deburring tool to delay at the edge of the hole to adequately deburr the workpiece.

3,661,474
LIQUID BOOSTER DEVICE
Leonard J. Sieghartner, Rock Island, Ill., assignor to Roy E. Roth Company, Rock Island, Ill.
Filed Feb. 10, 1970, Ser. No. 10,279
Int. Cl. F04d 1/00, 1/06
U.S. Cl. 415—143 2 Claims

A liquid booster device integrally formed with a turbine pump for delivering a liquid at or near boiling point upwardly from a liquid reservoir to the pump inlet. The tubular casing of the liquid booster device is integrally formed with the case head of the pump and houses at least one booster impeller mounted on a shaft extension of the main pump's shaft. A circular flange is formed at the main pump's inlet for mounting the combined turbine pump — liquid booster device at the top of the liquid reservoir such that the booster impeller is submerged in the liquid.

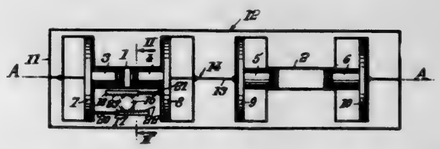


3,661,475
TURBOMACHINERY ROTORS
Bernard J. Anderson, Danvers, Mass., and William E. Schoenborn, Cincinnati, Ohio, assignors to General Electric Company
Filed Apr. 30, 1970, Ser. No. 33,220
Int. Cl. F01d 5/32, 5/02
U.S. Cl. 416—219 4 Claims



A compressor rotor is disclosed having relatively thin angled platforms connected to the structural portion of a rotor disc by web means.

3,661,476
TANDEM FREE-PISTON MACHINES
Henry Besaroya, 41 Boulevard du Commandant Charcol, Neuilly-sur-Seine, France
Filed Dec. 24, 1969, Ser. No. 887,829
Claims priority, application France, Dec. 30, 1968, 182156
Int. Cl. F04b 17/00, 35/00; F02b 71/00
U.S. Cl. 417—341 8 Claims



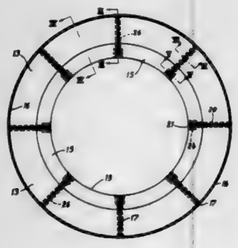
A tandem free-piston machine has two movable trains comprising drive and compressor pistons. Synchronizing means are provided between these trains and include an elastic member to absorb at least partly any momentary difference in the forces to which the movable trains are sub-

jected. The synchronizing means may be rack and pinion, or lever and connecting rod means. The elastic member may be a torsionally elastic shaft connecting two pinions, or a bendable elastic bar constituting one of said levers.

3,661,477
HEAT SHIELD

Thorbjorn Westrum, Kongsberg, Norway, assignor to A/S Kongsberg Vapenfabrikk, Kongsberg, Norway

Filed Dec. 15, 1969, Ser. No. 885,139
Claims priority, application Norway, Dec. 17, 1968, 5037/68
Int. Cl. F01d 25/20; F03d 11/00; F06d 37/02
U.S. Cl. 417—373 7 Claims

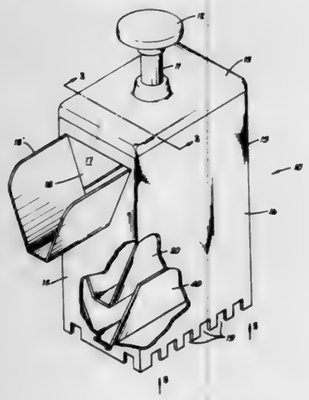


A segmented annular heat shield for mounting between the turbine blade wheel and the compressor impeller of a radial gas turbine. Each segment is fixedly secured to a stationary structure at one point at its outer edge and also fastened to said structure at two further fastening points at its inner edge in such a manner that at these further fastening points the segment is restrained from movement in the axial direction of the shield but can move freely in the plane of the segment. The segments adjoin along joints of such a design as to admit of relative movement of the segments in the plane thereof due to heat expansion.

3,661,478
FLUID PUMP

Robert E. Schurr, Garrett, Ind., assignor to Rieke Corporation, Auburn, Ind.

Filed Apr. 2, 1970, Ser. No. 25,188
Int. Cl. F04b 21/04
U.S. Cl. 417—555 3 Claims

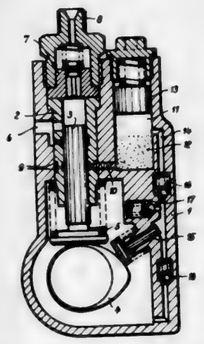


A pump which may be used in debris laden fluid. The pump has a sucker valve attached to the end of a handled rod. The sucker valve and a check valve are enclosed in a main body housing provided with entrance and exit openings. The sucker valve pushes the fluid from the entrance opening to the exit opening.

3,661,479
SEAL FOR RECIPROCATING MACHINE ELEMENTS

Alfred Musketa, Bergisch-Gladbach, Germany, assignor to Klochner-Humboldt-Deutz Aktiengesellschaft, Koln-Deutz, Germany

Filed Nov. 23, 1970, Ser. No. 91,752
Claims priority, application Germany, Dec. 3, 1969, P 19 60 576.6
Int. Cl. F04b 19/22; F01m 1/00; F15b 21/04
U.S. Cl. 417—437 6 Claims

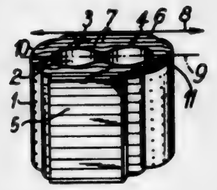


A sealing arrangement for machine elements reciprocable relative to each other and defining with each other a gap to be sealed, in which barrier chamber means extend to said gap and contain a barrier substance intermixed with solid particles having a minimum diameter which is in excess of the width of said gap to be sealed.

3,661,480
HOUSING FOR GEAR PUMPS OR MOTORS

Friedrich Forschner; Hans Kurzhals, both of Waiblingen, and Karl-Heinz Muller, Gerlingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 30, 1969, Ser. No. 889,280
Claims priority, application Germany, Jan. 16, 1969, P 19 01 964.8
Int. Cl. B23p 15/00; B21c 23/00; F01c 1/18
U.S. Cl. 418—179 9 Claims

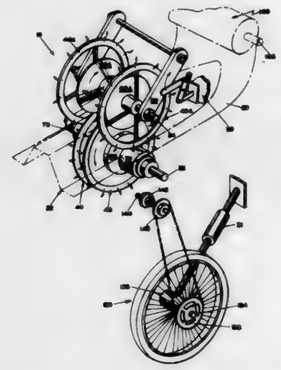


A section of an extrusion profile constitutes a housing especially for use for accomodating a gear pump or motor. The housing has a substantially cylindrical outer contour and a substantially oval cross section and an inner chamber which constitutes at least one longitudinal cylinder having at least one open end and surface lines which extend parallel with the surface lines of the outer contour and perpendicular to the original line threads or flow lines of the extrusion profile section so as to improve the fatigue resistance and especially the tensile fatigue resistance of the housing.

3,661,481
MOBILE THERMOFORMING APPARATUS

James B. Haviland, Jr., and Charles R. Balkema, both Grand Rapids, Mich., assignors to Haviland Agricultural Chemical Company, Grand Rapids, Mich.

Filed Mar. 2, 1970, Ser. No. 15,648
Int. Cl. B29c 17/02
U.S. Cl. 425—62 12 Claims



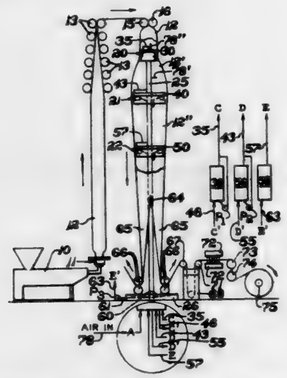
Thermoforming apparatus and method for continuously thermoforming a continuous web or sheet into a self-supporting, protective crop cover, preferably hat-shaped in cross-sectional configuration. The apparatus utilizes counter-rotating forming means, specifically sets of wheels on two adjacent axles, each set having primary forming wheels fixed to the axle and cooperative idler forming wheels freely rotating thereon, each idler wheel cooperating with a primary wheel on the opposing axle. Heat is supplied to the forming means, preferably by circulation of heated fluid. Forming pressure is supplied by shifting the forming means into cooperative relationship.

Such a crop cover is continuously formed by simultaneously heating and bending the sheet or web material into the configurated shape, and is continuously positioned over the row as formed, and anchored by pushing dirt onto its flanged edges.

3,661,482
APPARATUS FOR MANUFACTURING BIAXIALLY ORIENTED FILM WITH DIMENSIONAL STABILITY

Stuart L. Brown, Jr., 732 Ashby Drive, Waynesboro, Va.

Filed Aug. 28, 1968, Ser. No. 756,061
Int. Cl. B29c 17/07, 25/00; B29d 23/04
U.S. Cl. 425—66 8 Claims

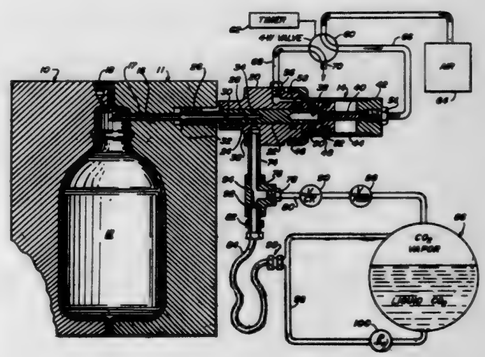


An apparatus is disclosed wherein a plurality of spaced mandrels accurately control expansion and stress relief of thermoplastic tubing in cooperation with means for lubricant assuring uniform operation.

3,661,483
APPARATUS FOR CONTROLLING THE FLOW OF LIQUID

Robert N. Bose, 1015 Naperville Rd., Wheaton, Ill.

Filed Aug. 8, 1969, Ser. No. 848,625
Int. Cl. B29c 5/06
U.S. Cl. 425—72 9 Claims



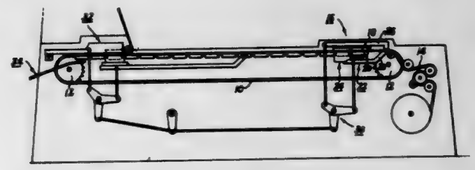
The intermittent flow of carbon dioxide liquid from a high pressure reservoir to a low pressure use area is controlled by a flow restricting orifice disposed in the supply line and a simple control valve located in the line downstream of the orifice. An additional source of pressurized fluid maintains the pressure between the orifice and the valve above the triple point of carbon dioxide to prevent solidification of the carbon dioxide upstream of the valve.

In a cyclical blow molding operation wherein liquid carbon dioxide is used to chill the freshly molded parts, the pressure of the fluid used to expand the parison is maintained above the triple point of carbon dioxide to prevent solidification of the carbon dioxide. Additionally, a predetermined amount of carbon dioxide is permitted to vaporize in the line upstream of the orifice during the off cycle in the molding operation thereby providing the necessary time delay between the application of the parison expanding gas and the injection of the liquid carbon dioxide into the molded part.

3,661,484
AUTOMATIC CONTAINER MAKING APPARATUS

Joseph M. Psota, Hawthorne; Joel A. Hamilton, Englewood, and Russell D. Di Donato, Nutley, all of N.J., assignors to Mahaffy & Harder Engineering Company, Totowa, N.J.

Filed Feb. 12, 1970, Ser. No. 10,822
Int. Cl. B29c 17/02
U.S. Cl. 425—109 9 Claims



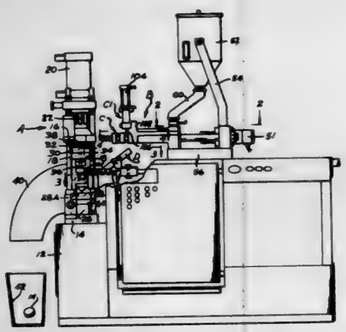
An automatic packaging machine of the type adapted to form packages from continuous rolls of plastic film. The machine includes an improved heating arrangement to apply heat directly to a plastic film while the film is maintained in its original plane of motion along a defined path prior to for-

mation into cups. This heating arrangement includes a heated platen positioned for reciprocating contact with one surface of the film. An elastomeric member is synchronized for movement with the heated platen so as to engage the opposite surface of the film and press it into heat transfer contact with the platen. The elastomeric member has a configuration matching the outline of the film area to be heated.

3,661,485
COMPRESSION MOLDING SYSTEM

Vasken F. Arpajian, Huntingdon Valley, and Quentin M. White, Jenkintown, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed June 10, 1970, Ser. No. 45,078
Int. Cl. B29c *3/00*
U.S. Cl. 425—162 **12 Claims**

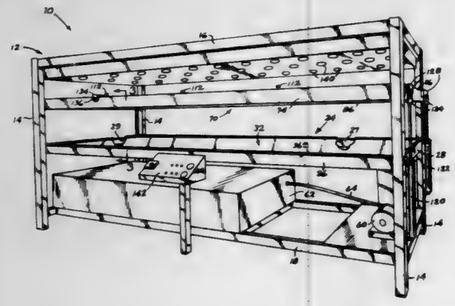


An automatic compression molding system, especially for thermosetting materials, in which an extrusion screw or a number of extrusion screws preplasticize the powder and charge the preplasticized mass into preforms. The preheated and preformed masses are immediately delivered and loaded into the mold cavities to reduce the time of the cure cycle up to 80 percent of that required in cold powder compression molding.

3,661,486
SHEET FORMING APPARATUS

Rodney A. MacDonald, Torrance, Calif., assignor to Merco Products, Inc., Eugene, Oreg.

Filed May 7, 1970, Ser. No. 35,530
Int. Cl. B29c *17/04*
U.S. Cl. 425—174 **9 Claims**

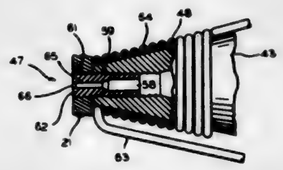


Apparatus for forming sheet material including a mold table, for supporting a mold with a sheet of airproof moldable material draped loosely thereover, and a clamping frame fro clamping the edges of the sheet against the table. The clamping frame includes a hollow side beam with an internally mounted adjustable truss for stiffening the beam to inhibit deflection. A vacuum manifold extends along the side of the beam adjacent the table with suction cups spaced therealong. A lower-than-atmospheric pressure may be produced in the manifold. The suction cups communicate with the manifold and act as vacuum grab means to hold the edges of a sheet against the beam when the pressure in the manifold is lowered. The clamping frame is movable toward and away from the table, and selective use of the vacuum grab permits the sheet either to remain on the table, or to be carried away from the table with the frame. A heat source is spaced from the frame in a direction opposite the table. The heat source is operable to heat a thermoplastic sheet carried with the frame to make it pliable and thus easier to form over the mold.

3,661,487
INJECTION MOLDING APPARATUS

Victor G. Susin, Naperville, Ill., assignor to Young Rubber Company, Naperville, Ill.

Filed Mar. 5, 1969, Ser. No. 804,532
Int. Cl. B29f *1/00*
U.S. Cl. 425—191 **4 Claims**

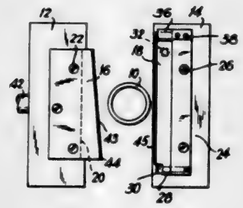


A unique temperature controlled runner system for use in conjunction with transfer and molding apparatus used for elastomers, or the like. The runner system comprises high pressure tubing coupled to extend the pressure injection system to the mold plate cavities. The high pressure tubing is surrounded by heat exchanging means designed to control the temperature within the tubing and the molds.

3,661,488
DEVICE FOR CUTTING PARISONS

Maurice Gaston Latreille, Batavia, Ill., assignor to American Can Company, New York, N.Y.

Filed Apr. 13, 1970, Ser. No. 22,570
Int. Cl. B29d *23/03*
U.S. Cl. 425—196 **10 Claims**

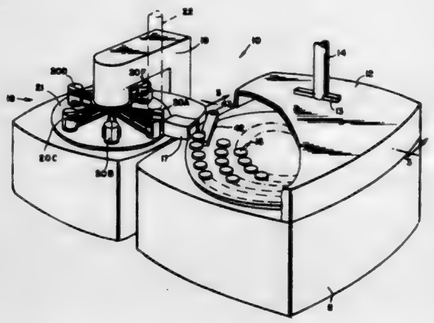


A device for cutting a parison disposed between mold halves comprises a first cutting blade fixed to one of the mold halves and a second cutting blade pivotally mounted on the other mold half for pivotal movement generally in a plane parallel to the parting plane of the molds. The second cutting blade is biased to a predetermined pivotal position, whereby when the mold halves are closed, the first blade engages the second blade to pivot the latter in opposition to said bias and the said two blades produce a scissoring action operable to cut the parison disposed between the two blades.

3,661,489
APPARATUS FOR FORMING CONTAINERS BY MOLDING

Lawrence A. Moore, King of Prussia, Pa., assignor to Beloit Corporation, Beloit, Wis.

Filed July 7, 1970, Ser. No. 52,812
Int. Cl. B29c *3/00*; **B29d** *23/03*
U.S. Cl. 425—233 **12 Claims**

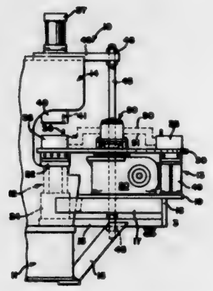


Preforms preferably of a suitable plastic material, are heated and then placed into a container mold where they are formed into containers. The applicable heating oven depends on the shape of the preform when it is heated. A rotary oven with an outwardly spiralling path may be used for flat or partially preshaped preforms. An elongated oven may be used for heating an elongated strip, from which flat preforms are cut after heating. The container mold assembly is constituted by a plurality of individual molds, all rotatable together about an axis of the container mold assembly, the individual molds arriving successively at a loading station for receiving heated preforms.

3,661,490
INJECTION MOLDING MACHINE

Raymond Lee Trueblood, New Carlisle, Ohio, assignor to Trueblood, Inc., Tipp City, Ohio

Filed Jan. 29, 1970, Ser. No. 6,801
Int. Cl. B29c *3/02*
U.S. Cl. 425—243 **4 Claims**

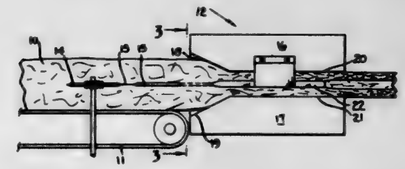


A plastic injection molding machine has a rotary indexing table and means supporting a stationary vertical standard which passes through a bore in the center of the table. A rotary fluid manifold is positioned concentrically about the standard and includes a pair of tubular sleeves having means between them defining axially spaced annular delivery and return passages. The outer sleeve is mounted on the rotary table for rotation therewith and the inner sleeve is keyed to the support standard. The manifold is provided with delivery and return bores in the inner sleeve which communicate with their respective passages and a plurality of outlets from the delivery passage and a plurality of inlets to the return passage to provide for rotary circulation of fluid through a plurality of mold parts spaced about the periphery of the indexing table. The vertical standard adds stability to the rotary table, and the manifold and standard cooperate to permit distribution of fluid to mold parts irrespective of their position on the table.

3,661,491
MEANS FOR PRODUCING FIBROUS PRODUCTS HAVING INTEGRAL TONGUE AND GROOVE EDGES

Richard Lloyd Troyer, Maumee, Ohio, assignor to Johns-Manville Corporation, New York, N.Y.

Original application Sept. 30, 1968, Ser. No. 763,655, now Patent No. 3,549,738. Divided and this application Sept. 17, 1970, Ser. No. 72,989
Int. Cl. B29c *15/00, 3/04*; **B29d** *27/00*
U.S. Cl. 425—297 **6 Claims**

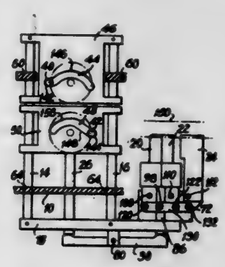


Means for consolidating, shaping and fixing the consolidated density and shape of a body of loose mass of fibers containing binders throughout to produce products of fixed configuration and density, which includes the concerted forming of integral tongue and/or groove longitudinal edges for effective complementary uniting of components with a like adjacent component, and the resulting tongue and/or groove fibrous product.

3,661,492
FLASH REMOVAL APPARATUS

Charles Donald Mason, Elgin, Ill., assignor to American Can Company, New York, N.Y.

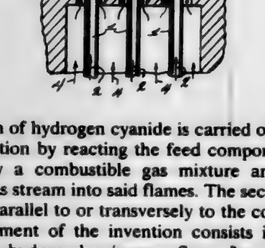
Filed Apr. 22, 1970, Ser. No. 30,674
Int. Cl. B29d *23/03*
U.S. Cl. 425—307 **12 Claims**



Apparatus for removing flash material from molded plastic bottles comprises a multi-part die having heated inner die parts insertable into an aperture such as a bottle handle opening and pivoted into a bottle contacting disposition to conform to the contour of the aperture, thereby to soften the

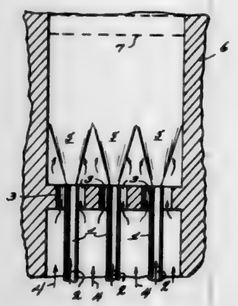
flash and press the latter against the surface of the handle. A heated outer die part is also pivoted with the inner die parts into flash removing relation to the bottle to remove flash at the outside of the handle.

3,661,493
PROCESS AND APPARATUS FOR REPELLING SPIDERS IN GAS APPLIANCES
Monte R. Edwards, Takoma Park, Md., assignor to Washington Gas Light Co., Washington, D.C.
Filed Aug. 3, 1970, Ser. No. 60,571
Int. Cl. F23d
U.S. Cl. 431—4 20 Claims



A spider repellent device and process to prevent the infestation of spiders in outdoor gas appliances. The repellents include halobenzenes, haloacetophenones, naphthalene, betanaphthylether and camphor. The device is positioned on the gas appliance downstream of the shut-off valve and dispenses the repellent into the area of the gas orifice.

3,661,494
PROCESS FOR CARRYING OUT ENDOTHERMIC GAS REACTIONS
Fritz Fetting, Darmstadt-Eberstadt; Henning Bockhorn, Darmstadt, and Hans-Adolf Herbertz, Neu-Isenburg, all of Germany, assignors to Deutsche Gold-und Silber-Schneideanstalt vormals Roessler, Frankfurt (Main), Germany
Filed Apr. 27, 1970, Ser. No. 32,008
Int. Cl. F23j 7/00
U.S. Cl. 431—4 8 Claims



Production of hydrogen cyanide is carried out by means of a flame reaction by reacting the feed components in flames produced by a combustible gas mixture and admixing a secondary gas stream into said flames. The secondary gas can flow either parallel to or transversely to the combustible gas. One embodiment of the invention consists in passing ammonia into a hydrocarbon/oxygen-flame front. Another embodiment of the invention consists in passing hydrogen or carbon monoxide into the flame front of a hydrocarbon/ammonia/oxygen-flame.

3,661,495
PROCESS FOR BURNING A COMBUSTIBLE LIQUID USING CELLULAR CERAMIC NODULES
William D. Johnston, Pittsburgh, Pa., assignor to Pittsburgh Corning Corporation, Pittsburgh, Pa.
Filed May 19, 1970, Ser. No. 38,866
Int. Cl. F23d 3/18
U.S. Cl. 431—7 9 Claims

A process for the substantially complete combustion of a combustible liquid including the combustion of a layer of the combustible liquid floating on a body of water. Cellular ceramic nodules having a core of separate closed cells and substantially continuous outer surfaces or skins with a coating of particulate alumina parting agent adhering thereto are treated to remove a substantial portion of said particulate alumina parting agent. The nodules are preferably washed in a water or dilute acid bath with mild agitation, to loosen and remove the particles of alumina parting agent adhering thereto without substantial abrasion or fracturing of the continuous outer skin. The treated nodules are relatively dust free and have a smoother outer surface. A layer of the treated cellular ceramic nodules is formed on the upper surface of the combustible liquid with a substantial number of the nodules in contiguous relation with adjacent nodules in the layer. The upper exposed surfaces of the nodules are wetted with the combustible liquid to form a film or layer thereon and the wetted films on the exposed surfaces of the nodules are ignited until combustion is self-sustaining. The combustible liquid films on the exposed upper surfaces of the nodules consumed by combustion, are continually replaced with combustible liquid from the bulk of the liquid until substantially all the combustible liquid is consumed.

3,661,496
PROCESS FOR BURNING A COMBUSTIBLE LIQUID EMPLOYING A PARTICULATE CARBON-COATED CELLULAR CERAMIC NODULE
William D. Johnston, Pittsburgh, Pa., assignor to Pittsburgh Corning Corporation, Pittsburgh, Pa.
Filed May 19, 1970, Ser. No. 38,865
Int. Cl. F23d 3/18
U.S. Cl. 431—7 8 Claims

A process for the substantially complete combustion of a combustible liquid including the combustion of a layer of the combustible liquid floating on a body of water. Cellular ceramic nodules are prepared by coating uncellulated pellets with a particulate carbonaceous parting agent and cellulating the coated pellets in a rotary furnace or kiln. The cellular ceramic nodules obtained by the above process have a relatively thin coating of the carbonaceous parting agent thereon and a relatively smooth continuous outer skin. A layer of the coated cellular ceramic nodules is formed on the upper surface of the combustible liquid with a substantial number of the nodules in contiguous relation with adjacent nodules in the layer. The upper exposed surfaces of the coated nodules are wetted with the combustible liquid to form a film or layer thereon and the wetted films on the exposed surfaces of the nodules are ignited until combustion is self-sustaining. The combustible liquid films on the exposed upper surfaces of the coated nodules consumed by combustion, are continually replaced with combustible liquid from the bulk of the liquid until substantially all of the combustible liquid is consumed.

3,661,497
PROCESS FOR BURNING A COMBUSTIBLE LIQUID USING CELLULAR CERAMIC NODULES
Nicholas T. Castellucci, 6901 Alcama Dr., and Ned C. Krouskop, 611 Pennwood Dr., both of Pittsburgh, Pa.
Filed June 2, 1969, Ser. No. 829,746
Int. Cl. F23d 3/18
U.S. Cl. 431—7 14 Claims

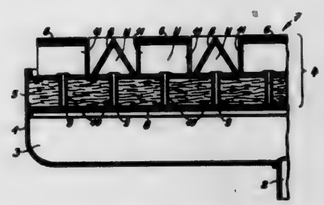
A process for the substantially complete combustion of a layer of combustible liquid floating on a body of water comprising spreading a layer of substantially spherical ceramic nodules on the upper free surface of the layer of combustible liquid. The nodules are wetted with the combustible liquid and the combustible liquid is ignited on the upper surface of the nodules until combustion is self-sustaining. The combustible liquid on the upper surface of the nodules consumed by combustion is continually replaced with combustible liquid from the layer until substantially all of the combustible liquid in the layer is consumed. The cellular ceramic nodules have a multiplicity of separate closed cells and the outer surface of the nodules has a plurality of cup shaped recess portions.

3,661,498
SPARK WHEEL ACTUATING MECHANISM PARTICULARLY FOR CIGARETTE LIGHTERS
Andre Pierre Francois Du Pont, Paris, France, assignor to S. T. Dupont (Societe Anonyme), Paris, France
Filed Feb. 24, 1970, Ser. No. 13,642
Claims priority, application France, Feb. 21, 1969, 6904557
Int. Cl. F23q 2/06
U.S. Cl. 431—275 4 Claims



In a spark wheel actuating mechanism of the type that accumulates and suddenly releases energy, in order to render the operation independent of the skill of the user, the said mechanism includes an arming disc turnable by the user; said arming disc compresses a driving spring which exerts a force on a pivotable lever immobilized by a detent and operatively connected to the spark wheel; at the end of its possible angular displacement, the said arming disc causes displacement of said detent. As a result, the said arm is rapidly swung by said spring and thus, a brief, high-speed rotation is imparted to the spark wheel.

3,661,499
RADIATION BURNERS OR GLOW RADIATORS
Kurt Krieger, Oberlinstrasse 16, Duesseldorf, Germany
Filed Jan. 27, 1970, Ser. No. 6,189
Claims priority, application Germany, Feb. 3, 1969, P 19 05 148.0
Int. Cl. F23d 13/12
U.S. Cl. 431—328 5 Claims



A radiation burner or glow radiator, in which a combustible mixture of gas or fuel vapor and air is supplied from a distribution chamber to a permeable burner head, which comprises an insulating layer of heat-resisting and/or fireproof material, for instance a fiber fleece, provided with discrete passage apertures for the combustible mixture, the burner head also comprising a heat-radiating surface of heat-resisting and/or fireproof material, consisting of one or more hollow moulded bodies provided with outlets, in such a way that burning gases issuing from these outlets impinge upon an external surface of an adjacent region of a heat-radiating surface.

CHEMICAL

3,661,500
COMPOSITION FOR DYEING HUMAN HAIR
Joseph W. Dehn, Jr., Great Neck, N.Y., and Mary R. Paradiso, Clifton, N.J., assignors to Shulton, Inc., Clifton, N.J.
Filed July 27, 1970, Ser. No. 64,871
Int. Cl. D06p 3/04
U.S. Cl. 8—10 8 Claims

Composition for dyeing human hair in rich, colorful tones. The dyes consist of a surfactant with a hair coloring agent which may be 6-(2-aminoethylamino)-1,2,3,4-tetrahydronaphtho-[2,3-f]-quinoxaline-7,12-dione; 6-(2-methyl-aminoethylamino)-4-methyl-1,2,3,4-tetrahydronaphtho-[2,3-f]-quinoxaline-7,12-dione; and 6-(2-ethylaminoethylamino)-4-ethyl-1,2,3,4-tetrahydronaphtho-[2,3-f]-quinoxaline-7,12-dione or mixtures of such coloring agents.

3,661,501
CATALYTIC TREATMENT OF SHAPED ARTICLES MADE FROM FIBER-FORMING SYNTHETIC POLYMERS
William Michael Corbett; David Harrison, and Michael Mundie Robertson, all of Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England
Filed Sept. 11, 1967, Ser. No. 666,927
Int. Cl. D06m 7/00, 13/34; C08g 41/04
U.S. Cl. 8—115.5 4 Claims

Procedure for imparting durable antistatic properties to shaped articles made from fiber-forming polyesters or polyamides by modifying the surface thereof. The article is heated while in intimate contact with a polyethylene oxide derivative such as polyethylene glycol diamine and in the presence of an inorganic catalyst such as potassium iodide to effect surface modification thereof.

3,661,502
FLAME-RESISTANT POLYACYLOXALAMIDRAZONE FILAMENTS
Gerhard Meyer, Obernburg; Heinz Grotjahn, Rollfeld; Helmut Magerlein, Erlenbach; Hans-Dieter Rupp, Erlenbach; Michael Wallrabenstein, Erlenbach, and Albert Schopf, Hering, all of Germany, assignors to Glanzstoff AG, Wuppertal, Germany
Filed Apr. 27, 1970, Ser. No. 32,394
Claims priority, application Germany, May 2, 1969, P 19 22 335.9
Int. Cl. D06m 13/50, 11/04
U.S. Cl. 8—115.5 16 Claims

Flame-resistant metal-containing polyacyloxalamidrazone filaments and a process for their production in which the filaments are treated with one or more solvent-soluble compounds of at least one of the metals zinc, tin, cadmium, barium, strontium, calcium, antimony and tantalum for a period of time sufficient to render the filaments resistant to flame.

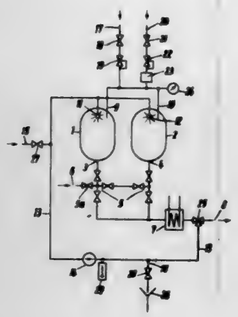
3,661,503
PROCESS FOR DEHYDRATING CELLULOSIC TEXTILE MATERIAL
Rostislav Didchenko, Middleburg Heights, and Lawrence Prentiss Lowell, Jr., Brookpark, both of Ohio, assignors to Union Carbide Corporation, New York, N.Y.
Filed May 29, 1969, Ser. No. 829,102
Int. Cl. C01b *31/07*; D06m *1/00*
U.S. Cl. 8—116 P 15 Claims

Flexible carbonaceous textile materials are produced by treating a cellulosic textile material with phosphoric acid, heating the acid-treated material at a temperature between 100° C. and 350° C. in an ammonia-containing atmosphere to produce a non-flammable, non-fusible, strong and flexible permanently dehydrated material, and carbonizing or graphitizing the product so produced to obtain the desired flexible carbonaceous textile material.

3,661,504
BASIC DYEABLE POLYMER OF POLYETHYLENE TEREPHTHALATE SHAPED ARTICLE CONTAINING 0.5 PERCENT OF A SULFONATED PYRROLE
Robert W. Stackman, Morristown, N.J., and Donald E. Sargent, Schenectady, N.Y., assignors to Celanese Corporation, New York, N.Y.
Original application Dec. 29, 1966, Ser. No. 605,570, now Patent No. 3,507,835. Divided and this application Jan. 28, 1970, Ser. No. 6,646
Int. Cl. D06p *5/06*
U.S. Cl. 8—168 5 Claims

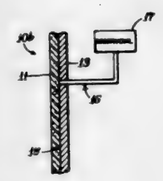
A polyethylene terephthalate shaped article containing a sulfonated pyrrole and permeated uniformly throughout by a cationic dye.

3,661,505
METHOD OF STERILIZING APPARATUS FOR THE HEAT TREATMENT OF LIQUID PRODUCTS
Martin Frolich, Moos-Strasse 2, Gumligen, Switzerland
Filed Apr. 24, 1970, Ser. No. 31,585
Claims priority, application Switzerland, Apr. 28, 1969, 6421/69
Int. Cl. A61l *1/00*
U.S. Cl. 21—56 1 Claim



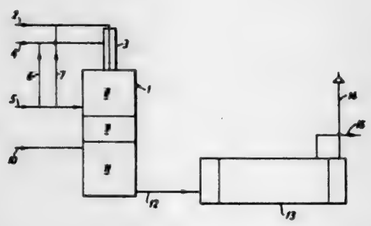
A method of sterilizing apparatus for the heat treatment of liquid products comprises displacing air from the apparatus by steam, circulating hot water through the apparatus so that hot water is sprayed into a vessel and thereby heated by the steam until the steam pressure in the vessel required to reach and maintain the sterilization temperature in the coldest part of the vessel is reached and maintaining this pressure until the sterilization temperature has been maintained for a predetermined sterilization period in the coldest part of the apparatus, subsequently discontinuing the steam supply and cooling the water by a heat exchanger while supplying sterile air which maintains an excess pressure in the apparatus during subsequent discharge of the water. The apparatus is modified to allow this method to be performed.

3,661,506
MEANS AND METHOD OF ELIMINATING AND CONTROLLING MARINE FOULING
Lucius D. Watkins, Hartland, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Sept. 3, 1969, Ser. No. 854,979
Int. Cl. A01n *17/00*, *23/00*
U.S. Cl. 21—58 7 Claims



A system for controlling marine growth on submerged surfaces in which chemical anti-foulants are constantly permeated and diffused by absorption through a permeable nonporous membrane, preferably formed as a plastic sheath, having the inner surfaces thereof continuously supplied with the diffusable chemical from a replenishable supply; the plastic sheath being selected for non-destructible and controlled permeation by a selected chemical which is repugnant or toxic to limnological and marine growth. The membrane may be backed up by a non-permeable barrier to isolate permeation to the membrane and in certain instances to form a reservoir system with the membrane. The barrier structure so formed is readily submersible and presents an environmental contacting surface which is highly repellent to marine organisms.

3,661,507
PROCESS FOR DECOMPOSING AMMONIA
Fritz Breitbach, and Gustav Choulat, both of Recklinghausen, Germany, assignors to Firma Carl Still, Recklinghausen, Germany
Continuation-in-part of application Ser. No. 369,187, May 21, 1964, now abandoned. This application Apr. 10, 1969, Ser. No. 824,340
Int. Cl. B01d *53/34*; C01b *2/04*
U.S. Cl. 23—2 R 10 Claims



Process of decomposing the ammonia of impure ammonia-containing vapor clouds, particularly ammonia-containing vapor clouds emanating from coke oven plants and gas works and contaminated by hydrogen sulfide, cyano compounds like HCN, benzene naphthaline and the like. The vapor clouds are first heated to the decomposition temperature of the ammonia, whereafter the hot clouds are passed at this temperature through a decomposition zone to cause decomposition of the ammonia into hydrogen and nitrogen. The combustible matter in the decomposed gases is then burned in an intermediately installed combustion zone by supplying combustion air. The combustible matter including the hydrogen may be burned at a place remote from the decomposition plant or may be added to other gases.

3,661,508
PROCESS FOR PRODUCING MOLYBDENUM DISULFIDE
Joseph E. Ritsko, Towanda, Pa., assignor to Sylvania Electric Products Inc.
Filed Dec. 14, 1970, Ser. No. 98,069
Int. Cl. C01g *39/00*; C22b *49/00*
U.S. Cl. 23—15 W 8 Claims

A process for producing molybdenum disulfide from molybdenite ore sources is disclosed wherein the ore is digested in sulfuric acid under controlled conditions for a specific length of time. After digesting, the impure solid molybdenum disulfide is removed and admixed with hydrofluoric acid and hydrochloric acid under controlled conditions for a specific length of time. The solid molybdenum disulfide is then removed and washed.

3,661,509
CATALYTIC PROCESS FOR THE PURIFICATION OF GASES AND CATALYTIC COMPOSITIONS SUITABLE THEREFOR
Italo Ferrara, and Italo Castellani, both of Siracusa, Italy, assignors to Simcat-Societa Industriale Catanese S.p.A., Palermo, Italy
Continuation of application Ser. No. 494,884, Oct. 11, 1965, now abandoned. This application June 20, 1969, Ser. No. 838,028
Claims priority, application Italy, Oct. 20, 1964, 22648/64
Int. Cl. B01d *53/04*, *53/34*
U.S. Cl. 23—2 S 2 Claims

Gases contaminated with mercury are purified by bringing the same into intimate contact with a catalytic composition comprised of mercuric sulfide and sulfur.

3,661,510
LIGHT BULK DENSITY SODIUM PERBORATE
Donald Charles Winkley, Trenton, N.J., assignor to FMC Corporation, New York, N.Y.
Filed Mar. 13, 1969, Ser. No. 806,979
Int. Cl. C01b *15/12*
U.S. Cl. 23—60 7 Claims

A light, bulk density (about 0.3–0.6 g./cc.) sodium perborate having a particle size larger than about 60 mesh is produced by reacting together an aqueous sodium metaborate solution with hydrogen peroxide in the presence of externally prepared, prismatic, seed crystals of sodium perborate tetrahydrate.

3,661,511
PROCESS FOR THE PREPARATION OF PURE ALUMINUM FLUORIDE
Alfred Schmidt, Linz/Donau, Austria, assignor to Osterreichische Stickstoffwerke Aktiengesellschaft, Linz/Donau, Austria
Filed Feb. 11, 1970, Ser. No. 10,625
Claims priority, application Austria, Feb. 25, 1969, A 1864/69
Int. Cl. C01f *7/50*
U.S. Cl. 23—88 2 Claims

Preparation of crystalline aluminum fluoride trihydrate low in iron from aqueous soluble iron compounds containing aluminum fluoride solutions by reduction of the ferric ions with nitrogen or sulphur containing reducing agents.

3,661,512
PREPARATION OF CHLORINE AND ALKALI METAL NITRATE AS A SIDE REACTION IN THE PRODUCTION OF NITRIC ACID
Takashi Oushiba, Tokyo, Japan, assignor to Showa Denko Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 23, 1969, Ser. No. 819,514
Claims priority, application Japan, Apr. 26, 1968, 43/27696
Int. Cl. C01d *9/04*; C01b *21/44*
U.S. Cl. 23—102 8 Claims

A method for producing chlorine and alkali metal nitrate which comprises reacting nitrogen peroxide, water and oxygen in the presence of an aqueous nitric acid containing a nitrate of a group Ia metal having an atomic weight at least as heavy as potassium and reacting a chloride of alkali metal with the resulting solution.

3,661,513
MANUFACTURE OF ALKALI METAL PHOSPHATES
James E. Barker, Freehold, N.J., assignor to Cities Service Company, New York, N.Y.
Filed Aug. 14, 1970, Ser. No. 63,948
Int. Cl. C01b *25/28*, *25/30*, *25/38*
U.S. Cl. 23—107 10 Claims

Alkali metal phosphates can be prepared directly from phosphoric acid and an alkali metal salt. Contaminating anions can be selectively extracted from the resulting solution with an immiscible organic amine, such as a secondary aliphatic amine. The alkali metal phosphates can be converted to polyphosphates, such as tripolyphosphate. The alkali metal phosphates and polyphosphates are useful in detergents and fertilizers.

3,661,514
PRODUCTION OF ALKALI-METAL POLYPHOSPHATES BY SPRAY DRYING
John F. Herink, Pocatello, Idaho, assignor to FMC Corporation, New York, N.Y.
Filed July 29, 1970, Ser. No. 59,159
Int. Cl. C01b *25/30*, *25/38*
U.S. Cl. 23—107 4 Claims

Alkali-metal phosphates are produced by spraying liquid containing alkali oxide and P_2O_5 values upward into an enclosed drying area against flame or hot gases blowing downward from near the top of the enclosure at a velocity sufficient to force the droplets close to but not past the flame or other source of hot gases and then collecting the product below the level of the spray ports. The product has a higher concentration of granular material than in conventional procedures, greater throughput is obtained and the material is less friable.

3,661,515
METHOD OF BRIGHTENING KAOLIN CLAY BY REMOVING ORGANIC CONTAMINANTS
Joseph Iannicelli; Albert C. Kunkle, and Robert N. Maynard, all of Macon, Ga., assignors to J. M. Huber Corporation, Locust, N.J.
Continuation of application Ser. No. 654,370, July 19, 1967, now abandoned. This application May 18, 1970, Ser. No. 37,473
Int. Cl. C01b *33/26*; C04b *33/12*; C09c *1/42*
U.S. Cl. 23—110 R 2 Claims

This invention concerns a method for brightening organically contaminated kaolin by treatment of kaolin slurries with an oxidizing agent followed by sedimentation. The oxidizing agent effects an oxidation of organic matter and the simultaneous liberation of discoloring contaminants which are separated from the beneficiated kaolin by hydraulic classification.

3,661,516
METHOD OF PREPARING AMMONIUM AMIDO-SULFONATE

Heinz-Karl Hofmeister, Kelkheim/Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

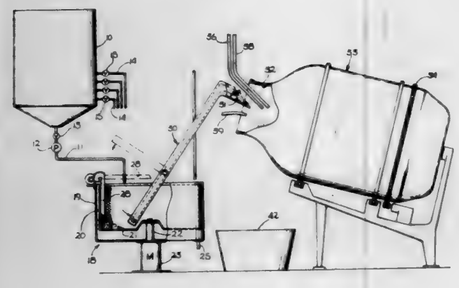
Filed Mar. 17, 1970, Ser. No. 20,386
Claims priority, application Germany, Mar. 27, 1969, P 19 15 723.4
Int. Cl. C01b *17/00*
U.S. Cl. 23—114 4 Claims

Amido-sulfonic acid and its salts are prepared by direct reaction of sulfuric anhydride with ammonia. The reaction is effected in such a way that a molten reaction product is obtained. By means of this process the reaction heat can be utilized and at the same time high space-time yields are obtained.

3,661,517
METHOD OF MANUFACTURE OF COPPER SULFATE CRYSTALS

Francis R. Bordeaux, 10604 Wheatland Ave., Sunland, Calif.

Filed Nov. 10, 1969, Ser. No. 875,074
Int. Cl. C01g *3/10*; C01b *31/20*
U.S. Cl. 23—125 1 Claim



A source of copper carbonate is obtained, such as by the treatment of a spent alkaline etchant solution with an acid, such as H_2SO_4. The resulting copper carbonate slurry is dried and put into a reactor. The exact amount of water to form $CuSO_4 \cdot 5H_2O$ is added to the reactor and then sulfuric acid is slowly added with agitation until the correct amount of H_2SO_4 is added to make $CuSO_4 \cdot 5H_2O$. The mixture is agitated while cooling and the resulting crystals are small and the yield is almost theoretical with no mother liquor remaining.

3,661,518
PROCESS FOR CONVERTING SULFATES TO SULFIDES

John L. Orahood, Midland, Tex., assignor to Elcor Chemical Corporation, Midland, Tex.

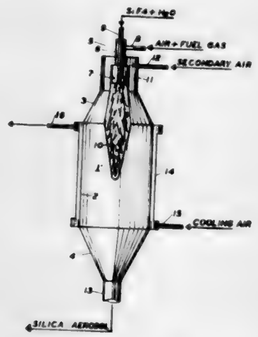
Continuation of application Ser. No. 662,650, Aug. 23, 1967, now abandoned. This application Feb. 24, 1970, Ser. No. 14,735
Int. Cl. C01b *17/20*
U.S. Cl. 23—137 5 Claims

A process is described whereby gypsum is reacted with a reducing gas at temperatures in the order of 1,800° F. to reduce the gypsum to calcium sulfide, and the calcium sulfide thus produced is water quenched with no substantial loss of material and minimum scale formation by quenching under conditions of water temperature and pressure such that no steam is generated.

3,661,519
HYDROLYSIS OF SILICON TETRAFLUORIDE

Richard E. Driscoll, Monroe, La., assignor to Cities Service Company, New York, N.Y.

Filed July 1, 1970, Ser. No. 51,622
Int. Cl. C01b *33/18*, *33/14*
U.S. Cl. 23—182 V 9 Claims



A mixture comprising oxygen, a hydrocarbon fuel and silicon tetrafluoride is burned, the amount of oxygen in the mixture being insufficient for complete combustion of the fuel. A substantial portion of the silicon tetrafluoride is hydrolyzed within the resulting incomplete-combustion hydrocarbon flame, oxygen being added thereafter for combustion of the remaining fuel therein. Probably because of free radical initiation in the incomplete-combustion flame, the conversion efficiency of silicon tetrafluoride to silica can be maintained at high levels while temperatures remain below the fusion-sintering point of the silica, i.e., not in excess of about 1,600° F.

3,661,520
PRODUCTION OF BARIUM HYDROXIDE MONOHYDRATE

Bennie Le Roy Benning, Modesto, Calif., assignor to FMC Corporation, New York, N.Y.

Continuation of application Ser. No. 670,793, Sept. 26, 1967, now abandoned. This application July 13, 1970, Ser. No. 56,192
Int. Cl. C01f *11/02*
U.S. Cl. 23—186 4 Claims

Discrete particles of commercial barium hydroxide monohydrate can be prevented from bonding together into hard, rock-like agglomerates by passing an inert sweep gas over the barium hydroxide monohydrate particles while maintaining them at elevated temperatures in a heating zone to remove substantially all residual water in excess of the stoichiometric amount required to form barium hydroxide monohydrate; the $Ba(OH)_2 \cdot H_20$ assay of the resulting monohydrate product is thereby increased and higher hydrates of barium hydroxide are eliminated.

3,661,521
REFINING OF CUBIC BORON NITRIDE

John D. Birle, Galloway, Ohio, assignor to General Electric Company

Filed Feb. 13, 1970, Ser. No. 11,347
Int. Cl. C01b *21/06*
U.S. Cl. 23—191 7 Claims

Cubic boron nitride is refined from a mixture of cubic boron nitride and hexagonal boron nitride by adding to the mixture lithium hydroxide, sodium hydroxide, or potassium hydroxide, or mixtures thereof and water as may be necessary to control the hydroxide fusion temperature, heating to a low-temperature molten state to dissolve the hexagonal boron nitride, and separating the cubic boron nitride from the remainder of the mixture.

3,661,522
PROCESS FOR PRODUCING PIGMENT GRADE TITANIUM DIOXIDE

Umberto Colombo, Novara, Italy; Bradford C. Hafford, Palmerton, Pa., and Giuseppe Ugletti, Ternate, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy and The New Jersey Zinc Company, New York, N.Y., by said Colombo and said Ugletti, part interest to each

Filed Mar. 31, 1970, Ser. No. 24,347
Claims priority, application Italy, Apr. 2, 1969, 14981 A/69
Int. Cl. C01g *23/04*; C09c *1/36*
U.S. Cl. 23—202 V 5 Claims

Process for producing pigment grade titanium dioxide by heating titanium tetrachloride to a temperature of from about 1,100° to 1,300° C by mixing with combustion gases having a temperature of from about 1,700° to 2,300° C obtained from the combustion of a mixture of carbon monoxide, oxygen and chlorine, the oxygen in the mixture being present in an amount of about 0.5 to 10.0 percent by volume in excess of the stoichiometric amount required for complete combustion of the carbon monoxide, the chlorine comprising from about 1.0 to 10.0 percent by volume of the mixture, and then reacting the thus heated titanium tetrachloride with oxygen at a temperature of from about 1,000° to 1,500° C. Desirably, the titanium tetrachloride is first preheated to a temperature of about 500° C and the oxygen reactant is preheated to a temperature of about 800° C. The titanium dioxide product obtained has a uniform particle size distribution and an average particle diameter greater than 0.25 microns.

3,661,523
PREPARATION OF TITANIUM CARBIDE

Robert S. Sheppard, Doylestown, and William L. Wilson, Barberton, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 14, 1970, Ser. No. 28,334
Int. Cl. C01b *31/30*
U.S. Cl. 23—208 A 11 Claims

Titanium carbide, usually in finely divided, particulate form, and often predominantly in the form of small cubic crystals having a particle size range of from about 0.02 to about 1.0 micron and a weight median particle size of from about 0.08 to about 0.8 micron, is formed by reacting titanium halide in vapor state with a reducing agent and carbon source at carbide forming temperatures. Reduction of impurity levels present in the titanium carbide product, e.g., oxygen and halogen, is obtained by collecting the titanium carbide product at temperatures of from about 350° C. to 1,500° C. in the substantial absence of air.

3,661,524
PREPARATION OF TITANIUM CARBIDE

Calvin B. Holden, Doylestown, and William L. Wilson, Barberton, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 14, 1970, Ser. No. 28,495
Int. Cl. C01b *31/30*
U.S. Cl. 23—208 A 14 Claims

Titanium carbide, usually in finely divided, particulate form and often predominantly in the form of small cubic crystals having a particle size range of from about 0.02 to about 1.0 micron and a weight median particle size of from about 0.08 to about 0.8 micron, is formed by reacting titanium halide in vapor state with halogenated hydrocarbon, e.g., chlorinated hydrocarbon, and hydrogen at carbide-forming temperatures. Control of the titanium carbide particle size is obtained by conducting the reaction in the presence of a nucleating amount of hydrocarbon, such as methane.

3,661,525
PROCESS FOR NEUTRALIZATION OF AMORPHOUS BORON

Benjamin Y. S. Lee, and John Gonzales, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy

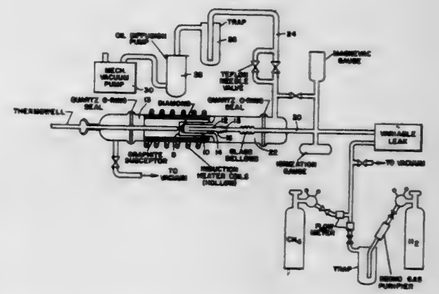
Filed Aug. 25, 1969, Ser. No. 852,923
Int. Cl. C01b *35/00*
U.S. Cl. 23—209 1 Claim

A process for the neutralization of large quantities of amorphous boron with anhydrous ammonia for use in fuel-rich solid propellant formulations wherein boron is used in large amounts.

3,661,526
PROCESS FOR THE CATALYTIC GROWTH OF METASTABLE CRYSTALS FROM THE VAPOR PHASE

John C. Angus, and Nelson C. Gardner, both of Cleveland Heights, Ohio, assignors to Case Western Reserve University

Filed June 24, 1969, Ser. No. 835,929
Int. Cl. C01b *31/06*; B01j *17/20*
U.S. Cl. 23—209.1 11 Claims



There is provided a process for growing metastable crystals, e.g., diamonds, from seed crystals at sub-atmospheric pressures and temperatures in the range of from 800°–1,700° C. The process is characterized by the provision of a catalytic, mobile transfer medium as a layer upon the surface of the seed crystal and exposing the catalytically coated seed crystal to a gas containing the crystallizable material under the foregoing conditions of temperature and pressure.

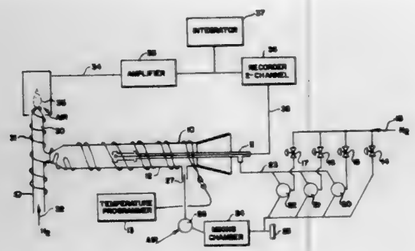
3,661,527
METHOD AND APPARATUS FOR VOLATILITY AND VAPOR PRESSURES MEASUREMENT AND FOR DISTILLATION ANALYSIS

Frank T. Eggertsen, Orinda; Elmer E. Seibert, El Cerrito, and Fred H. Stross, Orinda, all of Calif., assignors to Shell Oil Company, New York, N.Y.

Filed Feb. 24, 1970, Ser. No. 13,417
Int. Cl. G01n *7/16*
U.S. Cl. 23—230 PC 14 Claims

A microanalyzer for determining volatilities, vapor pressures, and for performing distillation analyses of organic materials wherein a sample of the material is supported in a

removable flow-through probe on a support and heated while flowing carrier gas over the sample to saturate the carrier gas

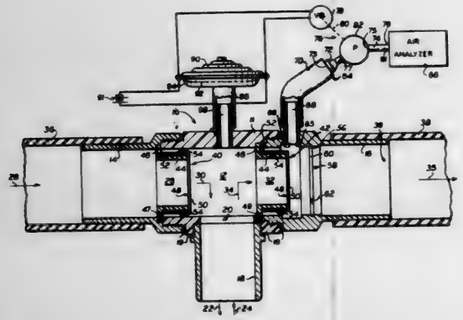


while monitoring the volatiles yields with a flame ionization detector.

3,661,528
BREATH SAMPLER

Donald B. Falk, East Seaford, N.Y., assignor to Instrumentation Associates Inc., New York, N.Y.

Filed Apr. 2, 1970, Ser. No. 25,176
Int. Cl. G01n *1/22, 33/16*
U.S. Cl. 23—254 R 4 Claims

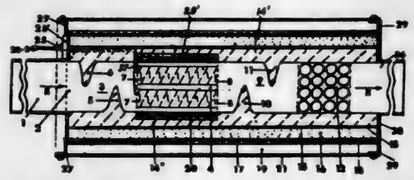


A breath sampler device for use with an air analyzer. The sampler includes a chamber, an intake port leading into the chamber, an outlet port exiting from the chamber, and a breathing port through which a subject inhales from and exhales into the chamber. An intake check valve provides for unidirectional air flow through the intake port into the chamber, and an outlet check valve provides for unidirectional air flow out of the chamber through the outlet port. An air reservoir having a sampling region is associated with the outlet port. Upon exhalation, the outlet check valve opens and the air which has just been exhaled from the subject's lungs is passed from the chamber into the air reservoir where it replaces the residual air contained in the reservoir sampling region from a previous exhalation. In order to discretely sample this expired air before it can be affected by conditions outside the subject's body, a pressure sensing membrane is provided which responds to the decrease in pressure inside the chamber on subsequent inhalation to actuate a switch which closes a circuit to an electric pump which draws a sample of this expired air from the reservoir sampling region into the analyzer.

3,661,529
COMBINATION AFTERBURNER AND AUXILIARY MUFFLER

Charalampos Alexandros Karolidis, 44, Kapodistriou, Athens, 102, Greece

Continuation of application Ser. No. 768,070, Oct. 16, 1968, now abandoned. This application July 6, 1970, Ser. No. 52,660
Claims priority, application Greece, Feb. 26, 1968, 36,751; Sept. 11, 1968, 38,073
Int. Cl. F01n *3/10*
U.S. Cl. 23—277 C 6 Claims



The device of the present invention may be coupled to a source of exhaust gases and compressed air. The device comprises a tubular casing with a lining of refractory material defining a passage for the mixture of exhaust gases and compressed air. An electrical heating unit and a heat sink unit are mounted in said passage, and baffles are located on the upstream side of the heating unit and intermediate the heating unit and the heat sink unit to deflect the gases from a straight line path to a path in the form of the letter "S," i.e., a reverse curve. The heater is provided with a body of refractory material affording a restricted passage section for the mixture of gases. The electrical resistance heating elements of the heater are disposed in said restricted passage.

3,661,530
PREPARATION OF FREE-FLOWING SULFUR COMPOSITION

Michael J. Block, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Apr. 28, 1970, Ser. No. 32,747
Int. Cl. C01b *17/10*
U.S. Cl. 23—224 6 Claims

Preparation of a free-flowing sulfur composition consisting essentially of particulate rhombic sulfur and a hydrocarbon having from about 6 to 50 carbon atoms in an amount sufficient to prevent caking of the sulfur is described herein.

3,661,531
PROCESS FOR ASSAY OF 2-HALOETHYLPHOSPHONIC ACID

Clarence Richard Stahl, Easton, Pa., assignor to GAF Corporation, New York, N.Y.

Filed Aug. 31, 1970, Ser. No. 68,500
Int. Cl. G01n *31/16*
U.S. Cl. 23—230 R 10 Claims

A process for the assay of 2-haloethylphosphonic acid, containing such impurites as esters thereof, 2-hydroxyethylphosphonic acid, vinylphosphonic acid, and/or phosphoric acid, is described. The process comprises:

1. neutralizing an aqueous solution of a sample of 2-haloethylphosphonic acid to a pH in the range of about 8.5–9.6, preferably about 9.3.
2. boiling the neutralized solution for about one-half hour,
3. titrating the thus obtained solution with an alkali to a pH in the range of about 8.5–9.6 preferably about 9.3.

A preferred indicator, for the neutralization (1) and the titration (3), is Thymol Blue indicator, and a preferred alkali for said neutralization and titration is sodium hydroxide. The percent of 2-haloethylphosphonic acid in the sample can be computed from the amount of alkali consumed in the titration.

3,661,532
PROCESS AND AGENT FOR THE DETECTION OF SILVER IONS

Dieter Schmitt; Alfred Stein, and Wilhelm Baumer, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

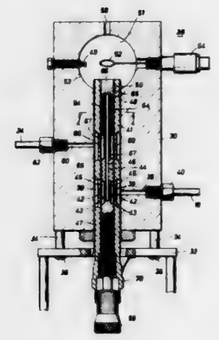
Filed Dec. 9, 1970, Ser. No. 96,665
Claims priority, application Germany, Aug. 4, 1970, P 20 38 651.0
Int. Cl. C09k *3/00*; G01n *33/00*
U.S. Cl. 23—253 TP 13 Claims

An indicator for the colorimetric detection of silver ions is formed by impregnating an absorbent carrier with an intimate mixture of cadmium sulfide and selenium.

3,661,533
ADJUSTABLE APPARATUS FOR FLAME IONIZATION AND FLAME EMISSION DETECTION

Donald J. David, and David L. Zipps, both of Austin, Tex., assignors to Tracor, Inc., Austin, Tex.

Filed Sept. 22, 1969, Ser. No. 859,912
Int. Cl. G01n *31/12*
U.S. Cl. 23—254 R 19 Claims

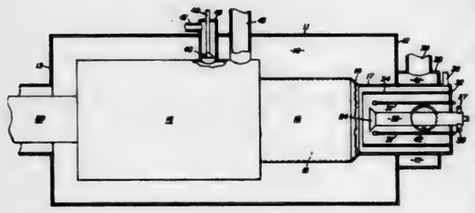


A flame detector for analyzing constituents of a gas sample includes means for selecting the distance between the flame and an ion collector and means for selectively optically shielding the flame from a photometric device for optimizing sensitivity and specificity in flame ionization and flame emission detection.

3,661,534
APPARATUS FOR SULFUR RECOVERY

Robert D. Reed, Tulsa, Okla., assignor to John Zink Company, Tulsa, Okla.

Filed June 15, 1970, Ser. No. 45,968
Int. Cl. C01b *17/04*
U.S. Cl. 23—262 3 Claims

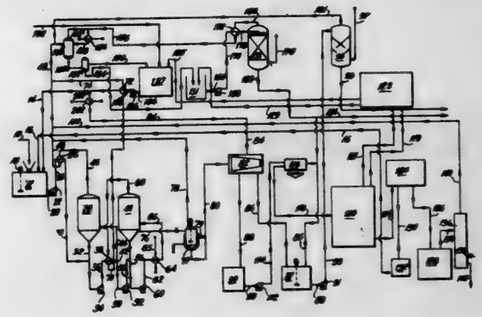


Apparatus is provided for burning sulfur which combines a jacketed pipe and a nozzle for spraying sulfur at a controlled temperature in a first chamber, a second chamber where the sulfur is burned downstream from the nozzle and a third chamber where the combustion product is mixed with acid gas to provide a mixture of gases suitable for transfer to a Claus reactor.

3,661,535
PROCESS FOR DRYING HYDROPHILIC ORES AND RECOVERING SULFUR THEREFROM

Robert L. Somerville, Neshanic, N.J., assignor to Singmaster & Breyer, New York, N.Y.

Filed Sept. 13, 1968, Ser. No. 759,656
Int. Cl. B01d *1/00, 3/36, 11/02*
U.S. Cl. 23—306 1 Claim



A process for removing water from a water-wet hydrophilic solid is shown. A slurry of wet, particulate solid in water-immiscible organic liquid is evaporated; the vapor including water and organic is removed; and solid of reduced water contact is separated from residual organic liquid. Preferably, evaporation takes place in a multiple-effect evaporation zone, and organic liquid is recovered and reused in the process. More specifically, a leaching process for recovering elemental sulfur in hydrophilic ore is shown. Xylene, in which sulfur is soluble, is used to slurry a flotation concentrate of hydrophilic ore. Evaporation of a water-xylene azeotrope from the slurry in a double effect evaporator permits the xylene to contact and dissolve the sulfur. The sulfur solution is then separated from leached gangue and further processed to recover sulfur.

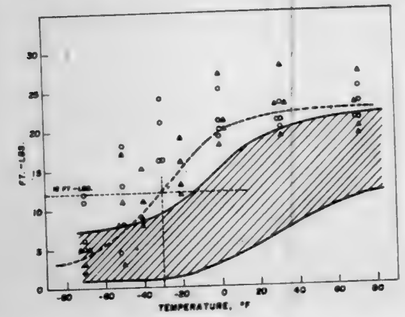
3,661,536
TUNGSTEN MATERIALS

Shogo Shimizu, Chigasaki-shi; Takami Motose, Atsugi-shi; Syu Yamazaki, Tokyo; Michiyasu Komatsu, and Hiroshi Yamamoto, both of Yokohama-shi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Continuation-in-part of application Ser. No. 596,227, Nov. 22, 1966, now abandoned. This application Sept. 10, 1969, Ser. No. 856,572
Claims priority, application Japan, Mar. 11, 1966, 41/14638; Mar. 14, 1966, 41/15708
Int. Cl. B22f *3/12*
U.S. Cl. 29—182 6 Claims

Tungsten materials prepared by adding during the manufacture of powdered tungsten 0.01 to 2.0 percent by weight of aluminum oxide (Al_2O_3), silicon dioxide (SiO_2) or potassium monoxide (K_2O) singly or in combination on the basis of the tungsten, and 0.005 to 0.5 percent by weight of cobalt (Co) or tin (Sn) singly or in combination on the basis of the tungsten in such a manner that after mixture is sintered into a plate or wire, the final composition thereof comprises 0.0001 to 0.05 percent by weight of aluminum (Al), silicon (Si) or potassium (K) singly or in combination and 0.002 to 0.5 percent by weight of cobalt (Co) and/or 0 to 0.0005 percent by weight of tin (Sn) and tungsten and minute amounts of impurities as the remainder.

3,661,537
WELDED PIPE STRUCTURE OF HIGH STRENGTH LOW ALLOY STEELS
Arthur H. Aronson, Pittsburgh; Edward J. Lichy, Gibsonia; Clifford A. Guess, Coraopolis, and Norman L. Samways, Pittsburgh, all of Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
Filed July 16, 1969, Ser. No. 842,285
Int. Cl. B21d *39/02*
U.S. Cl. 29—191 4 Claims



A steel composition having particular applicability to the manufacture of high-strength, low-alloy line pipe comprises 0.10 to 0.20 percent carbon, 0.85 to 1.25 percent manganese, 0.10 percent maximum phosphorus, 0.05 percent maximum sulfur, silicon in an amount not adversely affecting steel properties, 0.02 to 0.05 percent columbium, 0.10 percent maximum vanadium, an inclusion shape-control agent selected from the group consisting of zirconium, a rare earth or mischmetal, the balance iron.

3,661,538
PLASTICS MATERIALS HAVING ELECTRODEPOSITED METAL COATINGS
Peter Thomas Brown, Westley Waterless, near Newmarket Suffolk, and John Rowland Phillips, Royston, both of England, assignors to Ciba Limited, Basel, Switzerland
Filed May 21, 1969, Ser. No. 826,709
Claims priority, application Great Britain, May 27, 1968, 25,253/68
Int. Cl. C23b *5/60*; C23f *17/00*; B44d *1/092*
U.S. Cl. 29—195 21 Claims

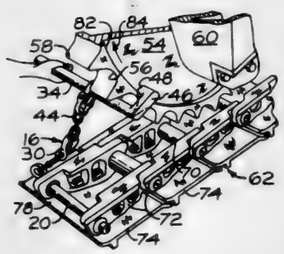
It is known to coat plastics materials, especially thermoplastics such as ABS, with metal by electrodeposition, typically with chromium on top of nickel. Conventional methods are often unsatisfactory when applied to thermosetting resin-based articles, the metal coating peeling or flaking off when the articles are subjected to repeated changes in temperature. It has now been found that copper or nickel coatings adhere well to surfaces, prepared in a conventional manner, of thermosetting plastics as well as of thermoplasts, provided that the coatings are electrodeposited in a manner such that they have an average stress in tension of at least 2,000 kg./sq. cm.

E.g., a molding prepared from "Araldite" MY 750, HT 972, calcined china clay and glass fibers, is prepared for electroplating by

a. etching with chromic acid
b. depositing a film of palladium through treatment with stannous chloride and palladium chloride solutions
c. depositing a film of copper or nickel by reduction of copper sulphate or nickel sulphate solutions.

Next, a nickel coating is electrodeposited under conditions such that it had an average stress in tension of 2,440 to 6,460 kg./sq. cm.: this coating being dull, a bright, lightly stressed nickel coating was electrodeposited before the final layer, of chromium, was applied.

3,661,539
TRACK CHAIN INSTALLATION TOOL
Richard D. Eastman, Eureka, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 9, 1970, Ser. No. 26,853
Int. Cl. B25b *27/22*
U.S. Cl. 29—270 17 Claims



A track chain installation tool has two bar elements adjustably connected to each other by a flexible member so that one of the bar elements may be releasably secured to a track chain and the other bar element may be releasably secured to a driven sprocket wheel whereby driving of the sprocket wheel causes the track chain to properly engage with and wrap around the sprocket wheel.

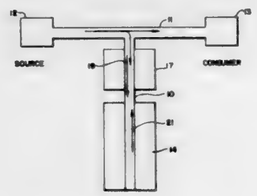
3,661,540
AUXILIARY EQUIPMENT FOR BLENDING
Warren E. Green, Baton Rouge, and George H. Perry, Greenwell Springs, both of La., assignors to Ethyl Corporation, New York City, N.Y.
Continuation-in-part of application Ser. No. 614,469, Feb. 7, 1967, now abandoned. This application Mar. 16, 1970, Ser. No. 19,971
Int. Cl. C10l *1/04*
U.S. Cl. 44—2 10 Claims

Apparatus for monitoring and controlling blending as in gasoline manufacture, with computing and display units to show Research and Motor Octane Numbers, Road Index, and accumulated octane barrels by which blended stream departs from target. Signals from test engine give octane deviation which are added to adjustable reference signal to give Octane Numbers. Octane deviation signals are also multiplied by stream flow rate signals and integrated to give accumulated net that can be shown on properly sensed digital display.

3,661,541
FUEL OIL COMPOSITIONS CONTAINING A MIXTURE OF POLYMERS TO IMPROVE THE POUR POINT AND FLOW PROPERTIES
William C. Hollyday, Jr., Watchung, N.J., assignor to Esso Research and Engineering Company
Filed Apr. 22, 1969, Ser. No. 818,427
Int. Cl. C10l *1/16*, *1/18*
U.S. Cl. 44—62 9 Claims

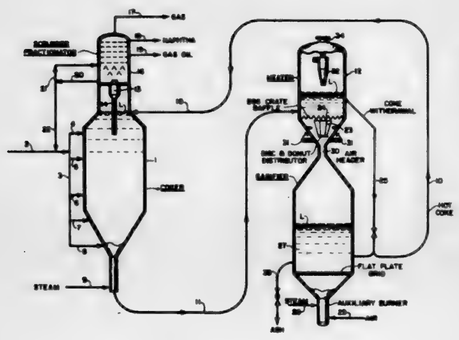
Mixtures containing (1) polymers of ethylene with polar monomers such as vinyl acetate, methyl methacrylate, ethyl fumarate, etc., and (2) homopolymers of ethylene or copolymers of ethylene with $C_3 - C_{18}$ alpha-olefins synergistically improve the pour point and flow characteristics of middle distillate petroleum oils.

3,661,542
SHORT TERM PEAK SHAVING OF NATURAL GAS
Michael H. Collins, Frodsham, England, assignor to Shell Oil Company, New York, N.Y.
Filed Jan. 9, 1970, Ser. No. 1,744
Claims priority, application Great Britain, Jan. 23, 1969, 3,955/69
Int. Cl. F17d *1/04*
U.S. Cl. 48—191 17 Claims



Apparatus and method for "peak shaving" storage of gas in a gas distribution system wherein the pressure varies from a maximum when demand is low to a minimum when demand is high, the method comprising cooling gas, in a gas storage chamber in open fluid communication with the system with a frozen cooling medium having a freezing point approximately midway between the minimum and maximum boiling points of the gas in the system. When the pressure in the system is high, gas in the chamber liquifies and is stored; when the pressure in the system is low gas in the chamber vaporizes and is available for use.

3,661,543
FLUID COKING PROCESS INCORPORATING GASIFICATION OF PRODUCT ORE
Arthur L. Saxton, Warren Township, N.J., assignor to Esso Research and Engineering Company
Filed Nov. 26, 1969, Ser. No. 880,219
Int. Cl. C10j *3/00*; C10b *49/10*
U.S. Cl. 48—206 10 Claims



A heavy carbonaceous material such as petroleum residuum (1,050° F.+) is converted completely to distillate and gaseous products by an integrated process consisting of a conventional fluid coking reactor, a circulating coke heater, and a gasifier in which the coke formed in the reactor is converted to an H_2 and CO rich gas by reaction with steam and an oxygen-containing gas. The process can also be operated by yield a net product of good quality coke.

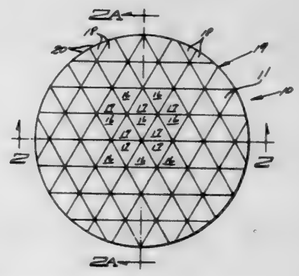
3,661,544
A METHOD FOR MAKING THERMOSETTING RESINOUS ABRASIVE TOOLS
Noble D. Whitaker, Los Alamitos, Calif., assignor to BMI Laboratories, Industry, Calif.
Filed Nov. 28, 1969, Ser. No. 880,949
Int. Cl. B24b *17/00*; C08g *51/12*
U.S. Cl. 51—295 12 Claims

A method for producing an abrasive tool or structure which includes the steps of mixing an abrasive composition containing abrasive particles and, preferably, friable particles, with a liquid, multi-stage, thermosetting resin and coating substantially all of the individual particles with the resin; curing the resin to the B-stage while the resin is in contact with the particles to form a fusible solid coating on the particles and forming individual particles coated with said B-stage resin, and placing said resin coated particles in a mold and heating the particles sufficiently to render the resin tacky and fusible and, concurrently, applying sufficient pressure to form a coherent mass of said particles and curing the resin to a hard infusible state to form a high tensile strength bond between said particles. An abrasive tool composed of abrasive particles and lightweight, easily crushable, friable particles uniformly dispersed throughout the abrasive particles, each of the particles being bonded together with a high strength bond formed by a thermosetting resin cured to a hard and infusible state.

3,661,545
METHOD FOR TREATING A MOLTEN SALT WITH WATER VAPOR
Roger F. Bartholomew, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Nov. 19, 1969, Ser. No. 878,225
Int. Cl. C03c *15/00*; C03b *18/00*
U.S. Cl. 65—30 5 Claims

This invention relates to the strengthening of alkali metal silicate glass articles through an ion exchange reaction employing a bath of molten alkali metal salt as the source of exchanging ions. More specifically, this invention relates to a means for typing up calcium ions present in the bath of molten salt, which deleteriously affect the strengthening capability of the bath, by passing water vapor through the molten salt.

3,661,546
MIRROR BLANK CORE AND METHOD OF MAKING
Robert A. Busdiecker, Woodville; James E. Rapp, Oregon, and Clarence L. Babcock, Toledo, all of Ohio, assignors to Owens-Illinois, Inc.
Continuation of application Ser. No. 518,446, Jan. 3, 1966, now abandoned. This application May 21, 1970, Ser. No. 39,520
Int. Cl. C03b *29/00*, *11/08*; G02b *5/08*
U.S. Cl. 65—33 14 Claims



Unitary, rigid telescope mirror blanks are disclosed formed from a plurality of polyhedrons. The polyhedrons may be

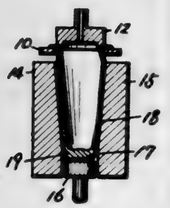
glass or crystallized glass and are assembled so that adjacent facing complimentary and parallel contacting surfaces are directly sealed to each other and none of the contacting surfaces are perpendicular to the horizontal when the mirror blank is in a substantially horizontal position. Methods of sealing and crystallizing are disclosed.

3,661,547

METHOD FOR MOLDING HOLLOW AND BOTTOMED GLASS ARTICLES

Toshio Nakayama, Otu-shi, Japan, assignor to Nippon Electric Glass Company Limited

Filed May 19, 1969, Ser. No. 825,780
Int. Cl. C03b 9/04
U.S. Cl. 65—67 1 Claim



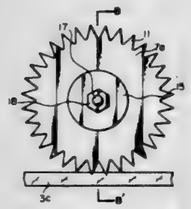
In mold-blowing a parison, which is glass in a still soft state, in a blow mold composed of two drum sections and one bottom section, the surface of the bottom section receiving the parison bottom is given in advance the same shape as that of the finished product and upon completion of molding by mold blowing, the bottom section is raised a predetermined distance, thereby effecting the final mold finishing so that the glass article may have the same shape and size as the finished product. Other advantages and details will be made clear.

3,661,548

APPARATUS FOR MANUFACTURING GLASS RIBBON BY FLOAT PROCESS

Kunihiko Ito; Yokiya Fujimoto; Nobuyoshi Ohsato, and Naotomo Akashi, all of Maizuru, Japan, assignors to Nippon Sheet Glass Co., Ltd., Higashi-ku, Osaka, Japan

Filed June 26, 1970, Ser. No. 50,143
Claims priority, application Japan, June 30, 1969, 44/52059; 44/52060; Aug. 25, 1969, 44/68233
Int. Cl. C03b 18/00
U.S. Cl. 65—182 R 11 Claims



An apparatus for manufacturing glass ribbon by float process. The apparatus comprises a molten metal bath, at least two width-controlling mechanisms provided on both sides of the bath, and a delivery roll provided on exit side of the bath. Each width-controlling mechanism has a rotary member having a plurality of projections capable of freely rotating with the advance of the glass ribbon. And an angle of less than 45° is formed by the plain containing the rotary member with respect to the direction of advance of the glass ribbon.

3,661,549

USE OF ETHYLENE FOR INCREASING CROP YIELDS

Arthur H. Freytag, Gurnee, and Emil P. Lira, Des Plaines, both of Ill., assignors to International Minerals & Chemical Corporation

Filed Apr. 30, 1969, Ser. No. 820,651
Int. Cl. A01n 9/40; C05f 11/00
U.S. Cl. 71—1 12 Claims

Yields of crops such as soybeans and corn are increased by introducing an effective amount of ethylene into the soil near the roots of the growing plants.

3,661,550

PROCESS FOR MAKING MICRONUTRIENT NAPHTHENATE COMPOSITIONS

John D. Downer, and C. Loyal W. Swanson, both of Pointe-a-Pierre, Trinidad, assignors to Texaco Trinidad, Inc., Pointe-a-Pierre, Trinidad

Filed Aug. 22, 1969, Ser. No. 852,470
Int. Cl. C05f 11/00
U.S. Cl. 71—27 3 Claims

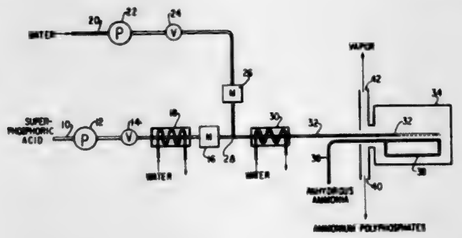
A micronutrient composition intended for application to the foliage, branches or barks of plants is described as containing oil soluble calcium, copper, molybdenum, magnesium, zinc. manganese or iron naphthenates of higher molecular weight in a horticultural spray oil. The naphthenic acids composition is made by mixing a solution of naphthenic acids in a light aromatic solvent with an aqueous sodium hydroxide solution to form sodium naphthenate, then adding an additional amount of solvent; heating and reacting with an aqueous solution of a water soluble salt of one of the above mentioned metals; separating the organic layer from the aqueous layer; washing the organic layer with water and then adding to the organic layer the quantity of spray oil required to obtain a composition having the desired concentration and removing substantially all of the light aromatic solvent so that the spray oil remains non-phytotoxic.

3,661,551

PROCESS FOR PRODUCING HIGH ANALYSIS AMMONIUM POLYPHOSPHATES

Ernest C. Camp, Jr., College Park, Ga., and Herbert J. Clausen, Apollo Beach, Fla., assignors to Cities Service Company, New York, N.Y.

Continuation of application Ser. No. 634,191, Apr. 27, 1967, now abandoned. This application May 4, 1970, Ser. No. 37,359
Int. Cl. C05b 13/06, 1/06
U.S. Cl. 71—34 4 Claims



A method of preparing solid ammonium polyphosphate fertilizers from superphosphoric acid containing non-orthophosphates by diluting the superphosphoric acid at a temperature and rate to inhibit the hydrolysis of the polyphosphates to orthophosphates, and then promptly ammoniating the diluted superphosphoric acid in a reactor at a controlled rate, while maintaining the reactor bed temperature at below 185° F., so that the exothermic heat of neutralization is removed by the heat required for the evaporation of the water and obtaining a solid product.

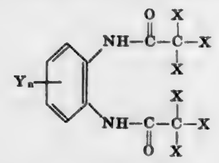
3,661,552

PROCESS FOR THE CONTROL OF PLANT GROWTH WITH SUBSTITUTED N,N'-BIS(HALOACETYL)-O-PHENYLENE DIAMINES

Edmund J. Rumanowski, Dover, N.J., assignor to Tenneco Chemicals, Inc.

Original application Oct. 25, 1967, Ser. No. 677,853, now Patent No. 3,557,221. Divided and this application Sept. 23, 1970, Ser. No. 74,935
Int. Cl. A01n 9/20
U.S. Cl. 71—118 10 Claims

Compounds having the structural formula



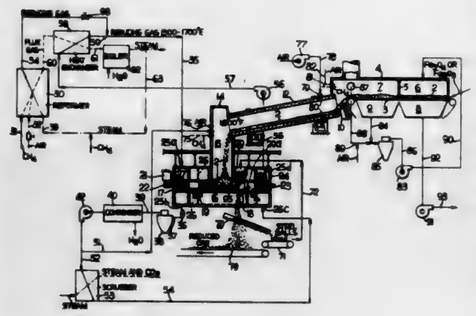
wherein each X represents hydrogen, chlorine, or fluorine and each Y represents halogen, lower alkyl, lower alkoxy, cyano, trifluoromethyl, or nitro, and *n* represents an integer in the range of zero to four; are useful as preemergence and postemergence selective herbicides. Illustrative of these compounds are N,N'-bis(trichloroacetyl)-4,5-dichloro-o-phenylene diamine, N,N'-bis(chloroacetyl)-4,5-dichloro-o-phenylene diamine, and N,N'-bis(trifluoroacetyl)-3,4,5-tribromo-o-phenylene diamine.

3,661,553

PROCESS FOR REDUCING OXYGEN CONTENT OF OXIDIC MINERAL ORE

Robert D. Frans, Middleburg Heights, Ohio, assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Nov. 1, 1968, Ser. No. 772,753
Int. Cl. C22b 1/102, 5/12, 9/00
U.S. Cl. 75—3 9 Claims



A process is disclosed for heat-treating mineral ore by successively drying, preheating, and reducing particles of the ores to a lower state of oxidation. The particles are gathered into a first gas permeable body with the particles at rest relative to each other within the body and dried and preheated until hardened. The body is then disrupted and a tumbling movement is imparted to the particles while further heating with heated reducing gases to initiate at least preliminary reduction. The particles are regathered into a second gas permeable body with the particles at rest relative to each other within the body and fuel that has been reformed into a stream of reducing gases rich in hydrogen and/or carbon monoxide is passed through the second body of particles to further reduce the particles. The reducing gases that have passed through the second body of particles are divided into two branch streams with a first of the branch streams being delivered to and directed through the particles being tumbled to effect a preliminary reduction, after which this gas stream is made oxidizing and passed through the first body of particles to effectuate the preheating and drying thereof. The other branch stream of gases is first mixed with a fresh supply of the hydrogen and/or carbon monoxide rich gases and thereafter recycled through the second body of particles.

3,661,554

PROCESS FOR HARDENING AGGLOMERATED BODIES OF ORE CONCENTRATE IN A HIGH FREQUENCY ALTERNATING FIELD

Endel Wijard, Sodertalje, and Jan Odsvall, Tyreso, both of Sweden, assignors to Aktiebolaget Elektrodius, Stockholm, Sweden

Filed Apr. 7, 1969, Ser. No. 814,191
Claims priority, application Sweden, Apr. 11, 1968, 4992
Int. Cl. C21b 1/20
U.S. Cl. 75—3 8 Claims

When agglomerating ore concentrates the green agglomerated bodies lack strength and hardness to be handled and charged into the reducing furnaces. The process according to the present invention resides in the hardening of the green agglomerated bodies by exposing them to a high frequency alternating field and in a further hardening treatment by exposing the bodies so treated to a hydrothermal treatment at a high temperature and at a corresponding high pressure.

3,661,555

PELLETIZED CHROMIUM ADDITION AGENTS FOR FERRO ALLOYS PRODUCTION AND METHOD THEREFOR

Fumihiko Kusama, and Misoru Yamanaka, both of Saitama, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed June 24, 1969, Ser. No. 836,156
Int. Cl. C22b 1/14, 39/00
U.S. Cl. 75—3 5 Claims

Chromium addition agents which may be advantageously applied in production of chromium-containing alloys can be produced by roasting at 2,350°–2,750° F. a previously pelletized mixture of Cr ore, a binder, carbon and if desired a flux. The pellets produced are hard, internally porous and have a film on the surface thereof consisting of various metal oxides. Mainly carbides of Cr and Fe are found in the inner region of the pellet.

3,661,556

METHOD OF MAKING FERROMAGNETIC METAL POWDERS

John Eric Jolley, and Ernest Lewis Little, Jr., both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 3, 1969, Ser. No. 803,985
Int. Cl. C22b 23/04, 39/00
U.S. Cl. 75—0.5 AA 6 Claims

The magnetic properties of ferromagnetic metal powders made by the borohydride reduction of appropriate mixtures of iron, cobalt, nickel and optionally chromium salts can be modified by the addition of complex forming agents to the reaction medium.

3,661,557
PROCESS FOR THE PRODUCTION OF METAL POWDER

Elis Kjell Ake Svanstrom, Nynashamn, Sweden, assignor to Rederiaktrebolaget Nordstjernan

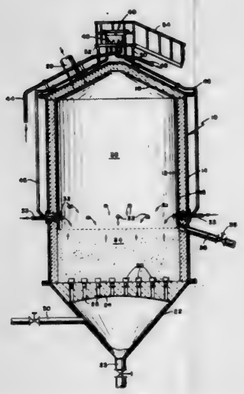
Filed Aug. 20, 1969, Ser. No. 851,746
Claims priority, application Sweden, Aug. 23, 1968, 11368/68
Int. Cl. B22f 9/00; C22b 5/12, 57/00
U.S. Cl. 75—0.5 BB 9 Claims

The invention relates to a process for affecting grain growth in the production of metal powder from the metals W, Mo, Ta, Nb or Re or from alloys comprising one or several of these metals, by reduction in a gas phase of the metal halides by means of hydrogen gas. The reduction may be carried out in one or several steps so that partially or completely reduced metal powder is obtained. If there is partially reduced metal powder, this powder is exposed to at least one additional treatment consisting of the mechanical decomposition of the powder and/or heat treatment at a temperature of 400°–1,200° C., preferably 700°–1,100° C. in an atmosphere containing some form of halogen. If there is a completely reduced metal powder, this powder is exposed to at least one additional treatment consisting of either a heat treatment at a temperature of 400°–1,200° C., preferably 700°–1,100° C. in an atmosphere containing some form of halogen or the mechanical decomposition of the powder followed by said heat treatment.

3,661,558
PROCESS AND APPARATUS FOR DISTRIBUTING SLURRY TO A REACTION FURNANCE

Thomas D. Heath, and Walfred W. Jukkola, both of Westport, Conn., assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Feb. 16, 1970, Ser. No. 11,508
Int. Cl. C22b 1/10; F27b 15/08
U.S. Cl. 75—9 20 Claims



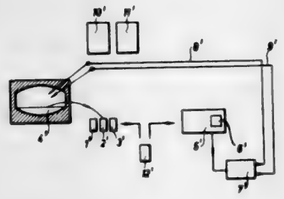
A feed distribution system for feeding slurry to a fluidized bed reactor through a plurality of feed guns placed around the periphery of the reactor. The feed distribution system includes a feed distribution tank and having no mechanically moving parts located above the reactor. The tank is divided by baffles into essentially two concentric zones, namely an inner zone which serves as a feed reservoir and an outer zone which is further subdivided into individual compartments and serves to feed slurry at a steady rate to said feed guns.

Also disclosed is a process utilizing said feed distribution system.

3,661,559
METALLURGICAL PROCESS CONTROL OF OXYGEN CONTENT

Aurel Horvath; Gellert Repasi, both of Dunaujvaros; Elek Szabo, and Bruno Vorsatz, both of Budapest, all of Hungary, assignors to M.T.A. Kozponti Fizikai Kutato Intezet, Konkoly thegeout, Budapest and Dunai Vasmu, Dunaujvaros, Hungary, part interest to each

Filed Dec. 3, 1968, Ser. No. 780,855
Claims priority, application Hungary, Dec. 6, 1967, MA1788
Int. Cl. C21c 7/06; G01t 1/20
U.S. Cl. 75—45 2 Claims



A metallurgical process is controlled by directly measuring the oxygen content of a specimen taken from the melted charge. The specimen is subjected to neutron radiation, and the radiation of the resulting ^{16}N isotopes is measured. Addition agents are then used to alter the oxygen content of the charge to a desired value. Preferably, the specimen is bombarded simultaneously with a specimen of known oxygen content, and the differences in radiation of the known and unknown specimens are automatically displayed and/or used to effect the desired additions.

3,661,560
MANGANESE CONTROL IN BASIC STEELMAKING PROCESS

Hugh Willmott Grenfell, Glamorgan, Wales, assignor to British Steel Corporation, London, England

Filed Nov. 20, 1969, Ser. No. 878,448
Claims priority, application Great Britain, Mar. 21, 1969, 14,977/69; Oct. 10, 1969, 49,907/69. The portion of the term of the patent subsequent to Oct. 26, 1988, has been disclaimed.
Int. Cl. C21c 5/32
U.S. Cl. 75—60 6 Claims

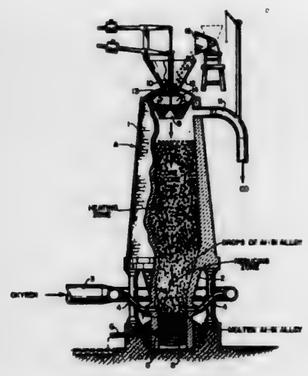
The invention relates to the refining of steel and has particular reference to the refining of steel by a process in which a stream of hot gases is directed onto the upper surface thereof.

The invention particularly provides for a method of controlling the manganese content of the melt at turn-down of a steel refining process by at least a two stage process in which the refining is carried out using a gas stream comprising the products of combustion of a fuel and uncombined oxygen by varying the proportions of combustion products to uncombined oxygen in a first stage in which the gas stream is relatively poor in uncombined oxygen and in a subsequent or second stage in which the gas stage is relatively rich in uncombined oxygen and varying the duration of the first stage so that with a relatively long first stage a low manganese reversion is obtained and by providing a relatively short first stage a high manganese reversion to the melt at turn-down is obtained.

3,661,561
METHOD OF MAKING ALUMINUM-SILICON ALLOYS

Frederick W. Frey, Jr.; Donald O. Hutchinson, and Kishan K. Seth, all of Baton Rouge, La., assignors to Ethyl Corporation, New York City, N.Y.

Filed Aug. 3, 1970, Ser. No. 60,425
Int. Cl. C22b 21/02, 5/10
U.S. Cl. 75—68 R 12 Claims

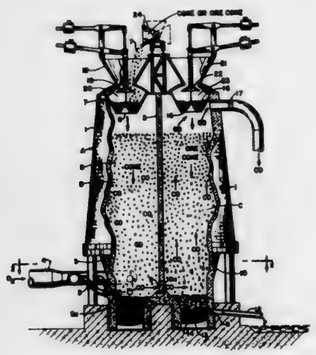


A method of making aluminum-silicon alloy in a blast furnace utilizing substantially pure oxygen, wherein lumps of silicon carbide comprise all or part of the furnace bed.

3,661,562
REACTOR AND METHOD OF MAKING ALUMINUM-SILICON ALLOYS

Kishan K. Seth, and Carroll W. Lanier, both of Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

Filed Dec. 7, 1970, Ser. No. 95,766
Int. Cl. C22b 21/02, 5/10
U.S. Cl. 75—68 R 17 Claims



A reactor or blast furnace adapted for the production of an aluminum-silicon alloy, wherein two separate reaction zones are provided. Coke or other suitable carbonaceous material is fed into one reaction zone and a mixture of coke and alumina-silica ore is fed into the second reaction zone. Substantially pure oxygen, a supporter of combustion, is introduced into the reaction zone or section containing coke for combustion. Hot carbon monoxide gases produced by the coke combustion are introduced into the second reaction zone or section containing ore and coke for reducing the ore. A suitable opening is provided in the wall separating the two reaction zones for permitting the hot carbon monoxide to move from one reaction zone to the other. The reaction zone in which the ore is reduced includes a suitable tap-hole for drawing off of molten aluminum-silicon alloy.

3,661,563
CYCLIC LEACH-PRECIPITATION PROCESS FOR RECOVERING COPPER VALUES FROM BODIES OF ORE MATERIAL CONTAINING COPPER MINERALS

Henry Rush Spedden, and Emil Edward Malouf, both of Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.

Filed July 16, 1970, Ser. No. 55,578
Int. Cl. C22b 15/12
U.S. Cl. 75—101 R 8 Claims

As part of a cyclic, copper leaching-precipitation process, an aqueous solution containing reducing ions selected from the group consisting of sulfite ion and bisulfite ion is injected into a body of copper ore material at a location or locations adjacent the emergence from such body of an applied acidic leach solution containing ferric ions and pregnant with copper values, for reducing ferric ions in such leach solution to ferrous ions so consumption of metallic iron in the precipitation stage is minimized. The injection site or sites are removed from access of atmospheric air, and injection is carried out in the absence of oxygen to prevent auto-oxidation of the reducing agent. Such agent acts as a bacteriacide to eliminate anaerobic, hydrogenase-producing strains of bacteria normally present, which bacteria would otherwise reduce sulfates and produce hydrogen sulfide to thereby effect precipitation of soluble copper into insoluble copper sulfide. Additionally, the reducing agent inhibits the action of autotrophic aerobic bacteria normally present in areas penetrated by atmospheric air and thereby minimizes oxidation of ferrous ions to ferric.

3,661,564
EXTRACTION OF COBALT AND NICKEL FROM LATERITE

Louis Gandon; Christian Bozec; Philippe Lenoble; Robert Lemarinel, all of Le Havre, and Pierre Fer, Caucriauville Le Havre, all of France, assignors to Le Nickel, Paris, France

Filed Nov. 16, 1970, Ser. No. 89,915
Claims priority, application France, Nov. 19, 1969, 6939777; Dec. 19, 1969, 6944050
Int. Cl. C22b 23/04
U.S. Cl. 75—101 R 9 Claims

A method for the recovery of nickel and cobalt from laterite with the elimination of iron, wherein the laterite is divided into a major and a minor portion and the minor portion is treated with hydrochloric acid to form a suspension. The major portion of laterite is mixed with the suspension to form a slurry which is roasted to form cobalt and nickel chloride. The nickel and cobalt chlorides are then dissolved by treating the solid residue with water, ferric chloride remaining in the residue. The solution is then subjected to a recovery treatment including cation exchange to separate the cobalt and nickel ions, and reduction to produce cobalt and nickel.

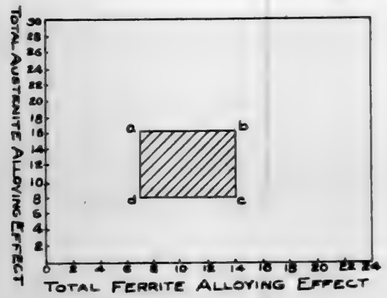
3,661,565
PRECIPITATION HARDENING STEEL

Richard F. Harvey, Orchard Lake, Mich., assignor to Metaltronics, Inc., Orchard Lake, Mich.

Continuation-in-part of application Ser. No. 559,679, June 20, 1966, now abandoned. This application Aug. 4, 1969, Ser. No. 855,065
Int. Cl. C22c 39/20, 41/02
U.S. Cl. 75—125 4 Claims

A low carbon, precipitation hardening steel characterized by good room temperature and good high temperature pro-

perties, said steel containing as essential elements about 0.20 percent carbon, 1.50 percent chromium, 1.75 percent nickel,



2.00 percent molybdenum, 2.65 percent copper, and the balance substantially iron with residual elements in normal amounts.

3,661,566
PROCESS FOR THE TREATMENT OF NODULAR CAST IRON

Jean-Claude G. Percheron, and Louis Septier, both of Chedde, France, assignors to Compagnie Pechiney, Paris, France, by said Percheron

Filed Sept. 30, 1969, Ser. No. 862,343
Claims priority, application France, Oct. 2, 1968, 168451
Int. Cl. C22c *23/00, 37/04*
U.S. Cl. 75—130 R **4 Claims**

A process for the treatment of molten iron to produce castings having a graphite nodular structure in which the molten cast iron is first treated with a nodulating alloy containing magnesium and boron and then with an inoculating alloy containing silicon and barium.

3,661,567
MAGNET ALLOYS

Hiroshi Yamamoto, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of application Ser. No. 429,260, Feb. 1, 1965, now abandoned. This application Dec. 6, 1967, Ser. No. 688,502
Int. Cl. H01f *1/04*; **C22c** *31/00*
U.S. Cl. 75—134 M **1 Claim**

A ternary permanent magnet alloy which is composed of 69.5 to 73.0 percent by weight of Mn, 26.4 to 29.5 percent by weight of Al and 0.6 to (1/3 Mn—22.16) percent by weight of C, and primarily consists of a body-centered tetragonal structure phase, and which has magnetic characteristics of $BHmax \geq 1.0 \times 10^6$ G.Oe, $Br \geq 2{,}800$ G. and $BHc \geq 1{,}400$ Oe., excellent magnetic stability, mechanical properties, weather resistance and corrosion resistance, and are not susceptible to spontaneous disintegration in the atmosphere.

3,661,568
COPPER BASE ALLOY

Charles D. McLain, Alton, Ill., assignor to Olin Corporation

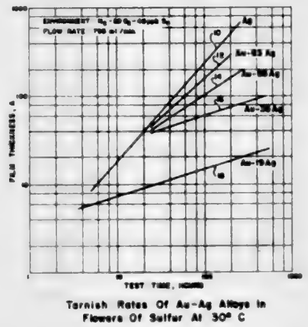
Continuation-in-part of application Ser. No. 648,953, June 26, 1967, now abandoned. This application June 29, 1970, Ser. No. 50,893. The portion of the term of the patent subsequent to July 28, 1987, has been disclaimed.
Int. Cl. C22c *9/00, 9/04*
U.S. Cl. 75—157.5 **10 Claims**

The present disclosure teaches an improved copper base alloy containing iron and manganese and a material selected from the group consisting of phosphorus and zinc and mixtures thereof. The alloys of the present invention are characterized by improved physical properties, in particular high strength and high conductivity.

3,661,569
LOW ENERGY CONTACTS

William H. Abbott, Columbus, Ohio, assignor to Battelle Memorial Institute, Columbus, Ohio

Filed June 19, 1969, Ser. No. 834,796
Int. Cl. C22c *5/00*
U.S. Cl. 75—165 **7 Claims**



Tarnish Rates Of Au-Ag Alloys In Flowers Of Sulfur At 30° C

High silver content (30 percent, by weight, or greater) gold base alloys are found to have exceptional resistance to silver sulfide tarnish when alloyed with from 0.25 to 10 percent, by weight, indium or preferably indium and cadmium each within the range of 0.25 to 10 percent and such alloys including those containing cadmium alone have been found to exhibit exceptional resistance to carbon film deposits in normal low energy switch applications and frictional polymer formation in sliding low energy applications.

3,661,570
MAGNETIC HEAD MATERIAL METHOD

Herbert Irwin Moss, Yardley, Pa., assignor to RCA Corporation

Filed Apr. 3, 1970, Ser. No. 25,465
Int. Cl. B22f *1/00*
U.S. Cl. 75—206 **7 Claims**

A process is described for providing a magnetic transducer material useful for the signal heads of a recorder-reproduced system. The process results in a material for a head core which consists of a majority or first phase of an alloy of iron, silicon and aluminum with an abrasion resistant second phase disposed in the grain boundaries throughout the first phase material.

3,661,571
METHOD FOR THE PREPARATION OF POROUS METALLIC COPPER WITH DISPERSED GRAPHITE PARTICLES

Hans Erich Hintermann, Ins, and Christian Jean Triquet, Neuchatel, both of Switzerland, assignors to Laboratoire Suisse de Recherches Horlogeres, Neuchatel, Switzerland

Filed July 12, 1968, Ser. No. 744,323
Claims priority, application Switzerland, Aug. 18, 1967, 11625
Int. Cl. B22f *9/00*
U.S. Cl. 75—201 **4 Claims**

A method for the preparation of a solid product characterized in that particles of a solid material homogeneously dispersed in a porous metallic mass is prepared in a liquid containing a metal dissolved in the form of a compound soluble in the liquid, the dispersion being mixed with a reagent capable of precipitating a compound of the metal so that at least a portion of the particles is entrapped in the precipitate in a uniformly dispersed state, the precipitate containing the dispersed particles being separated from the other constituents of the mixture, and the precipitate subjected to a treatment of reduction or thermal dissociation of a temperature which is below the melting point of the metal constituting the mass, to convert the compound of the metal directly into a solid elementary metal and into a vaporized by-product without any physical or chemical alteration of the dispersed phase.

3,661,572
MANUFACTURING PROCESS FOR MANUFACTURING ELECTROPHOTOGRAPHIC SENSITIVE MATERIAL

Yasuo Tamai; Masaaki Takimoto, and Hajime Miyatuka, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 31, 1970, Ser. No. 60,118
Claims priority, application Japan, Aug. 4, 1969, 44/61018
Int. Cl. G03g *5/00, 7/00*
U.S. Cl. 96—1.7 **7 Claims**

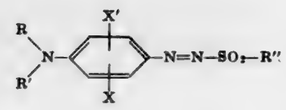
A process for manufacturing an electrophotographic sensitive layer which comprises adding a lead compound soluble in water and capable of generating lead ions upon dissolution in water and a water-soluble, sensitizing dye having a carboxyl group to a slurry prepared by dispersing a finely divided photoconductive zinc oxide in water thereby allowing the dye to be deposited fast on the surface of the zinc oxide so as to give rise to a colored zinc oxide powder, washing the powder with water, subsequently blending the colored powder which may be optionally mixed with untreated zinc oxide powder with an insulative resin, and spreading the resultant mixture in the form of a layer on a base having an electroconductive surface.

3,661,573
LIGHT-SENSITIVE COMPOUNDS

Urbain Leopold Laridon, Wilrijk; Gerard Albert Delzenne, 's-Gravenwezel, and Hugo Karel Peeters, Berchem, all of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Filed Oct. 9, 1969, Ser. No. 865,185
Claims priority, application Great Britain, Nov. 26, 1968, 56,095/68
Int. Cl. G03c *1/52*; **G03f** *7/02, 7/08*
U.S. Cl. 96—33 **10 Claims**

A copying material for use in the photochemical preparation of printing plates comprises a support and a light-sensitive coating formed from an intimate mixture of an alkali-soluble polymer and a compound of the formula:



wherein:
R = hydrogen, alkyl or phenyl;
R′ = alkyl, phenyl, naphthyl, benzoyl, alkoxybenzoyl, acryloyl, methacryloyl or alkylsulphonylaminoalkyl;
R″ = phenyl, alkylphenyl, aminophenyl, dialkylaminophenyl or acylaminophenyl;
X = hydrogen, halogen, nitro, alkyl or alkoxy;
X′ = hydrogen, halogen, or alkoxy.

On image-wise exposure to actinic light and dissolving the exposed portions of the coating in an aqueous alkaline liquid, a positive printing plate is formed.

3,661,574
PHOTOGRAPHIC PROCESS WITH AN AMINE METAVANADATE

Francois-Jean-Marie Bredoux, and Rene Fernand Pierre Garcia, both of Vincennes, France, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 18, 1969, Ser. No. 851,101
Claims priority, application France, Dec. 18, 1968, 178794
Int. Cl. G03c *5/00*
U.S. Cl. 96—35 **12 Claims**

There is described photosensitive elements which employ as the photosensitive component organic amine metavanadates and processes of producing photographic images and reliefs with these photosensitive elements.

3,661,575
GRAVURE PRINTING PLATE OF PHOTOCURABLE MATERIAL

Arthur D. Ketley, Columbia, and Joseph A. Cogliano, Baltimore, both of Md., assignors to W. R. Grace & Co.

Filed Jan. 5, 1970, Ser. No. 828
Int. Cl. G03c *5/00*
U.S. Cl. 96—35.1 **3 Claims**

This invention relates to a gravure printing plate and methods of making same, said plate comprising a photocurable composition, i.e., a polyene, polythiol and photosensitizer, optionally having a screen or grid embedded in the photocurable composition.

3,661,576
PHOTOPOLYMERIZABLE COMPOSITIONS AND ARTICLES

Edward N. Crary, Pewaukee, Wis., assignor to W. H. Brady Co., Milwaukee, Wis.

Filed Feb. 9, 1970, Ser. No. 9,857
Int. Cl. G03c *1/68*
U.S. Cl. 96—35.1 **14 Claims**

Photopolymerizable articles and compositions incorporating ethylenically unsaturated polyhydroxy diester polyethers as the active photopolymerizable ingredient, more specifically, acrylic and methacrylic diesters of diepoxy polyethers derived from aromatic polyhydroxy compounds. The articles and compositions are useful for dry photoresist films, for the manufacture of etched printing plates, as resist materials for chemical milling, and other uses which may utilize a photoactive layer or stratum.

3,661,577
METHOD FOR FORMING DIES

Carl John Klemm, Appleton, Wis.; Richard August Tietz, Streamwood, Ill.; Terrell Ray Street, Houston, Tex., and Trevor Blake, Lawrenceville, N.J., assignors to American Can Company, New York, N.Y.

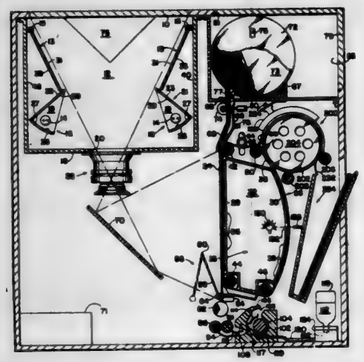
Filed Mar. 12, 1968, Ser. No. 712,526
Int. Cl. G03c *5/04, 5/00*
U.S. Cl. 96—36 **21 Claims**

A die for cutting paperboard material or the like comprises a pair of die plates having coacting cutting elements which partially overlap in the plane of the material to be cut. In making the die plates, a first image representing the critical overlap portion of the cutting elements is utilized to obtain a second and third image each representing a complete cutting element. The second and third image each includes an overlap portion derived from a common image source thereby to facilitate accuracy of registry of two matching die plates ultimately derived from said second and third images.

3,661,578
DRYER

Paul B. Mason, Magnolia, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 722,855, Apr. 22, 1968, abandoned. This application Apr. 1, 1969, Ser. No. 812,259
Int. Cl. G03c 5/54
U.S. Cl. 96—29 5 Claims



A dryer for photographic sheet material having an image-receptive layer. The dryer includes a support having a covering thereon adapted to contact and support the photographic sheet with the image-receptive layer in contact with the covering. The dryer also includes means for advancing the covering and photographic sheet past a heated platen located in contact with the side of the photographic sheet opposite the side in contact with the covering for vaporizing liquid previously absorbed into the sheet during processing thereof and driving the vapor into the covering from which it is subsequently removed.

3,661,579
METHOD FOR RECORDING AND REPRODUCING GRAPHIC INFORMATION ON PROCESSED PHOTOGRAPHIC MATERIAL

Marcel Nicolas Vranckes, Hove; Louis Achilles Meeussen, and Daniel Alois Claeys, both of Mortsel, all of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

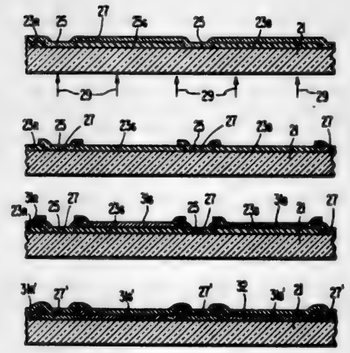
Filed May 13, 1968, Ser. No. 728,574
Claims priority, application Great Britain, May 12, 1967, 22,221/67
Int. Cl. G03c 5/00, 5/44
U.S. Cl. 96—36 17 Claims

Recording layers of the type disclosed in U.S. Pat. No. 3,476,937 are used for subtitling photographic film, particularly motion picture film. A heat and/or pressure sensitive layer of such type is applied as an over-coating on the film to be subtitled, exposed to a heat pattern according to the subtitle so as to reduce the water permeability of the heated areas thereof, contacted with an aqueous liquid chemically degrading the binder in such layers so that the layer is removed in the heated areas, after which the film which carries the developed photographic image in a conventional emulsion layer thereon is contacted with a liquid, which may be the same liquid used to chemically degrade the overlayer, which either degrades the binder of the conventional emulsion layer to permit removal thereof or bleaches the visible image-forming material, i.e., the developed silver image or colored dye image, in the emulsion layer, the degradation or bleaching effect taking place in the areas where the overlayer has been removed. The remaining areas of the overlayer can be finally removed by rubbing the same while wet with an aqueous liquid.

3,661,580
PHOTOGRAPHIC METHOD FOR PRODUCING A CATHODE-RAY TUBE SCREEN STRUCTURE

Edith Ellen Mayaud, Lancaster, Pa., assignor to RCA Corporation

Filed Jan. 30, 1970, Ser. No. 7,138
Int. Cl. G03c 5/00
U.S. Cl. 96—36.1 9 Claims



A method for preparing a screen structure comprising a light-absorbing layer or matrix having therein an array of discretely-sized holes filled with luminescent material. A stencil having an array of opaque areas, which areas are larger than the desired holes, is produced on a supporting surface. A photopolymeric film is deposited over the stencil and supporting surface, and light is passed through the surface and stencil, thereby exposing the film. The light in the film is scattered so that the exposed areas extend behind the opaque areas of the stencil producing unexposed areas in the film which are substantially the same size as the desired holes. The unexposed areas of the film and the opaque portions of the stencil are removed, while the exposed areas of the film are retained in place. The retained exposed areas are rendered light-absorbing and the holes therein are filled with luminescent material.

3,661,581
METHOD FOR PHOTODEPOSITING SMALLER SIZE IMAGE SCREEN AREAS FOR CATHODE RAY TUBE FROM LARGER SIZE MASK APERTURES

Nathan Feldstein, Kendall Park, N.J., assignor to RCA Corporation

Filed Dec. 30, 1969, Ser. No. 889,238
Int. Cl. G03c 5/00
U.S. Cl. 96—36.1 8 Claims



A method for producing a color kinescope having an image screen and a color selection mask having final-size apertures that are temporarily reduced in size for use as a photographic master in producing the image screen. The method includes providing a substrate having apertures of final size; providing at one surface of the substrate a perforated layer of electroless deposition-initiating material, portions of the layer partially extending across the apertures; electrolessly depositing a suitable material at these portions of the layer to produce opaque light-barriers that define respective light-transmitting corridors; providing the image screen by photographic exposure through the corridors; removal of the light-barriers to restore the apertures to their original condition and provide the final mask; and incorporation of the mask and image screen into a kinescope.

3,661,582
ADDITIVES TO POSITIVE PHOTORESISTS WHICH INCREASE THE SENSITIVITY THEREOF

Barret Broyde, Highland Park, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Continuation-in-part of application Ser. No. 833,077, June 13, 1969, now abandoned. This application Mar. 23, 1970, Ser. No. 21,989
Int. Cl. G03c
U.S. Cl. 96—36.2 14 Claims

The use of a scanning electron beam to generate a pattern in a positive photoresist is known. Electron beam equipment can be made which is capable of scanning very quickly, but standard positive photoresists require such a large flux of electrons for proper exposure that the scanning equipment must be operated at speeds substantially slower that the capability of the equipment. It has been discovered that by adding certain compounds to photoresists of the quinone diazid type, the sensitivity or speed of the photoresist is substantially increased. As a result, the electron beam can scan at a higher rate. The same compounds also increase the sensitivity of the photoresist to light. Compounds which are operable include aromatic compounds soluble in the resist and having two or more nitrogen atoms, at least one of which is bonded to a hydrogen atom. The ring can contain no other heterocyclic atoms and the nitrogens can not be bonded to other than nitrogen, carbon or hydrogen atoms. This definition includes most, but not all, of the compounds which have been determined to be operable.

3,661,583
THERMAL DESENSITIZATION OF PHOTOSENSITIVE SYSTEMS

Peter C. Van Der Voorn, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 9, 1970, Ser. No. 88,092
Int. Cl. G03c 5/24
U.S. Cl. 96—48 20 Claims

Exposed photosensitive elements are thermally desensitized to stabilize the image produced thereon.

3,661,584
PROTEINACEOUS COLLOID COMPOSITIONS PROVIDED ON GLASS SUPPORTS

Walter August Van Den Heuvel, Berchem; Jozef Frans Willems, Wilrijk; Herman Adelbert Philippaerts, Mortsel; Roland Francois Beels, Linkebeek, and Renaat Frans Heylen, Deurne, all of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

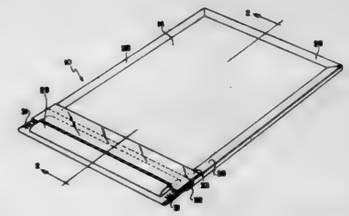
Filed Nov. 10, 1969, Ser. No. 875,570
Claims priority, application Great Britain, Nov. 18, 1968, 54,678/68
Int. Cl. G03c 1/76
U.S. Cl. 96—67 20 Claims

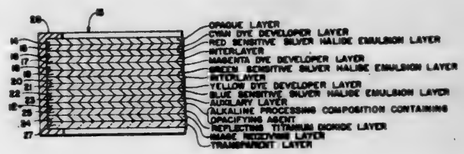
A photographic element comprising a glass support and a photosensitive emulsion layer on said support comprising a film-forming proteinaceous colloid is described. The adherence of the emulsion layer to the glass support is enhanced by including the emulsion layer an organic silicon compound having hydrocarbon groups directly or indirectly attached to a silicon atom wherein at least one of the hydrocarbon groups carries a group or atom which has chemical affinity for the free reactive groups of the proteinaceous colloid or which can be cross-linked to the free reactive groups through the intermediary of a cross-linking agent. The adherence of the photosensitive emulsion layer to the glass support is enhanced without affecting the photosensitive properties of the emulsion layer.

3,661,585
PHOTOGRAPHIC DIFFUSION TRANSFER COLOR PROCESS AND FILM UNIT FOR USE THEREIN

Sheldon A. Buckler, Lincoln, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 19, 1970, Ser. No. 3,646
Int. Cl. G03c 7/00, 5/54
U.S. Cl. 96—3 46 Claims





The present invention relates, in general, to a permanently structured composite photographic film unit, adapted to provide a color diffusion transfer image, which includes an opaque layer; a photosensitive silver halide layer having associated dye transfer image-forming material; a processing composition permeable layer comprising a particulate dispersion of visible light-reflecting inorganic pigment possessing a first mean particle size, which transmits actinio radiation incident on the layer effective to expose the photosensitive silver halide layer, and which dispersion upon contact with alkaline processing composition provides a dispersion of the pigment possessing a second mean particle size, effective to reflect incident actinic radiation and to thereby mask dye transfer image-forming material associated with the photosensitive silver halide layer; a polymeric layer dyeable by the dye transfer image-forming material; a transparent layer; and a rupturable container retaining alkaline processing composition for distribution between the dyeable polymeric layer and next adjacent photosensitive silver halide layer.

3,661,586
LEAD IODINE FILM

John H. Jacobs, Altadena, and Richard A. Corrigan, Pasadena, both of Calif., assignors to Bell & Howell Company

Filed Feb. 20, 1970, Ser. No. 12,914
Int. Cl. G03c 5/24, 1/00
U.S. Cl. 96—48 10 Claims

A lead iodide photographic film having photosensitivity which is low at room temperature but which can be portionally increased. Precursors of the lead iodide can be coated in separate layers on a film support. A dry developing agent, such as ascorbic acid, and a heat trigger, such as acetamide, can be incorporated to enhance the temperature sensitive photoresponse of the film. The image can be fixed with an alkaline solvent or by plating a more noble metal on the lead, such as copper. A method and mechanism are disclosed for add-an-image exposure and processing.

3,661,587
PHOTOGRAPHIC MEDIA
Howard Adrian, Sudbury, Mass., assignor to Itek Corporation, Lexington, Mass.
Filed Apr. 1, 1968, Ser. No. 717,976
Int. Cl. G03c *1/48*
U.S. Cl. 96—76 13 Claims

In photographic elements comprising a reversibly activated photoconductor and incorporating a photographic reducing agent, increased shelf life results from using an N-(carboxy-substituted alkyl) aniline compound containing an amino or hydroxy substituent on the aromatic nucleus as the reducing agent.

3,661,588
PHOTOPOLYMERIZABLE COMPOSITIONS CONTAINING *P* AMINOPHENYL KETONES AND ADJUVANTS
Catherine Teh-Lin Chang, Claymont, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 18, 1969, Ser. No. 877,853
Int. Cl. G03c *1/70*
U.S. Cl. 96—86 P 13 Claims

Photopolymerizable compositions comprising an ethylenically unsaturated monomer and an initiating combination of an aminophenyl ketone and a free-radical producing hydrogen donor compound selected from active methylene compounds and amino compounds.

3,661,589
INTERFACIAL VESICULAR PRINT MATERIALS AND METHODS OF PREPARATION
Norman T. Notley, P. O. Box 462, Sierra Madre, Calif.
Filed Feb. 18, 1970, Ser. No. 12,468
Int. Cl. G03c *1/54*
U.S. Cl. 96—91 8 Claims

This invention is directed to a method of preparing a light sensitive vesicular imaging film wherein two resin solutions, at the threshold of compatibility but having a common or miscible solvents, each containing a sensitizer which liberates gas on irradiation are mutually dispersed, coated as a thin film and dried. The thermoplastic film compriaes an intimate dispersion of one hydrophobic resin in the other hydrophobic resin with the sensitizer essentially uniformly dispersed throughout. After irradiation with a pattern of actinic light, gas released in the selected areas may be developed by overall heating to a visible record. The vesicular image in this two phase hydrophobic composition is of particularly high density and thermal stability.

3,661,590
TWO COMPONENT DIAZO-TYPE DEVELOPING PROCESS
William S. Murphy, Jr., and Edward Bialczak, both of Mount Prospect, Ill., assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.
Continuation of application Ser. No. 639,626, May 19, 1967, now abandoned. This application Aug. 14, 1970, Ser. No. 63,897
Int. Cl. G03c *5/34, 1/60*
U.S. Cl. 96—49 5 Claims

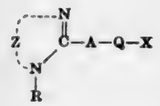
A two component diazo-type copy sheet having a light sensitive coating formulation which includes an azo coupling component, a coupling diazo compound and a metal salt such as cadmium sulfate, manganese sulfate, nickel sulfate and zinc sulfate which acts to substantially speed up the azo dye formation upon the application of controlled amounts of an organic amine. The metal salt is present in the range of 1 to 3 percent by weight of the sensitizing solution. Ethanolamine is typical of the developing liquids.

3,661,591
DIAZOTYPE MATERIALS
Peter William Maurice Reed, Hockley, England, assignor to Ozalid Company Limited, Loughton, Essex, England
Filed Mar. 24, 1970, Ser. No. 22,391
Claims priority, application Great Britain, Mar. 28, 1969, 16,418/69
Int. Cl. G03c *1/52*
U.S. Cl. 96—91 4 Claims

A diazotype material for use in making copies of X-ray films which comprises a support carrying a light-sensitive layer containing at least one diazonium compound, a coupler and a non-light-sensitive ultra-violet absorber, the ultra-violet absorber being effective in screening out radiation in the range of 3,400 to 4,000 A, being transparent to all radiation at or above 4,300 A and being present in an amount such as to give a background absorbance of at least 0.9 at 4,000 A.

3,661,592
PHOTOGRAPHIC FINE GRAIN SILVER HALIDE MATERIALS
Herman Adelbert Philippaerts, Mortsel; Robert Joseph Pollet, Vremde; Josef Frans Willems, Wilrijk, and Frans Henri Claes, Edegem, all of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium
Filed Oct. 2, 1970, Ser. No. 77,694
Claims priority, application Great Britain, Nov. 6, 1969, 54,539/69
Int. Cl. G03c *1/02*
U.S. Cl. 96—94 4 Claims

A method of preparing a photographic fine-grain silver halide emulsion is described wherein precipitation of the silver halide occurs in the presence of a compound corresponding to the formula:



wherein Z represents the atoms necessary to complete an imidazole, benzimidazole or naphthimidazole nucleus; Q is sulphur or selenium; R is hydrogen, C_1-C_4 alkyl or aryl, A is alkylene, which may be interrupted by hetero atoms, –S-alkylene which may be interrupted by hetero atoms, or arylene and X is alkyl, alkenyl or aryl or A and X together with Q represent the atoms necessary to complete a non-nitrogen containing heterocycle. By the presence of these compounds during precipitation of the silver halide homogeneous Lippmann-emulsions can be prepared with an average grain-size of less than 50 nm.

3,661,593
PROTEIN CONCENTRATES FROM BUFFER TREATED CEREAL ENDOSPERM PRODUCTS
Donald D. Christianson, Peoria; Arthur C. Stringfellow, Washington, and Joseph S. Wall, Peoria, all of Ill., assignors to The United States of America as represented by the Secretary of Agriculture
Filed Apr. 24, 1970, Ser. No. 31,542
Int. Cl. A23j *1/12*; A23d *6/00*
U.S. Cl. 99—17 8 Claims

An improvement has been made in processes for preparing protein enriched products from cereal grains. Protein which envelopes starch particles in cereal endosperm is loosened by hydration in an aqueous buffer solution. Standard commercial procedures such as grinding, milling, air classification, or screening can be used to prepare the desired products.

3,661,594
PRODUCTION OF BACTERIAL RENNET FOR MAKING CHEESE
Tomio Imai, Tokyo; Yoshio Irie, Matsudo, and Yoshinobu Kanazawa, Seka, all of Japan, assignors to Godo Shusei Kabushiki Kaisha, Tokyo, Japan
Continuation-in-part of application Ser. No. 724,455, Apr. 26, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 618,391, Feb. 24, 1967, now abandoned. This application Jan. 16, 1970, Ser. No. 3,490
Claims priority, application Japan, Feb. 26, 1966, 41/11338
Int. Cl. A23c *19/02*; C07g *7/028*
U.S. Cl. 99—116 7 Claims

Milk coagulating enzyme preparation is provided herein by a process comprising culturing a strain of Bacillus polymyxa on a nutrient medium containing assimilable carbon source and inorganic salts. The enzyme "bacterial rennet" produced by the aforementioned process is also employed herein as a milk coagulating enzyme useful for making cheese.

3,661,595
COMPOSITION FOR METALIZING CERAMIC
Robert W. Buck, Wheat Ridge, Colo., assignor to Coors Porcelain Company, Golden, Colo.
Filed Feb. 16, 1970, Ser. No. 11,869
Int. Cl. C09d *5/24*
U.S. Cl. 106—1 4 Claims

The subject matter of this invention is a composition and method for metalizing ceramic wherein the composition is a mixture containing manganese, molybdenum and silicon, at least a portion of the latter being present as molybdenum disilicide or tungsten disilicide, molybdenum disilicide being much preferred. The mixture, in powdered form, is suspended in an organic vehicle to provide a slurry which is coated onto the ceramic after which the ceramic is fired in a wet reducing atmosphere to a temperature of about 1150°C to 1450°C, the organic vehicle vaporizing during the initial phase of the firing operation. By inclusion of the disilicide in the mixture an improved metalized surface on the ceramic can be accomplished using relatively a low firing temperature.

3,661,596
STABILIZED, CHEMICAL NICKEL PLATING BATH
Wolfgang Clauss, and Dieter Menz, both of Berlin, Germany, assignors to Schering AG, Berlin, Germany
Filed Apr. 29, 1970, Ser. No. 33,088
Claims priority, application Germany, May 22, 1969, P 19 26 100.8
Int. Cl. C23c *3/02*
U.S. Cl. 106—1 5 Claims

A stabilized chemical bath containing a solution of a nickel salt and selenium compounds as stabilizers.

3,661,597
ELECTROLESS COPPER PLATING
Michael Gulla, Newton, Mass., assignor to Shipley Company, Inc., Newton, Mass.
Filed May 20, 1971, Ser. No. 145,508
Int. Cl. C23c *3/02*
U.S. Cl. 106—1 27 Claims

The invention is directed to an electroless copper solution characterized by inclusion of a polyether adduct of an alkine alcohol and an alkylene oxide for improved solution stability and deposit appearance.

3,661,598
CONVERSION OF ELECTROSTATIC LITHOGRAPHIC MASTERS AND COMPOSITION
Helen M. Rosenberger, Skokie, Ill., assignor to A. B. Dick Company, Niles, Ill.
Filed May 21, 1970, Ser. No. 39,502
Int. Cl. C09k *3/00*
U.S. Cl. 106—2 6 Claims

A conversion solution for electrostatic lithographic masters wherein the conversion solution is formulated to contain ferrocyanide in solution and which is stabilized by the presence of dissolved sulfite.

3,661,599
HIGH TEMPERATURE TIC-VC STRUCTURAL MATERIALS
Graham E. Hollox, Baltimore; Walter Precht, Towson; Robert G. Lye, Towson, and Albert R. C. Westwood, Towson, all of Md., assignors to Martin Marietta Corporation, New York, N.Y.
Filed Mar. 25, 1969, Ser. No. 810,301
Int. Cl. C04b *35/52*
U.S. Cl. 106—43 6 Claims

The invention describes new high temperature structural materials consisting of titanium carbide vanadium carbide alloys produced by zone refining techniques. The materials are fully dense and may be either mono- or polycrystalline.

3,661,600
OPTICAL GLASS WITH A HIGH REFRACTIVE INDEX AND A HIGH DISPERSING ABILITY
Tetsuro Izumitani, and Kazuo Namiki, both of Tokyo, Japan, assignors to Hoya Glass Works, Limited, Tokyo, Japan
Filed Nov. 3, 1969, Ser. No. 873,678
Claims priority, application Japan, Nov. 20, 1968, 43/85118
Int. Cl. C03c *3/00, 3/12, 3/30*
U.S. Cl. 106—47 Q 2 Claims

A TeO_2-WO_3 glass with a high refractive index ηd of not lower than 2.0 and a high dispersing ability represented by Abbe's number of 21 or less, and having a greatly improved stability with respect to both devitrification and chemical durability, can be obtained by the inclusion, in the composition of the glass, of Li_2O and at least one other oxide selected from the group consisting of K_2O, MgO, BaO, ZnO, CdO, TiO_2, PbO, La_2O_3, B_2O_3, Nb_2O_5 and Bi_2O_3.

3,661,601
OPAL GLASS COMPOSITIONS
William H. Dumbaugh; James E. Flannery, and George B. Hares, all of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Mar. 21, 1969, Ser. No. 809,317
Int. Cl. C03c *3/04, 3/08*
U.S. Cl. 106—54 3 Claims

This invention relates to spontaneously opacifiable glasses containing fluorine and having as the principal opacifying phase an immiscible, or insoluble, fluorine containing glass; the opal is an alkali aluminosilicate glass with additions of divalent oxides, fluorine, and boric-oxide. These glasses are opacified by cooling the glass body from the melt to a temperature below about the opal liquidus thereof at a rate greater than about 2° C./minute so as to homogeneously separate an insoluble glassy opacifying phase.

3,661,602
SILANE-STABILIZED SILICATE FOAMS
Stephen A. Gerow, Glen Mills, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed July 13, 1970, Ser. No. 54,573
Int. Cl. C04b *35/16*
U.S. Cl. 106—75 13 Claims

Stable aqueous foams prepared from aqueous solutions of alkaline ionic silicates containing a cationic surface-active onium compound and an alkyl silane, and optionally containing colloidal amorphous silica and a latent acid or salt gelling agent. Rigid foams are obtained by setting the aqueous foams with a salt or acid, then drying the set foam. Inclusion of the silanes increases foamability of the solution, stability of the wet foam, and water resistance and strength of the dried foam.

3,661,603
NOVEL LIGHTWEIGHT ASBESTOS CONTAINING CEMENTITIOUS MATERIAL AND PROCESS FOR PRODUCING THE SAME
John Paul Nicol, Thetford Mines, Quebec, Canada, assignor to Asbestos Corporation Limited, Thetford Mines, Quebec, Canada
Filed Apr. 7, 1970, Ser. No. 26,415
Claims priority, application Great Britain, Apr. 8, 1969, 17,905/69
Int. Cl. C04b 31/04, 31/40
U.S. Cl. 106—90 24 Claims

A lightweight, rigid composition is prepared by a process comprising mixing water, a cementitious material, asbestos fibers and an anionic surfactant capable of chemically opening the fiber and resistant to alkalis and saponification. The product may be cellular, in which case it may additionally include a different surfactant, a sequestering agent or a colloidal dispersion.

3,661,604
LIGHT-WEIGHT CONCRETE MATERIAL AND PROCESS FOR PRODUCING THE SAME
Paul Artmann, Maxingstrasse 38, Wien 13, Austria
Filed Aug. 12, 1969, Ser. No. 849,345
Claims priority, application Austria, June 3, 1969, A 5320/69
Int. Cl. C04b 31/20
U.S. Cl. 106—98 1 Claim

A light-weight concrete having a density of 800 – 1,800 kg/m³ consists essentially of a coarse aggregate, a fine aggregate, cement, and water, the coarse aggregate being at least 50 percent of all solids by volume, the fine aggregates being constituted by fine said of less than 1 mm grain size, crushed mineral material such as crushed brick of less than 5 mm grain size and pulverized mineral material, such as powdered brick of a grain size of less than 2 mm.

3,661,605
RELEASE PRODUCT
Leon R. Rubin, and Arthur E. Meyerhoff, Jr., both of Chicago, Ill., assignors to American Home Products Corporation
Filed June 8, 1970, Ser. No. 44,619
Int. Cl. C08h 9/00
U.S. Cl. 106—244 3 Claims

An aqueous aerosol composition is composed of a homogenized dispersion of lecithin in water and contains a propellant, e.g., carbon dioxide or nitrous oxide, for pressurizing the composition in an amount sufficient to produce a release coating of lecithin on a surface when the composition is sprayed. Other ingredients such as preservatives, i.e., bacteriostats and/or fungistats, and supplemental emulsifiers can be included where desired or needed.

3,661,606
PROCESS FOR PROTECTING ORGANIC MATERIAL FROM THE ACTION OF ULTRAVIOLET RAYS
Christian Luethi, Munichstein; Max Duennenberger, Frenkendorf, and Hans Rudolf Biland, Basel, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
Filed Apr. 13, 1970, Ser. No. 28,026
Claims priority, application Switzerland, Feb. 7, 1966, 1679/66; 1680/66. The portion of the term of the patent subsequent to Sept. 22, 1987, has been disclaimed.
Int. Cl. C08b 27/68; C08f 45/60; C08g 51/60
U.S. Cl. 106—178 9 Claims

This invention refers to a process for protecting organic materials that can be damaged by ultraviolet rays, from the action of ultraviolet rays, wherein asymmetrical oxalic acid diarylamides of the general formula A—NH—CO—CO—NH—B where A and B are different from each other and each represents a benzene or naphthalene residue, these residues A and B (a) being free from hydroxyl groups in the ortho-positions to the amide nitrogen atom and (b) containing if desired substituents that contain no more than 20 carbon atoms and do not displace the absorption maximum of the compound towards values above 400 mμ, are applied to said materials, as well as compositions containing said oxalic acid diarylamides.

3,661,607
REDUCTION OF DUSTINESS AND ABRADING OF SOFT POROUS LOW DENSITY HYDRATED CALCIUM SILICATE PRODUCTS
Elmer Brewington Hurley, Martinsville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.
Filed Mar. 31, 1970, Ser. No. 24,328
Int. Cl. C08h 9/06
U.S. Cl. 106—272 10 Claims

Means of diminishing surface dusting in porous low density hydrated calcium silicate bodies and improving resistance to abrasion and crumbling of their soft, friable texture by depositing thereon a high temperature melting wax, and the dust-free and more durable wax containing hydrated calcium silicate products.

3,661,608
COMPOSITIONS FOR USE IN REFRACTORIES
Paul H. Ralston, Bethel Park, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.
Filed Aug. 18, 1969, Ser. No. 851,056
Int. Cl. C08h 17/24
U.S. Cl. 106—286 1 Claim

Compositions comprising B_2O_3, P_2O_5, H_2O and, typically, alkali metal oxides are disclosed. These compositions are useful as binders for refractory compositions.

3,661,609
METHOD FOR PREPARING NACREOUS PIGMENTS
Harold Kaufman, Freehold, N.J., assignor to Whittaker Corporation
Filed Nov. 2, 1970, Ser. No. 86,272
Int. Cl. C09c 1/00, 1/04
U.S. Cl. 106—291 30 Claims

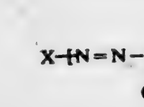
Improved pearlescent pigments are prepared by combining an aqueous, divalent metal salt solution with an aqueous solution comprising an alkali metal biphosphate or ammonium phosphate and a reducing agent. The combination of solutions yields metal acid phosphate or metal ammonium phosphate in crystalline form with a portion of the metal reduced to the free metallic state. The metal acid or ammonium phosphate crystals are plated onto the surface of mica or similar material at the time of formation in the presence of a cationic wetting agent within the aqueous reaction media.

3,661,610
PIGMENT
Andrew Paul Ferris, Cornwall, England, assignor to English Clays Lovering Pochin & Company Limited, Cornwall, England
Filed Sept. 8, 1970, Ser. No. 70,104
Claims priority, application Great Britain, Sept. 10, 1969, 44,700/69
Int. Cl. C09c 1/02, 1/28
U.S. Cl. 106—306 16 Claims

A mixed clay/calcium carbonate pigment wherein the clay pigment component has associated therewith before being mixed with the calcium carbonate pigment component a water-soluble condensed phosphate dispersing agent and a second dispersing agent which is a water-soluble salt comprising an organic macromolecular anion, for example a salt of polyacrylic or polymethacrylic acid, and wherein the calcium carbonate pigment component has associated therewith before being mixed with the clay pigment component said second dispersing agent.

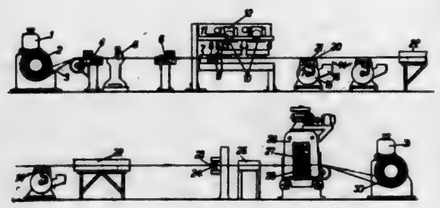
3,661,611
AZO COMPOUNDS
Fred Dawson; John Mitchell; Leslie Richard Rogers; William Todd, and Arthur Topham, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England
Original application May 23, 1966, Ser. No. 551,923, now Patent No. 3,532,520. Divided and this application May 1, 1970, Ser. No. 33,918
Int. Cl. C08h 17/14
U.S. Cl. 106—308 Q 6 Claims

A composition readily dispersible in an organic solvent and containing an azoacylacetarylamide and an azo compound of the formula



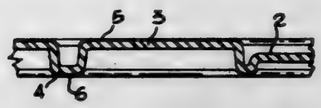
wherein X is selected from the group consisting of phenyl, diphenyl and quinoline radicals and is directly linked to the azo group through a nuclear carbon atom of said radicals, said radicals optionally carrying a substituent selected from the group consisting of chlorine, nitro, methyl and hydroxy, Y is methyl, Z is phenyl optionally substituted with a member selected from the group consisting of methoxy and methyl, R is a radical selected from the group consisting of alkyl, alkene, aminoalkyl and cyclohexyl and *n* is an integer of 1–2.

3,661,612
METHOD OF COATING A MOVING METAL STRIP
Albert Edward Jackson, Wendover, Gwernaffield Mold, and Phillip Haydn Hughes, Wrexham, both of England, assignors to John Summers & Sons Limited, Shotton, Deeside, Flintshire, England
Filed Dec. 9, 1968, Ser. No. 782,259
Claims priority, application Great Britain, Dec. 14, 1967, 56,871/67
Int. Cl. B22f 7/04
U.S. Cl. 117—22 13 Claims



A method of coating a moving metal surface comprising forming a dry layer of metallic powder on the surface, thereafter applying an aqueous liquid of a substance which gels when suitably hydrated to the said layer and allowing the water to penetrate the metallic powder layer, and then passing the metallic powder layer against a compression roller to compact the powder to the said surface, the said liquid acting to reduce the extent to which the roller dislodges the powder.

3,661,613
DECORATOR PANELS
Ralph G. Contrael, High Ridge; Leo G. Stahlhut, Kirkwood, and Richard E. Trippeer, Fenton, all of Mo., assignors to K-S-H Inc., St. Louis County, Mo.
Filed Nov. 21, 1968, Ser. No. 777,775
Int. Cl. B44c 5/04
U.S. Cl. 117—37 R 1 Claim



A plastic panel having bas-relief forms on both sides from a reference level, defining thereby at least three general levels, at least two of which are painted and at least one of which is substantially free of paint. A planar plastic sheet is positioned against a mold having spaced high mold sections, spaced intermediate mold sections and valleys defined by said mold sections, and formed onto the mold sections and into the valleys to form the bas-relief relative to the intermediate mold sections. The panel is removed from the mold and painted on both sides on the raised surfaces of the bas-relief islands.

3,661,614
RADIATION-CURABLE INK COMPOSITIONS
Robert W. Bassemir, Jamaica, N.Y.; Daniel J. Carlick, Berkeley Heights, and Gerald I. Nass, West New York, both of N.J., assignors to Sun Chemical Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 685,331, Nov. 24, 1967, now abandoned. This application Dec. 11, 1969, Ser. No. 884,350. The portion of the term of the patent subsequent to Dec. 29, 1987, has been disclaimed.
Int. Cl. B05c 1/16; C08d 1/00; C08f 1/16
U.S. Cl. 117—38 14 Claims

A radiation-curable solvent-free printing ink consists of (1) about 20 to 98 weight per cent of a pentaerythritol acrylate, methacrylate, or itaconate, (2) about 2 to 80 weight per cent of a halogenated aromatic, alicyclic, or aliphatic hydrocarbon photoinitiator wherein the halogen atoms are attached directly to the ring structure in the aromatic and alicyclic compounds and to the carbon chain in the aliphatic compounds, and (3) a colorant.

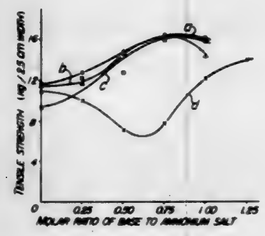
3,661,615
SUBSTRATE COATING PROCESS
Don N. Gray, Sylvania, Ohio, and John D. Grier, Okemos, Mich., assignors to Owens-Illinois, Inc.
Filed Mar. 11, 1969, Ser. No. 806,320
Int. Cl. C03c 17/10
U.S. Cl. 117—46 CA 6 Claims

There is disclosed a process for coating a substrate which comprises applying to the substrate a polymeric based composition comprising a finely divided, particulate inorganic material dispersed in a low molecular weight, low vapor pressure, liquid polymer consisting of poly (alpha substituted) styrene and having a relatively constant viscosity and thixotropic character and capable of being decomposed or pyrolyzed completely to gaseous products at a relatively low temperature without forming a carbonaceous or like residue having a deleterious effect(s) in the application of the composition to the substrate.

3,661,616
PROCESS FOR CARBONIZING CELLULOSE FIBER OR THE PRODUCTS THEREOF

Kazuo Miyamichi, Koriyama-shi, Japan, assignor to Notto Boseki Co., Ltd., Fukushima-shi, Japan

Filed Oct. 24, 1969, Ser. No. 869,196
Claims priority, application Japan, Nov. 6, 1968, 43/81178; Sept. 5, 1969, 44/70437; 44/70438; Sept. 19, 1969, 44/74483
Int. Cl. C01b 31/07
U.S. Cl. 117—46 CB 6 Claims



Cellulose fiber or the product thereof is treated with a strength increasing agent selected from the group consisting of (A) at least one compound selected from ammonium sulfite, ammonium bisulfite, ammonium bisulfate, or ammonium thiosulfate; (B) a mixture of at least one compound selected from ammonium sulfate, ammonium bisulfate, ammonium sulfite, ammonium bisulfite, ammonium thiosulfate, ammonium sulfate, or ammonium imidosulfonate with at least one organic nitrogen base; and (C) a mixture of an organic nitrogen base and an acid selected from sulfuric acid, sulfurous acid or sulfamic acid.

3,661,617
TREATMENT OF GLASS CLOTH

Irving Serlin, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 29, 1969, Ser. No. 795,046
Int. Cl. B22b 17/04; C03c 25/02
U.S. Cl. 117—54 7 Claims

Disclosed herein is a method for the treatment of aminosilane-sized hard drape glass cloth used in the preparation of resin impregnated composites which comprises treating the cloth with water prior to the fabrication of the composite. Polyimide resin impregnated laminates prepared from glass cloth treated with water in accordance with the present invention show a significant increase in the flexural strength after aging over laminates prepared from hard drape cloth which have not been treated with water.

3,661,618
PROCESS FOR THE PREPARATION OF PRESSURE SENSITIVE ADHESIVES

Robert S. Brookman; Stephen Grib, both of Pottstown, Pa., and Dale S. Pearson, Hauppauge, N.Y., assignors to The Firestone Fire and Rubber Co., Akron, Ohio

Filed June 30, 1969, Ser. No. 837,878
Int. Cl. C09j 7/02
U.S. Cl. 117—62 7 Claims

Pressure sensitive adhesives are prepared from a monomer layer composition containing a liquid alkyl acrylate having an adjusted viscosity of about 100 centipoises or higher and optionally containing cross-linking monomers, by subjecting the monomer layer to high energy particle radiation in the essential absence of oxygen.

3,661,619
PRINTING PROCESS EMPLOYING MOISTURE

Aage Surland, Brooklyn, N.Y., assignor to Frye Industries Inc., New York, N.Y.

Filed Apr. 17, 1969, Ser. No. 817,163
Int. Cl. B44d 1/44; B41m 7/00
U.S. Cl. 117—62.2 9 Claims

A moisture setting printing process comprising the steps of printing with an ink having a vehicle comprising a glycolic soluble resin such as an acidic resin, a cross-linking agent such as hexamethylolmethyl melamine, a Lewis acid catalyst and a glycol solvent, contacting the printed ink with moisture and allowing a hardening reaction to proceed to completion.

3,661,620
METHOD OF ENCAPSULATING FILLERS WITH POLYMERS

Henri Dekking, Rootstown, and Edwin M. Maxey, Stow, both of Ohio, assignors to The General Tire & Rubber Company

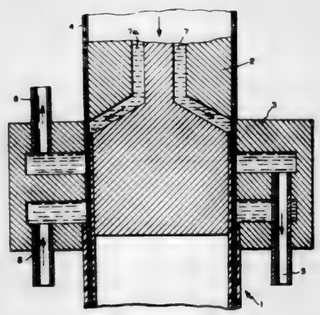
Filed Nov. 26, 1969, Ser. No. 880,426
Int. Cl. C08k 1/82; B44d 1/48; C03c 17/32
U.S. Cl. 117—62.2 2 Claims

A method of rapidly polymerizing a thin coating of thermosetting monomer onto the surface of particulate matter such that the particles will not stick together and may thereafter be handled as a freely flowing material comprising wetting the material's surface with a solution containing a liquid polymerizable monomer and a free radical generating catalyst and then exposing the wet surface to an atmosphere containing sulfur dioxide to effect rapid polymerization.

3,661,621
PROCESS FOR PRODUCING TUBULAR STRUCTURES COATED ON BOTH SIDES

Eugen Jager, Bomlitz, Germany, assignor to Wolff & Co. Aktiengesellschaft, Walsrode, Germany

Filed June 4, 1969, Ser. No. 830,405
Claims priority, application Germany, June 8, 1968, P 17 71 564.9
Int. Cl. B05c 9/04; B44d 1/40
U.S. Cl. 117—68 3 Claims



Process for continuous production of inside and outside coated artificial tubular structures by first coating one side, thereafter applying vacuum from the other side to remove gases and impregnate the tube and then coating the second side and thereafter solidifing, washing and drying the tube, this process being carried out in a continuously working apparatus.

3,661,622
METHOD OF IMPROVING RESISTANCE TO CORROSION OF METAL SURFACES AND RESULTANT ARTICLE

Lyna C. Rogers, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Mar. 16, 1970, Ser. No. 20,038
Int. Cl. B44d 1/14; B32b 15/04
U.S. Cl. 117—75 23 Claims

A method of improving resistance to corrosion of metal surfaces is disclosed, wherein said method comprises:

a. applying to the metal surface a composition comprising (1) a major amount (e.g. at least 75 weight percent) of a thixotropic, grease-like composition consisting essentially of a non-volatile diluent, an oil-soluble dispersing agent and an alkaline earth metal carbonate and (2) a minor amount (e.g. 0.1 to 25 weight percent) of a polymer, and

b. applying to the coated metal surface a conventional paint. An important feature is the use of the composition described in step (a) as a primer coating.

3,661,623
HEAT STABLE POLYESTER CORD REINFORCED RUBBER STRUCTURE AND METHOD OF MAKING

Roop S. Bhakuni; John G. Morgan, and Terry F. Allen, all of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

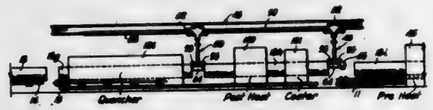
Filed Oct. 3, 1969, Ser. No. 863,698
Int. Cl. B32b 25/02, 27/36
U.S. Cl. 117—76 T 13 Claims

A method of making a heat stable polyester cord reinforced rubber structure, such as a tire, and the resultant structure, which method comprises applying an adhesive to the polyester cord and depositing in the vicinity of the adhesive a heat stabilizing agent selected from a tris substituted-aziridinyl phosphine oxide or sulfide, a polycarbodiimide, bis(tri-n-butyltin) oxide and a hindered phenol.

3,661,624
METHOD FOR COATING TUBULAR OBJECTS

Harry N. Versoy, New Orleans, and Robert J. Harris, Marrero, both of La., assignors to H. C. Price Co., Bartlesville, Okla.

Original application Dec. 11, 1967, Ser. No. 689,646, now Patent No. 3,581,922. Divided and this application July 21, 1970, Ser. No. 56,782
Int. Cl. B44d 1/094, 1/08
U.S. Cl. 117—94 5 Claims

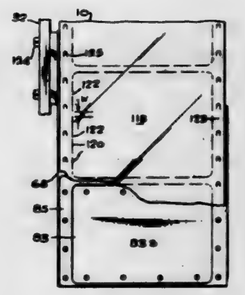


A relatively high speed, continuous method and novel apparatus, especially adapted to large diameter steel pipe, for applying external thin-mill coatings, such as thermal setting epoxy and epoxy resins, wherein the pipe sections are successively advanced in a train and continuously rotated through numerous operating stations, and embodying a change-over from an external roller drive line to an internal conveyor system. The pipe overhead suspension system permits even mill coating over the complete surface of the pipe and precludes damage to the coating during curing and while it is in the critical fluid state.

3,661,625
LABEL CARRYING STRIP FOR USE IN LABELING APPARATUS

Herbert La Mers, Los Angeles, Calif., assignor to La Mers Labeler Corporation, Santa Monica, Calif.

Filed Aug. 30, 1968, Ser. No. 756,651
Int. Cl. B32b 3/10; G09b 3/02
U.S. Cl. 161—109 6 Claims

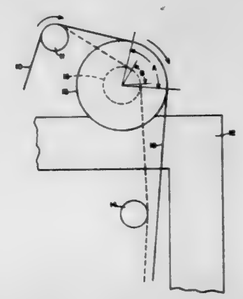


A label carrying strip for use in apparatus for applying labels to goods comprising an elongated web with labels spaced therealong and supported within the web.

3,661,626
METHOD OF COATING A FLEXIBLE WEB

Charles L. Woaba, II, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 8, 1970, Ser. No. 35,783
Int. Cl. B05c 1/06; C09d 3/44; B05c 11/00
U.S. Cl. 117—111 H 4 Claims

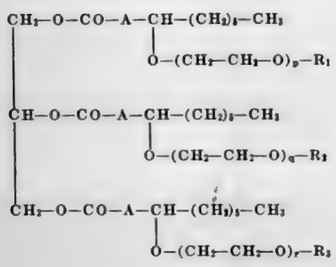


A method of applying a uniform coating of a soft, pliant material or the like, e.g. wax, on a continuous flexible web to coat a surface of the web with minute quantities of the pliant material. The coating is carried out by placing the web in surface contact with a coating roll made from the pliant material. The web is moved and the roll is turned such that there is a speed differential, i.e. slip, between the contacting surfaces of the roll and the web. The movement of the web over the peripheral surface of the roll in this manner uniformly coats the web with minute amounts of material transferred to the web from the roll surface.

3,661,627
HYDROPHILIC AND ANTISTATIC TREATMENT FOR POLYMERS
Eckhard C. A. Schwarz, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed May 19, 1970, Ser. No. 38,875
Int. Cl. B44d 5/12
U.S. Cl. 117—118 5 Claims
A surface modification to impart antistatic and hydrophilic properties to polyurethanes or polyamides by reaction with acrylonitrile and a base.

3,661,628
INORGANIC OXIDE SUBSTRATE COATED WITH WATER DISPERSIBLE ETHYLENE AND ACRYLIC-METHACRYLIC COPOLYMER SALTS WITH SILOXANE
James G. Marsden, Amawalk, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 729,948, May 17, 1968, now abandoned. This application Sept. 29, 1969, Ser. No. 862,027
Int. Cl. C03c 17/03, 25/00; C08f 35/02; C09d 3/82
U.S. Cl. 117—126 GS 7 Claims
This invention involves treating an inorganic substrate with an organo-functional siloxane and a water dispersible salt of a copolymer of ethylene and acrylic and/or methacrylic acid. The invention is specifically characterized by the treatment of glass fiber as the substrate and the incorporation of the treated glass fiber in polyolefin molding resins for the purpose of making a reinforced composite.

3,661,629
METHOD FOR THE PROCESSING OF SYNTHETIC FIBERS USED FOR REINFORCING RUBBER
Kyomi Honda, and Koji Misaki, both of Mihara, Japan, assignors to Teijin Limited, Osaka, Japan
Filed Mar. 19, 1970, Ser. No. 21,178
Claims priority, application Japan, Apr. 1, 1969, 44/25017
Int. Cl. D06m 15/26; B32b 27/06
U.S. Cl. 117—138.8 F 4 Claims
A method for the treatment of synthetic fibers used for reinforcing rubber, featuring treatment of the synthetic fiber used for reinforcing rubber with a treating agent in which a nonionic surface active agent (abbreviated as X below) with the following general formula:



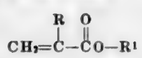
where A represents $(CH_2)_7$-CH CH-CH_2 or $(CH_2)_{10}$; R_1, R_2 and R_3 represent hydrogen atoms or —CO—R'· —CO—R'· and —CO—R''; R''$_1$, R'$_2$ and R'$_3$ represent aliphatic hydrocarbons with carbon numbers of 1 to 22; p, q, and r represent the molar numbers of the ethylene oxide added and $p+q+r$ is a positive integer = 50 to 300;
is combined with partially oxidized polyethylene with an average molecular weight of 500 to 10,000 (Abbreviated as Y below) in proportions within the limits of X = 5 to 40, Y = 0.1 to 3.0, and in which these components are combined with a lubricating agent and a surface active agent in addition to the aforesaid nonionic surface active agent X to give a total quantity of 100 weight percent

3,661,630
WELDABLE POLYURETHANE FOAM AND PROCESS FOR MANUFACTURE
Hans-Jurgen Remmert Kunststofftechniker, Wiesbaden, Germany, assignor to Firma Rudolph Koepp & Co., Chemische Fabrik AG
Filed July 10, 1969, Ser. No. 840,824
Claims priority, application Germany, July 19, 1969, P 17 69 819.0
Int. Cl. B32b 27/40; C08j 1/30
U.S. Cl. 117—138.8 D 16 Claims
Polyurethane foam of open pore structure is sized with a vinylidene chloride polymer to improve weladability thereof.

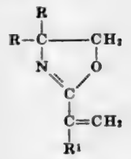
3,661,631
METHOD FOR IMPARTING WATER- AND OIL-REPELLENT PROPERTIES TO LEATHER AND LEATHER SO TREATED
Jurgen Piepper, Dusseldorf-Holthausen, and Friedrich Pieper, Langenfeld-Richrath, both of Germany, assignors to Henkel & Cie GmbH, Dusseldorf Holthausen, Germany
Filed June 18, 1970, Ser. No. 47,593
Claims priority, application Germany, June 27, 1969, P 19 32 630.8
Int. Cl. B44d 1/32; C14c 7/00
U.S. Cl. 117—142 16 Claims
A method for imparting water- and oil-repellent properties to leather is disclosed which uses as the treating composition a solution of

a. a condensation product formed by (1) an aluminum alcoholate of a lower monohydroxy alcohol having a carbon chain length of one to four carbon atoms with (2) a phosphoric acid monoester of a higher fatty alcohol having a carbon chain length of 12 to 20 carbon atoms, and
b. a fluorinated compound comprising lipophilic radicals having a carbon chain length of eight to 20 carbon atoms, selected from the group consisting of fluorocarboxylic acids and esters thereof, and fluoroalcohols and esters, ethers and acetals thereof in an inert organic solvent; the solution is applied to dry leather by immersion or spraying, as well as the water- and oil-repellent leather so produced.

3,661,632
PROCESS FOR BINDING PIGMENTS TO TEXTILES
Domenick D. Gagliardi, East Greenwich, and Robert J. Cicione, Cranston, both of R.I., assignors to Commercial Solvents Corporation, New York, N.Y.
Filed June 17, 1968, Ser. No. 737,284
Int. Cl. C08j 1/36; D06m 1/00
U.S. Cl. 117—143 A 5 Claims
A process for binding pigment to textiles, for example, cotton fabrics, by applying to the textile a liquid application medium having dispersed therein a pigment and a copolymer of an acrylic monomer of the formula



wherein R is hydrogen or methyl and R^1 is hydrogen or an alkyl radical having from 1 up to about 6 carbon atoms and an oxazoline of the formula

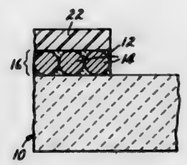


wherein R is a lower alkyl radical having from 1 to about 3 carbon atoms, hydroxymethyl radical or the radical -CH_2-OOC-R^1 and R^1 is an alkyl radical having from 1 to about 25 carbon atoms, the weight ratio of acrylic monomer to oxazoline in said copolymer being in the range of from about 75:25 to about 95:5, and drying the textile.

3,661,633
PROCESS AND COMPOSITION FOR IMPREGNATING WOOD AND WOOD PRODUCTS
Rolf Erhard Moren, Alfredshem, Sweden
Continuation-in-part of application Ser. No. 416,877, Dec. 8, 1964, now abandoned, and a continuation-in-part of 347,702, Feb. 27, 1964, now abandoned, and a continuation-in-part of 315,359, Oct. 10, 1963, now abandoned, and a continuation-in-part of 556,783, June 10, 1966, now Patent No. 3,406,038, and a continuation-in-part of 598,151, Dec. 1, 1966, now abandoned. This application Jan. 26, 1970, Ser. No. 6,037
Int. Cl. B27k 3/50
U.S. Cl. 117—148 2 Claims
Wood impregnating compositions are provided comprising a polyoxyalkylene glycol having a molecular weight within the range from about 200 to about 5,000, which is sufficiently soluble in water to form at least a 30 percent solution, and at least one thermoplastic resinous or resin forming material compatible with the glycol and capable of retaining the glycol in the wood.
A method of improving dimensional stability of natural wood by applying to the wood such a wood-impregnating composition, and wood treated with such a composition, are also provided.

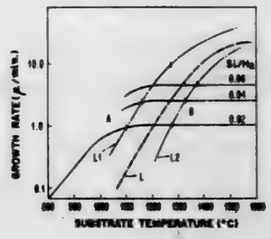
3,661,634
SEMIPERMEABLE OSMOTIC MEMBRANE AND METHOD OF PRODUCING SAME
Robert L. Riley, La Jolla, and Clifford R. Lyons, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Interior
Filed Oct. 31, 1969, Ser. No. 873,116
Int. Cl. C09d 3/72, 5/20
U.S. Cl. 117—161 UA 6 Claims
Semipermeable membranes prepared from a mixture of vinylpyrrolidone polymers and polyisocyantes. Process for preparing such membranes by casting the mixture from solution onto a smooth surface followed by curing under conditions of controlled humidity. Reaction of polyisocyanates with certain compounds having an active hydrogen atom provides a "blocked" polyisocyanate which does not react immediately with water at ambient temperatures thereby allowing greater processing control of membrane production.

3,661,635
DUAL-ETCHED REFRACTORY METALLIZING
Henry F. Harrison, Chattanooga, Tenn., assignor to American Lava Corporation, Chattanooga, Tenn.
Filed Feb. 20, 1970, Ser. No. 13,025
Int. Cl. H05k 3/04
U.S. Cl. 117—212 5 Claims



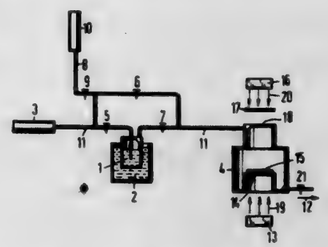
A process for metallizing on ceramic substrates with fine detail patterns of refractory metal which includes a prefiring to effect oxidation of a portion of the metallizing coating, application of a photopolymerizable coating thereover followed by exposure in pattern form using a mask, removal of unpolymerized coating by conventional means, acid etching to remove the oxides formed during pre-firing in exposed portions of the metallizing coating and mechanical removal of unoxidized and unsintered metal remaining in etched portions. This is followed by a final firing which destroys the photoresist and sinters the metal remaining on the substrate.

3,661,636
PROCESS FOR FORMING UNIFORM AND SMOOTH SURFACES
James M. Green, II, New York; Thomas O. Sedgwick, Crompond, and Victor J. Silvestri, Mount Kisco, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 22, 1970, Ser. No. 30,789
Int. Cl. C23c 13/00
U.S. Cl. 117—201 14 Claims



A method for forming uniform and smooth surfaces which can be used in any chemical vapor transport system and in general in any deposition system in which chemicals in a gas phase are reacted to cause deposition onto a substrate. A zone of operating conditions exists in which smooth uniform surfaces are obtained, while at the same time ridge growth and defect growth is minimized. By changing substrate temperature and the concentrations of input reactants, ridge growth and defect growth in deposited films are substantially reduced.

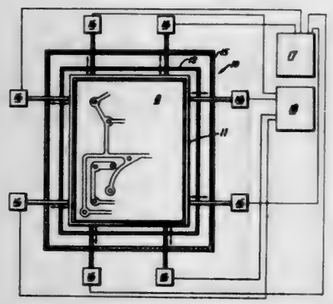
3,661,637
METHOD FOR EPITACTIC PRECIPITATION OF SILICON AT LOW TEMPERATURES
Erhard Sirtl, 809 Adams Drive, Midland, Mich., assignor to Siemens Aktiengesellschaft, Berlin, Germany
Filed Dec. 22, 1969, Ser. No. 887,251
Claims priority, application Germany, Jan. 2, 1969, P 19 00 116.2
Int. Cl. C01b 33/02; H01l 7/36; C23c 11/00
U.S. Cl. 117—201 8 Claims



A method for producing highly pure, monocrystalline silicon layers, with or without dopant additions, upon a wafer shaped substrate body, which comprises thermal dissociating

a gaseous silane compound, and by precipitating silicon upon a heated substrate body located in a reaction chamber. The crystalline structure of the silicon body is exposed e.g. by etching and its surface is flooded by the reaction gas. The silane compound is a dihalogen silane of formula SiH_2X_2, wherein X is chlorine, bromine, or iodine. The thermal dissociation is effected by heating the substrate body at low temperatures, preferably within a temperature range between 600° and 1,000° C.

3,661,638
PROCESS FOR UNIFORMLY COATING PRINTED CIRCUIT BOARD THROUGH HOLES
Bogdan Lesnecha, Dearborn, Mich., assignor to Photocircuits Corporation, Glen Cove, N.Y.
Filed May 26, 1970, Ser. No. 40,682
Int. Cl. B44d 1/18; B05c 11/00, 11/10
U.S. Cl. 117—212 7 Claims



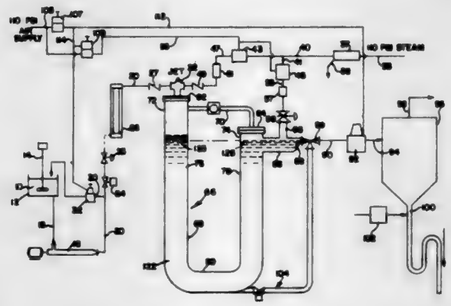
A method and apparatus for leveling and controlling the thickness of conductive material on the walls of the through holes of a printed circuit board and for removing excess conductive material therefrom the steps comprising, immersing a printed circuit board having conductive material deposited in the through holes thereof into a heated bath of a heated conductive material, heating the conductive material in the through holes until said conductive material is in a molten state and, while said conductive material is molten, gyating said circuit board in said bath in a plane substantially normal to the axis of said through holes and thereby causing said molten conductive material to flow circumferentially and axially of said through holes to form a level and uniform coating of said conductive material on the walls of said through holes and cause any excess of said conductive material to flow out of said through holes onto the surfaces of said circuit board; said apparatus including a heated bath of heat conductive material, means for supporting at least one circuit board in said bath and means for gyrating a circuit board supported in said bath in a plane substantially normal to the axis of through holes passing through said board.

3,661,639
SUPERCONDUCTING ELECTRICAL CONDUCTORS
James S. Caslaw, Ilford, England, assignor to The Plessey Company Limited, Ilford, England
Filed Feb. 20, 1969, Ser. No. 800,951
Claims priority, application Great Britain, Feb. 20, 1968, 8,319/68
Int. Cl. B44d 1/18; C23b 9/00; B44d 1/34
U.S. Cl. 117—213 5 Claims

In preparation of superconducting electrical conductors specifically niobium tin alloy, the reaction between niobium and tin is considerably accelerated if the niobium contains about 2,500 parts per million of oxygen before it is coated with tin. This concentration of oxygen does not have a harmful effect on the tape or its critical current density and the time for processing the tape may thus be considerably reduced.



3,661,640
LOOP COOKER
Gene M. Griffith, and Lester P. Hayes, both of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.
Filed Apr. 3, 1970, Ser. No. 25,372
Int. Cl. C13l 1/08
U.S. Cl. 127—28 9 Claims



A continuous cooker having a continuous closed-loop cooking chamber which maintains a constant volume of liquid phase material and a constant volume of gas phase material therein. The cooker is provided with a liquid inlet on one side of the loop, and a common gas and liquid outlet on the other side of the loop. The loop is disposed to provide a lower passageway in which a constant volume of liquid resides, and an upper passageway in which a constant volume of pressurized gas resides. The cooker automatically maintains virtually constant retained-liquid volume regardless of discharge conditions. A gas, i.e., a material which is not condensed at operating conditions is continuously added to the upper passageway.

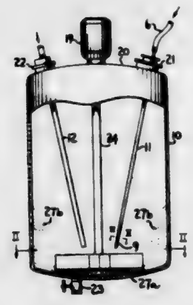
3,661,641
METHOD OF REMOVING POLYURETHANE RESIN PROTECTIVE COATING
Michael Walter Vigh, and Harold Thomas Rocheleau, both of Northridge, Calif.
Filed Aug. 29, 1969, Ser. No. 854,323
Int. Cl. B08b 7/04; C23g 5/02; C11d 7/50
U.S. Cl. 134—6 4 Claims

Method of removing a polyurethane resin protective coating from an assembly which may include various types of circuit components and soldered connections, comprising treating the coating with a composition comprising methyl alcohol, ethyl alcohol and toluene until the resin softens sufficiently, and then stripping the softened resin from the assembly. The composition may also include a small proportion of propanol.

3,661,642
METHOD OF CLEANING BATTERY TERMINALS AND THE LIKE
Joseph Pisaturo, Providence, R.I., assignor to State Battery Co., Inc., Providence, R.I.
Filed Nov. 24, 1969, Ser. No. 879,599
Int. Cl. B08b 30/00
U.S. Cl. 134—28 1 Claim

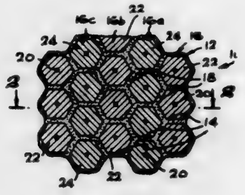
A method for cleaning corrosion off battery terminals and the like consisting of applying an aqueous solution having therein pure fruit dye, sucrose, sodium bicarbonate, benzoate of soda, and vitamin D^3 to the terminal and then flushing with water.

3,661,643
LEAD RING REMOVAL FROM A STEAM STILL
Irvin V. Lytton, Silsbee, and Ruel T. Rogers, Vidor, both of Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 5,320, Jan. 23, 1970, now abandoned. This application Mar. 30, 1971, Ser. No. 129,441
Int. Cl. B08b 3/00
U.S. Cl. 134—34 10 Claims



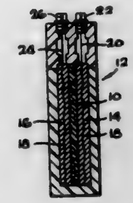
Lead ring deposits formed by the deposition of solid lead particles on steam still surfaces are removed by directing a fluid such as water, maintained at high pressure across an orifice at the surface to be cleaned. Pressures of 2,000 to 10,000 p.s.i.g. are employed across the orifice plate from which the fluid is directed against the surfaces to dislodge or explode the adherent lead ring from the still surfaces quickly and efficiently thereby eliminating the tedious mechanical scraping methods previously employed.

3,661,644
BATTERY CONSTRUCTION HAVING A HONEYCOMB MATRIX WITH CELLS FILLED WITH DIFFERENT ELECTRODE MATERIALS
Frank C. Arrance, Costa Mesa, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.
Filed Dec. 19, 1966, Ser. No. 603,016
Int. Cl. H01n 35/04
U.S. Cl. 136—6 12 Claims



Electrode-separator unit, designed particularly for high energy density batteries, comprising an organic or inorganic honeycomb matrix, preferably formed of a porous ceramic material, a first electrode material such as zinc positioned in some of the cells of the honeycomb matrix and a second electrode material such as silver positioned in other cells of the honeycomb matrix, such electrode materials being separated by the honeycomb wall; and a battery containing such electrode-separator unit.

3,661,645
POLYTETRAFLUOROETHYLENE BATTERY SEPARATOR AND METHOD FOR PRODUCING SAME
Murray P. Strier, Niagara Falls, N.Y., and Joseph S. Smatko, Santa Barbara, Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.
Continuation-in-part of application Ser. No. 6,409, Jan. 28, 1970. This application Apr. 13, 1970, Ser. No. 27,904
Int. Cl. H01m 3/02
U.S. Cl. 136—20 19 Claims



Method for producing an improved battery separator, specifically a microporous polytetrafluoroethylene separator, having high ionic conductivity, and having a highly uniform porous structure, by mixing an aqueous dispersion of a substance which is insoluble in water and which does not precipitate or coagulate polytetrafluoroethylene from aqueous dispersion, e.g., zinc oxide, with an aqueous dispersion of polytetrafluoroethylene, casting a film of such mixture, drying the film, sintering the dried film, forming a polytetrafluoroethylene film with particles of such substance, e.g., zinc oxide, uniformly distributed in such film, and removing the particles of such substance from the polytetrafluoroethylene film, e.g., removing zinc oxide particles from the film by leaching with aqueous alkali. The resulting flexible film or separator produced by such process.

3,661,646
BATTERY PLATE BRIDGE SUPPORT
James H. Barrett, Jr., 3863 Surrey Road, Toledo, Ohio
Filed Aug. 10, 1970, Ser. No. 62,527
Int. Cl. H01m 1/04
U.S. Cl. 136—79 9 Claims

A plurality of parallel bridge supporting rails for the lead plates of a storage battery for location in the bottom of the battery box, which rails are connected together by parallel cross bridging members of lesser height than the rails, whereby mud from the battery plates is free to settle and move under both the rails and the cross bridging members. The rails and cross bridging members are molded as a unit from a reinforced, plastic material which has smooth and rounded upper surface to which mud does not adhere.

3,661,647
SOLID STATE ELECTRIC CELL HAVING STABILIZED RESISTANCE
Boone B. Owens, Calabasas, Calif., and James R. Humphrey, Albany, Oreg., assignors to Gould Ionics, Inc.
Filed Aug. 31, 1970, Ser. No. 68,359
Int. Cl. H01m 11/00, 13/00
U.S. Cl. 136—83 R 11 Claims

A solid state electric cell having a mobile oxidant such as iodine in the cathode, a solid state electrolyte and a suitable

anode containing a material which is capable of reducing the mobile oxidant. The electrolyte contains dispersed therein a material capable of reacting with the mobile oxidant preventing it from reaching the anode. For example, silver can be dispersed in the electrolyte of the cell containing mobile iodine in the cathode such that AgI will be formed dispersed throughout the electrolyte during storage.

3,661,648

PREPARATION OF CUPROUS CHLORIDE ELECTRODES

Gerard Marcel Gerbier, Biard, and Victor Louis Dechenaux, Poitiers, both of France, assignors to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme),, Romainville, France

Filed July 31, 1970, Ser. No. 60,154
Claims priority, application France, July 31, 1969, 6926329
Int. Cl. H01m 13/08
U.S. Cl. 136—120 14 Claims

Electrodes for electrochemical cells are prepared from porous copper-containing carrier bodies by immersion at ambient temperature of such bodies in cupric chloride dissolved in an organic non-aqueous solvent such as methanol and subsequently washed in an organic compound capable of dissolving cupric chloride, e.g. methanol to remove excess cupric chloride and then dried in vacuo.

The porous carrier bodies may be prepared by sintering arborescent copper powder selected from the group consisting of acicular form or dendritic form having an apparent density of between 1 and 2 first molded to desired shape then heated to about 700° C. in a reducing atmosphere for about one half hour. A conductive copper or copper plated support of metal gauge or perforated metal sheet may be incorporated in the powder during molding.

In the alternative the copper carrier body can be molded from such copper powders agglomerated with an organic binder selected from the group consisting of polystyrene, polyethylene and polytetrafluoroethylene and this molded body immersed in cupric chloride dissolved in organic solvent such as methanol, with subsequent washing in organic compound such as methanol to remove excess cupric chloride and ultimate drying in vacuo.

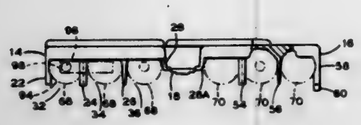
Electrodes and electrochemical cells utilizing said electrodes are also described.

3,661,649

BATTERY PACKAGE

Gordon E. Kaye, South Salem, N.Y., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Apr. 22, 1970, Ser. No. 30,743
Int. Cl. H01m 1/02
U.S. Cl. 136—132 3 Claims



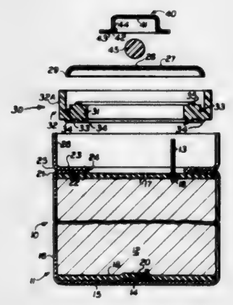
A battery package formed as a single plastic unit, with two side panels, each panel having pockets for accommodating a plurality of electro-chemical cells, and with a hingeing side edge panel joining the two side panels to permit folding the side panels toward each other, and means for holding them in a box structure, with integral end panels hinged at the ends of one side panel for folding to close the ends of the box, and means for holding the plastic box unit closed.

3,661,650

STORAGE BATTERY WITH CLOSURE SEAL AND VENT MEANS

John G. Flynn, New Bedford, Mass., assignor to High Energy Processing Corporation, New Bedford, Mass.

Filed Nov. 6, 1969, Ser. No. 874,576
Int. Cl. H01m 1/02, 1/06
U.S. Cl. 136—133 2 Claims



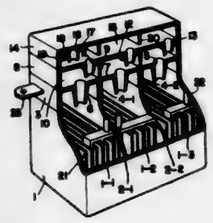
A battery with a closure member sealed in the casing by an annular resilient sealing member. The sealing member has a groove in which the closure member is positioned and an upstanding lip which is crimped over the closure member. A vent valve means is positioned over an opening in the closure member.

3,661,651

NON-SPILLABLE STORAGE BATTERY

Motoharu Nishimura, and Tochihiro Isoi, Takatsuki, both of Japan, assignors to Yuasa Battery Company Limited, Osaka, Japan

Filed Apr. 22, 1970, Ser. No. 30,827
Claims priority, application Japan, Jan. 27, 1970, 45/7601
Int. Cl. H01m 1/02
U.S. Cl. 136—170 3 Claims



This invention relates to a non-spillable battery in which at least three covers, namely, first, second and third covers from the battery container side are mounted in multiple stages on one battery container, said first and second covers are respectively provided with vent tubes in the manner that the tubes depend toward the container side so as not to bring the tubes of both covers into alignment with each other, said third cover being provided with an exhaust passageway communicating with vent openings, said passageway being provided at one end with a small vent tube having a port to communicate with the atmosphere.

3,661,652

APPARATUS FOR INDICATING THE DENSITY OF A FLUID

Gerard Ultenbroek, Stockport, England, assignor to Oldham International Limited, Manchester, England

Filed Aug. 14, 1970, Ser. No. 63,860
Claims priority, application Great Britain, Aug. 18, 1969, 41,191/69
Int. Cl. H01m 45/06; G01n 9/00
U.S. Cl. 136—182 14 Claims



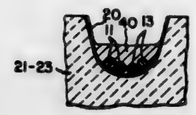
Density indicating apparatus comprises a guide member, a fixed magnet at one end of the guide member, a movable magnet movable up and down the guide member and a detector for detecting changes in position of the movable magnet. The two magnets are arranged one above the other so as to repel each other so that when immersed in a fluid, the second magnet takes up a position dependent on its weight, the magnetic forces acting on it and the buoyancy force due to displaced fluid.

3,661,653

THERMOELECTRIC APPARATUS

David L. Purdy, Indiana; Andrew C. Nyce, and Frederick Forscher, both of Pittsburgh, all of Pa., assignors to Arco Nuclear

Continuation of application Ser. No. 557,513, June 14, 1966, now abandoned. This application Mar. 21, 1969, Ser. No. 809,438
Int. Cl. H01v 1/02
U.S. Cl. 136—212 6 Claims



The thermoelectric tape disclosed is made up of thermoelectric wires as warp and thermally and electrically insulating thread as woof. The woof consists of threads of glass or quartz fibers except at the ends of the warp where cotton, which can be readily stripped, is used. The tape may include two layers, one having thermoelectric positive wires and the other negative wires, with the ends of the wires connected in unlike pairs to form junctions.

3,661,654

PROCESS FOR AUTOGENEOUS FLAME CUTTING

Gerhardt Lange, Frankfurt am Main, Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Germany

Continuation-in-part of application Ser. No. 687,344, Dec. 1, 1967, now abandoned. This application Sept. 4, 1970, Ser. No. 69,974
Claims priority, application Germany, Dec. 7, 1966, P 15 52 944.9
Int. Cl. B23k 7/00
U.S. Cl. 148—9 12 Claims

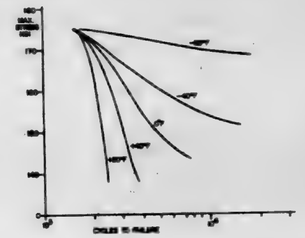
The flame cutting of seams to predetermined depths is characterized by reducing the cutting oxygen pressure more than 50 percent, and preferably 75 percent, of conventional cutting oxygen pressures. The cutting oxygen pressure is preferably 0.1 to 0.5 atmospheric excess pressure.

3,661,655

METALLIC ARTICLES AND THE MANUFACTURE THEREOF

Louis J. Hrusovsky, Bloomfield Hills, Mich., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 681,487, Nov. 8, 1967, now abandoned. This application Nov. 17, 1970, Ser. No. 90,342
Int. Cl. C21d 1/62, 9/02, 7/06
U.S. Cl. 148—12 10 Claims



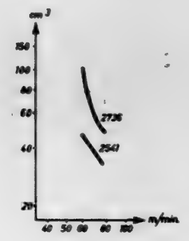
The manufacture of articles from non-austenitic metallic materials by a technique in which the article is formed to essentially its final configuration; cooled; and, while cooled, worked to produce residual compressive stresses in one or more surface portions of the article.

3,661,656

CASE-HARDENED STEEL PRODUCT AND PROCESS FOR ITS MANUFACTURE

Martin Holger Jarleborg, Hedkarravagen, Sweden, assignor to Fagersta Bruks Aktiebolag, Fagersta, Sweden

Filed June 3, 1969, Ser. No. 829,949
Claims priority, application Sweden, June 14, 1968, 8093/68
Int. Cl. C21d 1/78
U.S. Cl. 148—12.1 12 Claims



The product comprises a tough core and at least one hard, carburized surface layer, the core containing 0.01–0.04% C,

2.2–6.0% Mn, 0.5–2.0% Si, up to 0.2% acid-soluble Al, 0.01–0.5% Nb and/or V, with Nb being replaceable by Ta, up to 0.03% N, up to 0.2% Zr, the balance being iron and impurities, the surface layer having a higher carbon content than the core but otherwise the same composition. The product is manufactured by shaping a blank of the aforesaid core composition, the shaping operation being followed by surface carburization and hardening.

3,661,657
METHOD FOR MAKING ALUMINUM SHEET

Winston A. Wong, Livermore, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Dec. 7, 1970, Ser. No. 95,930
Int. Cl. C22f 1/04; C22c 21/00
U.S. Cl. 148—32 3 Claims

A method for forming aluminum sheet material containing 0.5–3.8 percent magnesium, having little or no propensity for forming ripples when subsequently plastically stretched during fabrication said method comprising hot rolling, intermediate annealing to effect substantially complete recrystallization and subsequently cold rolling to final gauge thickness and the product formed thereby.

3,661,658
HIGH-STRENGTH AND HIGH-TOUGHNESS CAST STEEL FOR PROPELLERS AND METHOD FOR MAKING PROPELLERS OF SAID CAST STEEL

Teishiro Oda; Makoto Nakamura, and Masato Zama, all of Nagasaki-shi, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Original application June 5, 1967, Ser. No. 643,679, now abandoned. Divided and this application Oct. 8, 1969, Ser. No. 864,898
Int. Cl. C21d 9/50; B23p 15/04
U.S. Cl. 148—127 3 Claims

A method of making a high strength, high toughness cast steel marine propeller comprised of not more than 0.25 percent of carbon, not more than 1 percent of silicon, not more than 3 percent of manganese, from 5–20 percent of chromium, from 1–8 percent of cobalt, and from 0.5–7 percent of one or both of molybdenum and tungsten, and the remainder consisting of iron. In addition, the cast steel may contain up to 8 percent of nickel and up to 4 percent of copper, depending on the conditions. The method comprises casting the propeller into individual sections, welding said sections together, heating to a temperature of 800° to 1,000° C. and air cooling. The propeller can be aged by heating to a temperature between 450° and 700° C. If desired, the individual cast sections can be annealed prior to welding.

3,661,659
GELLED ACIDIC EXPLOSIVE COMPOSITIONS

Cyril J. Breza, Thorofare, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

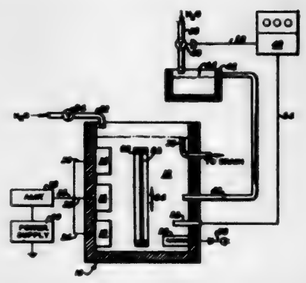
Filed Oct. 13, 1969, Ser. No. 865,983
Int. Cl. C06b 7/00
U.S. Cl. 149—19 9 Claims

Gelling aqueous acidic compositions with a polymer having pendent amide or nitrile functions crosslinked by a monomer containing a plurality of amide or amine groups bonded to methylene or polymethylene through the amide or amine nitrogen, and a process for their preparation. The gelling system of this invention finds particular utility in explosive compositions based on an oxidizing agent and one or more fuels or sensitizers.

3,661,660
METHOD FOR ULTRASONIC ETCHING OF POLYMERIC PRINTING PLATES

Ferrest A. Wessells, Baltimore, and Donald P. Gush, Hyattsville, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Original application Oct. 3, 1968, Ser. No. 764,849, which is a continuation-in-part of application Ser. No. 707,299, Feb. 21, 1968, now abandoned. Divided and this application Aug. 31, 1970, Ser. No. 68,257. The portion of the term of the patent subsequent to Oct. 4, 1987, has been disclaimed.
Int. Cl. B41n 3/02; C23g 1/00
U.S. Cl. 156—14 3 Claims

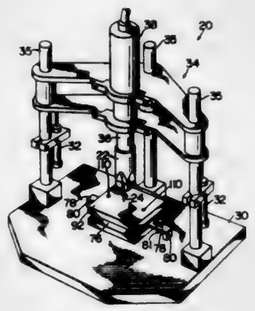


The invention disclosed is a method for ultrasonic etching of polymeric printing plates. The method includes an etching bath energized by means of ultrasonic energy, a water spray bath, and an air dryer. The method for ultrasonic etching of polymeric printing plates includes the steps of immersing a polymeric printing plate in an etching bath, energized by ultrasonic energy, washing the polymeric printing plate in a water spray cleaning bath after ultrasonic etching, and air drying the water washed polymeric printing plate in a current of heated air.

3,661,661
SONIC WELDING APPARATUS HAVING UNIVERSAL ALIGNING MEANS

Walter J. Berleyoung, Goshen, Ind., assignor to Robertshaw Controls Company, Richmond, Va.

Original application June 5, 1967, Ser. No. 643,716, now Patent No. 3,506,511. Divided and this application Dec. 9, 1969, Ser. No. 879,978
Int. Cl. B32b 31/16; B29c 27/08
U.S. Cl. 156—580 12 Claims

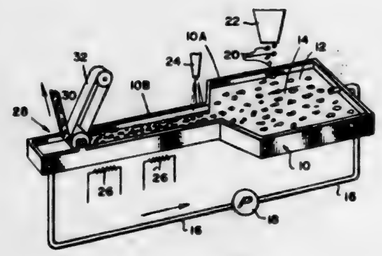


This application discloses an apparatus and method for sonically welding a plurality of thermoplastic relatively flat members or plates. A sonic signal producing element or horn presses and imparts welding sonic signals to one of the flat members. A holding fixture holds one or more of such flat members. A base supports the holding fixture, and universal supporting joint means are provided between the holding fixture and the base. Such universal supporting joint means may include a relatively large spherical ball which is received in recesses in the holding fixture and in the base. This construction equally distributes the main part of the force of the horn over the entire surface of the parts to be welded together between the flat members or plates.

3,661,662
COMPOSITE MATERIALS WITH FLAKE REINFORCEMENT

Lloyd R. Allen, Belmont, Mass., assignor to National Research Corporation, Newton Highlands, Mass.

Continuation of application Ser. No. 630,725, Apr. 13, 1967, now abandoned. This application Apr. 16, 1970, Ser. No. 28,232
Int. Cl. B32b 5/16
U.S. Cl. 156—62.2 2 Claims



Silicon carbide or boron carbide flakes are floated on a liquid bath, fixed into a sheet and formed into sheet laminates useful as high modulus structural composites. This assures a planar orientation and high packing factor of the reinforcing flake in the composite.

3,661,663
METHOD OF PRODUCING SILICEOUS FIBER CORROSION INHIBITING COMPOSITES

Richard F. Shannon, Lancaster, Ohio, assignor to Owens-Corning Fiberglas Corporation

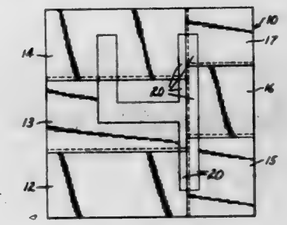
Filed Aug. 21, 1968, Ser. No. 754,496
Int. Cl. B29j 5/00
U.S. Cl. 156—62.4 7 Claims

A method of producing siliceous fiber containing composites which inhibit chloride ion stress corrosion of stainless steel. The method comprises the production of a siliceous fiber batt, the fibers of which form the reinforcing structure of the insulation material, but which fibers will not of themselves inhibit the chloride ion stress corrosion. Alkali metal silicates having an alkali metal to silicate ratio of between 3.75 and 7.5 to 1, and which inhibit the corrosion, are bonded to the skeletal structure of the fibers with a porous binder to both rigidify the fibers and retain the corrosion inhibiting material. In the preferred method of producing the composite, the alkali metal silicate and binder are incorporated with the fibers during the forming process, and the binder is, thereafter hardened to simultaneously form the rigid composite and secure the alkaline metal silicate to the structural skeleton of the fibers. In a less preferred arrangement, the fibers are bonded together with an organic binder, which is then cured, and a slurry of inorganic cementitious material, incorporating the alkali metal silicate, is sucked into the bonded fiber skeleton and hardened to produce the composite.

3,661,664
METHOD OF PRODUCING A SPLICED PICTORIAL

Raymond C. Lundell, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 11, 1969, Ser. No. 798,376
Int. Cl. B44c 1/00
U.S. Cl. 156—63 1 Claim

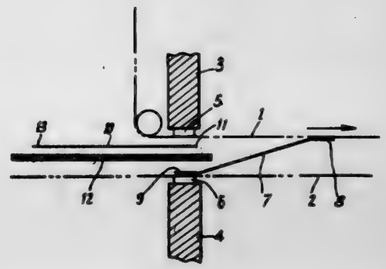


Method of producing a spliced pictorial on transparent plastic film for application to large internally illuminated signs involving the steps of sectionalizing the pictorial, appropriately four-color printing each sectional while leaving a different two-color border on each of adjacent sectionals, and overlap splicing adjacent borders in registry to provide an inconspicious splice.

3,661,665
METHOD OF MANUFACTURING A COMPOSITE WEB

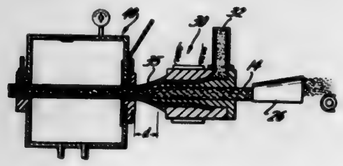
Pierre Froget, Nemours, France, assignor to "GRIESSER", Carros (Alpes Maritimes), France

Filed Aug. 20, 1969, Ser. No. 851,599
Claims priority, application France, Aug. 22, 1968, 163771
Int. Cl. E06b 9/26, 9/303
U.S. Cl. 156—65 1 Claim



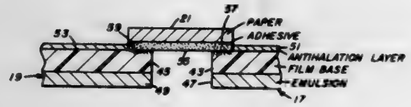
This invention is concerned with a method of continuously manufacturing a composite web comprising two flexibles superposed sheets assembled at spaced intervals by parallel flexible strips secured by their edges to the pair of superposed sheets so that a movement of the parallel strips can be obtained by moving said superposed sheets in relation to each other, this method consisting in causing the pair of sheets and their intermediate strips to be fed continuously between the pressure members of a heat-welding set while welding each edge of the intermediate strip only to the single sheet to which this edge is to be secured, an insulating sheet being interposed between the strip and the sheet to which this strip is not to be welded, for preventing the intermediate strip from being welded simultaneously to both sheets of the composite web without welding said insulating sheet to the elements between which it is inserted.

3,661,666
METHOD FOR MAKING SWAB APPLICATORS
Coleman Arthur Foster, and David Johnston Taylor, both of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.
Filed Aug. 6, 1970, Ser. No. 61,541
Int. Cl. B65b 7/00
U.S. Cl. 156—69 14 Claims



Swab applicators are made by extruding a plastic tube over a resilient mass of absorbent material. One end of the composite product is capped in such manner that when the cap is removed a portion of the absorbent material will be exposed to provide a swab tip. The applicator is then filled with a medicament or antiseptic fluid and the other end is sealed.

3,661,667
ULTRASONIC FILM SPLICING METHOD
Ray E. Gardner; William W. Voelckers, both of Rochester, and George T. Negus, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 23, 1968, Ser. No. 785,913
Int. Cl. B29c 27/08; B37b 31/18
U.S. Cl. 156—73 1 Claim



A method and apparatus for splicing two lengths of film by placing over the ends of said lengths a tape having a coating comprising a thermoplastic resin, and applying ultrasonic energy simultaneously to the overlapping portions. The apparatus includes trimming knives, and a gap to receive the knives where they will be out of the way of the ultrasonic horn.

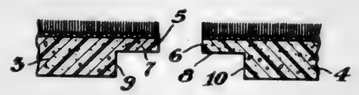
3,661,668
METHOD OF MAKING A PNEUMATIC TIRE WITH REDUCED SUSCEPTIBILITY TO BLOW OR BLISTER DEFECTS
William C. Gallagher, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Original application Sept. 12, 1967, Ser. No. 667,244, now Patent No. 3,552,468. Divided and this application Apr. 1, 1970, Ser. No. 31,453
Int. Cl. B29h 17/28
U.S. Cl. 156—133 5 Claims

Pneumatic tires and like mold-cured cord reinforced elastomeric articles are rendered less susceptible to blow or blister defects by combining with the continuous filament strength cord auxiliary gas receiving voids provided by a small yarn of staple fiber thereby increasing the total voids volume and enabling contained air or gas to be safely retained within the tire or article.

The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawing and the following detailed description.

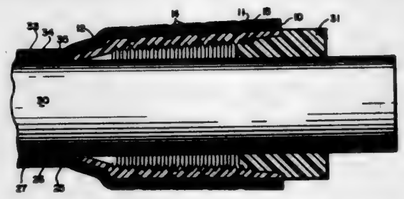


3,661,669
METHOD OF JOINING PIECES OF MATERIAL
James N. Cairns, Herrliberg, Zurich, Chur, Switzerland, assignor to The Dow Chemical Company, Midland, Mich.
Filed Jan. 19, 1970, Ser. No. 3,965
Int. Cl. B65h 69/02
U.S. Cl. 156—157 12 Claims



Pieces of material having a layer of foam adhered to one surface, for example, a foam-backed carpet, are joined by compressing permanently a narrow strip adjacent an edge of each piece of the material to be joined, butt-contacting those edges, joining together the two abutting edges to form a recessed portion and concurrently or subsequently inserting into the recessed portion and adhering thereto a strip of resilient foam having about the same thickness as the recessed portion so that the overall thickness of the foam where the pieces are joined is substantially the same as of other portions of the foam.

3,661,670
METHOD OF FORMING FIBER GLASS PIPE WITH INTEGRAL JOINT THREAD
William H. Pierpont, Jr., Wichita, Kans., assignor to Koch Industries, Inc., Wichita, Kans.
Original application Sept. 30, 1968, Ser. No. 763,564, now Patent No. 3,495,627. Divided and this application Sept. 15, 1969, Ser. No. 870,965
Int. Cl. B65h 81/00
U.S. Cl. 156—172 8 Claims



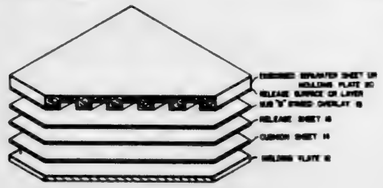
Glass reinforced plastic pipe having preformed threads integrally disposed therein formed by: (1) molding threaded portions wherein the outer surface is preferably corrugated or irregular and which tapers down to the inside diameter of the pipe to which the thread is to be attached; (2) mounting said molded thread on the end of a mandrel; and (3) forming a pipe on said mandrel by providing pretensioned filamentous reinforcements longitudinally and helically disposed thereon and imbedded in a cured resin. The described tapered portion and corrugated portion of the thread is overwound with the above-mentioned helical and longitudinal filamentous material.

3,661,671
METHOD OF MANUFACTURING AN IMPROVED SIMULATED LEATHER AND THE LEATHER PRODUCT MANUFACTURED THEREFROM
Keizo Katagiri; Kenji Kuroishi; Kazuchika Nakamura, and Katsutoshi Hagiwara, all of Katsuta, Japan, assignors to Nippon Kakoh Seishi K.K., Tokyo, Japan
Filed Feb. 20, 1970, Ser. No. 13,207
Claims priority, application Japan, Feb. 21, 1969, 44/12513
Int. Cl. B32b 5/18
U.S. Cl. 156—78 7 Claims

Method of manufacturing an improved simulated leather and the product leather are described. In the method, a low-foam polyolefin sheet is quenched immediately after its emergence from an extrusion die and the quenched side of said sheet is subjected to corona discharge.

An adhesive agent is applied to the treated side and, after drying, a thermoplastic synthetic resin film or sheet is laminated to said surface.

3,661,672
METHOD OF FORMING HIGH PRESSURE DECORATIVE LAMINATES HAVING REGISTERED COLOR AND EMBOSSING
John E. McQuade, Jr., Baltimore, Md., assignor to Esso Research and Engineering Company
Filed July 17, 1970, Ser. No. 62,780
Int. Cl. B44c 1/24; B44m 1/24
U.S. Cl. 156—220 8 Claims



High pressure decorative laminates having registered color and embossing are provided by temporarily laminating a sheet impregnated with an incompletely B-staged melamine resin to an embossed plate and simultaneously embossing such sheet throughout its thickness, by then printing a design on the exposed surface of the now embossed sheet in registry with the embossing thereon, and using this temporary laminate in the production of a high pressure laminate whereby the melamine resin impregnated and color coated sheet is transferred from the embossed plate during lamination.

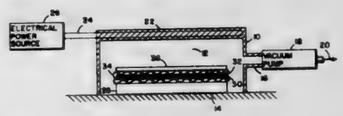
3,661,673
METHOD OF MAKING PLASTIC LAMINATE HAVING HIGH ABRASION RESISTANCE
John B. Merriam, Carpentersville, Ill., assignor to Woodall Industries Inc.
Filed May 1, 1969, Ser. No. 820,993
Int. Cl. B32b 31/00
U.S. Cl. 156—279 5 Claims

A process for making a resin impregnated laminated sheet material and the resultant laminate produced therefrom which is provided with an abrasion-resistant surface layer comprising a cured resin incorporating a controlled quantity of substantially spherically shaped transparent glass beads of controlled size which are distributed substantially uniformly through the surface layer.

3,661,674
METHOD FOR THE MANUFACTURE OF FLEXIBLE SHEET MATERIALS
Maurice William Higgs, Pelsall, and Dennis Ivor Clarke, Erdington, both of England, assignors to Dunlop Holdings Limited, London, England
Continuation of application Ser. No. 625,002, Mar. 22, 1967, now abandoned. This application Oct. 9, 1970, Ser. No. 79,679
Claims priority, application Great Britain, Apr. 6, 1966, 15,413/66
Int. Cl. B32b 31/12, 31/26
U.S. Cl. 156—280 13 Claims

To form a flexible leather-like sheet material a compressed sheet of cellular material is adhered to one or each surface of the resulting assembly, the binder is allowed to permeate and impregnate the assembly and the impregnated assembly is heated to set the binder. The term "fibrous material" is breadly defined in order to include also cellular non-fibrous materials.

3,661,675
METHOD OF USING POLYETHYLENE TEREPHTHALATE AS A BONDING ADHESIVE
Jozef Frankowski, La Jolla, Calif., assignor to General Dynamics Corporation, San Diego, Calif.
Filed Oct. 30, 1968, Ser. No. 771,902
Int. Cl. B29c 17/00
U.S. Cl. 156—285 3 Claims



A method of bonding a sheet or film of polyethylene terephthalate to another sheet of polyethylene terephthalate or in employing a sheet of polyethylene terephthalate as a high strength adhesive for bonding materials together wherein the sheet or sheets of polyethylene terephthalate are placed in pressure contact with each other or in pressure contact with materials to be bonded together, in a continuously evacuated environment and are heated to a temperature sufficient to out gas impurities from the polyethylene terephthalate sheets and fuse the sheets to the adjacent surface.

3,661,676
PRODUCTION OF SINGLE CRYSTAL ALUMINUM OXIDE
Philip Wong, Boston, and Donald R. Messier, Marblehead, both of Mass., assignors to The United States of America as represented by the Secretary of the Army
Filed May 4, 1970, Ser. No. 34,290
Int. Cl. B29c 19/00
U.S. Cl. 156—304 3 Claims

A method for the production of large single-crystals of Al_2O_3 comprising the positioning of several small single-crystals of Al_2O_3 on a substrate in a chamber, the catalytic oxidation of $AlCl_3$ in the presence of water vapor in the chamber and adjacent to the surfaces of the small single-crystals of Al_2O_3 to form Al_2O_3 and HCl gas. The produced Al_2O_3 being deposited on the surfaces of the small single crystals of Al_2O_3 to form a large single-crystal of Al_2O_3.

3,661,677
POST-HEAT TREATMENT FOR POLYVINYLIDENE CHLORIDE-COATED FILM

James C. Wang, Kendall Park, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 10, 1969, Ser. No. 865,335
Int. Cl. C09j 5/00
U.S. Cl. 156—315 2 Claims

In the preparation of a laminate of polyvinylidene chloride-coated nylon film with polyethylene film, the polyvinylidene chloride-coated nylon film is heated to at least about 110° F. for a period of time prior to applying adhesive for the lamination. This post-heat treatment of the coated nylon affords a laminate with very low retained solvent level without the need for lengthy storage. The product is suitable for packaging food products.

3,661,678
METHOD OF PREPARING A HEAT-SENSITIVE SHEET FOR USE IN STENCIL

Kubo Keishi, Kanagawa-ken; Sakai Kiyoshi, Tokyo, and Miyabe Shuichi, Chiba-ken, all of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

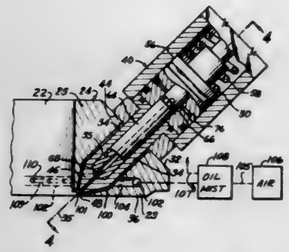
Filed June 25, 1969, Ser. No. 836,286
Claims priority, application Japan, July 3, 1968, 43/45842
Int. Cl. C09j 5/00
U.S. Cl. 156—322 4 Claims

A method of preparing a heat-sensitive stencil sheet comprising the steps of; making a thermoplastic resin film consisting essentially of vinylidene chloride-vinyl chloride copolymer in contact with the surface of a heating roll having a surface temperature at 80°–110° C so as to heat the film and to move said film forward to the next step of processing, cooling said film immediately after it leaves the surface of the heating roll, and then laminating said film to a supporting sheet made of a thin sheet of porous paper by means of an interposed adhesive binder.

3,661,679
ADHESIVE APPLICATOR FOR PLYWOOD PATCHING MACHINE

Raymond Thomas Law, Salinas, Calif., assignor to Lockwood Technical, Inc., Sand City (Seaside), Calif.

Filed Sept. 8, 1970, Ser. No. 70,426
Int. Cl. B32b 35/00; B27f 4/00; B05b 1/08
U.S. Cl. 156—356 10 Claims

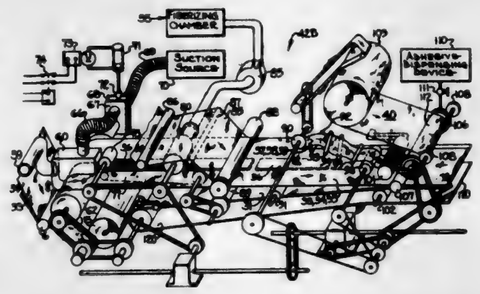


A conventional plywood patching machine is modified to permit accurately controlled application of adhesive directly to the interface between patch and ply. Nozzle applicators are built into the hold-down ring of a patching machine in a manner that requires minimum modification of other parts of the machine. A particularly effective nozzle and valve structure is described, responsive to pressure pulses and effectively compensating pressure and viscosity variations. A pulsed air jet spreads the adhesive. A release agent is applied via an airstream to prevent buildup of adhesive on the mechanism.

3,661,680
APPARATUS FOR SUCCESSIVELY FORMING DISPOSABLE DIAPERS

Graves T. Gore, Aiken, S.C., assignor to Riegel Textile Corporation, Ware Shoals, S.C.

Filed Mar. 9, 1970, Ser. No. 17,594
Int. Cl. B31f 7/00
U.S. Cl. 156—467 19 Claims

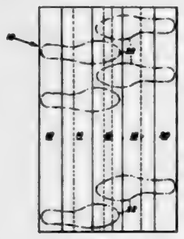


An apparatus for successively forming disposable diapers including means for supplying an elongate moisture absorbent pad and for feeding it along a predetermined longitudinal path of travel, means for supplying and positioning an elongate fluid permeable front cover sheet in superimposed relation to one side of the pad and means for supplying and positioning an elongate backing sheet in superimposed relation to the other side of the pad. Means are provided for receiving and feeding the superimposed front cover sheet, pad and backing sheet along a predetermined longitudinal path of travel, while additional means cooperate therewith for longitudinally sealing the side portions of the superimposed components, for transversely sealing the superimposed components at predetermined longitudinally spaced intervals to form successively interconnected diapers and for severing the same along successive transverse seals to form individual diapers.

3,661,681
APPARATUS FOR ASSEMBLING INSOLE STRIPS

Alan K. Edelberg, Cincinnati, Ohio, and Roy T. Swanfeldt, Burlington, Mass., assignors to The United States Shoe Corporation, Cincinnati, Ohio

Filed Sept. 18, 1969, Ser. No. 859,143
Int. Cl. B32b 31/12, 31/20
U.S. Cl. 156—546 41 Claims

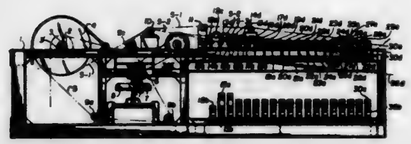


A machine for assembling diverse strip materials into a composite edge-laminated sheet from which insoles for shoes can be cut is disclosed. Stacks of insole strip materials are arranged on aligned, side by side loading platforms in a feeder portion of the machine. Adjacent edges of contiguous strips may be beveled to permit edge bonding by the machine into a single, composite, flat sheet. A vacuum device in the feeder portion picks up the top strips from each stack and delivers them to corresponding parallel endless belts. The strip from the centrally located loading platform and the strips from the two adjacent platforms are delivered to a first adhesive station where a hot melt adhesive is applied to the edges of the central strip or the corresponding inside edges of the outer strips. After passing the adhesive section, the strips are delivered to an assembly station where the two adjacent strips are moved laterally into alignment with the edges of the central strip. The three strips are then bonded together by being passed through suitable nip and pressure rolls. The resultant intermediate sheet is passed through a second adhesive section, where adhesive is applied to the outer edges, or the corresponding inside edges of the remaining strips, and then passes to a second assembly section. The remaining outer strips are then aligned with the edges of the intermediate sheet for joining by passing through a second set of nip and pressure rolls. The finished composite sheet is then delivered to a stacking station and subsequently may be cut into individual insoles of the desired size and composition.

3,661,682
APPARATUS FOR FABRICATING CYLINDRICAL TUBES FOR RAISING AND TRANSPLANTING SEEDLINGS OF FARM CROPS

Yoshio Shoji; Toshiaki Kobayashi, and Tadao Kudo, all of Hokkaido, Japan, assignors to Nippon Tensai Seito Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 9, 1969, Ser. No. 883,454
Claims priority, application Japan, July 23, 1969, 44/58573
Int. Cl. B32b 31/08
U.S. Cl. 156—548 7 Claims



An apparatus useful in the production of the paper pot assembly for raising and transplanting the seedlings of farm crops, said paper pot assembly comprising a plurality of cylindrical pots each having a square configuration in section. The apparatus comprises means for applying equidistantly spaced parallel lines or a wide strip of adhesive to one-half the width of one side of each flattened tube, tape-gathering means for converging a plurality of the flattened tubes thus applied with the adhesive to superpose consecutively the flattened tubes on one another in such a manner that two adjacent flattened tubes are disposed in a transversely staggered relation to one another with adjacent tubes overlapping by one-half their width. A combined regulating and guide means controls the travel of the flattened tubes and guides them into pressure rollers where the flattened tubes are adhered together while correctly keeping the staggered or overlapped relation.

3,661,683
PATCH PRESS

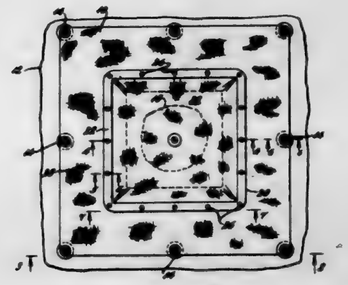
Harry C. Engel, and Edward J. Ardolino, both of Harve de Grace, Md., assignors to Airline Systems, Inc., Harve de Grace, Md.

Filed Nov. 3, 1970, Ser. No. 86,437
Int. Cl. B30b 9/22; B29b 19/00
U.S. Cl. 156—580 10 Claims

The present invention relates to a patch press, particularly but not exclusively adapted to use in repairing airplane surfaces by adhesively patching a double plate over the damaged area.

The patch press itself involves a longitudinally split rectangular frame that has clamped therein a cover member which may be heavy duty fabric such as canvas that extends across the framed area and beyond and which serves to carry a plurality of suction cups at the periphery thereof so that the press may be mounted on and adhered to the undamaged surface around the region to be patched with the patch inside the frame. Sealed inside the frame and secured thereto is an inflatable, suitably valved diaphragm into which air or other gas can be pumped. That portion of the cover member inside the framed area acts as an outside reinforcement for the inflatable diaphragm, so that the forces generated when inflatable diaphragm is inflated and beats against the patch are transmitted directly to the suction cups.

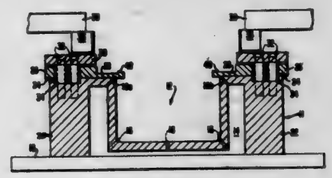
The patch press is a portable, essentially self-contained unit which can be employed to hold a patch onto an airplane surface and to maintain the patch there under pressure long enough for the adhesive bond to cure.



3,661,684
APPARATUS FOR PRODUCING A PADDED ARTICLE

John Rallis, Marion, Ind., and James C. Dillon, Santa Ana, Calif., assignors to The General Tire and Rubber Company

Continuation of application Ser. No. 673,343, Oct. 6, 1967, now Patent No. 3,587,284. This application July 15, 1969, Ser. No. 61,524
Int. Cl. B30b 15/34; B32b 31/20; B29c 27/06
U.S. Cl. 156—583 5 Claims

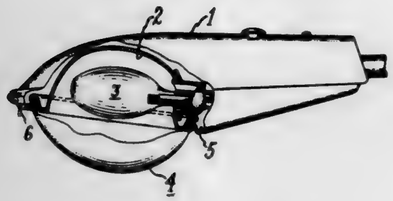


The hereinafter specification discloses an apparatus for forming, filling and closing a padded article. The article is provided with a hidden seam and is suitable for use as a cushion, chair seat, chair back, automobile crash pad, or the like. According to the invention, a cover sheet of plastic material is plug formed into a die cavity such that a pocket is created in the sheet. The pocket is filled with a foam padding and a rigid support member. A plastic cap sheet is applied and head sealed to the cover sheet using sliding seal bars to hide the seam and to close the article.

3,661,685
LAMINATED ASSEMBLY OF POLYCARBONATE AND POLYACRYLATE RESIN SHEETS AND METHOD OF MAKING THE SAME

Mitchell M. Osteen, Zirconia, N.C., assignor to General Electric Company

Filed Oct. 28, 1968, Ser. No. 771,107
Int. Cl. H01k 5/00; B32b 27/30
U.S. Cl. 161—1 11 Claims



Transparent globe for street lighting luminaires comprises a laminated assembly of superposed sheets of polycarbonate resin and polyacrylate resin having an ultraviolet absorbing compound incorporated preferably in the polyacrylate resin sheet.

3,661,686
TRANSPARENT LAMINATED STRUCTURE OF REDUCED SPECULAR REFLECTANCE

Ramsey C. Armstrong, Pacific Palisades, Calif., assignor to The Sierracin Corporation, Sylmar, Calif.

Filed Apr. 27, 1967, Ser. No. 634,297
Int. Cl. G02b 1/10, 5/26
U.S. Cl. 161—2 14 Claims



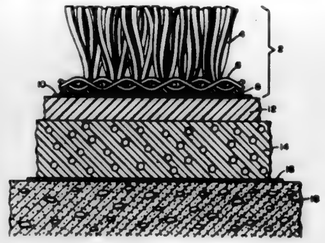
A laminated structure, transparent or adapted to be made transparent, having an intermediate layer of reflective material following the contours of the roughened surface of a first layer, thus reducing the specular reflectance and mirror-like imaging properties of the intermediate layer, and a thermoplastic layer disposed next to the intermediate layer with the surface of said layer adjacent the intermediate layer following the contours thereof.

3,661,687
ARTIFICIAL GRASS SPORTS FIELD

Arthur F. Spinney, Jr., Saugus, and Lawrence J. Warnalis, West Medford, both of Mass., assignors to American Biltrite Rubber Co., Inc., Chelsea, Mass.

Filed Apr. 29, 1970, Ser. No. 32,986
Int. Cl. A63c 19/04; E01c 13/00
U.S. Cl. 161—21 7 Claims

The invention is a composite sports field in which the top surface is artificial grass, the next layer (down) is a layer of shock dissipating material, the next layer is a shock-absorbing material, and the bottom layer is a foundation which



preferably is an asphalt composition suitably crowned to effect proper drainage.

3,661,688
COMPOSITE BOARD LAMINATE

Robert G. Wheeler, Corvallis, Oreg., assignor to Wood Process, Oregon Ltd., Corvallis, Oreg.

Filed Feb. 18, 1970, Ser. No. 12,356
Int. Cl. B32b 3/02, 3/30
U.S. Cl. 161—37 9 Claims

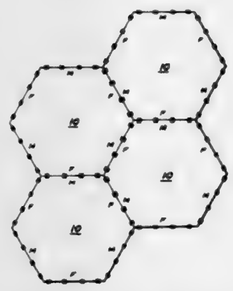


A composite board product according to the present invention is formed from a core of coarse wood components disposed between a pair of cellulosic fiber webs. This assembly is compressed to consolidate the board product and to provide an indented margin thereupon. The board product is provided with a rounded shoulder where the margin joins the rest of the product in order to preserve the continuity of the tough skin formed by a cellulosic fiber web. The margin edge is preferably rounded off on the side of the board product opposite the indented margin, and the tough skin formed by the remaining cellulosic fiber web is folded over. After trimming, only a narrow edge of doubly densified wooden core is exposed to the weather.

3,661,689
ASSEMBLED CAMOUFLAGE MATERIAL OF INTERLOCKED SEPARATE UNITS

Joseph A. Spanier, 245 South Van Ness Ave., San Francisco, Calif.

Filed Sept. 23, 1968, Ser. No. 761,690
Int. Cl. B32b 3/10
U.S. Cl. 161—37 4 Claims



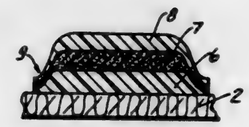
Flexible material in sheet form suitably decorated for military camouflage purposes provided in separate units or

modules of hexagonal configuration with male and female fastening devices arranged in alternate groups which are coextensive with sides of the hexagon to facilitate ready connection of a plurality of modules with the edges of each connected to edge of others to provide a large, continuous sheet having camouflage characteristics.

3,661,690
FLOATABLE WASHCLOTH

Michael A. Taranto, 93 Van Horn St., Demerest, N.J.

Filed May 11, 1970, Ser. No. 36,088
Int. Cl. B32b 3/02; A47k 7/02
U.S. Cl. 161—39 7 Claims



A layer of terry material has superimposed upon one side thereof a layer of fluid-impermeable synthetic plastic sheet material covering at least a portion of this one side. A layer of resiliently compressible spacing material is superimposed upon the sheet material and an additional layer of fluid-impermeable synthetic plastic sheet material is superimposed upon the spacing material and is adhered across the intervening layers to the terry cloth along at least one circumferentially complete annular zone inwardly of the edges of the layer of spacing material and the layers of synthetic plastic material, so that the terry cloth is provided with a three-dimensional resilient applique which constitutes at least within the confines of the aforementioned zone a flotation aid for the washcloth so that the same will float in liquid.

3,661,691
FLAME-RETARDANT VINYL FOAM CARPET AND METHOD

David K. Sloaberg, Atlanta, Ga., assignor to Pandel-Bradford, Inc., Lowell, Mass.

Filed Dec. 28, 1970, Ser. No. 101,552
Int. Cl. D05c 17/00; B29c 27/00; C09j 5/00
U.S. Cl. 161—67 22 Claims

A flame-retardant vinyl resin-backed surface covering; e.g., tufted carpet, which carpet is characterized by enhanced flame resistance and reduced flammability-rate characteristics in that the vinyl backing is securely bonded to the tufted base and the thermoplastic primary backing is inhibited from shrinking and cracking under conditions of open-flame ignition. A vinyl foam-backed tufted carpet is prepared by applying a carboxylated cross-linkable vinyl chloride resin composition to the back surface of a thermoplastic backing sheet containing a pile face surface of tufted yarns; heating the plastisol composition to cross-link the vinyl chloride resin and to bond the tufted yarns to the thermoplastic base fabric while maintaining the temperature below the shrinkable temperature of the base fabric; and laminating the foam vinyl backing to the surface of the cross-linked vinyl chloride resin composition.

3,661,692
COATED FABRICS

Charles N. Berczi, Ormskirk, England, assignor to Deering Milliken Research Corporation, Spartanberg, S.C.

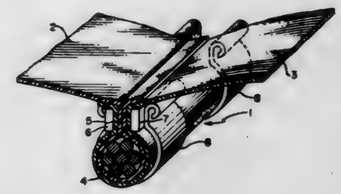
Filed Nov. 25, 1968, Ser. No. 816,849
Claims priority, application Great Britain, Nov. 25, 1968, 53,619/67; 53,620/67
Int. Cl. D03d 15/00; B32b 27/02
U.S. Cl. 161—89 18 Claims

multi-ply An elastomer coated, open weave, square woven fabric of milti-ply cords including continuous filament, organic, synthetic fibers, in which both the cords and their component plies have a twist in the range of 3 ½ to 45 turns per inch.

3,661,693
REINFORCED SEAM FOR SHEET MATERIAL

Robert M. Pierson, Hudson, Ohio, assignor to Environmental Structures, Inc., Cleveland, Ohio

Filed Aug. 18, 1969, Ser. No. 850,826
Int. Cl. B32b 7/08, 3/06, 3/04
U.S. Cl. 161—101 6 Claims



A seam for joining together the marginal edges of two sheets of flexible material, such as plastic or fabric, in which the edges are wrapped around a cable or other reinforcing member and clamped in the wrapped position to provide a leak-proof seam without the use of adhesives, sewing, heat sealing or other conventional fastening means. The sheets may, as an alternative, be wrapped around a filler member, then clamped to a reinforcing member. This seam is useful on inflatable buildings and other similar structures.

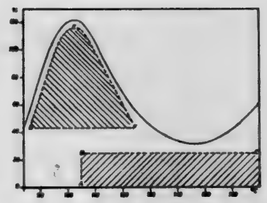
ERRATUM

For Class 161—109 see:
Patent No. 3,661,625

3,661,694
BIDIRECTIONALLY ORIENTED CORRUGATED PLATES

Jean Francois Bequet, Brussels; Roger Van Asbroeck, Neerijse, and Paul Du Bois, Braine-l'Alleund, all of Belgium, assignors to Solvay & Cie, Brussels, Belgium

Filed Dec. 30, 1970, Ser. No. 102,607
Claims priority, application Belgium, Dec. 31, 1969, 83421
Int. Cl. B32b 3/28, 3/30
U.S. Cl. 161—133 8 Claims



Corrugated plates are made of polyvinyl chloride resin, and are bidirectionally oriented in such a manner that an element which is sampled therefrom presents a retraction of at least 30 percent along the two main axes of the plates after a residence of 8 hours in an oven kept at 140° C. The plates have a resiliency in tension at 20° C in excess of 650 cm kgf/cm² and a resiliency in prestressed condition in excess of 300 kfg/cm². They are resistant at 4° C to impacts caused by boxwood balls of 200 mm diameter which are projected perpendicularly against the surface of said plates at a speed such that their kinetic energy is 0.105 m kgf.

3,661,695

TWO WATER SOLUBLE FILMS CONNECTED TO EACH SIDE OF A WATER IMPERVIOUS SYNTHETIC MEMBRANE

Julius F. T. Berliner, Chicago, Ill., assignor to M. D. Industries, Inc., Chicago, Ill.

Filed May 19, 1970, Ser. No. 38,777
Int. Cl. B32b 5/10, 7/10, 23/08
U.S. Cl. 161—151 14 Claims



Two sheets of water soluble film are cemented together with a waterproof adhesive which forms a thin membrane. If either side of the laminated film is exposed to water, that side is dissolved quickly, but the membrane prevents the other side from becoming wet. The other water soluble side provides a mechanical strength, adequate to support the weight of water or other substances resting on the membrane. When the laminate is discarded into a water substance, the other side dissolves leaving only the membrane which is too weak to survive as a mechanical structure.

3,661,696

ETHYLENE-VINYL ACETATE COPOLYMER ADHESIVE COMPOSITION AND METHOD OF PREPARATION

Gaylen M. Knutson, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Sept. 30, 1970, Ser. No. 77,018
Int. Cl. C08f 15/02, 37/18, 1/13
U.S. Cl. 161—204 16 Claims

A process for the production of an aqueous emulsion of an ethylene-vinyl acetate copolymer is disclosed wherein the polymerization is performed in the presence of a preformed seed emulsion and a mipor amount, from 1.5 to 6 weight percent, of a protective colloid comprising a mixture of fully and partially hydrolyzed polyvinyl acetate. The seed emulsion is comprised of from 25 to 63 weight percent of ethylene-vinyl acetate copolymers which contain from 1 to 20 weight percent ethylene and from 1 to 5 weight percent of a partially hydrolyzed polyvinyl acetate. The polymerization is performed under an ethylene pressure of from 100 to 1,000 psig., sufficient to incorporate from 1 to 20 weight percent ethylene in the final copolymer product and carried out until the total free monomer content of the emulsion is maintained below about 1 weight percent. Conventional free radical initiation of the polymerization reaction is used. The resultant emulsion can be used as an adhesive since films formed therefrom exhibit a high degree of adhesiveness.

3,661,697

MULTI-PLY PACKAGING MATERIAL OF POLYETHYLENE, AMYLOSE AND PAPER

Ellsworth E. Kimmel, and Austin H. Young, both of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Continuation of application Ser. No. 378,984, June 29, 1964, now abandoned. This application Jan. 2, 1969, Ser. No. 791,860
Int. Cl. B22b 9/06; B32b 27/10; C08h 17/26
U.S. Cl. 161—250 5 Claims

A water-resistant, grease-resistant, oxygen-resistant multiply structure comprising, bonded together, smooth continuous layers of polyolefine and amylose, and paper bonded to either the polyolefine or amylose layer.

3,661,698

PRODUCTION OF PULP BY A MULTI-STAGE AMMONIUM POLYSULPHIDE PULPING PROCESS

David W. Clayton, Hudson, Quebec, and Asahi Sakai, St. Laurent, Quebec, both of Canada, assignors to Pulp and Paper Research Institute of Canada, Pointe Claire, Quebec, Canada

Filed Oct. 8, 1969, Ser. No. 864,740
Int. Cl. D21c 3/26
U.S. Cl. 162—19 8 Claims

In a process for the production of cellulosic pulp from lignocellulosic material which comprises impregnating said material in subdivided form with a polysulphide liquor containing ammonium hydroxide in an amount sufficient to maintain a pH of at least 11.5 and at a temperature below that at which substantial decomposition of the polysulphide occurs, removing excess polysulphide from the material, heating the polysulphide impregnated material in the presence of ammonia gas to stabilize the material, and subsequently cooking the material with sodium hydroxide containing cooking liquor to delignify the material.

3,661,699

BLEACHING OF LIGNIN-CONTAINING CELLULOSE MATERIALS SUCH AS PULP

Charles Edward Farley, Fairfield, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of application Ser. No. 24,363, Mar. 31, 1970, now abandoned. This application Dec. 21, 1970, Ser. No. 100,474
Int. Cl. D21c
U.S. Cl. 162—65 4 Claims

Digester pulp is brightened and delignified by contacting the pulp with an aqueous medium containing oxygen and trisodium phosphate. The oxygen liberates the lignin substituents and the trisodium phosphate carries the lignin substituents into solution while minimizing degradation of the polymeric structure of the cellulose.

3,661,700

COATED REINFORCED PAPER AND PROCESS FOR PREPARING SAME

Gianfranco Zillo, Milan, Italy, assignor to Montecatini Edison S.p.A., Milan, Italy

Filed Mar. 18, 1970, Ser. No. 20,846
Claims priority, application Italy, Mar. 20, 1969, 14323 A/69
Int. Cl. B32b 5/20; D21d 3/00
U.S. Cl. 162—103 8 Claims

Coated reinforced papers having excellent mechanical and other characteristics are obtained by coating a net-like support obtained from a longitudinally oriented film of polypropylene consisting essentially of isotactic polypropylene with a composition formed of cellulosic or other fibers, mineral and/or organic fillers and/or pigments, and binders.

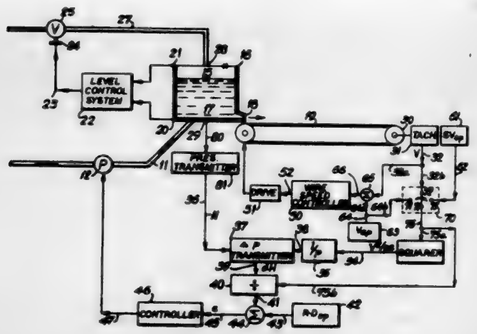
3,661,701

METHOD AND APPARATUS FOR CONTROLLING RUSH-DRAG IN A PAPER MACHINE

Abdul-Rahman A. Al-Shaikh, Mount Kisco, N.Y., assignor to Westvaco Corporation, New York, N.Y.

Filed June 23, 1970, Ser. No. 49,067
Int. Cl. D21f 1/06
U.S. Cl. 162—198 9 Claims

A system for controlling the difference between the velocity of a pulp slurry discharging from a paper machine headbox and the speed of the fourdrinier wire onto which said pump slurry is deposited. The system includes means for deriving a signal representative of the aforementioned speed differential thus allowing a direct comparison between the actual velocity differential and the desired velocity differential. The control system is based upon a differentiated and rearranged form of the equation $v^2=2gh$ which is $dv=(g/v)dh$, wherein dv = the rush or drag in units of speed, v = the wire speed, g = the gravitational constant, and dh = the differential head, i.e., that part of the total head which gives rise to the velocity difference between the slice velocity and the wire speed, in units of inches of H_2O.



3,661,702

STOCK FLOW SYSTEM FOR PAPER-MAKING MACHINE

John A. Means, Norwalk, Conn., assignor to Time, Incorporated, New York, N.Y.

Filed Dec. 15, 1969, Ser. No. 884,844
Int. Cl. D21f 1/06
U.S. Cl. 162—216 10 Claims



In order to establish diffusion among a plurality of fluid streams emanating respectively from a plurality of conduits in parallel, closely-spaced-apart relation, the streams are combined within a single enclosure to form a single stream of substantial width compared to its thickness. The enclosure is formed with a double elbow so that the direction of movement of the stream is changed twice in succession, through an angle of substantially 90° in each case. The enclosure is formed in the vicinity of each elbow in such a manner as to cause acceleration of the stock during each change in its direction of movement and deceleration of the stock immediately preceding each change in its direction of movement.

3,661,703

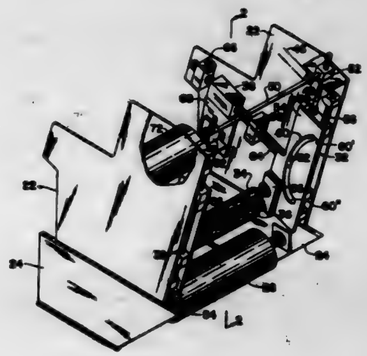
DECURLING APPARATUS

Clifford D. Shelor, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Mar. 30, 1970, Ser. No. 23,588
Int. Cl. D21f 7/02
U.S. Cl. 162—271 10 Claims

Decurling apparatus for controlling the curl characteristics of a web incorporates a pair of elongated decurling rollers over a selected one of which the web may be drawn to produce a modification of its curl tendency. The magnitude of the curl tendency modification produced in the web is a function of the sharpness of the angle at which the web is drawn over the selected decurling roller. To vary the magnitude of the curl tendency modification being produced, the position of the selected decurling roller with respect to the web is varied to change the sharpness of the angular path of the web over the decurling roller.

A movably mounted compensating roller over which the web is drawn is repositioned in response to movement of the selected decurling roller to compensate for the tendency of decurling roller movement to change the overall web path length.

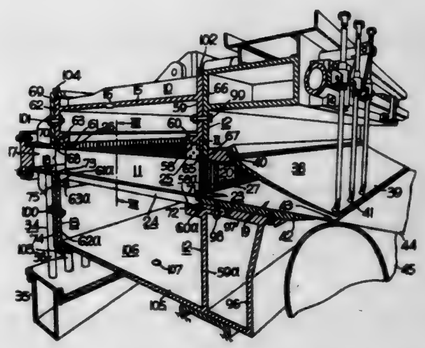


3,661,704

AIR LOADED PAPERMAKING MACHINE HEADBOX WITH STOCK OVERFLOW CHANNELS AND VERTICALLY ALIGNED VANES THEREIN

Donald B. DeNoyer, Beloit, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Nov. 6, 1970, Ser. No. 87,381
Int. Cl. B21f 1/06
U.S. Cl. 162—337 12 Claims



An air loaded headbox for a papermaking machine having an air chamber above vertical rectangular guide vanes defining top open channels between adjacent vanes. The vanes define a first plurality of the channels with end portions open horizontally to provide for horizontal stock flow therethrough. The vanes define a second plurality of channels with bottom portions open in a vertically downward direction to provide for skimming the upper surface of stock in the headbox by providing for a vertically downward stock

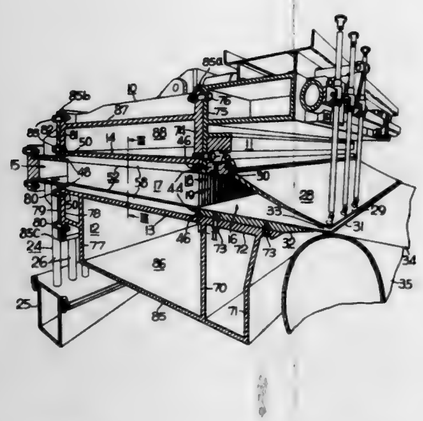
overflow from the tops of the open tops of the horizontal stock flow channels, downwardly through overflow channels to an overflow collection chamber beneath the vanes. The channels are arranged with alternate horizontal stock flow channels and stock overflow channels across the width of the headbox. A pair of spacers is arranged between vanes defining a stock overflow channel, with each overflow channel spacer being adjacent an end portion of adjacent vanes and extending vertically between top and bottom positions of the adjacent vanes. A group of three spacers is arranged between adjacent vanes defining a horizontal stock flow channel. A first spacer of the group of three, extends horizontally between front and rear wall assemblies of the headbox and provides a floor for the horizontal stock flow channel. The second and third spacers of the group of three are horizontally spaced apart with each adjacent an upper end of adjacent vanes.

3,661,705

PAPERMAKING MACHINE HEADBOX HAVING VERTICALLY ALIGNED VANES THEREIN

Donald B. De Noyer, Beloit, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Nov. 6, 1970, Ser. No. 87,378
Int. Cl. D21f *1/06*
U.S. Cl. 162—343 **8 Claims**



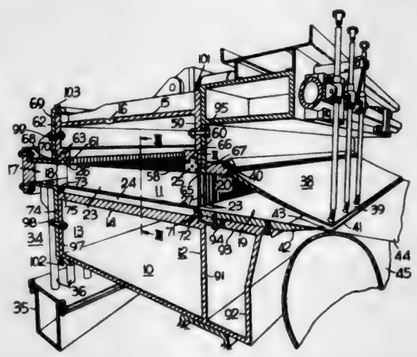
A headbox for a papermaking machine having vertical rectangular guide vanes defining channels therebetween for the flow of dilute paper stock toward a slice opening over a Fourdrinier wire. The guide vanes are provided with keys projecting horizontally from the vanes and into keyways defined by shelves projecting toward the guide vanes from vertical front and rear wall assemblies of the headbox. A pair of spacers is arranged between each pair of adjacent vanes, with one spacer providing a channel floor and the other spacer providing a channel ceiling. Each spacer has a key on both ends thereof. The keys of both the vanes and the spacers, in side abutting and alternating arrangement, project into a keyway. The keyways support the vanes and spacers between front and rear wall assemblies with cross-machine deflection of the flow passages, due pressure of pulp stock therein, being both minimized and made independent of headbox width. Pressurized chambers below and above the channels load the vanes and spacers against deflection in vertical planes defined by the vanes and spacers.

3,661,706

AIR LOADED HEADBOX FOR A PAPERMAKING MACHINE HAVING VERTICALLY ALIGNED VANES THEREIN

Donald B. De Noyer, Beloit, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Nov. 6, 1970, Ser. No. 87,384
Int. Cl. D21f *1/06*
U.S. Cl. 162—343 **9 Claims**



An airloaded headbox for a papermaking machine having an air chamber above vertical rectangular guide vanes defining horizontally extending channels between adjacent vanes for the flow of dilute paper stock toward a slice opening over a Fourdrinier wire. The guide vanes are provided with keys projecting vertically upward from each of the upper corners of each vane and with keys projecting horizontally from each of the four corners of each vane. The keys project into keyways defined by lands and shelves projecting toward the guide vanes from vertical front and rear wall assemblies of the headbox. Three spacers are arranged between each pair of adjacent vanes, with a first of the spacers providing a channel floor and a second and third of the spacers horizontally spaced apart and adjacent the upper corners of each vane and defining therebetween a channel top open to the air chamber for air loading stock flowing horizontally through the channels. The first spacer has a horizontally extending key on each end. The second and third spacers each have a vertical key projecting upwardly and a horizontal key projecting toward the adjacent vertical end wall. Each of the keys of both the vanes and the spacers, in side abutting and alternating arrangement, project into keyways in register therewith. The keyways support the vanes and spacers, with the vanes and channel floor spacers between front and rear wall assemblies providing for cross-machine deflection of the floor of the flow passages, due pressure of pulp stock therein, which is both minimized and made independent of headbox width. The vertical keys of the vanes provide for the vanes to tie together the front and rear wall assemblies to minimize deflection of the front wall assembly and slice defining structure toward the slice opening.

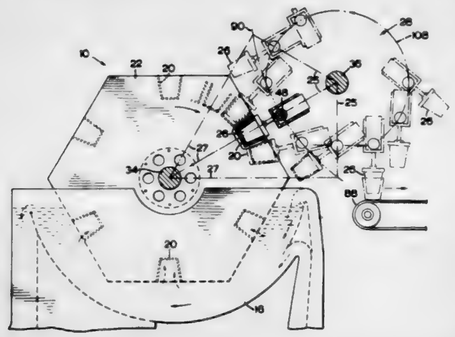
3,661,707

MOLDING MACHINE INCLUDING MATING OF FORMING AND TRANSFER MOLDS

Roy W. Emery, 1 Donino Court, Toronto 12, and John R. Emery, 46 Yorkminster Rd., Willowdale, Ontario, both of Canada

Filed July 7, 1969, Ser. No. 870,147
Claims priority, application Canada, Apr. 11, 1969, 048413
Int. Cl. D21j *7/00*
U.S. Cl. 162—392 **4 Claims**

This invention relates to a molding machine of the type used in the vacuum molding of wood pulp and like fibrous materials. With machines of this type, it has been difficult to achieve a deep draw because the molding elements that form the molding material into a compressed molded article tend to become misaligned. This results in an imperfection or hole in the molded article. With this invention, the two mating molds are positively controlled as they are brought into alignment with each other, with the result that it is possible to mold articles having a much deeper draw than was previously possible. It is also possible to operate the machine at a faster rate of speed.



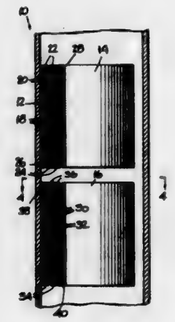
A plurality of forming and transfer molds, mounted on respective carriers, are carried into and out of cooperative relationship by a control mechanism performing 2 control functions. The first control function moves a single pivot axis of each transfer mold with respect to the axis of rotation of the transfer mold carrier to positively maintain the pivot axis on a predetermined line during transfer. The second control function positively rotates the transfer molds about the single pivot axis to align the central axes of the transfer and forming molds as they are carried into and out of cooperative relationship with each other.

3,661,708

FUEL SUBASSEMBLY FOR NUCLEAR REACTOR

Aaron J. Friedland, Oak Park, Mich., assignor to Atomic Power Development Associates, Inc., Detroit, Mich.

Filed May 9, 1968, Ser. No. 727,827
Int. Cl. G21c *7/30, 3/04*
U.S. Cl. 176—28 **9 Claims**



A fuel subassembly for a nuclear reactor including a wrapper tube and an upper and lower core bundle assembly contained therein, one of the core bundle assemblies being connected to the wrapper tube in such a manner that when the temperature of the fuel subassembly increases said one core bundle assembly is axially displaced to a magnified extent with respect to the other core bundles assembly, and thus increases the negative feedback of the subassembly.

3,661,709

NONSWELLING URANIUM NITRIDE FUEL

Walton Chubb, Worthington; Donald L. Keller, Columbus; Richard A. Wullaert, Columbus, and Victor Storhok, Columbus, all of Ohio, assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Apr. 6, 1970, Ser. No. 26,064
Int. Cl. G21c *3/20*
U.S. Cl. 176—67 **4 Claims**

A high-temperature dimensionally stable nuclear reactor fuel element containing tungsten and uranium nitride in the form of a cermet or uranium nitride only in which the particle size of the fuel material is not larger than the grain size of the uranium nitride and in which the fuel region contains 20 to 30 volume percent of highly interconnected porosity evenly distributed throughout the fuel region.

3,661,710

SYNTHESIS OF CONJUGATED OCTADECATRIENOIC ACID USING ENZYMES FROM TUNG

Thomas J. Jacks, Metairie, and Lawrence Y. Yatsu, New Orleans, both of La., assignors to The United States of America as represented by the Secretary of Agriculture

Filed May 22, 1970, Ser. No. 39,921
Int. Cl. C12b *1/00*
U.S. Cl. 195—30 **7 Claims**

Conjugated trienoic fatty acid was formed in a mixture containing CoASH, NADH, either ADP or ATP, $MgSO_4$, castor fatty acid, and enzyme prepared from tung nuts. The enzyme was prepared as a protein, which is soluble in 0.1 M tris- HCl buffer (pH 7.2), from acetone-insoluble powder of maturing tung nuts.

3,661,711

METHOD OF PRODUCING L-HISTIDINOL BY FERMENTATION

Koji Kubota, Kawasaki-shi, and Teruo Shiro, Chigasaki-shi, both of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Dec. 23, 1968, Ser. No. 786,361
Claims priority, application Japan, Dec. 30, 1967, 42/85303
Int. Cl. C12b *1/00*
U.S. Cl. 195—30 **7 Claims**

Histidinol is accumulated in histidine-containing, but otherwise conventional aqueous culture media on which histidine-requiring mutants of Brevibacterium, Corynebacterium, or Arthrobacter are cultured, and is readily recovered from the fermentation broth.

3,661,712

PROCESS FOR PRODUCING ZEARALENONE

Chester L. Keith, Manhattan, Kans., assignor to Commercial Solvents Corporation

Filed June 18, 1970, Ser. No. 47,637
Int. Cl. C12d *13/00*
U.S. Cl. 195—36 R **18 Claims**

Zearalenone is produced in an agitated, aerated, aqueous fermentation medium containing submergible, zearalenone-producing strains of *Gibberella zeae* and nutrients including assimilable carbon, nitrogen, and mineral sources.

3,661,713

PROCESS FOR PRODUCING ZEARALENONE

James R. McMullen, Terre Haute, Ind., assignor to Commercial Solvents Corporation

Filed June 18, 1970, Ser. No. 47,638
Int. Cl. C12d *13/00*
U.S. Cl. 195—36 R **14 Claims**

The production of zearalenone in a submerged fermentation process employing submergible, zearalenone-producing strains of *Gibberella zeae* is enhanced by inclusion of cationic zinc in the fermentation medium.

3,661,714
PROCESS FOR PRODUCING ZEARALENONE
Eric T. Woodings, Terre Haute, Ind., assignor to Commercial Solvents Corporation
Filed June 18, 1970, Ser. No. 47,639
Int. Cl. C12d *13/00*
U.S. Cl. 195—36 R 13 Claims

The production of zearalenone in a submerged fermentation process employing submergible, zearalenone-producing strains of *Gibberella zeae* is enhanced by partial replacement of the fermentation medium.

3,661,715
PROCESS FOR THE PREPARATION OF PROTEASES ACTIVE IN ALKALINE MEDIUM
Roger R. Bonnet, Saint-Gratien, and Bernard Ores, Montreuil-Sous-Bois, both of France, assignors to Roussel-UCLAF, Paris, France
Filed July 22, 1969, Ser. No. 843,736
Claims priority, application France, July 22, 1968, 160344
Int. Cl. C07g *7/028*
U.S. Cl. 195—66 R 3 Claims

The process comprises fermentating aerobically a Tracy strain of *Bacillus subtilis* in a nutrient medium comprising at least an assimilable carbon source, an assimilable nitrogen source and mineral substances, at a temperature range of about 28° to 40° C, the pH of the medium being adjusted between 7.5 and 9.5, at the beginning of the fermentation, by usual means, then, when the fermentation is over, acidifying the medium until a pH of approximately 4.5 by acetic and/or sulfuric acids, removing insoluble substances from the medium, treating the resulting clarified liquid phase with a mineral salt (for example, ammonium or alkaline sulfates), the pH being then brought close to 8.4 by means of a strong base, leaving the mixture under stirring and at last isolating the resulting precipitate.

The invention concerns also the proteases obtained by the process.

3,661,716
PROCESS FOR SIMULTANEOUS FRACTIONATION AND PURIFICATION OF PROTEASE AND RIBONUCLEASE OF RHIZOPUS MOLD
Juichiro Fukumoto, Takarazuka-shi, and Takehiko Yamamoto, Amagasaki-shi, both of Japan, assignors to Miles Laboratories, Inc., Elkhart, Ind.
Filed Aug. 8, 1969, Ser. No. 848,585
Claims priority, application Japan, Aug. 19, 1968, 43/59335
Int. Cl. C07g *7/02*
U.S. Cl. 195—66 6 Claims

Purified fractions of protease and ribonuclease produced from a Rhizopus mold can be obtained by contacting a solution containing protease and ribonuclease with a cation-exchange material to selectively adsorb the ribonuclease. The purified protease fraction is then separated from the cation-exchange material. A purified ribonuclease fraction is then removed by elution, for example, from the cation-exchange material. The initial protease and ribonuclease-containing solution is preferably purified to remove amyloglucosidase and amylase prior to being separated into protease and ribonuclease fractions.

3,661,717
UNITARY STERILITY INDICATOR AND METHOD
Robert L. Nelson, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of application Ser. No. 830,698, June 5, 1969. This application May 8, 1970, Ser. No. 35,763
Int. Cl. C12k *1/00*
U.S. Cl. 195—103.5 R 11 Claims

A unitary sterility indicator and a method for its use, the indicator comprising a deformable, translucent outer compartment having a closed, gas-transmissive, bacteria-impermeable opening therein and containing a predetermined number of viable microorganisms; a normally sealed, pressure-openable inner compartment snugly disposed in the outer compartment and containing an aqueous nutrient medium; and a detector material sensitive to microorganism growth and contained in one or both compartments.

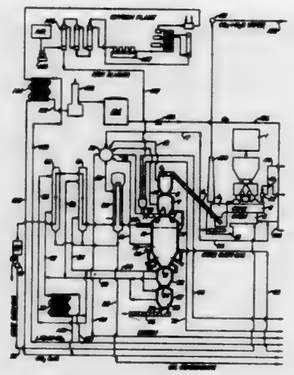


3,661,718
METHOD FOR TAKING AND TRANSFERRING BACTERIA SAMPLES
Rose J. Sterling, Denver, Colo., assignor to Birko Chemical Corporation, Denver, Colo.
Filed Jan. 26, 1970, Ser. No. 5,702
Int. Cl. C12k *1/04*
U.S. Cl. 195—103.5 R 4 Claims

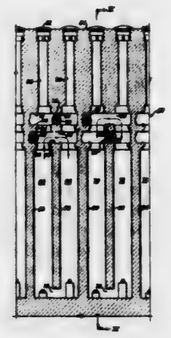
A tape dispenser, having means for supporting a nondrying adhesive tape therein, includes a depending mandrel having a flat surface of predetermined area. Tape from the roll is unrolled and pulled over the mandrel with the sticky side out. The flat surface of mandrel covered with the tape is pressed on a surface to be tested for bacteria, and the contaminated tape, over the mandrel, is then pressed onto surface of a culture medium. By using gelatin-like culture medium, it may be held upside down for transfer of bacteria from the dispenser, to prevent extraneous contamination from airborne bacteria.

3,661,719
NON-POLLUTING BY-PRODUCT COAL CARBONIZATION PLANT
John J. Kelmar, 2205 Cypress Drive, White Oak, McKeesport, Pa.
Filed Oct. 28, 1970, Ser. No. 84,551
Int. Cl. C10b *57/06*
U.S. Cl. 201—17 13 Claims

As coal is heated to produce coke and coke oven gas the coke is delivered to a reactor where a bed of it is maintained. Most of the tar and ammonia and oil are removed from the coke oven gas and then the gas is passed through the coke bed. A tar plant receives the tar removed from the gas and produces coal tar pitch, which is delivered with calcium carbonate to the reactor to desulfurize the coke and gas therein and enriches the gas. The desulfurized gas is continuously removed from the reactor and cooled. Periodically a batch of desulfurized coke is withdrawn from the reactor. Steam is produced in cooling the coke and is used in heating an ammonia still. Water from the still is processed and used in an ammonia scrubber along with make-up water produced by condensing water vapor from the coke oven combustion gas. Only nonpolluting products leave the system. The rest are consumed or recirculated in it.

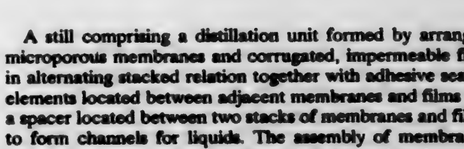


3,661,720
APPARATUS FOR CONTROLLING THE SIZE OF GAS FLOW OPENINGS IN THE HEATING WALLS OF A COKE OVEN
Wilhelm Jakobi, Essen, Germany, assignor to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany
Filed July 13, 1970, Ser. No. 54,479
Claims priority, application Germany, July 16, 1969, P 19 36 023.7
Int. Cl. C10b *5/04*
U.S. Cl. 202—139 10 Claims



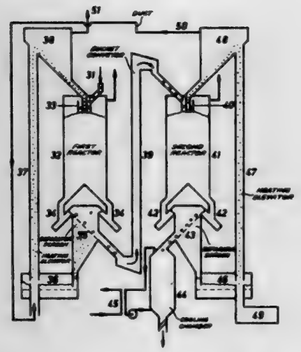
Regenerative coke oven batteries have heating walls with gas flow passages through transverse flue walls for the flow of gas between adjacent flues. During operation of the coke oven battery, the flow of gas through the passages in the flue walls is regulated for optimum heating of the carbonaceous material in the coke oven chamber. A cylindrically shaped damper brick formed of a refractory material is suitably supported adjacent to an opening in the passage and is rolled in preselected spaced relation to the passageway to regulate the size of the opening. The cylindrically shaped damper brick has a plurality of spaced notch-like recesses around the peripherally thereof to facilitate rotation of the damper brick on the support. The support for the damper brick includes a plurality of semi-cylindrical recessed portions spaced at predetermined distances in which the cylindrical damper brick may be positioned to control, with precision, the size of the flow opening. The flue wall has a plurality of horizontal passageways at different elevations that connect adjacent flues and regulate the height at which the gas flows from one flue to the adjacent flue. Support means extend horizontally within one of the flues at the same elevation as the respective passageways. Cylindrical refractory bricks are positioned on the supporting means and are arranged to be rolled into the passages in the flue wall. The passageways each have a transverse arcuate recessed portion for maintaining the cylindrical damper brick within the passageway.

3,661,721
COMPACT MULTISTAGE DISTILLATION APPARATUS HAVING STACKED MICROPOROUS MEMBRANES AND IMPERMEABLE FILMS
Franklin A. Rodgers, Brookline, Mass., assignor to Pactide Corporation, Cambridge, Mass.
Continuation-in-part of application Ser. No. 838,769, July 3, 1969, now abandoned, and a continuation-in-part of 838,872, July 3, 1969, now abandoned. This application Feb. 5, 1971, Ser. No. 112,854
Int. Cl. B01d *3/02*
U.S. Cl. 202—172 25 Claims



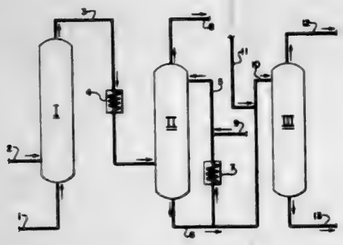
A still comprising a distillation unit formed by arranging microporous membranes and corrugated, impermeable films in alternating stacked relation together with adhesive sealing elements located between adjacent membranes and films and a spacer located between two stacks of membranes and films, to form channels for liquids. The assembly of membranes, films, sealing elements and spacer is subjected to heat and pressure to bond the sealing elements to the membranes, films and spacer, and holes are drilled through the unit to form conduits for feeding liquids to and from selected channels between adjacent membranes and films. The unit is then located together with sealing elements between the walls of two complimentary housing sections which are sealed to one another to form a housing enclosing the unit and subjected to heat and pressure to bond the unit to the walls of the housing to form additional liquid channels. The corners of the distillation unit are sealed to the corners of the housing to form chambers for receiving and distributing feed, heating, and coolant liquids. All of the components are designed to be fabricated or formed of polymeric sheet materials and connections for the flow of liquids are made to the conduits within the still (housing) by way of nipples secured to the housing and/or liquid conduits pressed into liquid-tight engagement with the housing. One surface of each member is corrugated to prevent blockage of the channels for feed liquid and the walls of the housing as well as the spacer are corrugated to provide channels for heating and coolant liquids.

3,661,722
APPARATUS FOR CARBONIZING CARBONACEOUS MATERIALS WITH DIRECT CONTACT HEAT EXCHANGE MATERIAL
Werner Peters, Wattenscheid; Horst Luther, Clausthal-Zellerfeld; Josef Langhoff, Dinslaken; Otto Abel, Clausthal-Zellerfeld, and Gerhard Schuseling, Koeln-Delbrueck, all of Germany, assignors to Bergwerksverband GmbH, Essen, Germany
Original application Aug. 26, 1968, Ser. No. 757,213. Divided and this application Oct. 20, 1969, Ser. No. 867,563
Claims priority, application Germany Aug. 25, 1967, B 94152
Int. Cl. C10b 1/04, 3/00
U.S. Cl. 202—99 3 Claims



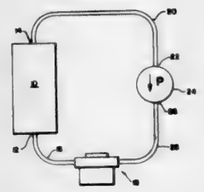
An apparatus for continuously producing shaped coke bodies from a carbonaceous material, comprising means for continuously introducing carbonaceous material together with a fine-size hot heat-exchange material into a first reactor, subjecting the mass thus formed to a coking operation in the first reactor to form a low-temperature coke, then withdrawing the mass, and thereafter passing the pre-coked material together with fine-size hot heat-exchange material into a second reactor and subjecting the mass therein to another coking operation at substantially higher temperatures than used in the first coking operation.

3,661,723
PROCESS FOR RECOVERING OF ACRYLONITRILE AND HYDROCYANIC ACID BY ADDITION OF ACETONITRILE TO THE AQUEOUS ACID NEUTRALIZED EFFLUENT
Kiyoshi Ohashi, Hiroshima; Morihiko Ohkuni, and Otoharu Kurayoshi, both of Yamaguchi, all of Japan, assignors to The Standard Oil Company, Cleveland, Ohio
Filed May 15, 1970, Ser. No. 37,520
Claims priority, application Japan, May 26, 1969, 44/40239
Int. Cl. B01d 3/34; C07c 121/32
U.S. Cl. 203—8 1 Claim



An improved process for the recovery of acrylonitrile, hydrocyanic acid, and acetonitrile from an aqueous solution of these nitriles wherein the aqueous solution is obtained by contacting the product mixture from a catalytic vapor phase reaction of propylene, ammonia, and air, with an acidic solution in an ammonia neutralization column to remove unreacted ammonia therefrom, where the improvement comprises adding additional acetonitrile to the effluent from the ammonia neutralizing column and distilling the aqueous effluent to recover the nitriles from solution.

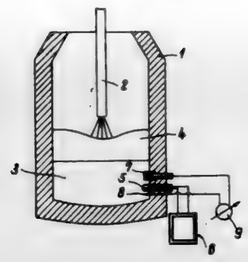
3,661,724
CLOSED LOOP HYGROMETRY
Allen Strickler, Fullerton, Calif., assignor to Beckman Instruments, Inc.
Filed Apr. 2, 1970, Ser. No. 25,208
Int. Cl. G01n 27/46
U.S. Cl. 204—1 T 25 Claims



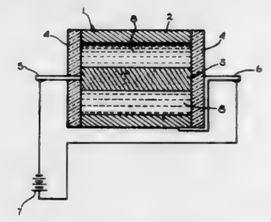
Method and apparatus for determining water vapor concentration in a fluid. The apparatus includes a hygrometer having an inlet and outlet and a pump having an inlet and an outlet. A layer of semipermeable barrier material permeable to moisture and having two surfaces, the first surface being exposed to the fluid, is provided. Conduit means connects the pump, hygrometer, and the second surface of the barrier in series so that a carrier gas may be circulated by the pump in a closed loop across the second surface of the barrier and through the hygrometer. Water vapor may pass through the barrier from the fluid into the carrier gas at a transfer rate proportional to the difference in partial water vapor pressure across the barrier, whereby the water vapor concentration in the fluid can be determined from the proportional water vapor concentration measured by the hygrometer. The method of determining water vapor concentration in a fluid comprises exposing the first surface of a layer of semipermeable barrier material having two surfaces to the fluid. A carrier gas is circulated in a closed loop across the second surface of the barrier and through a hygrometer so that water vapor passes through the barrier from the fluid into the carrier gas at a transfer rate proportional to the difference in partial water vapor pressure across the barrier. The water concentration in the fluid can be determined from the proportional water vapor concentration as measured by the hygrometer.

3,661,725
METHOD FOR DETERMINING THE CARBON CONCENTRATION IN A METAL MELT
Klaus-Herbert Ulrich, Duesseldorf; Dieter Doering, Essen-Holsterhausen, and Kurt Borowski, Essen, all of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany
Filed Mar. 24, 1969, Ser. No. 809,766
Claims priority, application Germany, Mar. 22, 1968, P 17 73 027.7
Int. Cl. G01n 27/46
U.S. Cl. 204—1 T 1 Claim

A method for determining the carbon concentration in a metal melt. The oxygen activity in the melt is first determined from a measurement of the temperature and the oxygen potential. The carbon concentration is then determined from the oxygen activity, for example with the aid of a suitable graph.



3,661,726
METHOD OF MAKING PERMANENT MAGNETS
Peter A. Denes, 9101 Crestwood Ave., Albuquerque, N. Mex.
Continuation-in-part of application Ser. No. 538,985, Mar. 31, 1966, now Patent No. 3,502,584, and a continuation-in-part of 9,939, Feb. 9, 1970, now abandoned. This application Mar. 23, 1970, Ser. No. 21,785
Int. Cl. C22d 5/00; C23b 5/00; B22f 3/00
U.S. Cl. 204—10 33 Claims



A method for making single phase or multiphase permanent magnets having high intrinsic coercivity, in which a molten state salt electrolysis technique is used to produce a variety of magnetic metallic or alloy particles, in controllable sizes. The magnetic particles thus produced are then bonded and formed into permanent magnets.

3,661,727
METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES
Yokichi Itoh; Nobuhiko Shirasaka, both of Hachioji, and Shoji Tauchi, Kokubunji, all of Japan, assignors to Kabushiki Kaisha Hitachi Seisakusko, Tokyo-to, Japan
Continuation of application Ser. No. 490,597, Sept. 27, 1965, now abandoned. This application Jan. 29, 1970, Ser. No. 7,319
Claims priority, application Japan, Oct. 1, 1964, 39/55667
Int. Cl. C23b 3/04
U.S. Cl. 204—32 S 9 Claims

The method of plating a metal layer on a selected, clean surface of a semiconductor substrate with a metal provides for forming at first a layer of silicon dioxide on the substrate surface by the high temperature oxidation method, then forming a hollow on one part thereof, thereafter immersing the semiconductor substrate in a mixture of an etching solution and a metal-plating solution for a limited period of time sufficient for only a part of the silicon dioxide film positioning on this hollow part to dissolve and to expose a clean surface of the substrate and sufficient for a metal layer of a certain thickness to be metal-plated on the clean surface.

3,661,728
NICKEL PLATING OF NICKEL-COPPER PRINTED CIRCUIT BOARD
Emil Toledo, Natick, Mass., and Dennis R. Sprague, Fountain Valley, Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed Mar. 31, 1971, Ser. No. 130,029
Int. Cl. C23b 1/00, 5/50
U.S. Cl. 204—32 R 4 Claims

A process for plating nickel onto a nickel surface of a printed circuit board containing copper comprising first plating copper from a cyanide copper bath onto said nickel surface and then removing all said plated copper by reverse plating in the same cyanide copper bath and then plating nickel onto said nickel surface.

3,661,729
PROCESS FOR COLORING ANODIC COATINGS ON ALUMINUM AND ALUMINUM ALLOYS WITH METAL SALTS
Tadahito Miyakawa, No. 159, 2-chome, Horinouchi-machi, and Kazuko Nagai, No. 11, Hinognoka, Nobe-machi, both of Minami-ku, Yokohama City, Japan
Continuation-in-part of application Ser. No. 586,980, Oct. 17, 1966, now abandoned. This application Sept. 5, 1969, Ser. No. 855,769
Int. Cl. C23f 5/02
U.S. Cl. 204—35 N 4 Claims

Colored coatings are produced by first subjecting an aluminum or its alloys to anodic oxidation in an electrolyte containing mainly sulfuric acid, by supplying an electric current comprising a direct current component and an alternating current component with the alternating current component at least as large as the direct current component, dipping the oxide coating in an aqueous solution containing metallic cations or anions without supplying the electric current and then subjecting the coating to sealing treatment to produce coloring thereof.

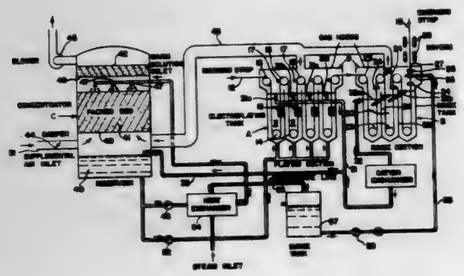
3,661,730
PROCESS FOR THE FORMATION OF A SUPER-BRIGHT SOLDER COATING
Kazuo Nishihara, Tokyo, Japan
Continuation-in-part of application Ser. No. 600,044, Dec. 8, 1966, now abandoned. This application Sept. 22, 1969, Ser. No. 868,616
Int. Cl. C23b 5/38, 5/46
U.S. Cl. 204—43 3 Claims

A process for electrodepositing solder on a basis material from an aqueous, acidic bath comprising stannous and plumbous compounds, o-toluidine or a 2-alkyl anil as a brightening agent and a non-ionic surface-active agent as a dispersant, to obtain a super-bright solder coating on the basis material.

3,661,731
ELECTRODEPOSITION OF BRIGHT NICKEL
William R. Schevey, Hawley, Pa., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Mar. 16, 1970, Ser. No. 20,031
Int. Cl. C23b 5/08
U.S. Cl. 204—49 13 Claims

Acid nickel plating bath for obtaining bright nickel deposits, said bath being of the chloride, sulfate, fluoborate or sulfamate type and containing a brightener mixture comprising the disodium salt of methylene bis naphthalene sulfonic acid and a second component selected from coumarin, piperonal bisulfite complex, sodium beta-styrene sulfonate, benzimidazole and mixtures thereof, with the proviso that benzimidazole is used only when greater than 50 mole percent of nickel salt used in the bath is nickel fluoborate.

3,661,732
METHOD AND APPARATUS FOR ELECTROPLATING
David A. Withrow, Willoughby, Ohio, assignor to Production Machinery Corp., Mentor, Ohio
Filed June 1, 1970, Ser. No. 42,435
Int. Cl. B01k 3/00; C23b 5/68, 5/06
U.S. Cl. 204—51 31 Claims



This invention concerns an improved method and apparatus for electroplating in which rinse solutions and fumes from electroplating operations are treated to recover values contained therein, and to simultaneously adjust the concentration and the temperature of the electroplating bath. Fumes and spray from the electroplating and rinsing operations are contacted with controlled amounts of a process solution comprising overflow rinse water mixed with electroplating bath solution. The liquid-vapor contacting operation is controlled to evaporate water at a rate substantially equivalent to the rate of addition of rinse water to the process so that a water balance is maintained throughout the system, and to cool the process solution. The process is preferably conducted in apparatus comprising an electroplating tank, a rinse tank, a fume exhaust system, a heat exchanger and a liquid-vapor contacting means.

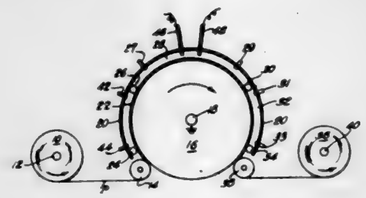
3,661,733
CHROMIUM ELECTROPLATING
Wilhelm Roggendorf, Kehl am Rhein, Germany
Continuation of application Ser. No. 578,965, Sept. 13, 1966, now abandoned. This application July 2, 1969, Ser. No. 838,703
Claims priority, application Germany, Jan. 18, 1966, R 42442
Int. Cl. C23b 5/06
U.S. Cl. 204—51 2 Claims

An improved electrolytically deposited chromium coating is provided having an improved mirror-like brightness using an aqueous solution in the nature of a Bornhauser solution and ions of the class consisting of hexafluoantimonate and hexafluostannate, as stable catalysts and brightening agents and within a critical content of about 0.7 to 4 percent with relation to the chromium trioxide content.

3,661,734
CARBONATE REMOVAL
Walter John Sloan, Newark, Del., assignor to Remington Arms Company, Inc., Bridgeport, Conn.
Filed July 2, 1970, Ser. No. 52,142
Int. Cl. C23b 5/48; B01d 15/00, 19/00
U.S. Cl. 204—52 Y 4 Claims

Removal of carbonate ions from cyanide-containing electroplating baths, or bath rinse solutions by contacting with an acid ion exchange resin, and liberating the carbon dioxide formed as off gas.

3,661,735
SHAPED ARTICLES HAVING IMPROVED SURFACE PROPERTIES AND CORONA DISCHARGE METHODS AND APPARATUS FOR MAKING THE SAME
Arthur H. Dreilich, Plainfield, N.J., assignor to Johnson & Johnson
Filed Oct. 14, 1969, Ser. No. 866,220
Int. Cl. B01k 1/00; B01j 1/00
U.S. Cl. 204—165 6 Claims



Films, sheets, expanded or foamed products, fibrous webs, and similar synthetic, organic, polymeric shaped articles and structures having surfaces with improved bonding and adhesion capabilities, increased fluid absorbency rates, and enhanced fluid wicking properties; and processes and apparatus for obtaining such improved capabilities and enhanced surface properties and characteristics by exposing said shaped articles to the action of an electrical corona discharge in an atmosphere of a reactive gas which does not have an affinity for electrons and which is also capable of acting as a chemical reducing agent, such as carbon monoxide, for example.

ERRATUM

For Class 204—64 T see:
Patent No. 3,662,047

3,661,736
REFRACTORY HARD METAL COMPOSITE CATHODE ALUMINUM REDUCTION CELL
Robin D. Holliday, New South Wales, Australia, assignor to Olin Mathieson Chemical Corporation
Filed May 7, 1969, Ser. No. 822,395
Int. Cl. C22d 3/12, 3/02; B01k 3/06
U.S. Cl. 204—67 15 Claims

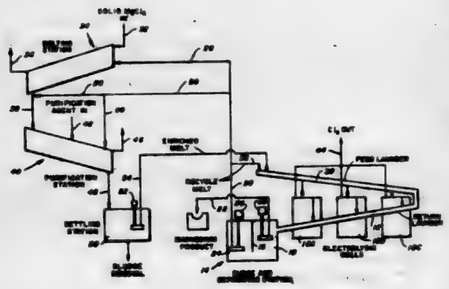


The present invention is directed to cathodes of fused refractory hard metal alloy composited with certain bonding agents and their use, replacing the conventional carbon lining of an aluminum reduction cell.

3,661,737
RECOVERY OF VALUABLE COMPONENTS FROM MAGNESIUM CELL SLUDGE
John G. Scherer, Tulsa, Okla., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Filed Oct. 29, 1969, Ser. No. 872,364
Int. Cl. C22d 3/08; C22b 45/00, 9/10
U.S. Cl. 204—70 8 Claims

Method for recovering valuable components from a molten admixture of fused magnesium salt, disperse magnesium metal and other substances, e.g. magnesium electrolytic cell sludge, including holding such admixture in fused state, under a fluoride-containing protective flux for magnesium metal, to form a layer of magnesium dispersed in a sludge and a separate layer of purified magnesium salt, withdrawing the metal-containing layer to a refining zone and thoroughly admixing therewith a metal-collecting magnesium fluoride-containing flux to form a layer of separated magnesium metal and a layer of residual sludge containing magnesium metal, recovering the separated metal, the residual sludge can then be admixed with an amount of fluoride-containing flux to form a eutectic having a lower melting point than that of magnesium metal, maintaining such eutectic in molten form below the melting point of magnesium metal, and mechanically recovering magnesium metal therefrom, the protective and metal-collecting fluxes being substantially free of alkaline earth metals other than magnesium.

3,661,738
SYSTEM FOR MELTING MELT ENRICHING SOLIDS UTILIZING EXCESS HEAT FROM ELECTROLYSIS CELLS
Roger M. Wheeler, Tulsa, Okla., and Frank E. Love, Snyder, Tex., assignors to American Magnesium Company, Tulsa, Okla.
Filed June 29, 1970, Ser. No. 50,849
Int. Cl. C22b 45/00; B01k 3/00
U.S. Cl. 204—70 14 Claims



A method of melting melt enriching solids to provide cell melt to an electrolysis cell for the production of magnesium and chlorine comprising withdrawing hot depleted cell melt from the electrolysis cell, conveying the depleted melt to a mixing station, admixing melt enriching solids with the depleted cell melt in the mixing station, the melt enriching solids being melted by heat of the depleted cell melt which is thereby enriched and cooled, and conveying the enriched cell melt to the electrolysis cell.

3,661,739
METHOD OF ELECTROCHEMICAL HYDRODIMERIZATION OF OLEFINIC COMPOUNDS
Andrei Petrovich Tomilov, 5 Parkovaya ulitsa 56, korpus 6, kv. 59; Vladimir Alexeevich Klimov, Butyrsky val, 26, kv. 50, and Semen Lvovich Varshavsky, ulitsa Pavla Andreeva, 28, kv. 282, all of Moscow, U.S.S.R.
Filed Sept. 29, 1969, Ser. No. 862,010
Claims priority, application U.S.S.R., Sept. 28, 1969, 1275670
Int. Cl. C07b 29/06; C07c 121/26
U.S. Cl. 204—73 A 8 Claims

A method of electrochemical dimerization of olefinic compounds of the general formula CH_2 CHX, wherein X is a nitrile, ester, amide, aldehyde or carboxy group, according to which a mixture consisting of an aqueous solution of acid salts of an alkali metal and polybasic acid and olefine is subjected to electrolysis in an electrolytic cell provided with an oxide anode and with a cathode made of graphite impregnated with ion-exchange polymers that are insoluble in the reaction mixture and contain a tetraalkylammonium group or a substituted tetraalkylammonium group, the electrolysis being effected at a cathode current density of 300–1,600 A/m², a pH of 7–9, and at a temperature of 17°–25°<½ C.

3,661,740
RECOVERY OF COPPER FROM COPPER ORES
Eldred C. Brace, and George E. Green, both of Tucson, Ariz., assignors to Banner Mining Company, Tucson, Ariz.
Filed July 13, 1967, Ser. No. 653,158
Int. Cl. C22d 1/16
U.S. Cl. 204—96 9 Claims

A method of recovering of oxidized copper from limestone gangue ores in which finely ground ore is leached with a caustic solution with gentle agitation and heat in stages, pregnant caustic solution from a succeeding stage being used to leach ore in a preceding stage; the ore in the final stage is leached with a copper barren caustic solution with gentle agitation and heat; copper sponge produced from the pregnant caustic solution by electrolysis, and the resulting copper barren caustic returned for re-use. Lime is used to recausticize dilute caustic from the final wash of the solids, and the thus recausticized solution is concentrated and also returned for re-use.

3,661,741
FABRICATION OF INTEGRATED SEMICONDUCTOR DEVICES BY ELECTROCHEMICAL ETCHING
Ronald Lee Meek, Pottersville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 7, 1970, Ser. No. 78,698
Int. Cl. B23p 1/00
U.S. Cl. 204—143 GE 5 Claims



Grid-like zones of P or N type high conductivity material are formed in the surface of an N type higher resistivity epitaxially deposited layer on a high conductivity substrate of a body of silicon semiconductor material. The surface of the N type layer then is covered with a dielectric film of silicon nitride and a support layer of polycrystalline silicon. The body then is immersed in a suitable bath and subjected to an electrochemical etch which removes the high conductivity substrate and, in line with the grid-like zones, channels are etched through the N type layer and the grid-like zones, leaving completely isolated blocks of the N type layer affixed to a common support member. Following such shaping of isolated blocks of the N type layer integrated circuits are fabricated by applying insulating films over the exposed surface of the block and otherwise carrying out well-known EPIC-type fabrication procedures.

3,661,742
ELECTROLYTIC METHOD OF MARINE FOULING CONTROL
Oliver Osborn, and Bernard L. Prows, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.
Filed June 22, 1970, Ser. No. 48,523
Int. Cl. C23f 13/00
U.S. Cl. 204—147 7 Claims

An improved method of inhibiting the sustained attachment of marine organisms to metallic surfaces while

preventing corrosion of the metallic surface by cathodic protection. Inhibition of marine organism attachment takes place when toxic ions are forced into solution by reversing and increasing the current density in the cathodic protection system at periodic intervals for a short period of time.

3,661,743
PHOTOCHEMICAL PROCESS FOR PREPARING BETA-THIOLACTONES

Arleen C. Pierce, Monmouth Junction, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Original application Oct. 6, 1967, Ser. No. 673,259, now Patent No. 3,520,903. Divided and this application Apr. 20, 1970, Ser. No. 38,613
Int. Cl. B01j *1/10*
U.S. Cl. 204—158 R 10 Claims

This specification discloses a process for the preparation of β-thiolactones whereby carbonyl sulfide is reacted with an ethylenically unsaturated compound in the presence of actinic radiation having a wave length between 2,800 and 3,600 Angstrom units. This process can be used to prepare known β-thiolactones and novel perhalogenated β-thiolactones which are useful as monomers for the preparation of polyesters as well as chemical intermediates for the preparation of thiocarboxylic acids or their ester and amide derivatives.

3,661,744
PHOTOCURABLE LIQUID POLYENE-POLYTHIOL POLYMER COMPOSITIONS

Clifton L. Kehr, Silver Spring, and Walter R. Wnzolek, Sykesville, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of application Ser. No. 617,801, Feb. 23, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 567,841, July 26, 1966, now abandoned. This application June 8, 1970, Ser. No. 44,607
Int. Cl. C08d *1/00*; C08f *1/16*; C08c *11/54*
U.S. Cl. 204—159.14 31 Claims

The invention disclosed is for a new photocurable liquid polymer composition which includes a liquid polyene component having a molecule containing at least two unsaturated carbon-to-carbon bonds disposed at terminal positions on a main chain of the molecule, a polythiol component having a molecule containing a multiplicity of pendant or terminally positioned —SH functional groups per average molecule, and a photocuring rate accelerator. The photocurable liquid polymer composition upon curing in the presence of actinic light forms odorless, solid, elastomeric or resinous products which may serve as sealants, coatings, adhesives and molded articles.

3,661,745
SYNTHESIS OF DODECYL MERCAPTAN USING HIGH ENERGY RADIATION

Peter Robert Hills, Abingdon; Michael William Spindler, Cowley, and Kenneth Wallace Carley-Macauly, Didcot, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

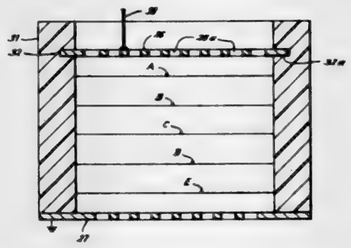
Filed Sept. 30, 1968, Ser. No. 763,652
Claims priority, application Great Britain, Sept. 29, 1967, 44,602/67
Int. Cl. B01j *1/10*
U.S. Cl. 204—162 HE 2 Claims

A process is disclosed for the synthesis of dodecyl mercaptan from a 50:50 mixture of dodecene and hydrogen sulphide at a temperature in the range 0° - 50° C. and a pressure of about 20 atmospheres, using cobalt-60 radiation to effect the reaction. A full flow sheet is described.

3,661,746
UNIFORM ELECTRIC FIELD TREATMENT

Roy N. Lucas, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Original application May 15, 1969, Ser. No. 825,015, now Patent No. 3,582,527, dated June 1, 1971. Divided and this application Jan. 19, 1971, Ser. No. 107,770
Int. Cl. B03c *5/00*
U.S. Cl. 204—188 10 Claims



A method for electrically resolving a dispersion consisting of immiscible and liquid phases. The dispersion flows along a vertical flow axis between inlet and outlet zones. An electric field for resolving the dispersion is established in a region between inlet and outlet zones through which region passes substantially all of the fluid. The electric field increases monitonically in potential in the direction of dispersion flow and has planes of constant potential transverse to the direction of dispersion flow. The phases resolved from the dispersion in the electric field are recovered from the outlet zone.

3,661,747
METHOD FOR ETCHING THIN FILM MATERIALS BY DIRECT CATHODIC BACK SPUTTERING

Peter A. Byrnes, Jr., Bridgewater Township, Somerset County, and Martin P. Lepselter, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of application Ser. No. 607,203, Jan. 4, 1966. This application Aug. 11, 1969, Ser. No. 848,935
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 3 Claims

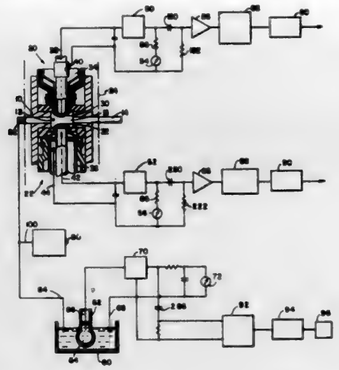
Thin layers of material including dielectric films are etched or cleaned by placing them in a low pressure gas ambient, forming a plasma in the ambient, and establishing a periodic voltage between the layers and the plasma. One important application of the process is the formation of metal silicide contacts through small windows in a dielectric layer protecting the silicon surface. In one application, the metal is sputtered onto the exposed silicon at the same time that the surface is subjected to ion bombardment. The sputtering and etching rates are adjusted so that some of the sputtered metal reacts with the silicon upon impact and the unreacted metal is etched away.

3,661,748
FAULT SENSING INSTRUMENTATION

David E. Blackmer, Harvard, Mass., assignor to Instrumentation Laboratory, Inc., Lexington, Mass.

Filed Apr. 7, 1970, Ser. No. 27,197
Int. Cl. B01k *3/00*
U.S. Cl. 204—195 7 Claims

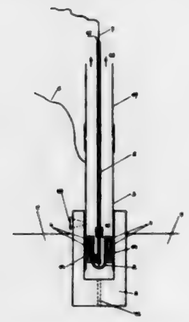
An electrochemical sensor system includes an electrode assembly that produces a DC signal as a function of a parameter of interest sensed by the electrode system. An AC signal is applied via an electrode to the conductor fluid in which the electrode system is disposed and an AC signal detector is connected to the DC circuitry. A threshold circuit responsive to the output of the AC signal detector indicates fault in the electrochemical sensor system whenever the AC signal detector has an output of predetermined magnitude.



3,661,749
APPARATUS FOR MEASURING IN A CONTINUOUS MANNER THE OXYGEN IN A MOLTEN METAL

Frederick Denys Richardson, Epsom, Surrey, England, assignor to Metallurgie Hoboken, Brussels, Belgium and RST International Metals Limited, London, England, part interest to each

Filed Jan. 27, 1969, Ser. No. 794,335
Claims priority, application Luxembourg, Feb. 9, 1968, 55,448
Int. Cl. G01n *27/30*
U.S. Cl. 204—195 S 16 Claims



Apparatus for the continuous measurement of oxygen contained in a molten metal which comprises

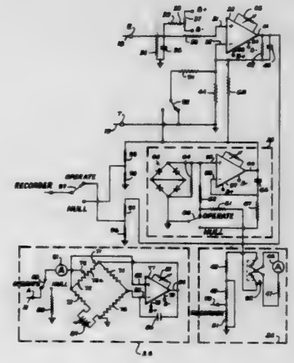
a. a solid oxygen electrolyte tube;
b. a reference electrode having known oxygen potential in contact with the inner surface of the tube;
c. means for measuring the electrochemical potential present between the inner and outer surfaces of the tube; and
d. insulating means to protect the solid oxygen electrolyte tube against chemical attacks, thermal shocks and mechanical stress due to the contact with the liquid molten metal.

The insulating means is a tube made of a metal containing substance having a high resistance to mechanical stress, to thermal shocks, to chemical attack, to splashing of the metal which is to be tested and to the slag of the metal which is to be tested. In addition the insulating means closely surrounds the solid oxygen electrolyte tube and is open at the bottom so that the outer surface of the tube can be directly contacted with the molten metal which is to be tested.

3,661,750
CORROSION RATE METER

Homer M. Wilson, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Aug. 28, 1969, Ser. No. 853,640
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 11 Claims



A corrosion rate meter with metallic electrodes contactable by a corrodent, including a test specimen electrode, a reference electrode, and a third or auxiliary electrode. A source of direct current passes between the test and third electrodes, at selected intervals, a predetermined, relatively constant current whereby a polarization potential is created between the test and reference electrodes. An isolation amplifier; with an input circuit between the test and reference electrodes, provides in its output circuit an output signal representative of the potential difference between these electrodes. A signal correction means applies a corrective signal to the input circuit of the isolation amplifier. The corrective signal removes from the output signal of the isolation amplifier any component representing the potential difference present between the test and reference electrodes intermediate the intervals of current flow creating the polarization potential. A readout means connects to the output circuit of the isolation amplifier to measure the output signal representative of the polarization potential (and corrosion rate) created between the test specimen and reference electrodes.

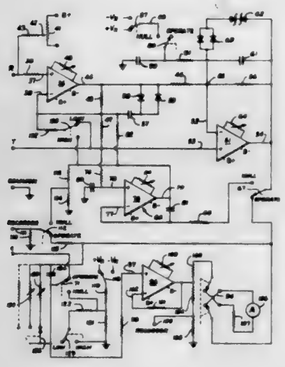
3,661,751
CORROSION RATE METER

Homer M. Wilson, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Oct. 30, 1969, Ser. No. 872,694
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 16 Claims

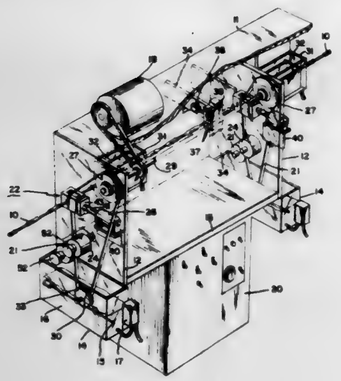
A corrosion rate meter with test specimen, reference and third electrodes contactable by a corrodent. An isolation amplifier provides an output signal representative of the potential difference between the test and reference electrodes. An output amplifier produces output current having a predetermined relationship to this output signal and a reference current signal representing a certain polarization potential to be established between the test and reference electrodes. A signal correction means stores an integrated corrective signal derived from the current from the output amplifier. The corrective signal adjusts the output signal of the isolation amplifier for a component representing the potential difference between the test and reference electrodes but not the polarization

potential component which removes the reference current signal. Then, the output amplifier passes current between the test and third electrodes to produce a polarization potential between the test and reference electrodes. The output signal from the isolation amplifier is now free of



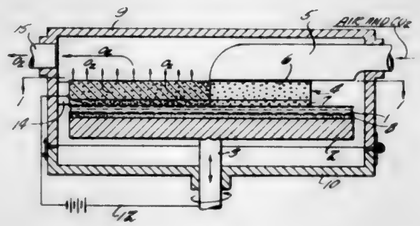
both corrective signal components to control the output amplifier to that current magnitude creating the certain polarization potential between the reference and test electrodes. A readout means measures the output current from the output amplifier which is representative of the corrosion rate occurring at the test electrode.

3,661,752
BELT PLATING APPARATUS
Harry Milton Capper, Harrisburg, Harold Oakley Woolley, Jr., Hershey, Clifton Eugene Lemons, Hummelstown, and Richard Maxwell Wagner, Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed June 23, 1970, Ser. No. 49,089
Int. Cl. C23b *5/68*
U.S. Cl. 204—206 **16 Claims**



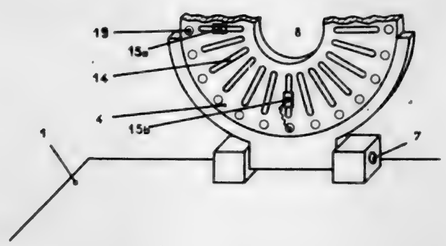
A novel dual head belt plater has been disclosed which can plate continuously selected portions of a stamped strip forming an electrical connector component blank or a blank as a part of a connector. Another embodiment of the novel belt plater allows continuous plating with one or more metals a continuous strip on a different metal whereby an electrodeposit of a certain or varying width is obtained. In a further embodiment, a machine accomplishes plating in a substantially continuous manner by moving continuously a workpiece over a periphery of a drum carrying an anode covered with a belt.

3,661,753
CARBON DIOXIDE REMOVAL DEVICE
John R. Aylward, Vernon, and James L. Smith, Enfield, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Nov. 18, 1970, Ser. No. 90,533
Int. Cl. C23b *5/68*
U.S. Cl. 204—212 **7 Claims**



A device for selectively removing CO_2 directly from a breathable atmosphere under zero gravity conditions, said device including an anode and cathode with a fused electrolyte layer disposed therebetween. The electrolyte is arranged so as to be exposed, for a short time, to the atmosphere whereby the CO_2 is absorbed. Then the electrolyte is moved to a field between the anode and cathode whereby absorbed CO_2 is decomposed into carbon and oxygen.

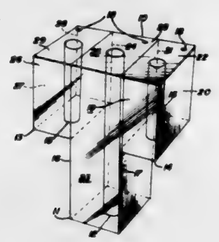
3,661,754
APPARATUS FOR SELECTIVELY ADJUSTING THIN FILM CIRCUIT COMPONENTS OF A COMPLEX NETWORK
Jean Joly and Gerard Blangeard, Paris, France, assignors to Societe Lignes Telegraphiques et Telephoniques, Paris, France
Filed Nov. 7, 1969, Ser. No. 874,807
Int. Cl. B01k *3/00*; B23p *1/02*; C23b *5/70*
U.S. Cl. 204—228 **4 Claims**



A method and an apparatus for carrying out said method for selectively adjusting by anodization the resistors of a thin film or hybrid circuit. The circuit is positioned under a thick mask provided with holes registering with the resistors on the circuit lay-out. A jellied electrolyte is spread over the circuit through the mask which is removed. Electrodes prepositioned with respect to the lay-out are placed on the electrolyte spots which are connected to an equipment. Each resistor is associated

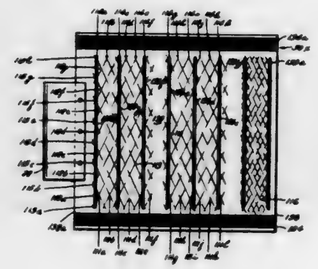
with three electrodes: two located at each end and connected in an arm of a measuring A.C. bridge, another arm of which is connected to the standard resistor, the third connected at the middle of the resistor and supplying the D.C. anodizing current. Balance of the bridge automatically stops the anodizing current.

3,661,755
NOVEL ELECTROCHEMICAL CELL FOR PRODUCING OXIDIZERS
Arvind S. Patil, Silver Spring, Md., assignor to W. R. Grace & Co., New York, N.Y.
Filed Sept. 23, 1970, Ser. No. 74,715
Int. Cl. B01k *3/00*
U.S. Cl. 204—271 **9 Claims**



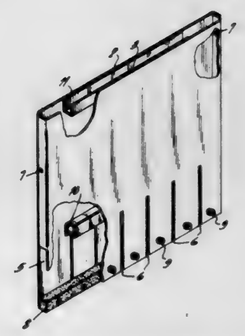
A dip-type electrochemical cell for the electrolysis of salt solutions, particularly halogen salt solutions. Said electrochemical cell comprising at least one anode and at least one cathode wherein the ratio of the total active anode surface area to the total active cathode surface area is within the range of about .1 to about 10, but most preferably 1; and preferably having a non-porous plastic housing comprising separate chambers for the electrodes. Said electrodes are composed of a non-corroding conducting material which can withstand highly alkaline or acidic conditions on a continuous basis.

3,661,756
CATHODE FOR ELECTROLYTE REFINING OF METAL, SUCH AS COPPER
Bill Hugh Spoon, El Paso, Tex., assignor to Phelps Dodge Refining Corporation, New York, N.Y.
Original application Feb. 15, 1967, Ser. No. 616,315, now Patent No. 3,544,431, dated Dec. 1, 1970. Divided and this application Dec. 16, 1969, Ser. No. 885,513
Int. Cl. B01k *3/04*; C23b *5/68*
U.S. Cl. 204—286 **4 Claims**



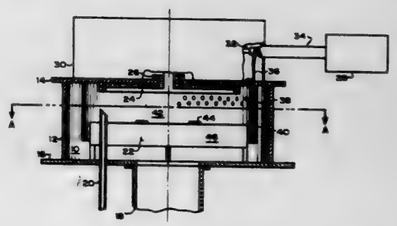
Cathode for electrolytic refining of metal, such as copper, to produce cathodes of commerce wherein a substantial thickness of the metal is electrolytically deposited on both sides of thin starting sheets to produce intermediate cathodes which are then subjected to a pressing operation to stress the metal over the area of the intermediate cathode sheets to cold work the metal and stress it to beyond its elastic limit, after which the metal is electrolytically deposited on both sides of the intermediate cathode sheets to a thickness suitable for metal cathodes of commerce.

3,661,757
ANODE
Derek Colin McLean, Sandbach, England, assignor to Murgatroyd's Salt and Chemical Company Limited, Sandbach, England
Filed Oct. 26, 1967, Ser. No. 678,343
Claims priority, application Great Britain, Nov. 8, 1966, 49,880/66
Int. Cl. B01k *3/04*
U.S. Cl. 204—290 F **3 Claims**



The invention is an anode suitable for use in an electrolytic cell. It comprises a box-like structure, open at either end, of titanium or a similar metal and has at least two parallel plates having at least part of their outer surfaces coated with a platinum group metal. Means are provided to prevent substantial deformation of the anode when the lower edge is cast in a conducting metal in the cell.

3,661,758
RF SPUTTERING SYSTEM WITH THE ANODE ENCLOSING THE TARGET
Weldon H. Jackson, Sunnyvale, and Billie J. Robison, Palo Alto, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed June 26, 1970, Ser. No. 50,103
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **1 Claim**



The plasma in an RF sputtering system is confined to the region between the anode and target by enclosing the target with the anode. The anode is in two parts which are

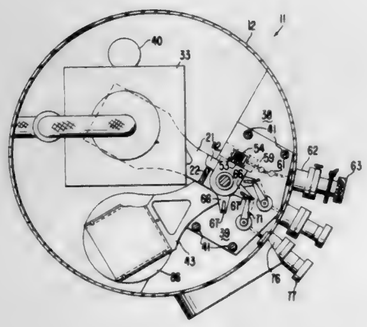
connected electrically through sliding contacts that allow removal of one of the parts for access to the interior region of the anode.

3,661,759

VACUUM COATING APPARATUS HAVING MEANS FOR POSITIONING ONE OF A PLURALITY OF MEMBERS AT A SELECTED LOCATION BETWEEN THE SUBSTRATE AND THE COATING MATERIAL SOURCE

Harold William Bruce, Palo Alto, and Werner E. Sandvoss, San Jose, Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Feb. 19, 1970, Ser. No. 12,561
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **12 Claims**



A vacuum coating apparatus of the gaseous discharge sputtering type is described. Such apparatus includes a target electrode, means for initiating and sustaining a gaseous discharge for sputtering coating material from a target positioned at the target electrode, and a substrate holder for supporting a substrate in the line-of-sight of the target for receiving coating material sputtered therefrom. Mechanisms are included for positioning any one of a plurality of coating masks over the substrate to provide a desired coating pattern, and for positioning any one of a plurality of sputter targets at the target electrode to obtain sputtering of, and consequent coating by, different materials. Actuation mechanism extends to the exterior of the vacuum chamber housing the sputtering apparatus for actuating both the mask moving and target moving mechanisms from the exterior of the chamber.

3,661,760

CATHODE SPUTTERING APPARATUS FOR THE DEPOSITION OF COMPOSITE THIN FILMS

Roland Borgne, Jean Joly, and Edouard Rosiaux, Paris, France, assignors to Societe Lignes Telegraphiques et Telephoniques, Paris, France

Filed Dec. 6, 1968, Ser. No. 781,772
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **1 Claim**

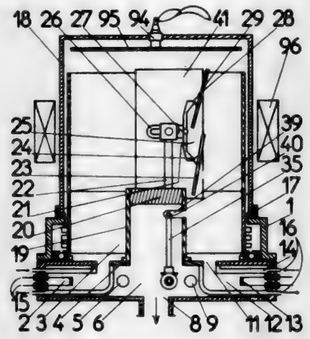
Cathode sputtering apparatus permitting:

Simultaneously or sequentially depositing an alternate or non-alternate layer of homogeneous or heterogeneous composition on a large number of substrates without breaking the vacuum, in the course of a single cathode sputtering operation;

Adjusting the distance and the orientation of centrally located targets;

Disposing the substrates on an object holder rotating continuously about the targets;

Carrying out the thickness monitoring measurements of the deposits outside the zones of circulation of the beams of charged particles, in the course of the deposition;



Eliminating any rotating joint in the construction of the apparatus;

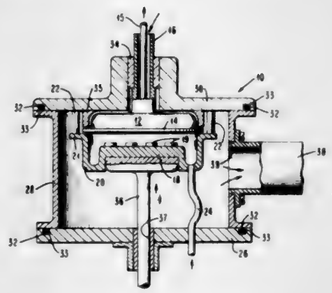
Automating the manufacture.

3,661,761

RF SPUTTERING APPARATUS FOR PROMOTING RESPUTTERING OF FILM DURING DEPOSITION

Harold R. Koenig, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 2, 1969, Ser. No. 829,633
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **9 Claims**



An RF sputtering method and apparatus wherein the area ratio of the substrate holder electrode to the target holder electrode is less than 2.5 and the region of the glow discharge is confined to promote resputtering, which improves the over-all quality of the resultant sputtered film.

3,661,762

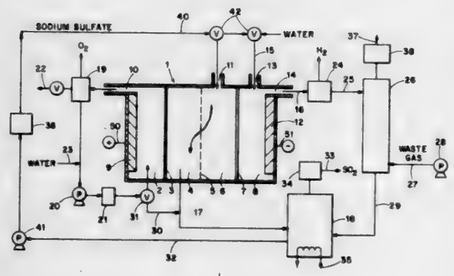
ELECTROLYTIC CELL FOR REMOVAL AND RECOVERY OF SO_2 FROM WASTE GASES

Edgardo J. Parsi, Watertown, Mass., assignor to Ionics, Incorporated, Watertown, Mass.

Original application Dec. 27, 1967, Ser. No. 693,903, now Patent No. 3,523,880. Divided and this application May 4, 1970, Ser. No. 34,441
Int. Cl. B01k *5/00*; B01d *13/02*; C23b *13/00*
U.S. Cl. 204—301 **10 Claims**

This invention relates to a four compartment electrolytic cell for converting a salt solution feed into its corresponding acid, acid salt and caustic solution for use in connection with a liquid SO_2 absorption system. The caustic

produced absorbs the SO_2 gas and on exhaustion is neutralized with the acid salt to reform the original salt feed solution. The desorbed SO_2 gas is collected and the salt solution recycled as feed to the cell. The acid pro-



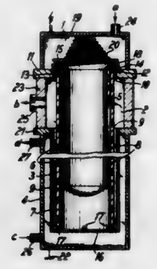
duced in the anode compartment of the cell is removed from the scrubber system in an amount which is sufficient to maintain the reformed salt feed solution substantially neutral in pH.

3,661,763

TUBULAR OZONIZER

Joseph Cremer, Hermulheim, near Cologne, and Herbert Panter, Kurt-Alstadten, near Cologne, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

Filed Mar. 18, 1969, Ser. No. 808,228
Claims priority, application Germany, Apr. 2, 1968, P 17 67 109.9
Int. Cl. C01b *13/12*
U.S. Cl. 204—321 **10 Claims**



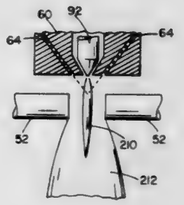
Tubular ozonizer substantially comprising an oxygen chamber, an ozone chamber, a discharge chamber and a coolant container surrounding the discharge chamber bounded by two metal electrodes, which are concentrically telescoped one into the other, have an open upper end and a closed lower end, and have an associated dielectrical tube arranged therebetween so as to leave two discharge spaces. The partition plate between the ozone chamber and oxygen chamber is formed with a bore into which the dielectrical tube is telescoped so as to be radially spaced therefrom, and a packing ring is provided in the annular gap left between the dielectrical tube and the wall of the bore in the partition wall, the packing ring having a centering ring mounted thereon to provide support for the upper flanged edge of the tensionally held, inner electrode.

3,661,764

MATERIAL TREATMENT APPARATUS

Lawrence W. Scammon, Jr., Concord, N.H., assignor to Humphreys Corporation, Bow, N.H.

Filed Nov. 14, 1969, Ser. No. 876,741
Int. Cl. C22d *7/08*
U.S. Cl. 204—325 **35 Claims**



Material treatment apparatus comprises a chamber, a plurality of first electrodes having opposed end surfaces adjacent one another to define a passage having an axis passing between the end surfaces. A second electrode structure has its end surface spaced from the first electrodes and aligned with the passage axis. Circuit means energizes the first and second electrodes to produce a high intensity electric arc condition to establish an elongated high enthalpy zone coaxial with said passage axis. Entrance port means in the chamber introduces material to be treated into the zone between the first and second electrode structures for flow through the passage defined by the faces of the first electrodes and the high enthalpy zone.

3,661,765

PROCESS FOR PRODUCTION OF GILSONITE-LIKE BITUMINOUS MATERIAL

Mitsuru Toyoguchi, Yokohama, and Hiroshi Iijima, Tokyo, Japan, assignors to Mitsubishi Oil Co., Ltd., Tokyo, Japan

No Drawing. Filed July 30, 1970, Ser. No. 59,725
Claims priority, application Japan, Aug. 4, 1969, 44/60,992
Int. Cl. C10g *27/04*; C10c *3/04, 1/20*
U.S. Cl. 208—6 **13 Claims**

A process for the production of a gilsonite-like bituminous material having a penetration of 0 to 1 and a softening point of 130° C. to 180° C. which comprises solvent extracting a material selected from the group consisting of straight asphalt and the vacuum distillation residue obtained in the production of lubricating oils to obtain a material having a penetration of 2 to 30, and then air blowing said material having a penetration of 2 to 30 at a temperature of 200° to 300° C.

3,661,766

PROCESS FOR THE UTILIZATION OF EMULSIONS OF AQUEOUS UREA SOLUTION AND NORMAL PARAFFINS

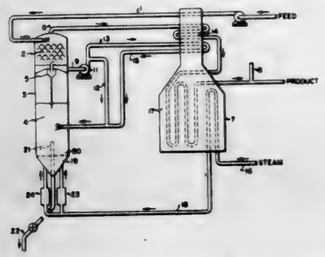
Hermann Franz, Neu Isenburg, and Max Kunert, Neu Wulmstorf, Germany, assignors to Edeleanu Gesellschaft m.b.H., Frankfurt am Main, Stresemannallee, Germany

No Drawing. Filed Apr. 16, 1970, Ser. No. 29,254
Claims priority, application Germany, Apr. 18, 1969, P 19 19 664.6
Int. Cl. C10g *43/04*; C07b *21/00*
U.S. Cl. 208—25 **7 Claims**

An emulsion of normal paraffins and aqueous urea solution formed during the decomposition of a normal paraffin-urea adduct is resolved by admixing water and a

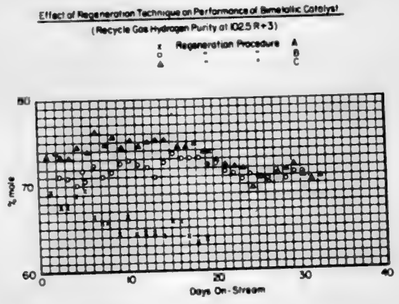
chlorinated hydrocarbon solvent with the emulsion, filtering and allowing the mixture to settle whereby two phases are formed, one comprising normal paraffins and chlorinated hydrocarbon and the other comprising aqueous urea solution.

3,661,767
FLUID COKING-STEAM CRACKING COMBINATION PROCESS
Guy B. Wirth, Florham Park, and Charles E. Jahnig, Rumson, N.J., assignors to Esso Research and Engineering Company
Filed Sept. 19, 1969, Ser. No. 859,313
Int. Cl. C10b *55/10*; C10g *37/02*
U.S. Cl. 208—54 27 Claims



This invention relates to a fluid coking-steam cracking furnace process combination for producing coke and gaseous hydrocarbons from a heavy hydrocarbon feedstock wherein the heat requirements for the endothermic-cracking reaction in the fluid coking vessel are supplied directly to the fluidized bed of hot carbonaceous particles. In one embodiment, steam is heated in a furnace, preferably a steam cracking furnace, and is thereafter passed into the fluid bed to supply all or essentially all the heat requirements for the cracking, i.e. coking reaction in the fluid bed. In another embodiment, steam is first heated in a furnace, preferably a steam cracking furnace. Thereafter, suitable oxygen-containing combustion gas mixtures, e.g. hydrogen-oxygen are employed to supply the remaining portion of the heat required to raise the temperature of the steam such that the steam, when introduced directly into the bottom of the fluid bed, in addition to fluidizing the bed, supplies the heat requirements for the coking reaction. In still another embodiment, the combustion products from suitable oxygen-containing combustion-gas mixtures, i.e. natural gas and oxygen, are injected directly into the upper portion of fluid bed such that the injection of the combustion products and steam from a steam cracking furnace into the fluid bed supply the heat requirement for the coking reaction directly to the bed. Additionally, the introduction of steam directly into the fluid bed provides the carrying and cracking medium for the vaporized hydrocarbons recovered from the fluid bed coking zone, which vaporized hydrocarbon-steam mixture is then passed through a steam cracking furnace to produce low molecular weight unsaturated products.

3,661,768
REFORMING WITH BIMETALLIC REFORMING CATALYST
Francis E. Davis, Jr., Woodbury, Walter R. Derr, Ashland, and Earle F. Ginter, Woodbury, N.J., assignors to Mobil Oil Corporation
Continuation-in-part of application Ser. No. 23,160, Mar. 27, 1970. This application June 1, 1970, Ser. No. 42,171
Int. Cl. C10g *35/08*
U.S. Cl. 208—139 3 Claims
The application describes an improved start-up procedure for bimetallic reforming catalyst comprising platinum which involves the steps of reducing the catalyst purged of oxygen with moisture saturated hydrogen gas until a temperature of 900° F. is attained thereafter sulfiding the reduced catalyst and charging naphtha in contact with the catalyst in the presence of circulating hydrogen gas provided with a sufficient amount of moisture and sulfur under operating conditions selected to assure generation of hydrogen rich gas.



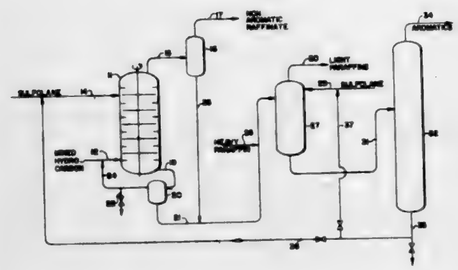
3,661,769
PROCESS FOR REFORMING A NAPHTHA FEEDSTOCK IN THE PRESENCE OF A PLATINUM-TUNGSTEN-ALUMINA CATALYST
Paul B. Venuto and Thaddeus E. Whyte, Jr., Cherry Hill, N.J., assignors to Mobil Oil Corporation
Filed Nov. 23, 1970, Ser. No. 91,971
Int. Cl. C10g *35/06, 35/08*
U.S. Cl. 208—139 10 Claims
A method for reforming a naphtha feedstock which comprises contacting the same with a catalyst that contains platinum and tungsten on a porous support.

3,661,770
CHLOROSILANE ACTIVATION OF AN ISOMERIZATION CATALYST AND PARAFFIN ISOMERIZATION UTILIZING THE SAME
Edwin N. Givens, Glassboro, N.J., assignor to Mobil Oil Corporation
No Drawing. Filed Oct. 22, 1970, Ser. No. 83,183
Int. Cl. B01j *11/78*; C07c *5/30*
U.S. Cl. 260—683.68 8 Claims
A Group VIII metal-alumina catalyst is pre-treated with a chlorosilane to produce a low temperature paraffin isomerization.

3,661,771
SEPARATION OF ORGANOSULFUR COMPOUNDS FROM HYDROCARBONS
Richard H. Havens, Kansas City, Mo., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed July 7, 1969, Ser. No. 839,709
Int. Cl. C10g *29/22*; C07c *9/00*
U.S. Cl. 208—240 8 Claims
Organosulfur compounds such as n-propylmercaptan, n-amylmercaptan, ethylsulfide, and methyl disulfide are removed from hydrocarbons, such as isooctane, by heating the hydrocarbon solution in contact with dimethylsulfate, cooling, and removing the dimethylsulfate.

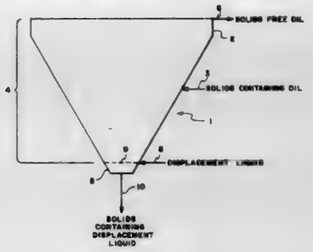
3,661,772
SOLVENT REFINING OF NAPHTHENIC LUBE OIL WITH N-METHYL-2-PYRROLIDONE
Avilino Sequeira, Jr., and James P. Jolly, Nederland, Tex., and William E. Rea, Hopewell Junction, N.Y., assignors to Texaco Inc., New York, N.Y.
No Drawing. Filed Apr. 3, 1970, Ser. No. 25,592
Int. Cl. C10g *29/00*
U.S. Cl. 208—289 2 Claims
Manufacture of naphthenic lubricating oil product by distillation of crude oil containing naphthenic lubricating oil effecting separation of the naphthenic lubricating oil stocks; refining lubricating oil stocks for removal of constituents of low viscosity index, low thermal stability, and poor oxidation stability by solvent extraction with an aqueous solvent phase comprising between about 85 and 98 wt. percent N-methyl-2-pyrrolidone and between about 2 and 15 wt. percent water at conditions effective to dissolve at least 10 vol. percent producing as a raffinate a refined lubricating stock of said lubricating oil stocks of improved viscosity index, thermal stability and oxidation stability.

3,661,773
FOAM PREVENTION IN EXTRACTIVE STRIPPING OF SULFOLANE SOLVENT EXTRACT
Frederik J. Zuiderweg and Hendrik J. Scheffer, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.
Filed Oct. 8, 1969, Ser. No. 864,727
Claims priority, application Netherlands, Dec. 24, 1968, 6818690
Int. Cl. C10g *21/28*
U.S. Cl. 208—321 5 Claims

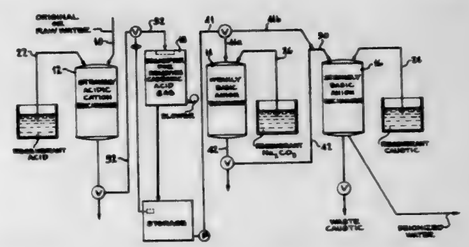


Gasoline boiling range aromatics are recovered from a sulfolane extract containing sulfolane, gasoline boiling range aromatics, and minor amounts of light paraffins by extractive stripping in the presence of added heavy paraffinic hydrocarbon to remove the light paraffins and fractionation to separate the aromatics and sulfolane.

3,661,774
SEPARATION OF SOLIDS FROM A LIQUID
George P. Masologites, Park Forest, Ill., assignor to Atlantic Richfield Company, New York, N.Y.
Filed Oct. 28, 1970, Ser. No. 84,756
Int. Cl. B01d *12/00*
U.S. Cl. 210—21 13 Claims
A method for separating solid particles from a liquid in which they are dispersed wherein the liquid is subjected to force conditions such as gravity settling, centrifugation, and the like to cause the solid particles to collect in a localized portion thereof, and introducing a displacement liquid into the localized portion under conditions such that the displacement liquid takes the place of at least part of the solids containing liquid in that localized portion, the displacement liquid taking up solid particles migrating into the localized portion, and removing displacement liquid having solid particles dispersed therein.



3,661,775
PROCESS FOR DEIONIZING WATER
Akimitsu Miyahara, Kawagoe, Minoru Fujita, Tokyo, Isao Yamamoto, Chiba, and Tamako Katamura, Tokyo, Japan, assignors to Rohm and Haas Company, Philadelphia, Pa.
Filed July 1, 1970, Ser. No. 51,468
Int. Cl. C02b *1/68*
U.S. Cl. 210—37 4 Claims



This invention involves a 3-bed ion exchange water deionization system. The first bed contains a strongly acidic cation exchange resin; the second bed contains a weakly basic anion exchange resin; and the third bed contains a strongly basic anion exchange resin. Water to be deionized is passed down through the first column. The effluent is divided into two parts, the major portion being made to pass down through the second or weakly basic resin and, eventually, through the third column containing the strongly basic resin. The minor portion of the effluent from the cation exchange bed is mixed together with the effluent from the weakly basic resin bed and then sent down through the strongly basic resin bed. The effluent from the third column or strongly basic resin bed is the deionized water.

3,661,776
COMPOSITION COMPRISING A FOAM-FORMING FLUOROALIPHATIC COMPOUND AND A FILM-FORMING FLUOROALIPHATIC COMPOUND
Robert B. Fletcher, Maplewood, and Kenneth W. Livermore, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Continuation of application Ser. No. 700,716, Jan. 26, 1968. This application Aug. 24, 1970, Ser. No. 66,595
Int. Cl. A62d *1/00*
U.S. Cl. 252—3 4 Claims
An aqueous composition for extinguishing or preventing flammable fuel fires is formulated as a 6% concentrate composition and comprises water, a water-soluble

foam-forming fluoroaliphatic compound and at least one water-soluble film-forming two-component fluoroaliphatic salt, viz, one having an acid component and a base component. The 6% concentrate composition is diluted with sixteen parts water, by weight, and is applied onto a hydrocarbon fuel fire as a blanketing foam.

3,661,777
THIXOTROPIC COLLOIDAL LEAD-CONTAINING COMPOSITION

Mack W. Hunt, Lynn C. Rogers, and Roy C. Sias, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

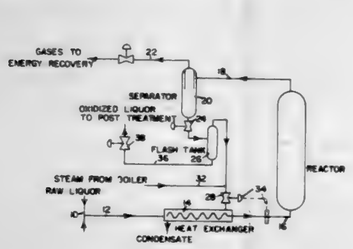
No Drawing. Filed Nov. 24, 1969, Ser. No. 879,605
Int. Cl. C10m 5/22
U.S. Cl. 252—33 24 Claims

Thixotropic colloidal dispersions of lead oxide are disclosed broadly. These materials are prepared by treating a fluid, overbased lead dispersion with an active hydrogen compound (e.g. water or water-alcohol mixtures). Preferably, yellow lead oxide is used to prepare the fluid, overbased lead dispersion. The thixotropic colloidal dispersion of lead oxide is useful as a corrosion inhibitor and as a grease.

3,661,778
WET AIR OXIDIZATION SYSTEM FOR STRONG SLUDGES AND LIQUORS

Louis A. Pradt, Wausau, Wis., assignor to Sterling Drug Inc., New York, N.Y.

Filed Jan. 18, 1971, Ser. No. 107,393
Int. Cl. C02c 5/04
U.S. Cl. 210—63 3 Claims



Raw liquor is introduced to a heat exchanger and thence through a temperature control valve to a reactor and thence to a separator, and a flash tank is provided which receives oxidized liquor from the separator at an intermediate pressure resulting in "flash" steam used for preheating in the heat exchanger.

3,661,779
GREASES CONTAINING PARTICULATE POLYMERIC DIIMIDE THICKENERS

Garth M. Stanton, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Aug. 1, 1969, Ser. No. 846,941
Int. Cl. C10m 5/20
U.S. Cl. 252—49.6 13 Claims

Grease compositions are disclosed comprising a lubricating fluid and a thickener consisting essentially of a polymeric diimide having a number average molecular weight of 10,000 to 50,000, with the thickener comprising 5 to 40 weight percent of the grease composition and being dispersed in the grease as particles less than five microns in diameter. Derivatives of pyromellitic dianhydride are particularly preferred.

3,661,780
HYDROCARBON COMPOSITION CONTAINING POLYALKYL-SUBSTITUTED TETRAHYDRONAPHTHALENES AND DI-n-C_{10}-C_{15}-ALKARYL HYDROCARBONS AND PROCESS FOR PREPARING SAME

George C. Feighner, Franklin Lakes, N.J., and Oliver C. Kerfoot, Delmar D. Krehbiel, and Gene E. Nicks, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

No Drawing. Continuation-in-part of application Ser. No. 716,351, Mar. 27, 1968, which is a continuation-in-part of application Ser. No. 643,370, June 5, 1967, both now abandoned. This application Oct. 26, 1970, Ser. No. 84,125
Int. Cl. C10m 1/16
U.S. Cl. 252—59 11 Claims

Hydrocarbon composition containing at least 20 volume percent polyalkyl-substituted tetrahydronaphthalenes and from 25 to 60 volume percent di-n-C_{10}-C_{15}-alkaryls, each of said tetrahydronaphthalenes and said di-n-C_{10}-C_{15}-alkaryls containing from 26 to 36 carbon atoms. Process for preparing said hydrocarbon composition, wherein the process comprises (1) contacting an admixture of mono-n-C_{10}-C_{15}-alkaryls and alkyl-substituted tetrahydronaphthalenes with a Friedel-Crafts catalyst, and (2) fractionally distilling the reaction mass to recover the desired hydrocarbon composition. The hydrocarbon composition is suitable for use both as a feedstock for preparing oil-soluble sulfonic acids and as a lubricant, particularly a lubricant for low-temperature ambient conditions.

3,661,781
OXIDE PIEZOELECTRIC MATERIAL

Noboru Ichinose, Yokohama-shi, Harutoshi Egami, Tokyo, and Katsunori Yokoyama and Yoshikazu Tanno, Yokohama-shi, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Feb. 24, 1970, Ser. No. 13,741
Claims priority, application Japan, Feb. 24, 1969, 44/13,164; July 22, 1969, 44/57,424; Aug. 11, 1969, 44/62,902; Oct. 14, 1969, 44/81,526; Nov. 26, 1969, 44/94,250
Int. Cl. C04b 35/46, 35/48
U.S. Cl. 252—62.9 6 Claims

An oxide piezoelectric material essentially consisting of 50.0 to 1.0 mol percent of $Pb(Cd_{1/3}\cdot Nb_{2/3})O_3$, 34.0 to 55.5 mol percent of $PbTiO_3$ and 16.0 to 53.3 mol percent of $PbZrO_3$ assuming the form of solid solution. The material may further contain at least one of MnO_2, Cr_2O_3, NiO, CoO, La_2O_3, Bi_2O_3, ThO_2 and CeO_2.

3,661,782
HYDRAULIC BRAKE FLUID BASE OILS

Malcolm K. Smith, Westfield, N.J., assignor to The Baker Castor Oil Company, Bayonne, N.J.

No Drawing. Application Feb. 27, 1962, Ser. No. 176,126, which is a continuation-in-part of application Ser. No. 690,417, Oct. 16, 1957, which in turn is a continuation-in-part of application Ser. No. 629,585, Dec. 3, 1956. Divided and this application Aug. 24, 1970, Ser. No. 66,554
Int. Cl. C09k 3/00
U.S. Cl. 252—79 5 Claims

Novel hydraulic brake fluids wherein the base oils are an adduct of a mixture of ethylene oxide and 1,2-propylene oxide with castor oil, and are characterized by having greatly improved properties, in connection with their use in brake fluids, over the properties of castor oil alone or in combination with either ethylene oxide or 1,2-propylene oxide.

3,661,783
COMPOSITION FOR METAL PLATING OF PLASTICS

William J. Cooper, Butler, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

No Drawing. Original application June 2, 1967, Ser. No. 643,053, now Patent No. 3,507,681, dated Apr. 21, 1970. Divided and this application Jan. 29, 1970, Ser. No. 6,947
Int. Cl. C23f 17/00; C09k 3/00
U.S. Cl. 252—79.2 3 Claims

Plastic surfaces are prepared to make them susceptible to being plated by chemical plating solutions by treatment with a solution of a noble metal salt, for example, palladium chloride, in an acid etchant for the plastic, followed by treatment with a solution containing amine boranes or ammonia borane. The borane solution may be a chemical plating solution, in which case, the second step of the surface preparation and the plating occurs simultaneously.

3,661,784
METHOD OF PROTECTING METAL SURFACES AGAINST ABRASIVE WEAR IN SUBMERSIBLE PUMPS

Thomas J. Bellos, Kirkwood, Mo., assignor to Petrolite Corporation, Wilmington, Del.

No Drawing. Filed Aug. 4, 1969, Ser. No. 847,403
Int. Cl. C10m 1/24, 1/32, 3/04
U.S. Cl. 252—49.3 3 Claims

Solutions of water soluble and/or dispersible oxyalkylated quaternary fatty amines not only offer protection against abrasive wear to submerged metal surfaces, such as in submersible oil well pumps, but also through their anti-bacterial and corrosion inhibiting action offer protection against corrosion and bacterial deterioration of the pump.

3,661,785
INHIBITION OF DEPOSITION OF WATER INSOLUBLE COMPOUNDS IN AQUEOUS SYSTEMS

William G. De Pierri, Jr., Baytown, Tex., assignor to Esso Research and Engineering Company

No Drawing. Original application Apr. 4, 1968, Ser. No. 718,913, now Patent No. 3,557,164, dated Jan. 19, 1971. Divided and this application Apr. 27, 1970, Ser. No. 43,259
Int. Cl. C02b 5/06
U.S. Cl. 252—8.55 B 4 Claims

Deposition of water insoluble compounds from aqueous systems containing them is inhibited by adding to the aqueous system, which may be a subsurface formation water or brine, a small but effective amount of a phosphate ester of ethoxylated esterified triol or the alkali metal or ammonium salts thereof.

3,661,786
DETERGENT COMPOSITIONS CONTAINING STABILIZED α-AMYLASE

Malcolm Desforges, Newcastle-upon-Tyne, England, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Jan. 27, 1970, Ser. No. 6,290
Int. Cl. C11d 7/18, 7/56
U.S. Cl. 252—99 11 Claims

A granular detergent composition is provided containing a mixture of an organic detergent and an alkaline builder, an α-amylase, and an amount of starch sufficient to stabilize the α-amylase.

3,661,787
SATURATED ALIPHATIC DICARBOXYLIC ACID SALTS AS DETERGENT BUILDERS

George E. Brown, Jr., Cincinnati, Ohio, assignor to The Pollutrol Group, Cincinnati, Ohio

No Drawing. Filed Oct. 9, 1970, Ser. No. 79,691
Int. Cl. C02b 5/06; C07c 55/02; C11d 9/26
U.S. Cl. 252—109 2 Claims

Disclosed herein are detergent compositions which include a detergent compound and at least one builder salt. The major portion of the builder salt is an alkali metal salt, an ammonium salt or mixtures thereof of an aliphatic saturated polycarboxylic acid having a linear carbon chain of from two to ten carbon atoms. Salts of oxalic and succinic acid are preferred. No polyphosphates are required.

3,661,788
STABILIZATION OF METHYLCHLOROFORM

Alastair Campbell, Peter Robinson, and James William Tipping, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed July 28, 1969, Ser. No. 845,522
Claims priority, application Great Britain, Aug. 30, 1968, 41,494/68
Int. Cl. C11d 7/50; C23g 5/02
U.S. Cl. 252—171 9 Claims

Methylchloroform is stabilized with a small amount of pyran, dihydropyran and tetrahydropyran, substituted in any one of the 2, 3, 4, 5, and 6 positions by an —OR group wherein R is hydrogen, lower alkyl, pyranyl, dihydropyranyl, or tetrahydropyranyl. Additional conventional stabilizers such as nitriles, ethers, alcohols, nitrates, nitroalkanes and aliphatic epoxides may also be included in the stabilized methylchloroform composition.

3,661,789
STABILIZED OXYGEN BLEACH-ACTIVATOR SYSTEM

Garland G. Corey, Milltown, and Bernard Weinstein, Plainfield, N.J., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 843,829, July 22, 1969. This application Nov. 24, 1969, Ser. No. 879,573
Int. Cl. C01b 15/00; C11d 7/51
U.S. Cl. 252—186 5 Claims

Oxygen releasing bleaches such as perborates are combined with activators and nonionic surfactants or glycols to provide compositions unusually stable upon storage under adverse conditions of high temperature and humidity to which they are normally subjected.

3,661,790
GLOWING BOUNCING PUTTY

Hubert William Dean, North Branford, and Almon G. Hovey, Northford, Conn. (both % Arnold Clark, Incorporated, P.O. Box 741, New Haven, Conn. 06520)

No Drawing. Continuation-in-part of application Ser. No. 788,347, Dec. 31, 1968. This application Oct. 20, 1969, Ser. No. 867,872
Int. Cl. C09k 1/00; A63b 43/06
U.S. Cl. 252—301.3 R 9 Claims

A non-toxic novelty composition comprising various components, including a "bouncing putty," possessing unusual properties, particularly the ability to glow in the dark after exposure to a light source.

3,661,791

METHOD OF PREPARING RARE EARTH METAL PHOSPHATE VANADATE LUMINESCENT COMPOSITIONS HAVING ACICULAR CRYSTAL HABIT

Richard C. Ropp, Warren, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 16, 1970, Ser. No. 3,403
Int. Cl. C09k 1/36, 1/44
U.S. Cl. 252—301.4 P 10 Claims

Separately precipitated rare-earth metal orthophosphate and separately precipitated rare-earth metal orthovanadate are admixed and fired to form a solid solution phosphor composition exhibiting a unique acicular crystal habit. The compositions are particularly useful for high pressure mercury vapor lamps. This method utilizing separately precipitated orthophosphate and orthovanadate results in a very homogeneous solid solution of these compositions exhibiting superior luminescence.

3,661,792

INCREASING THE PARTICLE SIZE OF PRECIPITATED HALOPHOSPHATE PHOSPHORS WITH THE AID OF SEED MATERIAL

Hugh C. Bertsch and Michael E. Russo, St. Louis, Mo., assignors to Mallinckrodt Chemical Works, St. Louis, Mo.

No Drawing. Filed June 5, 1970, Ser. No. 43,972
Int. Cl. C01b 25/32; C09k 1/36
U.S. Cl. 252—301.4 P 7 Claims

The particle size of precipitated alkaline earth haloapatites is increased by carrying out the precipitation in the presence of a suitable seed material. The seed material is preferably a precipitated alkaline earth haloapatite substantially all of whose particles are of a size between about 1 and 4 microns. Before use, the seed material is dried at a temperature not exceeding its softening point, conveniently about 125° C. Precipitation at a temperature above about 50° C. in the presence of such a seed material yields a granular precipitate whose particles are of a size substantially within the preferred 3 to 30 micron range.

3,661,793

DEFOAMING COMPOSITION AND A METHOD FOR ITS USE

Gerald B. Curtis, Haddonfield, N.J., assignor to Pioneer Chemical Works, Inc., Philadelphia, Pa.

No Drawing. Filed Aug. 22, 1969, Ser. No. 852,477
Int. Cl. B01d 17/00
U.S. Cl. 252—321 5 Claims

A composition is set forth comprising, by weight based on the composition, about 75% to about 97% of a water-insoluble hydrophobic organic liquid, about 3% to about 20% of normally hydrophilic perlite having a hydrophobic surface, 0% to about 5% of a surfactant, 0% to about 5% of hydrophobic silica and 0% to about 5% of a suspension aid. This composition is valuable in controlling foaming in an aqueous system.

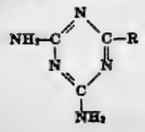
3,661,794

SURFACTANT COMPOSITION

Alois Aignesberger, Trostberg, Upper Bavaria, Germany, assignor to Suddeutsche Kalkstickstoff-Werke AG, Trostberg, Upper Bavaria, Germany

No Drawing. Filed Feb. 9, 1970, Ser. No. 9,967
Claims priority, application Germany, Feb. 13, 1969, P 19 07 261.8
Int. Cl. B01f 17/06, 17/32, 17/34
U.S. Cl. 252—354 7 Claims

Water soluble resins obtained by condensing amino-s-triazines of the formula



wherein R is H, NH_2, OH, or C_nH_{2n+1}, n being an integer between 1 and 9, with lower alkanals or alkanones in the presence of sulfites to make the resins anionic have only negligible effects on the surface tension of water. Yet they synergistically cooperate with all ordinary anionic organic surfactants in sharply lowering the surface tension of water below that obtained by the surfactants alone. Some of the resins stabilize stock solutions of perfluorinated anionic surfactants.

3,661,795

PHOSPHATIDE EMULSIFIERS

Hermann Pardun, Cleves, Germany, assignor to Lever Brothers Company, New York, N.Y.

No Drawing. Filed Jan. 8, 1970, Ser. No. 1,558
Claims priority, application Germany, Jan. 9, 1969, P 19 00 961.1
Int. Cl. B01f 17/30
U.S. Cl. 252—356 5 Claims

An emulsifying agent suitable for use in margarine and preparable as dry flakes or pellets comprises from 10 to 50 parts by weight of a partially hydrolysed vegetable phosphatide having a lysophosphatide content of from 2 to 15% by weight of the dry phosphatide, and from 90 to 50 parts by weight of a saturated fatty acid mono/diglyceride having a monoglyceride content of from 35 to 90% by weight.

3,661,796

PREVENTION OF CORROSION ON ALUMINUM METAL AND ITS ALLOYS

William A. Erby and Paul W. Thorsell, Downers Grove, and Perlita A. Ilagan, Chicago, Ill., assignors to Daubert Chemical Company, Oak Brook, Ill.

No Drawing. Filed May 5, 1970, Ser. No. 34,860
Int. Cl. C23f 11/14
U.S. Cl. 252—392 10 Claims

Compositions for, and a method of, preventing the oxidation and/or pitting of the surface of aluminum metal and aluminum metal alloys, the compositions comprising as their essential active ingredient a morpholine salt of a C_5–C_{22} monocarboxylic or fatty acid exemplified by morpholine caprylate. The morpoline salt advantageously is utilized in conjunction with an aluminum metal lubricant such as a mineral oil, the concentration of the salt in the lubricant being about 0.1% to about 99%, by weight.

3,661,797

ANALYTICAL REAGENTS FOR QUANTITATIVE DETERMINATION OF WATER

Clifton E. Meloan, Manhattan, Kans., and Thomas G. Bunting, Willoughby, Ohio, assignors to Kansas State University Research Foundation, Manhattan, Kans.

No Drawing. Filed June 10, 1970, Ser. No. 45,253
Int. Cl. G01n 33/18
U.S. Cl. 252—408 26 Claims

Under anhydrous conditions cobalt, nickel, and iron salts react with aromatic diazole compounds, such as piaselenole and piasthiole, to produce complexes which are capable of decomposing reproducibly in the presence of water, and are therefore useful as analytical reagents for water determinations. The sensitivity of the compounds varies with the element in the heterocyclic ring, namely selenium or sulfur, which complexes with the cobalt, nickel, or iron salt. Sensitivity can be further varied by employing the complex in admixture with a water reactive compound, such as cobaltous chloride or nitrate. Depending on the reagent or reagent mixture selected, water determinations in the range of p.p.b. through p.p.m. to a few percent can be made, using a spectro-photometer. Interferences are limited.

3,661,798

PROCESS FOR REGENERATING NICKEL AND COBALT HYDROGENATION CATALYSTS

Jean Cosyns, Nanterre, and Pierre Duhaut, Le Vesinet, France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil Malmaison, Hauts-de-Seine, France

No Drawing. Filed Apr. 14, 1970, Ser. No. 28,527
Claims priority, application France, Apr. 18, 1969, 6912376
Int. Cl. B01j 11/30, 11/02
U.S. Cl. 252—416 15 Claims

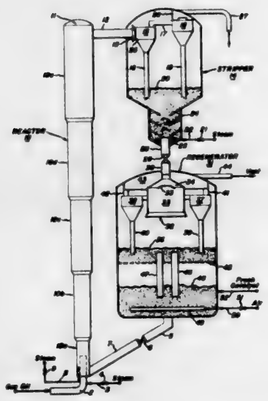
In the hydrogenation of aromatic and olefinic hydrocarbons containing about 1–200 parts per million by weight of sulfur, nickel and cobalt catalysts are deactivated and are difficult to regenerate. If, however, a silica carrier is employed, the regeneration of the catalysts can be accomplished by the successive steps of heating the deactivated catalysts with a gas containing molecular oxygen at 300–600° C., contacting resultant cooled catalysts with liquid water at about 0–250° C. and then with hydrogen at 200–500° C. This regeneration process does not work satisfactorily with alumina as a carrier.

3,661,799

OXIDATIVE FLUIDIZED REGENERATION OF PETROLEUM CONVERSION CATALYST IN SEPARATE DILUTE AND DENSE PHASE ZONES

Robert R. Cartmell, Crown Point, Ind., assignor to Standard Oil Company, Chicago, Ill.

Filed Jan. 26, 1970, Ser. No. 5,777
Int. Cl. B01j 11/04, 11/74
U.S. Cl. 252—417 7 Claims



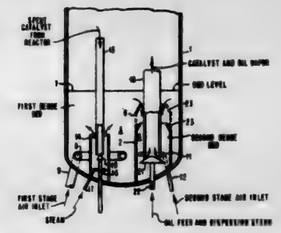
Catalytic conversion of petroleum feedstocks, such as the cracking of a gas oil in a vertical transport reactor, is improved by effecting rapid separation of catalyst from reactor effluent and regenerating catalyst in a multi-stage fluid-bed system. A higher yield of desirable petroleum products and a lower carbon level on spent catalyst are realized. Partial regeneration of spent catalyst is effected in a first dilute-phase regeneration stage, permitting subsequent use of a high regeneration temperature in order to reach an acceptably low carbon level on regenerated catalyst without harm to sensitive conversion catalysts.

3,661,800

STAGED FLUIDIZED SOLIDS CONTACTING PROCESS IN OXIDATION REGENERATION OF CATALYSTS

Robert W. Pfeiffer, Bronxville, and Henry P. Wickham, Upper Brookville, Glen Head, N.Y., assignors to Pullman Incorporated, Chicago, Ill.

Filed June 17, 1970, Ser. No. 46,985
Int. Cl. B01j 11/04, 11/68
U.S. Cl. 252—417 9 Claims



A method for staged regeneration of particulate, fluidized material in a unitary vessel having superimposed beds wherein regeneration gas leaving a second stage is passed through a first stage. The method is particularly applicable to the regeneration of hydrocarbon cracking catalyst to low residual levels of carbon.

3,661,801

SOLID PHOSPHORIC ACID CATALYSTS

William R. Gutmann and Edward K. Dienes, Louisville, Ky., assignors to Catalysts and Chemicals Inc., Louisville, Ky.

No Drawing. Filed Feb. 2, 1970, Ser. No. 8,025
Int. Cl. B01j 11/82
U.S. Cl. 252—435 5 Claims

Solid phosphoric acid is the name which has come into use for a calcined mixture of an acid of phosphorous and a porous siliceous material. Solid phosphoric acid catalysts have for years been virtually the only catalyst effective in many reactions involving olefins, particularly the polymerization of olefins to form high octane fuels. These catalysts are widely used despite their lack of strength and poor wearing qualities. High strength solid phosphoric acid catalysts are provided herein, the uniqueness of the catalyst being attributable to the method of preparation. P_2O_5 is dry blended with the silica material to form the precursor. The precursor is then subjected to a steam-air treatment to bring about the hydration of the P_2O_5. This forms a silico-phosphorous matrix. This matrix is preserved by not physically changing the catalyst during its preparation. This is accomplished by forming spheres of the catalyst material by tumbling and spraying the tuming mass with phosphoric acid.

3,661,802

POLYMERIZATION CATALYSTS USING SUPPORTED RHENIUM OXIDES

Philip E. Nicpon, Hammond, Ind., assignor to Standard Oil Company, Chicago, Ill.

Filed Aug. 31, 1970, Ser. No. 68,197
Int. Cl. C08f 1/52
U.S. Cl. 252—430 7 Claims

A composition of matter useful as a catalyst for the polymerization of mono- and diolefins to normally solid polymers which comprises a minor amount of a higher oxide of rhenium supported on a major amount of a high-surface-area silica, said oxide in combination with said silica, wherein said combination has been heated in the temperature range from about 400° C. to about 950° C., and a promoter chosen from the group containing compounds of formula R_3Al wherein R is a lower alkyl group

of from 1 to about 6 carbon atoms and wherein the mole ratio of said promoter to said higher oxide of rhenium runs from about 0.5 to about 50.

3,661,803
ETHYLENE POLYMERIZATION IN THE PRESENCE OF COMPLEX NICKEL CATALYSTS CONTAINING A GLYCOLIC ACID, THIOGLYCOLIC, OR THIOLACTIC ACID LIGAND

Ronald Bauer, Orinda, and Harold Chung and Wilhelm Keim, Berkeley, Calif., and Henry van Zwet, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Jan. 15, 1970, Ser. No. 3,199
Int. Cl. C08d *3/04*
U.S. Cl. 252—431 C **11 Claims**

Ethylene is polymerized in the presence of a catalyst which is the reaction product of a nickel compound with a ligand selected from the group consisting of glycolic acid, thioglycolic acid and thiolactic acid. The nickel compounds comprise olefinically unsaturated compounds of from 2 to 20 carbon atoms. The preferred nickel compound is biscyclooctadiene-1,5-nickel.

3,661,804
LEAD DIOXIDE STABILIZATION

Klaus L. J. Scholz, Konigsbrunn, and Josef Psader, Neusass, Germany, assignors to Polychemie G.m.b.H. Augsburg, Augsburg, Germany

No Drawing. Filed Apr. 3, 1970, Ser. No. 25,569
Claims priority, application Germany, Apr. 18, 1969, P 19 19 803.9
Int. Cl. B01j *11/78*
U.S. Cl. 252—441 **5 Claims**

Stabilization of the oxidizing capacity of lead dioxide to prevent acceleration thereof caused by heat which is obtained by the addition of 0.1 to 15% by weight, based on the lead dioxide, of a multivalent metal salt wherein the metal is tin, zinc, cadmium, nickel, cobalt, manganese, iron, chromium, bismuth, vanadium, tungsten or molybdenum.

3,661,805
METHOD OF MANUFACTURING AN EXTRUDED CATALYST COMPOSITION

Edward Horvath, Hickory Hills, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,910
Int. Cl. B01j *11/32*
U.S. Cl. 252—465 **9 Claims**

A method for the manufacture of an extruded catalyst composition comprising a Group VI–B metal, a Group VIII metal and a refractory inorganic oxide gel. The Group VI–B and Group VIII metal components are combined with the refractory inorganic oxide gel, said gel being peptized before or after combination wtih the metallic components. The mixture is subsequently treated with an aqueous alkaline reagent to form an extrudable mass of finely divided particles. Upon extrusion, the extrudate is dried and oxidized.

3,661,806
EXHAUST GAS OXIDATION CATALYST AND PROCESS

Warren S. Briggs and Frank G. Ciapetta, Silver Spring, Md., assignors to W. R. Grace & Co., New York, N.Y.

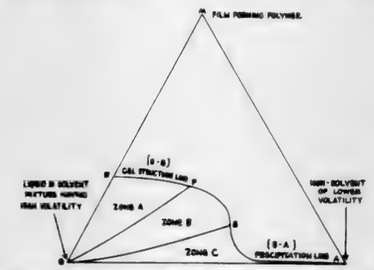
No Drawing. Continuation-in-part of application Ser. No. 707,395, Feb. 23, 1968, which is a continuation-in-part of application Ser. No. 418,402, Dec. 15, 1964, which in turn is a continuation-in-part of application Ser. No. 298,164, July 29, 1963. This application Jan. 5, 1970, Ser. No. 808
Int. Cl. B01j *11/16, 11/24*
U.S. Cl. 252—470 **3 Claims**

Internal combustion engine exhaust gas oxidation catalyst and process of treating the exhaust gases to remove air pollutants. The catalyst comprises oxidation promoters dispersed upon a matrix. The catalyst possesses a specific pore volume distribution wherein 0.20 to 0.35 cc./g. of its pore volume are in pores having a diameter below 120 A., 0.10 to 0.25 cc./g. are in pores having a diameter between 120–3500 A. and 0.35 to 0.60 cc./g. are in pores having a pore diameter greater than 3500 A. The total pore volume of the catalyst is 0.65 to 1.20 cc./g. This catalyst has been found to possess an unusually long activity life.

3,661,807
SOLUBLE FLUORESCENT MATERIALS AND OPTICAL BRIGHTENERS IN SOLVENT PRECIPITATION FILM COMPOSITIONS

Jerome A. Seiner, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 4,175, Jan. 14, 1970, which is a continuation of application Ser. No. 524,953, Feb. 1, 1966. This application Apr. 15, 1970, Ser. No. 28,734
Int. Cl. C08 *1/26*
U.S. Cl. 260—2.5 M **25 Claims**



The disclosed invention relates to opaque films with enhanced optical properties produced by the inclusion of soluble fluorescent materials and optical brighteners in the opaque films in such a manner as to maximize their effectiveness therein. The films of this invention, absent the above described additives, are non-porous, microcellular and opaque in and of themselves. Therefore, lesser amounts of the additives are necessary to obtain desired optical properties. The preparation of the films of the disclosed invention involves the mixing of a film forming polymer with a solvent mixture for the film forming polymer, whereby the solvent mixture comprises at least two miscible liquids, at least one of the liquids being a non-solvent for the polymer and having a lower volatility than that of the other liquids in the mixture and a flourescent material or an optical brightener which is soluble in said composition. The polymer solvent mixture is then applied to a substrate and the solvent mixture is removed as by evaporation. During the removal, a gelled film having entrapped therein the low volatility non-solvent is first formed and upon further evaporation, the non-solvent is removed, leaving behind small closed voids in its place. These voids cause the film to be opaque.

The added ingredients are included by dissolving them in the solvent mixture of the above-described process prior to the removal of the solvent mixture from the composition.

3,661,808
CATALYST COMBINATION FOR POLYURETHANES

William Alvis Kennedy, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed July 31, 1970, Ser. No. 60,155
Int. Cl. C08g *22/38, 22/44*
U.S. Cl. 260—2.5 AC **7 Claims**

An excellent catalyst for polyurethanes is a combination of 4,4'-dimorpholinodiethyl ether and 1,4-dimethylpiperazine. The catalyst combination, which exhibits a much lower vapor pressure than dimethyl piperazine alone, is useful in polyether and polyester foams. Urethane foams are useful in various applications ranging from cushioning in flexibles to insulation in rigids.

3,661,809
FLAME RETARDANT POLYURETHANE FOAM

James J. Pitts, Wallingford, Conn., assignor to Olin Corporation

No Drawing. Filed Aug. 28, 1970, Ser. No. 67,983
Int. Cl. C08g *22/44, 51/56*
U.S. Cl. 260—2.5 AJ **22 Claims**

Certain metal ammine complexes are utiilzed as flame-retardant additives for polyurethane foam.

3,661,810
NONCLUMPING THERMOPLASTIC PARTICLES AND PROCESS OF MAKING SAME

Herbert Gahmig, Princeton, N.J., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

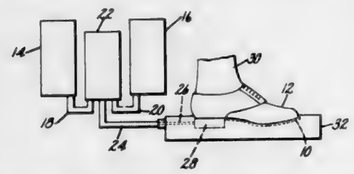
No Drawing. Filed June 17, 1970, Ser. No. 47,176
Int. Cl. C08j *1/26, 1/30*
U.S. Cl. 260—2.5 B **8 Claims**

Clumping of thermoplastic particles is prevented by mixing the particles with finely divided hydrophobic silica powder. The mixture retains its free-flowing characteristics during storage.

3,661,811
COMPOSITIONS FOR MOLDING POLYURETHANE FOAM ARTICLES

Alan Hardy, David T. Messenger, and Austin T. Carpenter, Leicester, England, assignors to USM Corporation, Flemington, N.J.

Filed Sept. 9, 1970, Ser. No. 70,801
Claims priority, application Great Britain, Oct. 4, 1969, 48,850/69
Int. Cl. C08g *22/16, 22/44*
U.S. Cl. 260—2.5 AN **8 Claims**



Process and composition for molding polyurethane foam articles, particularly for molding polyurethane foam outsoles in which a diisocyanate is reacted with a hydroxyl terminated polyester and a chain extender mixture of an aliphatic diol and a hydroxyl terminated adduct of diisocyanate and an aliphatic diol.

3,661,812
PRODUCTION OF FREE-FLOWING AMINOPLAST FOAMS

Anton Buchner and Hans Lang, Limburgerhof, Johann Lenz, Ludwigshafen, Leo Unterstenhoefer, Limburgerhof, and Wilhelm Krieger, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

No Drawing. Filed Nov. 23, 1970, Ser. No. 92,279
Claims priority, application Germany, Dec. 4, 1969, P 19 60 810.7
Int. Cl. C08j *1/16*
U.S. Cl. 260—2.5 F **3 Claims**

A process for improving the flowability of aminoplast foams prior to curing, particularly for covering soil, by incorporating coarse gas bubbles into foam containing fine bubbles.

3,661,813
POLYOLEFIN FOAM UTILIZING POLYMERIZATION DEACTIVATED CATALYST AND SOLVENT AS NUCLEATING AGENT AND BLOWING AGENT, RESPECTIVELY

Edward W. Cronin, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Mar. 26, 1969, Ser. No. 810,793
Int. Cl. C08f *47/10, 29/04, 1/28*
U.S. Cl. 260—2.5 HA **12 Claims**

There is provided a foamed polyolefin product and process for the production thereof. After polymerization of the olefin by a low pressure process, the organometallic containing catalysts used in the polymerization process are not completely removed from the polymer. The catalysts are deactivated and, at least in part, function as nucleating agent for foaming. Also, a part of the polymerization solvent is left in the polyolefin and may function, at least in part, as the blowing agent.

3,661,814
PHENOL-FORMALDEHYDE ADHESIVE RESINS BY ADDITION OF POLYHYDRIC ALCOHOLS

Harry A. Smith and Erwin H. Kobel, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,503
Int. Cl. C08g *5/06, 5/18, 51/04*
U.S. Cl. 260—17.2 **10 Claims**

Improved phenol-formaldehyde adhesive resins are obtained by premixing with aqueous formaldehyde about 0.5–10 weight percent based on formaldehyde of a polyhydric alcohol of Formula I:

$$R\{(OC_mH_{2m})_aOH)_b$$

where R is a C_4–C_{12} aliphatic group, m is 2–4, a is 0–3 and b is 4–8, and thereafter reacting the formaldehyde-polyhydric alcohol solution with phenol in the presence of alkali. Preferred are water-soluble sugars and related polyols including their C_2–C_4 alkylene oxide derivatives. The resulting thermosetting resole adhesive resins are particularly suitable for plywood glues.

3,661,815
WATER-ABSORBING ALKALI METAL CARBOXYLATE SALTS OF STARCH-POLYACRYLONITRILE GRAFT COPOLYMERS

Theodore Smith, Muscatine, Iowa, assignor to Grain Processing Corporation, Muscatine, Iowa

No Drawing. Filed May 18, 1970, Ser. No. 38,388
Int. Cl. C08b *25/02;* **C08f** *3/76, 27/14*
U.S. Cl. 260—17.4 **12 Claims**

Granular, water-insoluble alkali metal carboxylate salts of starch-acrylonitrile graft copolymers which are produced by saponifying starch-acrylonitrile graft copolymers with a base in an aqueous alcoholic medium.

3,661,816
ROOM TEMPERATURE CURING ORGANOPOLYSILOXANES

Anthony Enrico Pepe, Wilton, Conn., and Guenther Fritz Lengnick, Manitou Beach, and Charles George Neuroth, Blissfield, Mich., assignors to Stauffer-Wacker Silicone Corporation, Adrian, Mich.

No Drawing. Continuation-in-part of application Ser. No. 688,336, Dec. 6, 1967. This application Apr. 10, 1970, Ser. No. 27,453
Int. Cl. C08h *9/00*
U.S. Cl. 260—18 S **5 Claims**

The invention relates to curable organopolysiloxane compositions comprising an organopolysiloxane and a disilaorganic cross-linking agent containing functional groups which are hydrolyzable in the presence of ambient moisture.

3,661,817
CURABLE COMPOSITIONS
Stephen B. Hamilton, Schenectady, Melvin D. Beers, Ballston Lake, and Abe Berger and Terry G. Selin, Schenectady, N.Y., assignors to General Electric Company, New York, N.Y.
No Drawing. Filed May 4, 1970, Ser. No. 34,576
Int. Cl. C08h 9/00
U.S. Cl. 260—18 S 46 Claims

Room temperature vulcanizing silicone elastomers are prepared by the addition of a novel cross-linking agent such as acetoxypropenylenyltriacetoxysilane to a silanol chain-stopped polydiorganosiloxane fluid. These compositions are stable, free flowing fluids in the absence of moisture but cure to a rubbery, solid elastic state upon exposure to moisture. These compositions are particularly useful as adhesives in difficult bonding situations such as attaching glass window panes to aluminum window frames.

3,661,818
METHOD FOR PREPARING AND COMPOSITIONS OF VINYLIZED AND/OR VINYLIDENIZED EPOXY RESIN ESTERS
Rolf Guldenpfennig, Bammental, Germany, assignor to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany
No Drawing. Continuation-in-part of application Ser. No. 704,994, Feb. 13, 1968. This application Apr. 12, 1971, Ser. No. 133,333
Claims priority, application Germany, Feb. 22, 1967, R 45,344
The portion of the term of the patent subsequent to Feb. 16, 1988, has been disclaimed
Int. Cl. C08g 5/20
U.S. Cl. 260—19 EP 11 Claims

Methods and compositions for water-dilutable heat-curable coatings comprising:

(I) Vinylized and/or vinylidenized compounds of partial esters containing hydroxyl groups and optionally also epoxide groups obtained by partial esterification of compounds containing epoxide groups and optionally hydroxyl groups with monocarboxylic acid mixtures having a predominant content of unsaturated aliphatic straight chain monocarboxylic acids and/or partial esters reacted with polybasic carboxylic acids in such a way that the resulting epoxide resin esters containing free carboxyl groups and free hydroxyl groups acquire the ability to be diluted with water by neutralization with ammonia or strong organic nitrogen bases in the presence of water;
(II) Ammonia or strong organic nitrogen bases;
(III) Water; and
(IV) heat-curable, water-soluble or hydrophilic low molecular weight aldehyde condensation products of:
(a) phenolic resols;
(b) resins which form aminoplasts; and
(c) etherified phenolic resols.

3,661,819
AQUEOUS COATING FOR USE IN ELECTRODEPOSITIONS CONTAINING FULLY ETHERIFIED POLYMETHYLOL AMINOTRIAZINE CROSS-LINKING AGENTS
Jerry Norman Koral, Stamford, and Michael Petschel, Jr., Wilton, Conn., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Sept. 21, 1970, Ser. No. 74,107
Int. Cl. C08g 9/30
U.S. Cl. 260—21 10 Claims

An aqueous dispersion of a mixture of certain alkylated fully methylolated aminotriazines such as melamine and benzoguanamine in a mixture with certain water-dispersible, nongelled, polymeric materials carrying an anionic charge, which polymerci material contains at least one class of reactive groups selected from the group consisting of carboxyl groups, alcoholic hydroxy groups and amide groups. The invention further relates to the use of such aqueous dispersions in the electrodeposition of aqueous coatings on metallic surfaces.

3,661,820
COATING COMPOSITION FOR PREVENTING CARBURIZATION OF STEEL PARTS WITH SUBSEQUENT WATER WASH-OFF CAPACITY
Robert W. Foreman, Bloomfield Hills, and Jon S. Pontius, Ypsilanti, Mich., assignors to Park Chemical Company
No Drawing. Filed July 15, 1970, Ser. No. 55,225
Int. Cl. C09d 5/02; C21d 1/70; C23c 9/06
U.S. Cl. 260—22 A 8 Claims

A composition for use in forming a coating on selected surfaces of steel parts to selectively prevent carburization thereof in gas carburizing, pack carburizing, and carbonitriding mediums, said composition being basically comprised of a water reducible or water soluble organic resin, a boron material such as boric acid, and a carrier fluid of water.

3,661,821
RESINOUS CONDENSATION PRODUCTS AND METHOD OF PREPARING SAME
Cornelio Caldo and Giuseppe Cantatore, Terni, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy
No Drawing. Continuation of application Ser. No. 506,016, Nov. 1, 1965, which is a continuation-in-part of abandoned application Ser. No. 30,732, May 23, 1960. This application May 15, 1970, Ser. No. 37,448
Claims priority, application Italy, May 26, 1969, Pat. No. 611,258; Dec. 10, 1959, Pat. No. 643,990; Feb. 22, 1960, Pat. No. 682,346, Oct. 22, 1959, Pat. No. 623,526
Int. Cl. C08f 25/12
U.S. Cl. 260—23 EP 6 Claims

New condensation products comprising amine-epichlorhydrin condensates modified by further reaction with aliphatic polyamine, or aliphatic imine or with alkylating or arylating agents and process for preparing same. Particularly useful as tinctorial modifier for crystalline polymers. Dyeable textile fibers prepared from composition of crystalline polymers and condensation products.

3,661,822
STABILIZATION OF EPDM RUBBER WITH EPOXIDE-SULFIDE MIXTURE
Charles W. Lee, Towaco, N.J., assignor to Uniroyal, Inc., New York, N.Y.
No Drawing. Filed Apr. 30, 1970, Ser. No. 33,479
Int. Cl. C08f 29/10, 45/58
U.S. Cl. 260—23.5 18 Claims

Stabilization of ethylene-propylene-non - conjugated diene terpolymer (EPDM) elastomers against heat aging by incorporation of an epoxide and an organic sulfide (e.g., an olefin oxide and n-octyl disulfide).

3,661,823
POLYFLUOROHYDROCARBON RESIN COMPOSITIONS AS CUSHION AND COVER COMPOSITIONS FOR V-BELTS
Sidney R. Fix, Stanley W. Olson, and John C. Wolfe, Lincoln, Nebr., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Original application Feb. 6, 1968, Ser. No. 703,248, now Patent No. 3,541,872, dated Nov. 24, 1970. Divided and this application Apr. 22, 1970, Ser. No. 38,643
Int. Cl. C08d 13/00
U.S. Cl. 260—17.4 BB 5 Claims

V-belts containing the cushion compositions and/or elastomeric impregnated fabric envelopes which contain

polyfluorohydrocarbon resins which increase the resistance to failure due to flexing of said V-belts.

3,661,824
ANTIBLOCKING AGENTS FOR ACRYLATE FILM
George P. Patitsas and Richard G. Bauer, Kent, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Filed Oct. 26, 1970, Ser. No. 84,232
Int. Cl. C08f 29/46
U.S. Cl. 260—23 AR 4 Claims

Acrylate film such as the polymers of 2-ethylhexyl acrylate and acrylonitrile are compounded with a combination of ethylene N-bis oleamide and an animal fat glyceride to improve the antiblocking characteristics of the film.

3,661,825
STABILIZATION SYSTEMS FOR POLYMERS
James W. Horvath, Cuyahoga Falls, Ohio, and Charles A. Markley, West Chester, Pa., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Apr. 21, 1970, Ser. No. 30,399
Int. Cl. C08d 11/04
U.S. Cl. 260—23.7 M 8 Claims

Stabilizer systems for polymers containing divinyl benzene (DVB) comprising certain phenolic stabilizers, epoxy polyvinyl chloride stabilizers and other polyvinyl-chloride stabilizers such as the organo-tin types.

3,661,826
WAX COMPOSITIONS COMPRISING PETROLEUM WAXES WITH CERTAIN HYDROGENATED TWO-BLOCK COPOLYMERS
Dale J. Meier, 6612 Lautrec Place, Palos Verdes Peninsula, Calif. 90274
No Drawing. Filed May 8, 1970, Ser. No. 35,942
Int. Cl. C08f 45/52
U.S. Cl. 260—28.5 B 1 Claim

Wax compositions comprising hydrocarbon waxes with certain hydrogenated two-block copolymers have viscosities, tensile strength, hardness and adhesion substantially greater than that of the unmodified petroleum wax.

3,661,827
METHOD FOR PREPARING A WATER-DISPERSIBLE ACRYLIC COPOLYMER
David D. Taft, Minneapolis, Minn., assignor to Ashland Oil, Inc., Ashland, Ky.
No Drawing. Filed July 17, 1968, Ser. No. 745,363
Int. Cl. C08f 19/10, 19/00
U.S. Cl. 260—29.6 MN 3 Claims

Water dispersible copolymers are prepared and dispersed or diluted in water without the use of emulsifiers. A water dispersible acrylic copolymer can be prepared in the absence of emulsifiers by the copolymerization of vinyl comonomers (e.g. methyl methacrylate, styrene, and acrylic acid) in a mixture of water miscible organic solvent, water and a neutralizing agent (e.g. a tertiary amine such as triethyl amine).

3,661,828
THERMOSET MOLDING POWDERS EMPLOYING GLYCIDYL METHACRYLATE AND DIPHENOLS
John F. Fellers, Livonia, Santokh S. Labana, Dearborn Heights, and Seymour X. Newman, Southfield, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed June 5, 1970, Ser. No. 43,896
Int. Cl. C08f 45/36
U.S. Cl. 260—29.1 R 14 Claims

Novel thermosetting resin powders which can be molded to form products characterized, in tensile measurement, by high elongation-to-break, high tensile strength and modulus and a high glass transition temperature are prepared from a mixture of a prepolymer consisting essentially of glycidyl methacrylate, methyl methacrylate, and methacrylonitrile or acrylonitrile and a diphenol crosslinking agent.

3,661,829
AQUEOUS SULFO MODIFIED MELAMINE-FORMALDEHYDE RESIN COMPOSITION CONTAINING MULTIVALENT OXIDES
Alois Aignesberger and Horst Michaud, Trostberg, Germany, assignors to Suddentsche Kalkstickstoff-Werke AG, Trostberg, Germany
No Drawing. Filed May 6, 1970, Ser. No. 35,259
Int. Cl. C08g 9/30, 51/04
U.S. Cl. 260—29.4 R 2 Claims

An aqueous solution of a melamine-formaldehyde resin containing enough sulfo groups to be water soluble combined with one or more basic or amphoteric oxides or hydroxides of trivalent or quadrivalent metals is a strong binder for sand, cement, and the like.

3,661,830
UNSATURATED ALKYL SULFAMATES, METHOD OF PREPARING SUCH SULFAMATES, AND THEIR USE AS SLIP AGENTS IN POLYETHYLENE
Robert W. Hill, Leawood, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Original application Aug. 28, 1967, Ser. No. 663,568, now Patent No. 3,580,944. Divided and this application Aug. 19, 1970, Ser. No. 65,276
Int. Cl. C08f 45/46, 45/60
U.S. Cl. 260—30.8 R 8 Claims

Unsaturated alkyl sulfamates having 10 to 22 carbon atoms, such as erucyl sulfamate and oleyl sulfamate, are prepared by refluxing the corresponding monounsaturated alkenol with sulfamide in a suitable solvent, such as dioxane, until evolution of ammonia ceases. These monounsaturated alkyl sulfamates are useful as slip additives in mono-olefin polymers, such as polyethylene or polypropylene when added in amounts from 0.005 to 1 percent by weight.

3,661,831
TETRAFLUOROETHYLENE/HEXAFLUOROPROPYLENE COPOLYMER PARTICLES DISPERSED IN ORGANIC LIQUIDS
James C. Fang, Media, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of applications Ser. No. 413,333, Nov. 23, 1964, Ser. No. 528,047, Feb. 17, 1966, Ser. No. 654,333, July 19, 1967, and Ser. Nos. 738,817 and 738,818, both June 21, 1968. This application July 1, 1970, Ser. No. 51,722
Int. Cl. C08f 45/28, 45/34, 47/20
U.S. Cl. 260—32.8 A 32 Claims

Dispersions of tetrafluoroethylene/hexafluoropropylene copolymers in organic liquids, containing other film-forming materials, and articles coated with these dispersions.

3,661,832
POLYTRIMELLITAMIDE-IMIDES IN PHENOLIC SOLVENTS
James R. Stephens, Gary, Ind., assignor to Standard Oil Company, Chicago, Ill.
No Drawing. Continuation-in-part of applications Ser. No. 252,557, Jan. 21, 1963, Ser. No. 336,857, Jan. 10, 1964, Ser. No. 535,367, Mar. 18, 1966, and Ser. No. 631,173, Apr. 17, 1967, which is a continuation-in-part of application Ser. No. 535,367. This application May 20, 1970, Ser. No. 39,177
Int. Cl. C08g 20/32, 51/34
U.S. Cl. 260—33.4 P 6 Claims

An aromatic polytrimellitamide-imide solution suitable for producing smooth continuous coatings and wire

enamels at baking temperatures of about 400° F. said solution comprising said polytrimellitamide-imide and phenols or substituted phenols. A process for producing wire enamels wherein said aromatic polytrimellitamides are dissolved in phenol or alkyl substituted phenols and a process for preparing polytrimellitamide-imide polymers in alkyl substituted phenol solutions.

3,661,833

FAST CURING ORGANOSILOXANE RESINS

Willard D. Larson, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed July 9, 1970, Ser. No. 53,628

Int. Cl. C08f *45/30*

U.S. Cl. 260—33.8 SB 8 Claims

Curable fluorosilicone resins are disclosed. Such resins consist of a random organosiloxane resin base having a degree of substitution from 0.95 to 1.7 inclusive, the organic substituents being monovalent hydrocarbon or monovalent halohydrocarbon radicals, at least 70 mol percent of these substituents being 3,3,3-trifluoropropyl radicals, curability resulting from termination of the resin base with monoorganodihydroxylsiloxy units, monomethyldihydroxylsiloxy units being present in amounts in the range of from 0.05 to 0.5 moles per 100 grams of the random organosiloxane resin base. The curable fluorosilicone resins can be used as molding compositions, laminating resins, coatings and varnishes.

3,661,834

RESILIENT PLASTIC ARTICLE AND PROCESS FOR FORMING THE SAME

Robert H. Pasley, Coral Gables, Fla., assignor to Royalty Designs of Florida, Inc., Hialeah, Fla.

No Drawing. Filed Feb. 4, 1970, Ser. No. 8,688

Int. Cl. C08f *45/38, 45/26, 47/20*; C08g *53/18*

U.S. Cl. 260—34.2 5 Claims

This disclosure deals with a novel quivery resilient plastic article and process for forming the same useful for cushioning purposes and for application as protective coatings, involving a very highly plasticized, preferably polyvinyl chloride plastic, having ratios of plasticizer-to-resin of the order of substantially 12-to-1 ± about 35%.

3,661,835

PROCESS FOR PREPARING A DISPERSION OF SPHERICAL AGGREGATES OF AMPHIPATHIC POLYMER

Alan Stuart Baker, George Green, and Julian Alfred Waters, Maidenhead, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Aug. 7, 1970, Ser. No. 62,127

Claims priority, application Great Britain, Aug. 14, 1969, 40,644/69

Int. Cl. C08j *1/46*

U.S. Cl. 260—34.2 6 Claims

Process of preparing dispersions containing spherical aggregates of amphipathic copolymer in which the copolymer is dissolved in a common solvent for two different polymeric components of the copolymer and constituents of this solvent are removed by distillation to leave a solvent for only one of the components. The dispersions are useful in coatings.

3,661,836

METAL-CONTAINING POLYACYLOXALAMIDRAZONES

Albert Schopf, Hering, Michael Wallrabenstein, Hans-Dieter Rupp, and Helmut Magerlein, Erlenbach, Heinz Grotjahn, Rollfeld, and Gerhard Meyer, Obernburg, Germany, assignors to Glanzstoff AG, Wuppertal, Germany

No Drawing. Filed Apr. 27, 1970, Ser. No. 32,393

Claims priority, application Germany, May 2, 1969, P 19 22 334.8

Int. Cl. C08g *33/04, 51/04*; C08k *1/06*

U.S. Cl. 260—37 N 10 Claims

A metal-containing polyacyloxalamidrazone in which the metal is chemically bound to the polymer to provide a heat-resistant colored composition useful as a pigment or a supported metal catalyst.

3,661,837

CONTINUOUS INCORPORATION OF GLASS FIBERS INTO POLYAMIDES

Anton Cadus, Ludwigshafen, Hermann Uhr, Frankenthal, and Reinhold Weber, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

No Drawing. Filed May 27, 1970, Ser. No. 41,080

Claims priority, application Germany, May 29, 1969, P 19 27 271.0

Int. Cl. C08g *51/10*

U.S. Cl. 260—37 N 6 Claims

Continuous incorporation of glass fibers into synthetic linear polyamides having periodically recurring amide groups in the main chain in a screw extruder, glass fibers and unmelted plastics granules being supplied simultaneously or successively to the polyamide melt and the unmelted granules serving as comminuting aids.

3,661,838

SCENTED PLASTIC COMPOSITION

Fumio Enomoto, 4–5 Bunkyo-machi, Hatano, Kanagawa, Japan

No Drawing. Continuation-in-part of application Ser. No. 686,791, Nov. 30, 1967. This application Mar. 9, 1970, Ser. No. 17,871

Int. Cl. C08k *1/08, 1/20*; A61k *1/02*

U.S. Cl. 260—41 A 12 Claims

A scented plastic composition capable of emitting a scent is obtained by dispersing in a gas-permeable plastic material a porous finely divided silica powder having adsorbed thereon a liquid scent-emitting substance, such as a floral perfume or an essential oil. Processes of preparation are described.

3,661,839

HEAT CURABLE GLASS FIBER FILLED POLYVINYL CHLORIDE COMPOSITIONS

Oskar E. H. Klopfer, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Mar. 2, 1970, Ser. No. 15,874

Int. Cl. C08f *45/72, 47/12*

U.S. Cl. 260—41 AG 4 Claims

A cross-linked, heat stable, glass filled polyvinyl halide composition and a process for the preparation thereof. The composition is prepared by mixing together polyvinyl halide resin, a stabilizer, a lubricant, a cross-linkable monomer, an inhibitor, and glass fibers to form a dry blend which is milled on a hot, two-roll mill to form a rigid sheet. The sheet is heat treated to increase deflection temperature.

3,661,840

PEELABLE METAL PROTECTANTS

Henry M. Deutsch, Fullerton, Calif., assignor to Organocerams, Inc., Placentia, Calif.

No Drawing. Continuation-in-part of application Ser. No. 642,198, May 29, 1967. This application Apr. 18, 1968, Ser. No. 722,156

Int. Cl. C23b *3/04*

U.S. Cl. 260—41.5 R 10 Claims

A low solvent, high solids containing maskant or metal protectant film forming liquid composition including a low molecular weight liquid diene prepolymer having end and side chain functionality such as a 1000–2000 equivalent weight hydroxyl, thiol, epoxy, amine, carboxyl, chloro or isocyanate terminated and side chain modified diene polymer having a functionality of at least 2 and a cross-inking and curing agent such as an aliphatic, cycloaliphatic or aromatic polyisocyanate, polyamine, polyol, or polybasic acid, acid chloride or anhydride. Said composition being curable to form a peelable polymeric film having a molecular weight greater than 20,000. The maskant film may contain aluminum, magnesium or calcium carbonate, oxide or silicate fillers such that the film is translucent as applied, but becomes visible in regions that are mechanically stressed.

3,661,841

FLAME RETARDANT POLYMERS

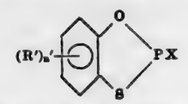
James L. Dever, Lewiston, and James J. Hodan, Williamsville, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Original application June 14, 1967, Ser. No. 645,873, now Patent No. 3,522,331. Divided and this application Apr. 20, 1970, Ser. No. 38,615

Int. Cl. C09k *3/28*

U.S. Cl. 260—45.8 R 10 Claims

Compounds are described of the structure



wherein R′ is selected from the group consisting of alkyl of 1 to 18 carbon atoms, aryl of 6 to 12 carbon atoms and cyclohexyl; X is a halogen selected from the group consisting of chlorine, bromine and iodine; and *n*′ ranges from 0 to 4. The compounds are prepared by reacting an orthomercaptophenol compound with phosphorus trihalide. The resulting compounds can be used to impart fire retardancy to plastic compositions, in particular polystyrene.

3,661,842

POLYESTERS STABILIZED WITH AMMONIUM HEXAFLUOROPHOSPHATE FLUORIDE, TRIPROPYLAMMONIUM DIHYDROGEN PHOSPHATE, AND TETRAMETHYLAMMONIUM HEXAFLUOROPHOSPHATE

John A. Price, Swarthmore, and Mary J. Stewart, Media, Pa., assignors to FMC Corporation, Philadelphia, Pa.

No Drawing. Filed Dec. 2, 1969, Ser. No. 881,600

Int. Cl. C08g *51/60*

U.S. Cl. 260—45.9 5 Claims

A stabilized polyester resin composition comprising the product formed by incorporating a minor amount of a compound selected from the group consisting of tetramethylammonium hexafluorophosphate, tripropylammonium dihydrogen phosphate, and ammonium hexafluorophosphate fluoride into a melted saturated polyester resin.

3,661,843

TRANSITION METAL COMPLEXES WITH TRIVALENT PHOSPHORUS COMPOUNDS USEFUL AS STABILIZERS FOR POLYMERS

Ingenuin Hechenbleikner, Park Ridge, N.J., and Thomas G. Kugele, Cincinnati, and John F. Hussar, Loveland, Ohio, assignors to Cincinnati-Milacron Chemicals, Inc., Reading, Ohio

No Drawing. Filed Oct. 27, 1970, Ser. No. 84,494

Int. Cl. C08f *45/62*

U.S. Cl. 260—45.75 N 7 Claims

Ultraviolet light absorbers and stabilizers, particularly for monoolefin polymers, are provided from metal complexes of trivalent phosphorus compounds of the formulae

$$Me(L)_n(A)_m(L')_o$$

where Me is preferably nickel but can be manganese, iron, copper, molybdenum or tungsten, L is (P(X)(Y)(Z) where any one or all of X, Y and Z can be O hydrocarbyl,



where R_{31} and R_{32} are hydrocarbyl or hydrogen, S hydrocarbyl, hydrocarbyl, 2 or 3 of X, Y and Z can form one or more heterocyclic rings with P, A is an anion such as halogen, e.g. Cl, Br, I or F, NO_3, ClO_4, $R_{33}COO^-$ where R_{33} is hydrocarbyl, any hydrocarbyl group can have 1 or 2 halogen substituents, *m* is 0 or a small whole number, e.g. 1, 2, 3, 4, L′ is CO, NO, CN, halogen, *o* is zero or a small whole number, e.g. 1, 2, 3, 4, *n* is 1 or another small whole number, e.g. 2, 3, 4, $o+m+n$ is not greater than the highest coordination number of the metal.

3,661,844

ORGANIC ACYL THIOACETAL AND THIOKETAL STABILIZERS FOR HALOGENATED RESINS

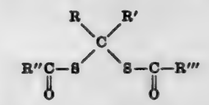
Christian H. Stapfer, Newtown, Pa., assignor to Cincinnati-Milacron Chemicals, Inc., Reading, Ohio

No Drawing. Filed Dec. 11, 1970, Ser. No. 97,310

Int. Cl. C08f *45/58*

U.S. Cl. 260—45.95 10 Claims

Polyvinyl chloride formulations containing organic acyl thioacetals or thioketals of the formula



wherein R and R′ may be hydrogen or may be joined in such a way to make a cyclo aliphatic group, R″ and/or R‴ are alkyl, aryl, aralkyl, alkaryl are stabilized against thermal degradation. Furthermore, R or R′ can be a repetition of the thioacetal group, or be difunctional.

3,661,845

FAST CURE ORGANOSILOXANE RESINS AND METHOD FOR PREPARING SAME

Robert C. Antonen, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed July 9, 1970, Ser. No. 53,632

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 R 9 Claims

Mixing a random organosiloxane resin and an organoacetoxysilane, such as methyltriacetoxysilane, in an organic solvent, allowing the mixture to react, adding the reaction product to water thus hydrolyzing the acetoxy groups, allowing an aqueous phase and an organic solvent product to form, separating same and thereafter azeotroping any residual water and by-products is a useful method

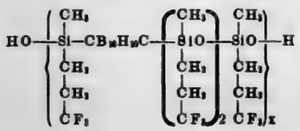
for obtaining a fast cure organosiloxane resin which has a random organosiloxane resin base terminated by hydroxyl bearing organosiloxane units, such as monomethylsiloxane units. The fast cure organosiloxane resin is useful to provide faster curing resins for laminates, molding compounds and paints than conventional random organosiloxane resins.

3,661,846
ORGANO-INORGANO POLYMERS AND THEIR PREPARATION
Malcolm E. Kenney, 1203 Hereford Road, Cleveland Heights, Ohio 44118
No Drawing. Continuation-in-part of application Ser. No. 831,745, June 9, 1969, which is a continuation-in-part of abandoned application Ser. No. 662,239, July 31, 1967. This application Sept. 4, 1970, Ser. No. 69,883
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 R **12 Claims**

Organo-inorgano polymers, useful as thermal insulators and as reinforcing agents for resins, through a method including: contacting the ordered sheet silicate minerals chrysotile and apophyllite with an organosilicon compound and strong acid in an organic liquid between 20° C. and up to and including reflux temperature for at least one hour; and subsequently contacting under more nearly neutral conditions the resulting product thereof with an organosilicon compound neat or in an organic solvent between 20° C. and up to and including reflux temperature for at least one hour. Hydrophobic, ordered, organo-inorgano polymers of a molecular weight of more than ten thousand and consisting essentially of carbon, hydrogen, silicon, and oxygen with at least 65 percent by weight thereof being silicon and oxygen, possessing a sheet silicate framework consisting essentially of silicon and oxygen and alike the sheet silicate framework of its mineral source while substantially free from metal atoms found in its mineral source, and having organosiloxy groups appended in substantial amount to silicon atoms of its sheet silicate framework.

3,661,847
CARBORANE-SILOXANE POLYMERS
Dwain R. Chapman, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
No Drawing. Filed May 1, 1969, Ser. No. 821,105
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 E **16 Claims**

Siloxane polymers having haloalkyl substituents and a carborane linkage in the polymer backbone provide heat stable fluids, resins and elastomers. A specific polymer



can be compounded with silica to form an elastomer which is stable at temperatures of 600° F. and greater.

3,661,848
FORMATION OF POLYPHENYLENE ETHERS
Glenn D. Cooper, Delmar, and James G. Bennett, Menands, N.Y., assignors to General Electric Company
No Drawing. Continuation of abandoned application Ser. No. 807,076, Mar. 13, 1969. This application Nov. 6, 1970, Ser. No. 87,645
Int. Cl. C08g *23/18*
U.S. Cl. 260—47 ET **15 Claims**

A process for the formation of high molecular weight polyphenylene ethers by the oxidative coupling of a phenolic percursor in a reaction system containing a low molecular weight alcohol and a complex catalyst formed from a non-basic cupric salt and a primary or secondary amine. The process is characterized by the addition of the alcohol to the reaction system which (1) results in the formation of higher molecular weight polymer in a given reaction time or polymer of comparable molecular weight in substantially decreased reaction time and (2) permits the use of aqueous solutions of cupric salts and cupric salts in hydrated form.

3,661,849
HETEROCYCLIC POLYIMIDES PREPARED FROM HETEROCYCLIC DIAMINES
Billy M. Culbertson, Barnesville, Minn., assignor to Ashland Oil & Refining Company, Ashland, Ky.
No Drawing. Filed Oct. 6, 1965, Ser. No. 493,564
Int. Cl. C08g *20/32*
U.S. Cl. 260—47 CP **13 Claims**

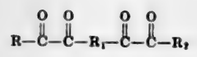
Novel, heterocyclic ring-containing polyimides, useful in the formation of films and fibers are formed by reacting aromatic tetracarboxylic acid anhydrides with diamines having the following formula

$$H_2N—R—NH_2$$

wherein R is a divalent radical containing from one to two benzoxazole, benzimidazole, or benzothiazole moieties, said divalent radical containing at least two aromatic ring structures, the amine groups of said diamine being attached to aromatic carbon atoms located in different ring structures, in an organic solvent for at least one reactant at a temperature below 150° C. to form a polyamide-acid intermediate and then converting said polyamide-acid intermediate to the polyimide.

3,661,850
QUINOXALINE POLYMERS, METHODS OF MAKING SAME AND COMPOSITIONS THEREOF
John K. Stille, % Department of Chemistry, University of Iowa, Iowa City, Iowa 52240
No Drawing. Continuation of application Ser. No. 819,532, Apr. 24, 1969, which is a continuation-in-part of abandoned application Ser. No. 344,232, Feb. 12, 1964. This application July 16, 1970, Ser. No. 55,588
Int. Cl. C08g *9/06*
U.S. Cl. 260—50 **39 Claims**

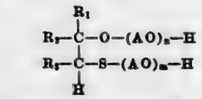
Polymers containing recurring quinoxaline groups which are the reaction products of aromatic tetramines containing two sets of ortho-amine functions attached to the aromatic nucleus and tetracarbonyl compounds having the formula:



wherein R and R_2 represent a member selected from the group consisting of hydrogen and monovalent hydrocarbon groups, and R_1 represents a divalent hydrocarbon group. The salts of the aromatic tetramines and the hydrates of the tetracarbonyl compounds may also be used to prepare the polymers. Quinoxaline polymers can be used for making films, fibers and ahhesives as well as for other purposes. Laminated articles bonded together with these adhesive compositions, such as high temperature metal laminates are also disclosed.

3,661,851
POLYALKYLENEGLYCOL ETHERS OF HYDROXYALKYLMERCAPTANS AND PROCESS
Wilfried Umbach, Langenfeld, Rhineland, Rainer Mehren, Neuss, Rhineland, and Werner Stein, Erkrath-Unterbach, Rhineland, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany
No Drawing. Filed Oct. 2, 1969, Ser. No. 863,350
Claims priority, application Germany, Oct. 8, 1968, P 18 01 712.4
Int. Cl. C07c *149/18*
U.S. Cl. 260—609 R **3 Claims**

Polyalkylene glycol ethers of β-hydroxymercaptans of the formula



wherein R_1 is a member selected from the group consisting of alkyl having from 1 to 22 carbon atoms, alkoxyalkyl having from 2 to 22 carbon atoms, haloalkyl having from 1 to 22 carbon atoms, cycloalkylalkyl having from 6 to 22 carbon atoms and alkenyl having from 3 to 22 carbon atoms, R_2 and R_3 are members selected from the group consisting of hydrogen, and R_1 and when taken together alkylene having from 3 to 4 carbon atoms, with the proviso that the sum of the carbon atoms in R_1, R_2 and R_3 is from 4 to 22; A is a bivalent member having from 2 to 4 carbon atoms selected from the group consisting of alkylene, haloalkylene and hydroxyalkylene; *n* is an integer from 0 to 50; *m* is an integer from 1 to 50; and the sum of *n* and *m* is an integer from 1 to 50. The compounds have surface-active properties and are useful per se or as intermediates.

3,661,852
POLYAMIDE-IMIDE COMPOSITIONS WITH IMPROVED HYDROLYTIC STABILITY
Ralph G. Flowers, Pittsfield, and Thomas L. Sherer, Richmond, Mass., assignors to General Electric Company
Filed May 11, 1970, Ser. No. 36,309
Int. Cl. C08g *20/32*
U.S. Cl. 260—65 **5 Claims**

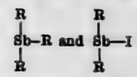
This invention relates to new polyamide-imide compositions having improved hydrolytic stability and formed by reacting maleic anhydride with the product obtained by reacting a dianhydride with an intermediate diamine formed by reaction of trimellitic anhydride, hexamethylene diamine and an aromatic diamine. The resulting composition is useful for electrical insulating purposes in the form of films or coatings.

3,661,853
FILAMENTARY MATERIAL
Myron J. Coplan, 47 Speen St., Natick, Mass. 01760; Howard I. Freeman, 34 Livingston Road, Sharon, Mass. 02067; and Joseph S. Panto, P.O. Box 223, Dover, Mass. 02030
Continuation of application Ser. No. 859,597, Jan. 2, 1969, which is a division of application Ser. No. 341,725, Jan. 31, 1964. This application July 10, 1970, Ser. No. 56,187
Int. Cl. D01d *5/12*
U.S. Cl. 260—67 FP **6 Claims**

A melt spun random oxymethylene polymer filamentary material having at 70 degrees Fahrenheit an elastic recovery of at least about 70 percent from an extension up to about 50 percent.

3,661,854
METHOD FOR PREPARING RANDOM COPOLYMERS OF FORMALDEHYDE AND OLEFIN OXIDES AND/OR VINYL ETHERS
Robert Alton Setterquist, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Feb. 9, 1970, Ser. No. 9,983
Int. Cl. C08g *1/18*
U.S. Cl. 260—67 FP **17 Claims**

Random copolymers of formaldehyde monomer and olefin oxides and/or vinyl ether monomers can be prepared by reacting said monomers at a temperature of from about −20° to about 100° C. in the presence of a perfluoroalkylstibine catalyst having the formula



in which R is perfluoroalkyl of from 1–8 carbon atoms.

3,661,855
CROSS-LINKABLE ACETALDEHYDE CO-POLYMERS
Georges Ivanovsky, Verneuil-en-Halatte, France, assignor to Societe Chimiques des Charbonnages, Paris, France
No Drawing. Filed Sept. 2, 1969, Ser. No. 854,739
Claims priority, application France, Sept. 3, 1968, 164,969
Int. Cl. C08g *1/14*
U.S. Cl. 260—67 R **2 Claims**

Cross-linkable elastomer co-polymers of acetaldehyde with a monomer compound possessing at the same time an epoxy function fixed on two vicinal carbon atoms of a saturated hydrocarbon cycle and an epoxy function fixed on two vicinal aliphatic carbon atoms, the said co-polymers having an absorption band for infra-red at 4520 $cm.^{-1}$ which is characteristic of a free epoxy function. The method of manufacture of said elastomer co-polymers comprises the polymerization of acetaldehyde with said monomer compound by means of Lewis acid catalyst at a temperature lower than −40° C.

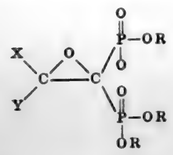
3,661,856
DYEABLE POLYESTER
Anthony L. Lemper, Tonawanda, N.Y., and Yuzi Okuzumi, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Continuation-in-part of application Ser. No. 873,694, Nov. 3, 1969. This application June 29, 1971, Ser. No. 158,125
Int. Cl. C08g *17/14*
U.S. Cl. 260—75 S **16 Claims**

Polyethylene terephthalate and terephthalate copolyesters in fibers and fabrics are treated with an alkali metal salt of 2-bromoethane sulfonic acid to render the fibers and fabrics more dyeable with cationic dyestuffs.

3,661,857
POLYMERIC COMPOSITIONS
Al F. Kerst, Littleton, Colo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Apr. 13, 1970, Ser. No. 28,032
Int. Cl. C08g *22/16, 51/54*; C08f *45/54*
U.S. Cl. 260—75 NR **6 Claims**

A polymer comprising a reactive hydrogen containing material such as polyurethane, copolymerized with sub-

stituted epoxy ethane polyphosphonate having the formula



wherein R is hydrogen or an organic radical and X and Y are hereinafter defined.

3,661,858
REDUCING POLYESTER REACTOR SCALE
Clyde E. Gleim, Akron, and James A. Mally, Cuyahoga Falls, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Filed Oct. 2, 1969, Ser. No. 863,341
Int. Cl. C08g *17/013*
U.S. Cl. 260—75 R 12 Claims

During the alcoholysis step in producing polyesters reactor scale and catalyst precipitation are reduced by using a phosphorous-free manganese octoate or phosphorous-free manganese 2-ethyl hexoate catalyst, or by the addition of free octonoic acid and/or 2-ethyl hexanoic acid to the reactor.

3,661,859
POLY(1,3-IMIDAZOLIDINE-2,4,5-TRIONES)
Tad L. Patton, Baytown, Tex., assignor to Esso Research and Engineering Company
No Drawing. Continuation-in-part of application Ser. No. 808,004, Mar. 17, 1969. This application Apr. 17, 1970, Ser. No. 29,657
Int. Cl. C08g *22/00, 22/08*
U.S. Cl. 260—77.5 CH 39 Claims

New heterocyclic polymers containing the 1,3-imidazolidine-2,4,5-trione-1,3-diyl structure are produced by hydrolyzing the polymers formed by the reaction of diisocyanates with hydrogen cyanide, by the reaction of dicyanoformamides with diisocyanates and by the polymerization of cyanoformamidyl isocyanates. The new heterocyclic polymers are stable and are useful in the formation of films, fibers, foams, and molded objects.

3,661,860
HYDROPHILIC POLYURETHANE
Eckhard C. A. Schwarz, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
No Drawing. Filed May 11, 1970, Ser. No. 36,465
Int. Cl. C08g *22/14*
U.S. Cl. 260—77.5 AQ 2 Claims

Hydrophilic polyurethane suitable as elastic film or foam of high tensile strength is prepared by introducing a tertiary amine copolymer segment which imparts hydrophilic properties without reducing the tensile strength of the resulting product.

3,661,861
PROTECTIVE COATING WHICH IS PRODUCED BY REACTING MOISTURE WITH A PREPOLYMER MADE BY REACTING AN OXAZOLINE WITH A DIISOCYANATE
Jerry Hoyt Hunsucker, Terre Haute, Ind., assignor to Commercial Solvents Corporation, New York, N.Y.
No Drawing. Filed May 12, 1970, Ser. No. 36,681
Int. Cl. C08g *22/00*
U.S. Cl. 260—77.5 R 9 Claims

A prepolymer compound consisting of the reaction product of a mono-, bis- or tris-oxazoline with toluene diisocyanate dissolved in a solvent thereby providing an air-drying coating material which forms a smooth, continuous film by reaction with atmospheric moisture.

3,661,862
PROCESS FOR THE PREPARATION OF POLYURETHANE MASTICS
Yves Bonin and Jean Robin, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France
No Drawing. Filed Mar. 11, 1969, Ser. No. 806,310
Claims priority, application France, Mar. 12, 1968, 143,386
Int. Cl. C08g *22/04*
U.S. Cl. 260—77.5 AP 11 Claims

The invention provides a two-stage process for the preparation of a polyurethane mastic which comprises first reacting a macrodiol with a polyisocyanate in an amount such that there are 1 to 2 isocyanate groups per hydroxyl group to produce an isocyanate terminated prepolymer and then adding more polyisocyanate.

3,661,863
COPOLY(AMIDE-IMIDE)S COMPRISING THE REACTION PRODUCT OF A DIACID, A TRIACID AND BIS(4-AMINOCYCLOHEXYL)METHANE
Robert W. Campbell, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed June 11, 1970, Ser. No. 45,586
Int. Cl. C08g *20/32*
U.S. Cl. 260—78 TF 9 Claims

Copoly(amide-imide)s are obtained by using a combination of both a dicarboxylic acid and tricarboxylic acid in polymerization with PACM.

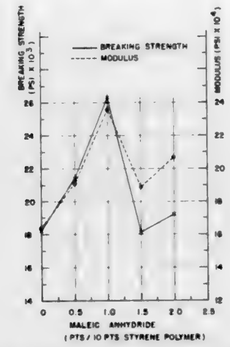
3,661,864
METHOD OF PRODUCING CONTROLLED-FORM PRECIPITATES
James S. Tapp, Kettering, Ohio, Robert E. Colwell, Simsbury, Conn., and Myron K. Toney, Greenwood, S.C., assignors to Monsanto Company, St. Louis, Mo.
Filed Mar. 19, 1969, Ser. No. 808,605
Int. Cl. C08f *3/74*; C08g *20/38*
U.S. Cl. 260—78 S 3 Claims

Precipitates of controlled morphology are produced by subjecting a pregnant solution and a precipitant to centrifugal action whereby controlled amounts of the solution and precipitant are thrown into random contact causing a precipitate to form; then by collecting and separating the precipitate from the excess of the solution and precipitant.

3,661,865
PRODUCTION OF ABC TERPOLYMERS
Henry L. Hsieh, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed May 1, 1969, Ser. No. 821,069
Int. Cl. C08g *17/003*
U.S. Cl. 260—78.4 16 Claims

ABC terpolymers, which can be used as adhesives and as terminating agents for lithium initiated polymerizations, are prepared by polymerizing a mixture of an alkene oxide, a cyclic acid anhydride and a cyclic ether in the presence of an organometallic compound.

3,661,866
HIGH STRENGTH POLYSTYRENE
Eckhard C. A. Schwarz, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed May 11, 1970, Ser. No. 36,271
Int. Cl. C08f *27/00*
U.S. Cl. 260—78.4 D 10 Claims



Polystyrene of increased strength and resistance to thermal degradation is produced by reaction with maleic anhydride and a free radical former at elevated temperatures.

3,661,867
METHOD FOR PRODUCING CHLORIDE BY SUSPENSION POLYMERIZATION
Shunichi Koyanagi, Hajime Kitamura, Kinya Ogawa, and Shigenobu Tajima, Naoetsu-shi, Japan, assignors to Shinetsu Chemical Company
No Drawing. Filed Dec. 10, 1970, Ser. No. 96,977
Claims priority, application Japan, Dec. 15, 1969, 44/100,787
Int. Cl. C08f *1/11, 3/30*
U.S. Cl. 260—78.5 CL 7 Claims

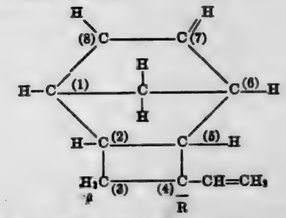
A dialkyl peroxydicarbonate whose alkyl radical has 1–8 carbon atoms, an acetyl cyclohexyl sulfonyl peroxide or a mixture thereof is added to vinyl chloride or a mixture of vinyl monomers having vinyl chloride as its main component. 0.001–0.5% by weight, based on the weight of the monomer(s), of the dialkyl peroxydicarbonate, acetylcyclohexyl sulfonyl peroxide or mixture thereof is added. The resultant mixture is maintained at a temperature not exceeding 35° C. for 0.5 to 2 hours. The pH is adjusted to 8–11. The resultant mixture is heated at 40–70° C. in the presence of a polymerization initiator to substantially complete the polymerization. The initiator is selected from the group consisting of azobis-2,4-dimethylvaleronitrile, azobismethoxyvaleronitrile, azobistrimethylvaleronitrile, ter-butylperoxypivalate and mixtures thereof. The method substantially prevents polymer scale deposition on the interior walls of the polymerization vessel. The polymerization induction period is eliminated. The polyvinyl chloride produced has little color and has superior thermal stability.

3,661,868
FLOCCULANT
Benny G. Barron, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed May 1, 1970, Ser. No. 33,925
Int. Cl. C08f *15/02*
U.S. Cl. 260—80.3 N 6 Claims

In the inverse suspension polymerization of a mixture of acrylamide and an N-(dialkylaminoalkyl)acrylamide or methacrylamide, the resulting cationic copolymer has superior flocculating capacity when there is present in the mixed monomers a small amount of an N-(dialkylaminoalkyl) - 3 - (dialkylaminoalkylamino)propionamide. This additive preferably corresponds in its carbon skeleton and nitrogen atom substituents to the cationic monomer.

3,661,869
POLYCYCLIC UNSATURATED HYDROCARBONS AND PROCESS FOR THEIR PREPARATION
Alberto Greco, Antonio Carbonaro, and Gino Dall'Asta, Milan, Italy, assignors to The B. F. Goodrich Company, Akron, Ohio
No Drawing. Filed May 11, 1970, Ser. No. 36,444
Claims priority, application Italy, May 12, 1969, 16,717/69
Int. Cl. C07c *13/00*; C08f *19/00*
U.S. Cl. 260—80.78 9 Claims

New doubly unsaturated polycyclic hydrocarbons having the general Formula I:



(I)

in which R is H or CH_3, are disclosed. Polycyclic unsaturated hydrocarbons included in Formula I are 4-vinyl-tricyclo[4,2,1,$0^{2,5}$]nona-7-ene and 4-methyl-4-vinyl tricyclo-[4,2,1,$0^{2,5}$]nona-7-ene. The new polycyclic hydrocarbons having two types of unsaturation are addition products, or hetero-dimers, of bicyclo[2,2,1]hepta-2,5-diene(2,5-norbornadinene) and a conjugated aliphatic diene, such as butadiene-1,3 or isoprene, and are obtained by reacting the monomers in the presence of particular catalysts.

3,661,870
ISOBUTYLENE, 1,3-BUTADIENE, METHYL BUTENE COPOLYMERS
Herbert L. Bullard, Norton Village, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Filed Nov. 24, 1969, Ser. No. 879,523
Int. Cl. C08f *17/00*
U.S. Cl. 260—80.7 4 Claims

A resinous material, typically essentially noncyclic, useful as a tackifier, and having a softening point in the range of from about 20° C. to about 40° C., which comprises from about 25 to 75 weight percent units derived from isobutylene, from about 5 to about 50 weight percent units derived from 1,3-butadiene, from about 5 to about 50 weight percent units derived from 2-methyl-1-butene, and up to about 10 weight percent units derived from 3-methyl-1-butene, wherein the ratio of the units derived from isobutylene to units derived from 1,3-butadiene is from about 1:1 to about 5:1.

3,661,871
PRODUCTION OF NON-CONJUGATED DIENES HAVING 4,7,8,9-TETRAHYDROINDENE STRUCTURES FROM A HYDROCARBON MIXTURE CONTAINING CYCLOPENTADIENE AND ANOTHER C_5 CONJUGATED DIENE AND PRODUCTION OF VULCANIZABLE COPOLYMERS THEREFROM BY POLYMERIZATION WITH α-OLEFINS
David Arthur Gregson Walmsley, Runcorn, and Roy John Sampson, Billingham, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed May 3, 1967, Ser. No. 635,673
Claims priority, application Great Britain, May 24, 1966, 23,152/66
Int. Cl. C08f *17/00*
U.S. Cl. 260—80.78 15 Claims

Amorphous vulcanisable high molecular weight polymers obtained by the copolymerisation of at least one

α-olefin with a hydrocarbon fraction containing non-conjugated dienes selected from 4,7,8,9-tetrahydroindene and methyl derivatives thereof, said fraction having been obtained by heating a multi-component hydrocarbon stream containing cyclopentadiene and at least one other C_5 conjugated diene to cause Diels-Alder reaction between the said dienes.

3,661,872
SHORTSTOP AND STRIPPING AIDS
James N. Short, Bartlesville, Okla., and Antonio A. Geraldo, Borger, Tex., assignors to Phillips Petroleum Company
No Drawing. Filed Apr. 13, 1970, Ser. No. 28,073
Int. Cl. C08d *5/02, 3/04, 3/08*
U.S. Cl. 260—85.1 **8 Claims**

A combination polymerization shortstop and stripping process for solution polymerization systems comprising the use of sugar ester surfactants which are either oil- or water-soluble.

3,661,873
PROCESS AND PRODUCT OF TREATING LIVE POLYMERS WITH DIVINYL BENZENE AND A HALOALKANE
Adel F. Halasa, Bath, and Ervin E. Schroeder, North Canton, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
No Drawing. Continuation-in-part of application Ser. No. 716,345, Mar. 27, 1968. This application Jan. 6, 1971, Ser. No. 104,469
Int. Cl. C08d *5/04;* **C08f** *27/02, 19/08*
U.S. Cl. 260—85.1 **18 Claims**

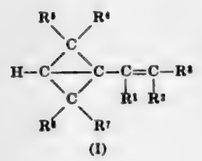
The process described herein involves a method of converting relatively low molecular weight polymers of conjugated dienes prepared by alkali metal-catalyzed polymerizations, such as alkyllithium catalyzed polymerizations, and still containing active lithium or other alkali metal therein, by postreaction with a mixture of divinyl benzene and a haloalkane, such as carbon tetrachloride, to give higher molecular weight polymers having improved cold flow resistance, improved processability and green strength, etc. The improvements are much greater than can be effected by postreaction with either divinyl benzene or CCl_4 individually, or by having divinyl benzene present during the polymerization. The haloalkanes include chloro, bromo and iodo compounds and can have 1–4 or even more halogen atoms per molecule. The postreacted products are highly branched elastomers having a broad molecular weight distribution and possessing less cold flow than the polymers from which they are produced. Surprisingly, even though the molecular weight of the polymer is increased many times, the reaction product displays little or no tendency for cold flow even after extension with oil.

3,661,874
COMPOSITION OF MATTER
Melvin M. Olson, Richfield, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Continuation-in-part of application Ser. No. 871,529, Nov. 6, 1969, which is a continuation of abandoned application Ser. No. 469,902, July 6, 1965. This application June 5, 1970, Ser. No. 43,970
Int. Cl. C08d *5/02, 3/08, 3/12*
U.S. Cl. 260—83.3 **7 Claims**

A water-soluble rubbery polymer formed by the reaction of an epoxidized water-insoluble neutral rubbery polymer and a water-soluble secondary mono amine.

3,661,875
1-(1-ALKENYL)BICYCLO[1.1.0]BUTANES AND THEIR POLYMERS
James B. Sieja, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Jan. 27, 1970, Ser. No. 6,284
Int. Cl. C08f *15/02*
U.S. Cl. 260—85.5 **2 Claims**

Novel bicyclobutanes of the formula

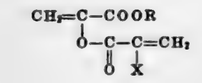


(I)

R^1, R^2, R^3, R^4, R^5, R^6, and R^7 may be hydrogen or a hydrocarbyl group of 1–18 carbon atoms which is free of olefinic or acetylenic unsaturation, with the proviso that the pairs R^1 and R^2, R^2 and R^3, R^4 and R^5, and R^6 and R^7 taken together may, respectively, be tetramethylene or pentamethylene diradicals. The above compounds are prepared by treating 3-alkoxycyclobutanone with a 1-alkenyl Grignard reagent to obtain the corresponding 1-alkenyl-3-alkoxy-1-hydroxycyclobutane which is treated with a hydrogen halide to form a mixture of 1-alkenyl-3-alkoxy-1-halocyclobutane and 3-alkoxy-1-(2-haloalkenylidene)cyclobutane. Those compounds are then treated with a metal capable of removing halogen (such as sodium, magnesium, zinc, etc.) to obtain the corresponding 1-(1-alkenyl)bicyclo [1.1.0]butane. These bicyclobutanes can be converted to homo- and copolymers, which are useful as self-supporting films, fibers and molding powder.

3,661,876
ADHESIVES OR SEALING AGENTS WHICH HARDEN ON EXCLUSION OF OXYGEN
Bernd Wegemund, Hilden, Rhineland, and Joachim Gallake, Dusseldorf-Holthausen, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany
No Drawing. Filed Mar. 30, 1970, Ser. No. 23,958
Claims priority, application Germany, Apr. 1, 1969, P 19 16 648.4
Int. Cl. C08f *3/64, 15/26*
U.S. Cl. 260—86.1 **8 Claims**

Adhesive compositions hardenable under exclusion of oxygen comprising liquid esters of methacrylic and acrylic acids which harden under exclusion of oxygen, an organic percompound selected from the group consisting of organic hydroperoxides having from 3 to 18 carbon atoms and organic peroxides whose half life decomposition temperature after 10 hours is greater than 85° C., and at least 10% by weight of a compound of the formula



wherein X represents a member selected from the group consisting of hydrogen, halogen and lower alkyl and R represents a hydrocarbon having from 1 to 12 carbon atoms. Said compositions form a heat-stable adhesive bond.

3,661,877
POLYMERIC COMPOSITIONS AND METHOD OF PREPARATION
Allen C. Bluestein, Succasunna, and Richard F. Grossman, Andover, N.J., assignors to Reichhold Chemicals, Inc., White Plains, N.Y.
No Drawing. Filed May 21, 1970, Ser. No. 39,563
Int. Cl. C08f *15/04, 27/00, 45/02*
U.S. Cl. 260—86.7 **15 Claims**

A heat crosslinkable composition, which comprises about 94% to about 99.5% of a polymer of ethylene and about 6% to about 0.5% of a peroxide blend, both percentages being based upon the total weight of the composition. The peroxide blend consists of about 10% to about 90% of a peroxide with a thermal decomposition temperature of from about 80° to about 148° C. and of about 90% to about 10% of a peroxide with a thermal decomposition temperature of from about 105° C. to about 210° C. Both percentages are based upon the total weight of said blend. The blend provides a crosslinking action which lies between the crosslinking rate of either peroxide alone.

3,661,878
PROCESS FOR PRODUCING ETHYLENE POLYMERS AND ETHYLENE COPOLYMERS
Itsuho Aishima, Tokyo, Hisaya Sakurai, and Yukichi Takashi, Kawasaki-shi, Hideo Morita and Yoshiyuki Hirotsu, Yokohama-shi, and Tetsuo Hamada, Kawasaki-shi, Japan, assignors to Asahi Chemical Industry Co., Ltd., Tokyo, Japan
No Drawing. Filed July 9, 1969, Ser. No. 840,475
Int. Cl. C08f *1/44, 3/06, 15/04*
U.S. Cl. 260—88.2 F **7 Claims**

The polymerization of ethylene and the copolymerization of ethylene with one alpha-olefin having 3 to 10 carbon atoms in the presence of a catalyst prepared by the reaction between (A) at least one compound of the general formula:

$$R^1R^2HSiOAlR^3R^4$$

wherein R^1 and R^2 represent independently members selected from the group consisting of alkyl groups having 1 to 5 carbon atoms, cyclohexyl, phenyl and 1-naphthyl; R^3 and R^4 represent independently members selected from the group consisting of alkyl groups having 1 to 5 carbon atoms, cyclobutyl, cyclopentyl, cyclohexyl, phenyl and p-tolyl and (B) at least one compound selected from the group consisting of

(1) TiX_p, XV_p, $Tix_{4-q}(OR^5)_q$, $VOX_{3-r}(OR^5)_r$ and VOX_3 wherein X represents halogen selected from the group consisting of Cl, Br, and I; R^5 represents one member selected from the group consisting of alkyls having 1 to 6 carbon atoms, cyclohexyl, phenyl and p-tolyl; p is an integer of 2 to 4, q is an integer of 1 to 3; r is an integer of 1 to 2; and

(2) The solid compounds obtained by the reaction between one member selected from the group consisting of TiX_4, VX_4, $TiX_{4-q}(OR^5)_q$, $VOX_{3-r}(OR^5)_r$ and VOX_3 and one member selected from the group consisting of $AlR_v^6(OR^7)_wX_{3-y}$, SiR_3^8H, $(R^9HSiO)_s$,

$$R^{10}R^{11}R^{12}SiO—(R^{13}HSiO)_t—SiR^{12}R^{11}R^{10}$$

and a combination of one member selected from SiR_3^8H, $(R^9HSiO)_s$ and $R^{10}R^{11}R^{12}SiO—(R^{13}HSiO)_t—R^{12}R^{11}R^{10}$ and one member selected from $AlCl_3$, $AlBr_3$ and $FeCl_3$ wherein R^5 and X represent independently the same groups as defined above; R^6 and R^7 represent independently the same groups as above-defined R^5; R^8, R^9, R^{10}, R^{11}, R^{12} and R^{13} represent independently the same groups as above-defined R^1 or R^2; q and r represent independently the same integers as above-defined; v is an integer of 1 to 3, w is 0 or an integer of 1 to 2, y is an integer of 1 to 3 and $v+w+y=3$; s is an integer of 3 to 6; t is at least one and the viscosity of

$$R^{10}R^{11}R^{12}SiO—(R^{13}HSiO)_t—R^{12}R^{11}R^{10}$$

is at most 2,000 ecntistokes, the mole ratio of the compound (A) to the compound (B) being 0.5–5:1.

3,661,879
PROCESS FOR THE POLYMERIZATION OF N-VINYLCARBAZOLE IN THE PRESENCE OF 2,4,5,7-TETRANITRO-9-FLUORENONE
Max Van Dam, Oradell, and Diana S. Y. Yung, Park Ridge, N.J., assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
No Drawing. Filed Apr. 6, 1971, Ser. No. 131,827
Int. Cl. C08f *7/16*
U.S. Cl. 260—88.3 R **7 Claims**

N-vinylcarbazole is polymerized catalytically using 2,4,5,7-tetranitro-9-fluorenone as the polymerization catalyst. The reaction is carried out under elevated temperature conditions. The resulting polymer-fluorenone composition is useful in the preparation of photoconductive plates used in the electrostatic duplicating field.

3,661,880
PROCESS FOR PREPARING SOLID WATER-SOLUBLE CATIONIC POLYMERS
Gerhard Markert, Ober Ramstadt-Eiche, Horst Pennewis and Klaus Ross, Darmstadt, and Dieter Neher, Darmstadt-Eberstadt, Germany, assignors to Rohm Gesellschaft mit beschrankter Haftung, Darmstadt, Germany
No Drawing. Filed May 28, 1969, Ser. No. 828,722
Claims priority, application Germany, June 7, 1968, P 17 70 588.3
Int. Cl. C08f *3/62, 3/90*
U.S. Cl. 260—89.5 N **1 Claim**

An improved method for preparing solid water-soluble cationic polymers by polymerizing concentrated aqueous monomer solutions in thin horizontal layers bounded by flexible walls, and then concentrating the resulting polymer solutions by evaporating water directly therefrom to form non-adherent solids easily separable from said walls.

3,661,881
PROCESS FOR PREPARING VINYL CHLORIDE POLYMERS OF REDUCED POROSITY
Donald E. Moore, Coleman, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Continuation of application Ser. No. 661,206, Aug. 17, 1967. This application Sept. 3, 1970, Ser. No. 69,446
Int. Cl. C08f *1/11, 3/30*
U.S. Cl. 260—92.8 W **5 Claims**

This invention is directed to a process for preparing vinyl chloride polymer of reduced porosity in aqueous suspension while in the presence of a monomer-soluble polymerization catalyst and while maintaining an essentially constant reaction temperature. More particularly, the polymerization reaction is continued until a decrease of from about 1 to 20 p.s.i. from the liquid-vapor equilibrium pressure of the reaction occurs. Thereafter, the reduced pressure is maintained by the addition of monomer and polymerizing of the same in contact with the previously formed polymer until a polymer product of lower porosity is obtained.

3,661,882
POLYMERIZATION CATALYST DERIVED FROM ZERO-VALENT STATE METAL COORDINATION COMPLEX WITH GROUP V-A COMPOUND ETC.
John J. Hawkins, Santa Ana, Calif., Charles D. Storrs, Niagara Falls, N.Y., and Stanley D. Zimmerman, Morrisville, Pa., assignors to Columbian Carbon Company
No Drawing. Filed Sept. 5, 1969, Ser. No. 855,753
Int. Cl. C08d *1/14, 3/06*
U.S. Cl. 260—94.3 **23 Claims**

A catalyst composition is provided which contains a coordination complex of a Group V–A compound such

as triphenyl phosphite and a group zero-valent state metal such as nickel, for example, tetrakis(triphenylphosphite) nickel (O) or bis(triphenylphosphite) nickel (O) dicarbonyl, together with an inorganic Lewis acid such as aluminum chloride, boron trifluoride, or zinc chloride, suitably with a solvent such as tetrahydrofuran, cyclohexane, or methyl chloride, which catalyst is used to polymerize an unsaturated monomer such as butadiene.

3,661,883

PROCESS FOR THE MANUFACTURE OF POLYISOPRENE

Takashi Nishida and Kazuo Itoi, Kurashiki, Japan, assignors to Kurashiki Rayon Co., Ltd., Kurashiki, Okayama Prefecture, Japan

No Drawing. Filed Feb. 24, 1970, Ser. No. 13,748

Claims priority, application Japan, Mar. 1, 1969, 44/15,653; Aug. 13, 1969, 44/64,358

Int. Cl. C08d *3/10, 3/12*

U.S. Cl. 260—94.3 4 Claims

A process for the preparation of polyisoprene containing at least 90% of cis-1,4-configuration comprising contacting isoprene in an inert solvent with a catalyst, characterized in that the said catalyst is prepared by mixing in an inert solvent (a) titanium tetrachloride, (b) an organotin hydride of the general formula, R_mSnH_{4-m}, in which R is a hydrocarbyl group and *m* is an integer of 2 or 3, and (c) an aluminium halide selected from the group consisting of aluminium bromide and aluminium iodide.

3,661,884

REFINING CRUDE AMORPHOUS POLYOLEFINS

Francis J. Shell and Norris D. Zetmeir, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed July 7, 1969, Ser. No. 839,676

Int. Cl. C08f *3/02, 3/08, 15/00*

U.S. Cl. 260—93.7 10 Claims

Crude amorphous polyolefins, by-products of polyolefin production, contain quantities of catalyst residues including discoloring agents such that the crude material is dark, highly viscous-to-solid, flammable and corrosive waste. By treating the crude product in a liquid two-phase purification process, the amorphous polyolefin is separated and recovered as a usable, safe-to-handle, essentially color free, material. The catalyst residue also is recovered.

3,661,885

POLYURETHANE CATALYST

Roy D. Haddick, Ryhope, Karmjit Purewal, Newcastle-upon-Tyne, and Fenwick Vickers, Highfield, Rowlands Hill, England, assignors to Nuodex Limited, Birtey, England

No Drawing. Filed Apr. 22, 1968, Ser. No. 723,247

Claims priority, application Great Britain, May 1, 1967, 20,037/67

Int. Cl. C08g *22/38, 22/40*

U.S. Cl. 260—97.5 AC 12 Claims

As catalysts for polyurethane production these are used, instead of stannous salts as such, complexes of stannous salts with organic complexing agents. Examples are complexes of stannous chloride or, better, stannous octanoate or the like with a ketone, lactone or amine. One advantage of using these complexes is that they have some "delayed action" effect, avoiding premature action without prejudice to their final effectiveness. They may be used in association with known tertiary amine catalysts, or with uncomplexed tin catalysts.

3,661,886

BASIC AZO DYESTUFFS CONTAINING A HETEROCYCLIC QUATERNARY AMMONIUM GROUP

Gert Heger, Schoenenbuch, Switzerland, assignor to Ciba Limited, Basel, Switzerland

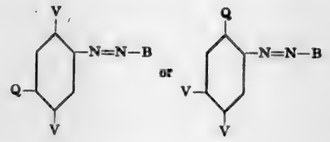
No Drawing. Continuation-in-part of application Ser. No. 657,796, Aug. 2, 1967. This application May 26, 1970, Ser. No. 40,734

Claims priority, application Switzerland, Aug. 5, 1966, 11,331/66; June 21, 1967, 8,815/67

Int. Cl. C09b *29/08, 29/12, 29/36*

U.S. Cl. 260—156 9 Claims

Basic dyestuffs which are free from acidic groups imparting solubility in water and which correspond to the formula



wherein Q is an electronegative group, B is a coupling component, one of V is hydrogen, alkyl, chlorine or bromine and the other a —O— alkyleneamino moiety. The compounds are prepared by coupling, condensation with an amine or hydrazine or by alkylation. They are useful for dyeing synthetic fibers, yielding strong and level dyeings of good general fastness, especially fastness to wet treatments, light and rubbing.

3,661,887

PROCESS FOR CURING SILICONE RUBBER COMPOSITIONS USING HARADA COMPLEXES AS CATALYSTS

John R. Leebrick, Old Lyme, Conn., assignor to Cosan Chemical Corporation, Clifton, N.J.

No Drawing. Continuation-in-part of application Ser. No. 665,981, Sept. 7, 1967. This application May 6, 1970, Ser. No. 35,289

Int. Cl. C08h *9/00*

U.S. Cl. 260—18 S 9 Claims

In a process for curing silicone rubber based on organosiloxane polymers to the solid state, significant improvements are achieved using as the curing catalyst a Harada complex characterized by the empirical formula



in which each of the R groups represent an alkyl group containing 1 to 8 carbon atoms and A represents a carboxylic acid radical containing 1 to 22 carbon atoms.

3,661,888

WATER INSOLUBLE DISAZO DYESTUFFS RESULTING FROM COUPLING N,β-ACETOXYETHYL - N,β-CYANOETHYLANILINE AND DIAZOTIZED 4 - AMINO - 2' - OR 4' - NITRO-AZOBENZENE

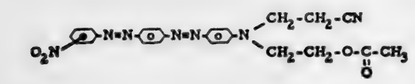
John Sagal, Jr., Rochester, N.Y., assignor to Martin Marietta Corporation

No Drawing. Filed Feb. 12, 1970, Ser. No. 11,025

Int. Cl. C09b *31/04;* D06p *1/06*

U.S. Cl. 260—187 3 Claims

A water insoluble disazo dye of the formula



is prepared by coupling, under acid conditions, equimolar amounts of N,β1acetoxyethyl-N,β-cyanoethylaniline and a diazotized amine of the formula



wherein each NO_2 group is para or meta to the azo group attached to the same phenylene ring as the NO_2 group in question. The dyes may be used as disperse dyes for dyeing polyethylene terephthalate textile fibers to red or orange shades by the conventional thermosol dyeing method, to produce dyeings having excellent light, wash and sublimation fastness.

3,661,889

WATER-INSOLUBLE PHENYL-AZO-PHENYL DYES

Guenter Lange and Hans Guenter Wippel, Ludwigshafen (Rhine), and Rudolf Bermes, Mannheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Original application Jan. 10, 1966, Ser. No. 519,425. Divided and this application Feb. 6, 1970, Ser. No. 9,418

Claims priority, application Germany, Jan. 15, 1965, P 15 44 367.1

Int. Cl. C07c *107/06;* C09b *29/08*

U.S. Cl. 260—207.1 3 Claims

Water-insoluble p-aminoazo dyes bearing a phenoxyacetoxyethyl substituent on the amino nitrogen. These dyes are particularly useful for dyeing synthetic linear polyesters.

3,661,890

PREPARATION OF QUERCETIN DERIVATIVES

Leonard Jurd, Berkeley, Calif., assignor to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Mar. 10, 1970, Ser. No. 18,314

Int. Cl. C07c *47/18*

U.S. Cl. 260—210 F 4 Claims

Process for converting rutin into a 3-O-alkyl quercetin. Example: (a) Rutin is reacted with an excess of benzoyl chloride to benzoylate all the free phenolic hydroxy groups of the rutin, thus to produce 5,7,3',4'-tetra-O-benzoyl rutin. (b) This compound is then hydrolyzed in an acidic medium to split off the rutinoside group while retaining the benzoic acid groups, thus to produce 5,7,3',4'-tetra-O-benzoyl quercetin. (c) This compound is alkylated to produce 3 - O - alkyl - 5,7,3',4' - tetra - O-benzoyl quercetin, which is then (d) hydrolyzed to yield the final product 3-O-alkyl quercetin. Another phase of the disclosure concerns the conversion of rutin into 7-O-benzoyl quercetin. This is accomplished by reacting rutin with benzoyl chloride in the presence of borax to cause selective benzoylation of the rutin in the 7 position. The resulting intermediate (7-O-benzoyl rutin) is then hydrolyzed in an acid medium, yielding the desired end product 7-O-benzoyl quercetin.

3,661,891

ERYTHROMYCIN UREIDES AND PROCESS OF PREPARATION

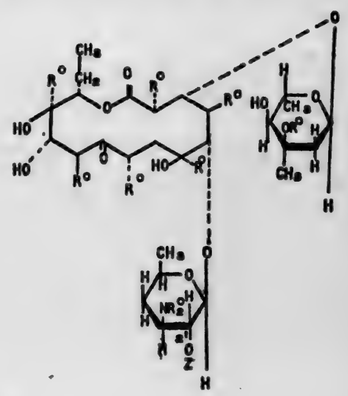
Anthony A. Sinkula, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Aug. 28, 1970, Ser. No. 67,964

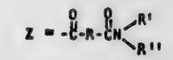
Int. Cl. C07c *47/18*

U.S. Cl. 260—210 E 6 Claims

Erythromycin ureides having the following formula:

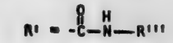


wherein



R^0=CH_3

R=the radical obtained by the removal of the two carboxyl groups from a dicarboxylic acid which can be dehydrated to an inner anhydride.



R'' and R'''=H, alkyl of from 1 to 20 carbon atoms, inclusive, and isomeric forms thereof, cycloalkyl of 3 to 8 carbon atoms, inclusive, and aralkyl of not more than 12 carbon atoms.

Erythromycin ureides are superior tasting erythromycin compounds possessing erythromycin antibacterial activities and the same uses as erythromycin. They also demonstrate a depot effect.

3,661,892

PROCESS FOR THE PRODUCTION OF A NEW ANTIBIOTIC SF–733 SUBSTANCE

Takashi Shomura and Norio Ezaki, Yokohama-shi, Takashi Tsuruoka and Tomizo Niwa, Kawasaki-shi, Eiichi Akita, Tokyo, and Taro Nilda, Yokohama-shi, Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Dec. 3, 1968, Ser. No. 780,620

Claims priority, application Japan, Dec. 18, 1967, 42/8,060; Oct. 15, 1968, 43/74,634

Int. Cl. C07c *129/18*

U.S. Cl. 260—210 R 1 Claim

A process for the production of an antibiotic SF–733 substance which comprises cultivating SF–733 strain

of *Streptomyces thermoflavus* in an aqueous nutrient medium under submerged aerobic condition and recovering the active ingredient, amorphous free base of SF–733 substance from the medium and more particularly obtaining free base crystal of SF–733 substance by passing said amorphous substance through ethanol-solvate state on the way to crystallization.

3,661,893

SYNTHESIS IN VITRO OF NUCLEIC ACIDS AND PRODUCTS USED THEREIN AND PRODUCTS PRODUCED THEREFROM

Solomon Spiegelman and Ichiro Haruna, Champaign, Ill., assignors to University of Illinois Foundation, Urbana, Ill.

Continuation-in-part of application Ser. No. 509,485, Sept. 29, 1965, and a division of application Ser. No. 535,596, Mar. 18, 1966, now Patent No. 3,444,041, dated May 13, 1969. This application Nov. 25, 1968, Ser. No. 798,528

Int. Cl. C07d *51/50*

U.S. Cl. 260—211.5 R **6 Claims**

Biologically active ribonucleic acids are synthesized in vitro in an enzymatic system from nucleotide bases and a biologically active ribonucleic acid template.

3,661,894

METHOD OF PRODUCING N-ALKYL LACTAMS

Klaus Wehner, Leuna, Werner Kisan, Halle-Neustadt, and Gerald Kunz, Merseburg-West, Germany, assignors to Veb Leuna-Werke "Walter Ulbricht," Leuna, Germany

No Drawing. Filed June 29, 1970, Ser. No. 51,002

Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 **8 Claims**

Method of producing a N-alkyl substituted lactam, comprising contacting a N-unsubstituted lactam with a-symmetrical dialkyl ether at a temperature of 200 to 400° C. in the presence of a catalyst which catalyzes the splitting off of water.

3,661,895

TEXTILE FIBER SIZING AGENTS

Felix Joseph Germino, Palos Park, Joseph Frank Stejskal, Brookfield, Edwin Hans Christensen, La Grange Park, and Francis Ervin Kite, Riverside, Ill., assignors to CPC International Inc.

No Drawing. Filed Oct. 1, 1969, Ser. No. 862,969

Int. Cl. C13l *1/08*

U.S. Cl. 260—233.5 **23 Claims**

Reaction of a cross-linked, thin-boiling starch with a polycarboxylic anhydride yields an effective warp size composition.

3,661,896

AZATRICYCLIC LACTAMS

Gilbert H. Berezin, West Chester, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Division and Continuation-in-part of application Ser. No. 775,114, Nov. 12, 1968. This application Aug. 21, 1970, Ser. No. 66,097

Int. Cl. C07d *41/00*

U.S. Cl. 260—239.3 **2 Claims**

This invention relates to the novel compounds 4-azatricyclo[4.3.1.1^{3,8}]undecane - 5 - one and 4 - azatricyclo [5.3.1.1^{3,9}]dodecane-5-one and the methods of preparing said compounds.

3,661,897

18-AMINO-PREGNANES

Ulrich Eder, Hans-Detlef Berndt, Ulrich Kerb, Rudolf Wiechert, and Georg Zollner, Berlin, Germany, and Paul Buchschacher, Arlesheim, Andre Furlenmeier and Andor Furst, Basel, and Marcel Muller, Frenkendorf, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Apr. 14, 1970, Ser. No. 28,538

Claims priority, application Germany, Apr. 17, 1969, P 19 20 151.5

Int. Cl. C07c *173/10*

U.S. Cl. 260—239.55 R **19 Claims**

13-methylamino steroids, salts thereof and methods for their preparation are described. The aforesaid compounds are valuable medicinals and exhibit a generally favorable activity on heart muscle tone. Their activity results especially in an increasing of the expandability of the heart muscle fibers and thus facilitates, for example, makes possible a sufficient blood filling of the heart.

3,661,898

METALLIFEROUS DYES

Johannes Dehnert and Gerhard Bachmann, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed July 23, 1969, Ser. No. 844,210

Claims priority, application Germany, July 24, 1968, P 17 70 959.0

Int. Cl. C07d *33/50*

U.S. Cl. 260—240 G **2 Claims**

Metalliferous azomethines prepared from 2-(8-aminoquinonyl-(2)-)-indandione-(1,3) and ortho-hydroxyaldehydes which contain copper or nickel as the metal. These compounds are valuable pigment dyes.

3,661,899

2(5H)-FURANONE COMPOUNDS

John A. Ford, Jr., and Charles V. Wilson, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 870,437, Nov. 12, 1969, which is a division of application Ser. No. 555,240, June 6, 1966. This application June 1, 1970, Ser. No. 42,535

Int. Cl. C09b *23/00*; C07d *5/10*

U.S. Cl. 260—240 **12 Claims**

Certain 2(5H)-furanone compounds are described and claimed. These compounds, depending on their particular structure, are textile dyes, sensitizers for organic photoconductors in electrophotography, ultraviolet absorbers, for example, for linear condensation polymers or useful for the heat stabilization of polyesters, such as poly(ethylene terephthalate). Some of the compounds have more than one of the utilities just mentioned. 3-cyano-5-orthonitrobenzylidene - 4 - phenyl - 2(5H) - furanone and 3 - cyano-5-dimethylaminomethylidene-4-phenyl-2-(5H)-furanone are illustrative of 2(5H)-furanone compounds.

3,661,900

2-(2',6'-DICHLOROPHENYL)-1,3-THIAZINE-4-ONE

Jasper Daams and Kobus Wellinga, Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed June 3, 1970, Ser. No. 43,194

Claims priority, application Netherlands, June 4, 1969, 6908457

Int. Cl. C07d *93/06*

U.S. Cl. 260—243 R **1 Claim**

It has been found that 2-(2',6'-dichlorophenyl)-1,3-thiazine-4-one has a biocidal effect on plants and their seeds. An interesting feature is that the said novel substance has not only a good initial activity but also a long-term activity. Selective use of the substance in cultivated plants having roots which penetrate to a comparatively great depth is possible. Thus, no appreciable damage is done to the cultivated plants.

3,661,901

HEAVY METAL COMPLEXES OF CEPHALOSPORIN C AND PROCESS FOR THE ISOLATION OF CEPHALOSPORIN C IN THE FORM OF SUCH COMPLEXES

Hans Bickel, Binningen, Rolf Bonhardt, Arlesheim, Bruno Fechtig, Reinach, Walter Voser, Allschwil, Johannes Mueller, Arlesheim, and Heinrich Peter, Riehen, Switzerland, assignors to Ciba Corporation, Summit, N.J.

Filed June 4, 1969, Ser. No. 830,334

Claims priority, application Switzerland, June 14, 1968, 8,835/68

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **12 Claims**

Sparingly soluble microcrystalline heavy metal complexes of cephalosporin C and a process for isolating cephalosporin C in the form of such complexes from solutions obtainable in the fermentation of cephalosporin C.

3,661,902

N-SUBSTITUTED PIPERIDINE SPIRO COMPOUNDS

Michio Nakanishi, Oita, a ndKatsuo Arimura and Tadao Okada, Fukuoka, Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

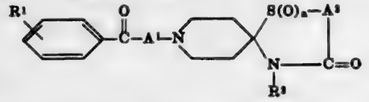
No Drawing. Continuation-in-part of application Ser. No. 752,497, Aug. 14, 1968. This application Sept. 2, 1970, Ser. No. 69,154

Claims priority, application Japan, Aug. 16, 1967, 42/52,529

Int. Cl. C07d *29/20, 93/06*

U.S. Cl. 260—243 R **15 Claims**

Compounds of the formula



and pharmaceutically acceptable acid addition salts thereof are antipsychotic agents, useful in the therapy of schizophrenia and mania. In the formula

R^1=H, halogen, lower alkyl or lower alkoxy;
R^2=H, lower alkyl, phenyl, halophenyl, methylphenyl or trifluoromethylphenyl;
A^1=alkylene of 1 to 3 carbon atoms;
A^2=alkylene of 1 to 2 carbon atoms; and
n=0, 1 or 2.

3,661,903

HALO-SUBSTITUTED 2-AMINO-BENZYLAMINE-MORPHOLIDES AND SALTS THEREOF

Gerd Kruger, Biberach (Riss), Otmar Zipp, Osnabruck, and Johannes Keck, Josef Nickl, Hans Machleidt, Gerhard Ohnacker, Robert Engelhorn, and Sigfrid Puschmann, Biberach (Riss), Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

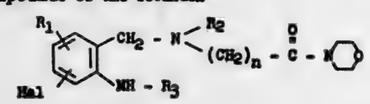
No Drawing. Continuation-in-part of application Ser. No. 872,778, Oct. 30, 1969, which is a continuation-in-part of application Ser. No. 555,696, June 7, 1966. This application Nov. 12, 1970, Ser. No. 88,985

Claims priority, application Germany, June 9, 1965, T 28,754

Int. Cl. C07d *87/42*

U.S. Cl. 260—247.2 A **6 Claims**

Compounds of the formula



wherein

Hal is chlorine or bromine,
R_1 is hydrogen, chlorine or bromine,
R_2 is alkyl of 1 to 4 carbon atoms, phenyl or benzyl,
R_3 is hydrogen, alkanoyl of 2 to 4 carbon atoms, benzoyl, cholorobenzoyl, methoxybenzoyl, nicotinoyl or isonicotinoyl, or
n is 1 or 2,

and non-toxic, pharmacologically acceptable acid addition salts thereof; the compounds as well as their salts are useful as antitussives and respiration-stimulants.

3,661,904

2-ALKYL-4,5-DICHLORO-AMINOPYRIDAZONES-3 AND PREPARATION THEREOF

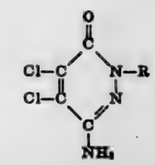
Masao Iizuki, Kanagawa Prefecture, Norio Igari, Tokyo, and Shinya Ito, Kyoto, Japan, assignors to Hodogaya Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed May 7, 1970, Ser. No. 35,567

Int. Cl. C07d *51/04*

U.S. Cl. 260—250 **7 Claims**

2-alkyl-4,5-dichloro - 6 - aminopyridazones-3 of the formula:



wherein R is an alkyl group having 1 to 4 carbon atoms are intermediates for the production of monoazo dyestuffs having an affinity to metal-containing polyolefins and polyesters. These compounds are prepared by nitrating the corresponding 2-alkyl-4,5-dichloro-pyridazones-3 and reducing the 6-nitro group of the intermediate to an amino group.

3,661,905

TETRAHYDROQUINOXALINE DERIVATIVES

Kurt Ley, Odenthal-Globusch, Roland Nast, Cologne-Buchheim, Wolfgang Redetzky, Opladen-Quettingen, and Theo Kempermann, Cologne-Lindenthal, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

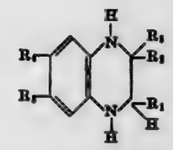
No Drawing. Filed Sept. 10, 1969, Ser. No. 856,796

Claims priority, application Germany, Sept. 13, 1968, P 17 95 325.2, P 17 95 326.3

Int. Cl. C07d *51/78*

U.S. Cl. 260—250 **10 Claims**

The present invention relates (1) to rubber products that are unaffected by ozone (2) to anti-ozonants that may be used in the production of these ozone-resistant rubber products, and (3) to the preparation of these anti-ozonants corresponding to the general formula:

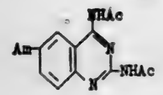


3,661,906
2,4-DIACYLAMINO-6-AMINO-QUINAZOLINES

Paul Schmidt, Therwil, and Christian Egli, Rheinfelden, Switzerland, assignors to Ciba Corporation, Summit, N.J.

No Drawing. Filed Oct. 22, 1969, Ser. No. 868,591
Claims priority, application Switzerland, Nov. 13, 1968, 16,921/68
Int. Cl. C07d *51/48*
U.S. Cl. 260—256.4 Q 6 Claims

Compounds of the formula



in which Ac stands for an acyl group, Am for an optionally substituted amino group, and which may be substituted in the benzene ring in positions 5,7 or 8 are useful as hypotensive and diuretic agents.

3,661,907
5-BENZ (cd)-INDOL-2(1H)-YLIDENE-BARBITURIC ACID

Thurairajah Padmanathan, Highland Park, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application May 27, 1968, Ser. No. 732,045. Divided and this application Oct. 21, 1970, Ser. No. 82,821
Int. Cl. C07d *51/33*
U.S. Cl. 260—256.4 C 1 Claim

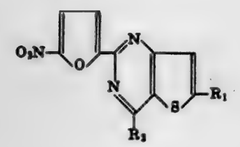
The compound 5-benz(cd)indol-2(1H)-ylidene-barbituric acid, which is useful as a dye for synthetic fibers. The compound is also useful as an intermediate in the synthesis of 1,3,2-oxazaborinide compounds.

3,661,908
2-(5'-NITRO-2'-FURYL)-4-AMINO-THIENO[3,2-d] PYRIMIDINES AND SALTS THEREOF

Eberhard Woltun and Wolfgang Reuter, Biberach (Riss), Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim/Rhein, Germany

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,841
Claims priority, application Germany, Nov. 26, 1969, P 19 59 403.7; Oct. 16, 1970, P 20 50 814.9, P 20 50 815.0, P 20 50 816.1
Int. Cl. C07d *99/06*
U.S. Cl. 260—256.5 R 11 Claims

Compounds of the formula



wherein

R_1 is hydrogen or methyl, and

R_2 is amino, (alkyl of 1 to 5 carbon atoms)-amino, di-(alkyl of 1 to 4 carbon atoms)-amino, (monohydroxy-alkyl of 2 to 5 carbon atoms)-amino, (2,3-dihydroxy-n-propyl)-amino, (alkoxy of 1 to 2 carbon atoms-alkyl of 1 to 3 carbon atoms)-amino, N-(ω-hydroxy-alkyl of 2 to 3 carbon atoms)-N-(alkyl of 1 to 4 carbon atoms)-amino, N-methyl-D-glucamino, di-(hydroxy-alkyl of 1 to 5 carbon atoms)-amino, [(di-alkyl of 1 to 2 carbon atoms)-amino-alkyl of 2 to 3 carbon atoms]-amino, (1-methyl-2-hydroxy-ethyl)-amino, (2-phenyl-2-hydroxy-ethyl)-amino, (2 - hydroxy-3-diethylamino-n-propyl)-amino, (alkanoyl of 1 to 2 carbon atoms)-amino, chloroacetyl - amino, dichloroacetyl - amino, (amino-alkyl of 2 to 3 carbon atoms)-amino, (acetyl-amino-alkyl of 2 to 3 carbon atoms)-amino, allylamino, anilino, chloroanilino, methylanilino, hydroxyanilino, methoxyanilino, N-methyl-anilino, benzylamino, phenethyl-amino, cyclohexyl-amino, (hydroxy-cyclohexyl)-amino, pyrrolidino, piperidino, hydroxy-piperidino, morpholino, thiomorpholino, thiomorpholino-1-oxide, piperazino, N - methyl - piperazino, N-hydroxyethyl-piperazino, N-formyl-piperazino or N-carbethoxy-piperazino,

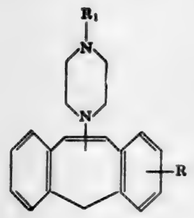
and non-toxic, pharmacologically acceptable acid addition salts thereof; the compounds as well as their salts are useful as bactericidal agents against grampositive and gramnegative bacteria, as fungicides and as trichomonacides, especially against Trichomonas vaginalis, in warm-blooded animals.

3,661,909
5H-DIBENZO (a,d) CYCLOHEPTEN-10-YL-PIPERAZINES

Michele Masturzi, Naples, Sabino Lembo, Pozzuoli, and Rene Viterbo, Naples, Italy, assignors to Richardson-Merrell S.p.A., Naples, Italy

No Drawing. Original application Mar. 25, 1968, Ser. No. 715,536, now Patent No. 3,575,980. Divided and this application Feb. 2, 1971, Ser. No. 112,042
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 TR 3 Claims

New en-amines of the formula:



in which R may be hydrogen, halogen, or lower alkyl, and R_1 represents a nitrogen-containing substituent, preferably a cyanethyl or picolyl. These new compounds are useful because of their pharmacological, activities which include muscle relaxing, anti-inflammatory, anti-pyretic, analgesic, and sedative action. A preferred method of making the new compounds is described.

3,661,910
5-(SUBSTITUTED-BENZYL)-DIBENZO[a,d] CYCLOHEPTENES

William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Parsippany, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Oct. 13, 1969, Ser. No. 866,011
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 TR 13 Claims

5-(substituted-benzyl) - dibenzo[a,d]cycloheptenes e.g. 10,11-dihydro-5-(2-methoxy-α-[4-methyl-1 - piperazinyl] benzyl)-5H-5-dibenzo[a,d]cycloheptenol. The compounds are prepared by treating a substituted benzyl lithium compound with a dibenzo[a,d]cycloheptene. The compounds are useful as hypotensive/antihypertensive agents.

3,661,911
MONO, DI, AND TRI PYRIDINE COMPLEXES OF ORGANOTIN COMPOUNDS

Holger Meyer, Bromma, Sweden, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Nov. 21, 1966, Ser. No. 595,599
Claims priority, application Sweden, Nov. 23, 1965, 15,124/65
Int. Cl. C07d *31/26*
U.S. Cl. 260—270 R 2 Claims

The compounds are of the class of organotin complexed with one to three moles of pyridine, useful as pesticides. This class is exemplified by the dipyridine complex of bis-(dibromocyclohexyl)-diphenyltin.

3,661,912
BIS(N-ACYLAMINO) DERIVATIVES OF PERYLENE TETRACARBOXYLIC ACID IMIDES

Dietmar Kalz, Leverkusen, and Gerhard Wolfrum, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 26, 1968, Ser. No. 755,438
Claims priority, application Germany, Aug. 31, 1967, P 15 69 754.8, P 15 69 755.9, P 15 69 756.0; Oct. 10, 1967, F 53,721, F 53,722, F 53,723; Oct. 24, 1967, P 16 69 760.6
Int. Cl. C07d *39/00*
U.S. Cl. 260—281 7 Claims

A perylene series dyestuff of the formula:



wherein:

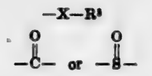
R^1 is hydrogen, an optionally substituted alkyl, cycloalkyl, aralkyl, or aryl group;

R^2 is a optionally substituted alkyl, cycloalkyl, aralkyl or aryl group, or an alkoxy carbonyl group, or a heterocyclic radical;

or a radical of the formula:

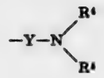
wherein

X is



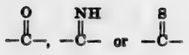
and R^3 is an optionally substituted alkyl, cycloalkyl, aralkyl, aryl or heterocyclic radical;

or a radical of the formula:



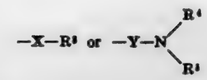
wherein

Y is



and R^4 and R^5 are hydrogen or optionally substituted alkyl groups, cycloalkyl groups, aralkyl groups or aryl groups;

wherein the perylene radical can have further substituents; with the proviso that when R^2 is



then R^1 is hydrogen.

3,661,913
8-LOWER ALKOXYISOQUINOLINIUM HALIDES

Willy Leimgruber, Montclair, and Fausto Eugenio Schenker, Bloomfield, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Aug. 30, 1967, Ser. No. 664,269, now Patent No. 3,562,280, dated Feb. 9, 1971. Divided and this application Sept. 9, 1970, Ser. No. 70,923
Int. Cl. C07d *35/10*
U.S. Cl. 260—286 Q 4 Claims

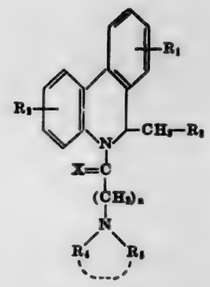
Novel pharmacologically active 8-(lower alkoxy)-1,2,3,4-tetrahydroisoquinolines, 8-(lower alkoxy)-1 and/or 2-(lower alkyl)-1,2,3,4-tetrahydroisoquinolines and intermediates therefor, are prepared utilizing, for example, 8-isoquinolinol as a starting material. The pharmacologically active compounds of the invention are useful as hypotensive agents.

3,661,914
DERIVATIVES OF 5,6-DIHYDRO-PHENANTHRIDINE

Willem Jacob van der Burg, Heesch, Netherlands, assignor to Organon Inc., West Orange, N.J.

No Drawing. Filed July 1, 1969, Ser. No. 838,732
Claims priority, application Netherlands, Aug. 21, 1968, 6811947
Int. Cl. C07d *39/02*
U.S. Cl. 260—287 R 2 Claims

Novel phenanthridine derivatives having the general formula:



in which

R_1 and R_2 are a member of the group consisting of hydrogen, halogen, hydroxy, amino, acyloxy, alkyl and alkoxy with 1–6 C-atoms.

R_3 is a member of the group consisting of hydrogen, hydroxy, alkoxy, and alkyl with 1–6 C-atoms, and halogen,

X is a member of the group consisting of hydrogen (H_2) and oxygen,

$(CH_2)_n$ is a member of the group consisting of a branched and an unbranched alkylene group with 1–6 C-atoms,

R_4 and R_5 are a member of the group consisting of hydrogen and an alkyl group with 1–6 C-atoms, and together

with the nitrogen atom a member of the group consisting of a saturated and an unsaturated heterocyclic ring system,

and the acid addition salt and quaternary ammonium compounds thereof.

3,661,915
1-HYDROXYBENZO[b]QUINOLIZINE DERIVATIVES

John T. Suh, Mequon, and Richard A. Schnettler, Brown Deer, Wis., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 767,479, Oct. 14, 1968. This application Sept. 2, 1970, Ser. No. 69,140
Int. Cl. C07d *39/12*
U.S. Cl. 260—289 R 4 Claims

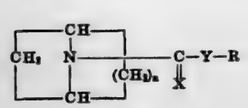
The compounds are 1-hydroxybenzo[b]quinolizines which are useful as agents to control aggressive anti-social behavior in animals. The compounds also may be used as intermediates in the preparation of pickling agents, mothproofing agents and wood preservatives. Representative of compounds disclosed are cis-8,9-dimethoxy-1-hydroxy-1,3,4,6,11,11a-hexahydro - 2H - benzo[b]quinolizine and 8,9 - dimethoxy - 1 - hydroxy - 1 - (3 - chlorobenzyl)-1,3,4,6,11,11a-hexahydro-2H-benzo[b]quinolizine.

3,661,916
THIOCARBOXYLIC ACID ESTERS OF 8-AZA-BICYCLO[3.2.1]OCTANES AND 9 - AZA-BICYCLO[3.3.1]NONANES

Elmar Sturm, Ariesheim, Basel-Land, and Christian Vogel, Binningen, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed July 20, 1970, Ser. No. 56,687
Claims priority, application Switzerland, Aug. 1, 1969, 11,725/69
Int. Cl. C07d *39/00*
U.S. Cl. 260—292 7 Claims

Compounds of the formula



wherein

R represents lower alkyl, lower halogenalkyl, lower alkenyl or lower halogenalkenyl,
n represents the integer 0 or 1 and
of the symbols X and Y, one represents sulphur and the other represents oxygen or sulphur

are disclosed as herbicidally active substances. Compositions as well as a method for controlling weeds and wild grasses with the aid of such compounds are also described.

3,661,917
3-SULFONAMIDO-4-HYDROXYPHENYL-2-PIPERIDYLCARBINOLS

Carl Kaiser, Haddon Heights, N.J., and Stephen T. Ross, Berwyn, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 39,561, May 21, 1970. This application Mar. 26, 1971, Ser. No. 128,566
Int. Cl. C07d *29/34*
U.S. Cl. 260—293.73 10 Claims

3-sulfonamido - 4 - hydroxyphenyl-2-piperidylcarbinols prepared by appropriate reduction of 2-pyridylcarbinols or ketones have β-adrenergic stimulant activity. Erythro and threo diastereoisomers may be conveniently separated.

3,661,918
PROCESS FOR THE PREPARATION OF BICYCLIC AMINES

Constantine J. Bouboulis, Union, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed Oct. 17, 1968, Ser. No. 768,540
Int. Cl. C07d *39/00*
U.S. Cl. 260—293.52 11 Claims

Substituted bicyclic amine compounds such as substituted 1-aza bicyclo[3,3,1]nonanes are synthesized through the catalytically promoted hydrogenation of triamino compounds, ketodiamino compounds, trinitrile compounds and keto-dinitrile compounds. The starting trinitrile and keto-dinitrile compounds are desirably produced by cyanoethylating either a ketone or a mononitrile compound. The triamino and keto-diamino materials are obtained by hydrogenation of the nitrile compounds. The substituted bicyclic amine compositions are useful as agricultural chemicals and as additives or additive precursors for hydrocarbon compositions ranging from gasoline fractions through middle distillate fuels and lubricating oils.

3,661,919
TETRAHYDROPYRIDYL-5-RESORCINOLS

Raj K. Razdan, Belmont, Mass., William R. Thompson, Ithaca, N.Y., and Felix E. Granchelli, Arlington, and Harry G. Pars, Lexington, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

No Drawing. Filed Mar. 27, 1969, Ser. No. 811,701
Int. Cl. C07d *29/38*
U.S. Cl. 260—297 R 5 Claims

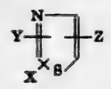
New 2-R_3-5-alkyl-resorcinols having anti-bacterial and anti-fungal activity.

3,661,920
PHENYL-THIAZOLE-MALONIC ACID DERIVATIVES

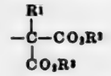
Walter Hepworth and Gilbert Joseph Stacey, Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Feb. 17, 1969, Ser. No. 799,963
Claims priority, application Great Britain, Mar. 22, 1968, 13,989/68
Int. Cl. C07d *91/32*
U.S. Cl. 260—302 R 6 Claims

Thiazole derivatives of the formula:



wherein Y or Z is linked to the 2-position of the thiazole nucleus, X stands for hydrogen or alkyl of up to 3 carbons, Y stands for a phenyl radical and Z stands for a group of the formula:



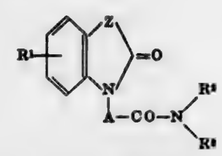
wherein R^1 stands for hydrogen, alkali metal, alkyl of not more than 3 carbons, dialkylaminomethyl of not more than 5 carbons, N-piperidinomethyl or N-morpholinomethyl, chlorine or bromine, and R^2 and R^3, stand for hydrogen or alkyl radical of not more than 3 carbons, provided that when R^2 and R^3 stand for hydrogen, R^1 stands for hydrogen or an alkyl radical of not more than 3 carbon atoms, and non-toxic pharmaceutically-acceptable salts thereof. These phenyl-thiazole-malonic acid derivatives possess anti-inflammatory, analgesic and anti-pyretic activity. Processes for preparing these compounds, and pharmaceutical compositions containing the same are disclosed. A typical compounds is diethyl 4-(4-bromophenyl)thiazol-2-ylmalonate.

3,661,921
N-SUBSTITUTED AND N,N - DISUBSTITUTED AMINOCARBONYLALKYL COMPOUNDS AND THEIR PRODUCTION

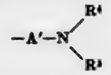
Sumisori Umio, Kawanishi-shi, Japan, assignor to Fujisawa Pharmaceutical Co., Ltd., Osaka-shi, Japan

No Drawing. Continuation-in-part of application Ser. No. 733,828, June 3, 1968. This application Apr. 1, 1969, Ser. No. 812,448
Claims priority, application Japan, June 5, 1967, 42/36,113; Sept. 30, 1967, 42/62,872
Int. Cl. C07d *91/16, 49/34*
U.S. Cl. 260—304 29 Claims

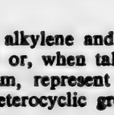
N-substituted and N,N - disubstituted aminocarbonylalkyl compounds of the formula:



wherein Z is sulfur or lower alkylamino, A is lower alkylene, R^1 is hydrogen, halogen, lower alkyl, lower alkoxy or trifluoromethyl, R^2 is hydrogen, lower alkyl or hydroxy (lower)alkyl and R^3 is hydrogen, lower alkyl, halo(lower) alkyl, hydroxy(lower)alkyl, lower alkoxy(lower)alkyl, hydroxy(lower)alkoxy(lower)alkyl, hydroxycarbonyl(lower)alkyl, lower alkoxycarbonyl(lower)alkyl, phenyl bearing or not one or more of lower alkyl, halogen, hydroxyl, lower alkoxy and lower alkanoyl, phenyl(lower)alkyl having or not on the benzene ring one or more of lower alkyl, halogen, hydroxyl, lower alkoxy and lower alkanoyl, or the group of the formula:



in which A' is lower alkylene and R^4 and R^5 are each lower alkyl or phenyl or, when taken together with the adjacent nitrogen atom, represent a 5 to 7-membered nitrogen containing heterocyclic group, or the group of the formula:



may represent a 3 to 7-membered heterocyclic group, provided that R^1 is not hydrogen when R^2 and R^3 are each lower alkyl or, in the linked form, represent a lower alkylene group or an oxa(lower)alkylene group and R^1 is not chlorine when both R^2 and R^3 are hydrogen. These compounds exhibit pharmacological activity such as antiinflammatory activity or antiarrhythmic activity.

3,661,922
PROCESS FOR PURIFICATION OF VINYL OXAZOLINES

John A. Frump and Wallace F. Runge, Terre Haute, Ind., assignors to Commercial Solvents Corporation

No Drawing. Filed June 15, 1970, Ser. No. 46,496
Int. Cl. C07d *85/36*
U.S. Cl. 260—307 F 5 Claims

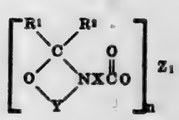
A process for the separation of a mixture of a vinyl oxazoline containing the corresponding oxazoline as an impurity of the steps of reacting the oxazoline with formaldehyde to form the water-soluble 2-alkyl or alkenyl-[1,1-bis(hydroxymethyl)] derivative, then separating it by extraction with water.

3,661,923
POLYFUNCTIONAL POLYOL ESTER OXAZOLIDINES

William D. Emmons, Huntingdon Valley, and Jerome F. Levy, Dresher, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Oct. 18, 1968, Ser. No. 768,906
Int. Cl. C07d *85/26*
U.S. Cl. 260—307 F 8 Claims

Polyfunctional polyol ester oxazolidines of the general formula

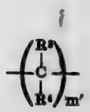


where

n is an integer of two to four;
Z_1 is an alkylene radical or a tri- or tetravalent hydrocarbon radical
X is the radical



where *m* is an integer of 2 to 4 and R^5 and R^6 are selected from H and (C_1–C_8)alkyl or a mixture thereof;
R^1 and R^2 are selected from the group consisting of
(1) separate groups selected individually from
(a) hydrogen, phenyl, benzyl, and (C_1–C_{12})alkyl groups in the case of R^1 and
(b) hydrogen and (C_1–C_4)alkyl groups in the case of R^2 and
(2) a single group selected from the group consisting of pentamethylene and tetramethylene which together with the carbon atom to which the group is attached forms a carbocyclic group;
Y is the radical



where *m'* is an integer of 2 to 3 and R^3 and R^4 are selected from H, (C_1–C_{12})alkyl, aryl and alkaryl,

produced by means of a transesterification process are useful for formulating adhesives, caulks, lacquers, paints, varnishes, leather impregnants and moisture-cured coating systems.

3,661,924
DERIVATIVES OF N-ALKYNYLTRIHALOGEN-IMIDAZOLE AS ACTIVE SUBSTANCES IN AGENTS FOR COMBATING ECTOPARASITES

Henry Martin, Basel, Switzerland, and Georg Pissiotas, Lorrach, Germany, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed Oct. 7, 1969, Ser. No. 864,542
Claims priority, application Switzerland, Oct. 17, 1968, 15,559/68
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 6 Claims

The invention comprises N-alkynyl-2,3,5 trihalogenimidazoles and their use as active ingredients in preparations for combating ectoparasites.

3,661,925

PROCESS FOR THE PREPARATION OF 2-BENZIMIDAZOLECARBOXAMIDES

Ronald J. McCauily, Malvern, and Carl Gochman, Philadelphia, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed May 15, 1970, Ser. No. 37,909

Int. Cl. C07d *49/38*

U.S. Cl. 260—309.2 4 Claims

This invention relates to substituted 2-benzimidoazolecarboxamides and to processes for their production comprising the reaction of a 2,2-dihydroxyacetamide, dialkanoate with an o-phenylenediamine. The compounds are pharmacologically active as central nervous system depressant agents.

3,661,926

PHYSIOLOGICALLY ACTIVE OXADIAZOLINE AND THIADIAZOLINE DERIVATIVES OF PHOSPHORIC ACID AND THIOPHOSPHORIC ACID

Bernardus Gerhardus Van Den Bos, Jacques Meltzer, and Martin Jacob Handele, Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

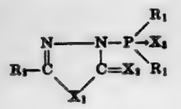
No Drawing. Filed Oct. 14, 1968, Ser. No. 767,461

Claims priority, application Netherlands, Oct. 16, 1967, 6714053

Int. Cl. C07d *85/54*

U.S. Cl. 260—307 A 5 Claims

Oxadiazoline or thiadiazoline derivatives of phosphoric or thiophosphoric acid of the formula



wherein X_1, X_2 and X_3 are oxygen and sulfur and R_1 and R_2 are organic moieties. These compounds are useful as insecticides and acaracides. An example is [5-(p-chlorophenyl) - 1,3,4 - oxadiazolone (2)] bis(dimethylamido) phosphoric acid.

3,661,927

2-IMIDAZOLIN-2-YL ALKYLENE DERIVATIVES OF BENZAZOCINES AND BENZOTHIAZOCINES

Dusan Zivkovic, Brussels, Belgium, assignor to UCB Société Anonyme, Brussels, Belgium

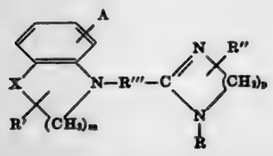
No Drawing. Filed Feb. 5, 1969, Ser. No. 796,920

Claims priority, application Great Britain, Feb. 7, 1968, 6,049/68

Int. Cl. C07d *49/34, 51/36*

U.S. Cl. 260—309.6 11 Claims

Heterocyclic compounds with anti-arrhythmic, psychostimulant, antispasmodic, cardiovascular, antidepressive and antihistaminic properties having the formula



wherein

A is hydrogen, halogen, cyano, alkyl, alkoxy, acyl or haloalkyl,

X is methylene or sulfur,

R, R′, R″ are each hydrogen or alkyl,

R‴ is a straight or branched chain alkylene radical having 1 to 4 carbon atoms,

m is a whole number from 2 to 4, and

p is a whole number from 2 to 5,

the pharmaceutically acceptable acid addition salts thereof, and methods for preparing the same.

3,661,928

HALOGENATED DI- AND TRI-ARYL-PYRAZOLINE SULPHONIC ACIDS

Siegfried Rosenberger, Graubunden, and Heinrich Häusermann, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Nov. 16, 1967, Ser. No. 683,486

Claims priority, application Switzerland, Nov. 21, 1966, 16,668/66

Int. Cl. C07d *49/10*

U.S. Cl. 260—310 D 2 Claims

Novel halogenated 1,3-diaryl- and 1,3,5-triaryl-pyrazolines which bear a sulfonic acid group in p-position and a single fluorine, chlorine or bromine atom, in m-position, at the phenyl-substituent in 1-position at the pyrazoline nucleus are described as useful for the optical brightening of polyamide fiber materials on which they cause unexpectedly no greenish or undesirably strong reddish hue even when applied in larger concentrations, e.g. of up to 1% of pyrazoline derivative.

3,661,929

DIIODOMETHYLATE 1,2 - BIS(4′-PYRROLYDINOMETHYL-1′,3′-DIOXOLANYL-2′) ETHANE

Solomon Aronovich Giller, Ulitsa Pernavas 101, kv. 76; Georgy Petrovich Sokolov, Ulitsa Avotu 28, kv. 3; and Agris Adolfovich Kimenis, Ulitsa Revoljutsii 10, kv. 30/31, all of Riga, U.S.S.R.; and Via Ekabovna Klusha, St. Maiory, ulitsa Dauku 11, Jurmala, Latviiskoi, U.S.S.R.

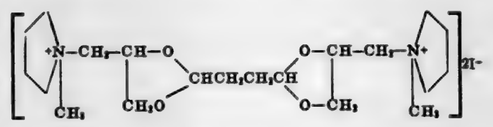
No Drawing. Filed May 7, 1969, Ser. No. 822,698

Claims priority, application U.S.S.R., May 12, 1968, 1,239,904

Int. Cl. C07d *27/02*

U.S. Cl. 260—326.5 D 1 Claim

The diiodomethylate of 1,2-bis-(4′-pyrrolydinomethyl-1′,3′-dioxolanyl-2′) ethane of the following formula



is used as the active ingredient in a pharmaceutical composition of curare-like action.

The process for the preparation of the above product consists in reacting 1,2-bis(4′-chloromethyl-1′,3′-dioxolanyl-2′) ethane with pyrrolydine at a temperature not higher than 150° C. and a subsequent liberation of the obtained base—1,2-bis(4′-pyrrolydinomethyl-1′,3′-dioxolanyl-2′) ethane; treatment of the latter with methyl iodide in an organic solvent resulting in formation of the final product.

3,661,930

1,4-DITHIACYCLOHEPTYLIDEN-6-IMINYL CARBAMATES

Ranajit Ghosh, Nigel Douglas Bishop, and Frederick Charles Peacock, Bracknell, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Dec. 2, 1968, Ser. No. 780,590

Claims priority, application Great Britain, Dec. 4, 1967, 55,062/67

Int. Cl. C07d *75/00*

U.S. Cl. 260—327 R 3 Claims

Carbamoyloximes and pesticidal compositions containing the same. The carbamoyloxides are made by reacting the appropriate ketone with hydroxylamine and carbamoylating the resulting oxime. Representative products are 1,4-dithiacycloheptyliden-6-iminyl N-methyl-carbamate and 1,4-dithia-5,5-dimethylcycloheptyliden-6-iminyl N-methyl-carbamate.

3,661,931

PROCESS FOR PREPARING 1-METHYL-2,3,5,6-TETRAHYDRO - 5 - SEMICARBAZIDO-6-HYDROXY-INDOLE - 3 - SULPHONIC ACID AND ALKALI METAL SALTS THEREOF

Giorgio Giommoni, Via Massena 2/A, Milan, Italy

No Drawing. Filed June 11, 1969, Ser. No. 832,474

Claims priority, application Italy, June 25, 1968, 18,183/68

Int. Cl. C07d *27/34*

U.S. Cl. 260—326.11 9 Claims

A process for preparing 1-methyl-2,3,5,6-tetrahydro-5-semicarbazido-6-oxo - indole - 3 - sulphonic acid wherein adrenaline is reacted with an aqueous solution of alkali metal sulphite to obtain a compound which is then treated with a moderate oxidizing agent and semicarbazide to give the alkali metal salt of 1-methyl-2,3,5,6-tetrahydro-5-semicarbazido-6-oxo-indole-3-sulphonic acid from which the free acid is obtained by acidifying the aqueous solution of said salt.

3,661,932

PROCESS FOR THE PREPARATION OF 1,3,5-TRIOXANE

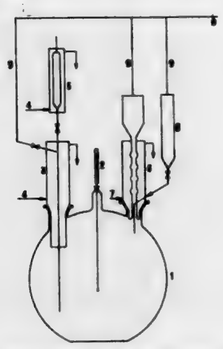
Gianfranco Pregaglia, Milan, and Marco Agamennone and Luigi Cavalli, Novara, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed May 1, 1967, Ser. No. 635,250

Claims priority, application Italy, May 5, 1966, 10,175/66

Int. Cl. C07d *19/00*

U.S. Cl. 260—340 4 Claims



Increasing the productivity of the reaction in the preparation of 1,3,5-trioxane from a concentrated formaldehyde solution containing a strong acid by including in the solution from about 5 to 15 grams per 100 cc. of solution of a soluble acid salt of aluminum or of a monovalent or a bivalent metal selected from the group I–A, II–A and II–B metals, Mn, Fe, Co and Ni, the salt being of an acid having a pKa lower than 2.

3,661,933

LEVOPIMARIC ACID EPOXYPEROXIDE

Walter H. Schuller, Lake City, Fla., Hideo Kanno, Tokyo, Japan, and Ray V. Lawrence, Lake City, Fla., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Oct. 10, 1969, Ser. No. 865,504

Int. Cl. C07d *11/00*

U.S. Cl. 260—340.3 2 Claims

Levopimaric acid epoxytransannular peroxide and the methyl ester of this compound were prepared by mixing about 1:1 molar ratio of the levopimaric acid transannular peroxide with an epoxidizing agent (or methyl levopimarate transannular peroxide to produce the methyl ester) such as meta-chloroperbenzoic acid, peracetic acid, permaleic acid, and the like, in organic solvent, refluxing the mixture until epoxidation is complete, washing the product with aqueous base to remove unreacted impurities, and finally recrystallizing the product from a suitable organic solvent.

3,661,934

PROCESS FOR PREPARING 2-(DIETHYLAMINO)-ETHYL TETRAHYDRO - α - (1 - NAPHTHYLMETHYL)-2-FURANPROPIONATE

Harold Berman, Norwich, N.Y., assignor to Norton-Norwich Products, Inc.

No Drawing. Filed Oct. 9, 1969, Ser. No. 865,159

Int. Cl. C07d *5/04*

U.S. Cl. 260—347.5 1 Claim

An improved process for preparing the titled compound is provided which comprises (a) catalytic reduction of ethyl-2-aceto-3-(2-furyl)acrylate to ethyl tetrahydro-α-acetyl-2-furanpropionate, (b) reaction of the product of (a) with 1-chloromethylnaphthalene in the presence of an alkali metal alkoxide to yield ethyl tetrahydro-α-(1-naphthylmethyl)-2-furanpropionate; and (c) transesterification of the product of (b) with 2-(diethylamino)ethanol followed by treatment with oxalic acid.

3,661,935

ANTIFUNGAL BENZOPYRAN-5-ONE DERIVATIVE

David Cecil Aldridge, Douglas Broadment, Harold George Hemming, and William Brian Turner, Macclesfield, and Keith Joseph Bent, Bracknell, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Oct. 16, 1969, Ser. No. 867,083

Claims priority, application Great Britain, Oct. 29, 1968, 51,273/68

Int. Cl. C07d *7/18*

U.S. Cl. 260—343.2 R 1 Claim

The compound 2,3,3a,9b - tetrahydro - 6 - hydroxy-7,8 - dimethoxy - 2 - n - propyl - 5H - furo[3,2 - c]-benzopyran-5-one, obtained by fermentation of *Helminthosporium monoceras* exhibits anti-fungal properties.

3,661,936

N-METHYL - N - FURFURYL-OLEAMIDE AND N-METHYL - N - TETRAHYDROFURFURYL-OLEAMIDE

Robert R. Mod, Frank C. Magne, and Evald L. Skau, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Application Oct. 12, 1967, Ser. No. 683,060, which is a division of application Ser. No. 529,652, Feb. 24, 1966, now Patent No. 3,403,126, dated Sept. 24, 1968. Divided and this application Nov. 13, 1969, Ser. No. 876,574

Int. Cl. C07d *5/04, 5/16*

U.S. Cl. 260—347.3 2 Claims

The invention provides N-methyl-N-furfuryl-oleamide and N-methyl-N-tetrahydrofurfuryl-oleamide which are useful as plasticizers for vinyl chloride resins.

3,661,937

1,4-DIHYDROXYPOLYHALOPOLYHYDRO - 5,8-METHANO - 2,3 - NAPHTHALENEDICARBOXYLIC ACIDS AND CORRESPONDING ANHYDRIDES

Robert A. Dombro, Chicago, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 408,673, Nov. 3, 1964. This application Oct. 30, 1968, Ser. No. 772,045

Int. Cl. C07d 5/32; C07c 61/28

U.S. Cl. 260—346.3 6 Claims

Novel compositions of matter comprising halo-substituted 1,4-dihydroxypolyhalomethanonaphthalenedicarboxylic acids or anhydrides thereof, as exemplified by 1,4-dihydroxy-5,6,7,8,9,9-hexachloro - 1,2,3,4,4a,5,8,8a-octahydro-5,8-methano-2,3-naphthalenedicarboxylic acid or anhydride are useful as additives for plastics, polymers, resins, etc. whereby flameproof or fire-retardant properties are added thereto.

In addition, these compositions of matter also form an element of other compositions of matter which are prepared by admixing the acids or anhydrides with a compound containing at least one reactive functional group.

3,661,938

PROCESS FOR THE PREPARATION OF GLYCIDYL ESTERS

William J. Heilman, Allison Park, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Jan. 27, 1970, Ser. No. 6,280

Int. Cl. C07d 1/18

U.S. Cl. 260—348 A 14 Claims

A glycidyl ester, such as glycidyl methacrylate, is prepared by contacting an unsaturated fatty acid, such as methacrylic acid, with an alkali metal base, such as NaOH, a solution of an alkali metal hydroxide in a first reaction zone to form an alkali metal salt, such as sodium methacrylate, in the presence of a solvent which will azeotrope with water and which is free of epoxide groups. Substantially all of the water is removed from the first reaction zone by, for example, removing a water-solvent azeotrope. The alkali metal salt is then physically separated from the remaining solvent by filtration or centrifugation. The alkali metal salt is then reacted in a second reaction zone with dry epichlorohydrin under substantially anhydrous conditions to form the desired glycidyl ester.

3,661,939

PROCESS FOR THE PRODUCTION OF VITAMIN D_3

Masashi Toyoda, Kawagoe-shi, and Yoshiyuki Tawara, Fukuoka-machi, Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,204

Claims priority, application Japan, Dec. 16, 1969, 44/100,628

Int. Cl. C07c 171/10

U.S. Cl. 260—397.2 6 Claims

A process for producing vitamin D_3 or its acylate characterized by irradiating a solution of a 7-dehydrocholesterol acylate with ultraviolet rays so as to be photoisomerized to produce a previtamin D_3 acylate.

3,661,940

DERIVATIVES OF 21-METHYL-19-NORPREGNANES

Robert V. Coombs, Summit, and Eugene E. Galantay, Morristown, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,554

Int. Cl. C07c 169/34

U.S. Cl. 260—397.3 16 Claims

The compounds are 21-methyl-19-norpregnane derivatives bearing a double bond in the 17(20)-position and a keto-group in the 21-position, e.g., 21-methyl-19-nor-4, 17(20)-pregnadiene-3,21-dione. Said compounds are useful as pharmaceutical agents, and may be obtained by treatment of a 17-alpha-propadienyl, 17-beta-hydroxy-substituted steroidal compound, e.g. with a protonating agent.

3,661,941

PROCESS FOR PREPARATION OF 3β-HYDROXY A/B CIS STEROIDS OF THE CHOLESTANE SERIES

Jerry R. Dias, 865 Carlisle Way, Sunnyvale, Calif. 94087, and George R. Pettit, 6232 Bret Hills Drive, Paradise Valley, Ariz. 85253

No Drawing. Filed Oct. 9, 1970, Ser. No. 79,667

Int. Cl. C07c 169/22

U.S. Cl. 260—397.3 6 Claims

There is provided a novel procedure for converting a 3β-hydroxy-17-oxo-androst-5-ene into a 3β-hydroxy A/B cis-steroid of the cholestane series, thus providing a new and useful route for the preparation, inter alia of bufalin and resibufogenin from readily available materials.

3,661,942

NOVEL CHEMICAL PROCESS

Verlan H. Van Rheenen, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 651,130, July 5, 1967. This application Sept. 8, 1969, Ser. No. 856,217

Int. Cl. C07c 167/00

U.S. Cl. 260—397.3 10 Claims

This invention is the discovery that copper salts catalyze the oxygenation of enamines to product useful products of oxidative cleavage, including oxidative decarbonylation, and/or diketone formation, depending on the structure of the enamine.

3,661,943

17α-BUTATRIENYL STEROIDS

John H. Fried, Palo Alto, Calif., assignor to Syntex Corporation, Panama, Panama

No Drawing. Filed Apr. 14, 1970, Ser. No. 28,560

Int. Cl. C07c 169/08, 169/20

U.S. Cl. 260—397.4 6 Claims

17α-butatrienyl-estra - 1,3,5(10) - triene steroids and 17α-butatrienyl-androst-4-ene and 17α-butatrienyl-19-nor-androst-4-ene steroids and methods of making these compounds. The compounds are prepared from the corresponding 17α-(2',3'-dihalomethyleneprop-1'-en - 1' - yl) steroid compounds by dehalogenation and rearrangement of the 17α-dihalocyclopropyl group into a propadiene group thereby affording the above butatriene compounds. The above 17α-butatrienyl-estra-1,3,5(10)-triene steroids have utility in palliating conditions arising in mammals which are caused by or related to estrogen deficiency. The 17α-butatrienyl-androst - 4 - ene and 17α-butatrienyl-19-norandrost-4-ene steroids are useful for palliating menstrual disorders and in the control and regulation of fertility in mammals.

3,661,944

4-(N-LOWER ALKANOYL)HYDROXYLAMINO-4'-AMINODIPHENYLSULFONE COMPOUNDS

Frederick G. Dowalo, Maple Shade, N.J., and Bernard Loev, Broomall, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed July 1, 1970, Ser. No. 51,714

Int. Cl. C07c 147/06

U.S. Cl. 260—397.6 3 Claims

The compounds are 4-(N-lower alkanoyl)hydroxylamino-4'-aminodiphenylsulfones having antimalarial activity. A preferred compound is bis[p-(N,O-diacetyl) hydroxylaminophenyl]sulfone.

3,661,945

REACTION PRODUCTS OF CERTAIN CATIONIC COMPOUNDS WITH ANIONIC COMPOUNDS, COMPOSITIONS CONTAINING SAME AND METHODS FOR PREPARING SAME

Hans S. Mannheimer, 23 Hains Cove Drive, Toms River, N.J. 08753

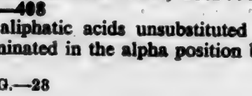
No Drawing. Filed Mar. 27, 1970, Ser. No. 23,453

Int. Cl. C07c 143/90

U.S. Cl. 260—401 14 Claims

Reaction products of compounds of:

Formula I



and compounds of:

Formula II

$$E-A_m-Z-M$$

3,661,946

PHOSPHATIDE EXTRACTION

Hermann Pardun, Kleve, Germany, assignor to Lever Brothers Company, New York, N.Y.

No Drawing. Filed Sept. 17, 1968, Ser. No. 760,350

Claims priority, application Germany, Sept. 19, 1967, P 16 92 568.1

Int. Cl. C07f 9/02

U.S. Cl. 260—403 8 Claims

In the separation of vegetable phosphatide fractions from mixtures containing them, by extracting the mixture with a lower aliphatic alcohol containing from 1 to 3 carbon atoms, the efficiency of the extraction process, expressed as percentage recovered choline lecithin present in the alcohol-soluble choline lecithin-enriched fraction, is increased to an important degree without adversely affecting the selectivity, expressed as the weight ratio of choline lecithin to cephalin in the same fraction, by carrying out the extraction in the presence of from 5 to 30%, preferably 10 to 20%, by weight of the total amount of phosphatides present in the mixture to be extracted of a monoglyceride which is liquid at the temperature of extraction.

3,661,947

CARBONYL HALIDE CATALYST FOR α-BROMINATION OF ALIPHATIC ACIDS

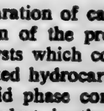
Robert M. Thomas and Rastko I. Mamuzic, West Lafayette, Ind., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

No Drawing. Filed Aug. 21, 1969, Ser. No. 852,111

Int. Cl. C07c 51/00; C07f 7/00

U.S. Cl. 260—408 8 Claims

Saturated aliphatic acids unsubstituted in the α-position are brominated in the alpha position by reacting the acid with elemental bromine in the presence of a carbonyl halide of the formula



wherein X is bromine or chlorine and R is bromine or chlorine.

3,661,948

CATALYTIC PREPARATION OF CARBOXYLIC ACID ESTERS FROM OLEFINS, ALCOHOLS AND CARBON MONOXIDE IN THE PRESENCE OF AN ALKYL ETHER AND AN ACTIVATOR AMOUNT OF WATER

Raymond A. Schell, Berkley, Mich., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 671,110, Sept. 27, 1967. This application Mar. 20, 1970, Ser. No. 21,474

Int. Cl. C07c 67/00, 51/14

U.S. Cl. 260—410.9 R 33 Claims

A process is described for preparing carboxylic acid esters from olefins, alcohols and carbon monoxide using a combination of tin or germanium salt; a platinum salt as the catalyst, an ether and an activator amount of water.

Olefins having from 8 to about 24 carbon atoms are preferred reactants. Alkyl ethers having up to 16 carbon atoms are useful.

The reaction rate is unexpectedly improved by the combination of alkylether and activator.

3,661,949

HYDROCARBOXYLATION PROCESS UTILIZING AN IRON SALT COCATALYST

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed June 11, 1969, Ser. No. 832,413

Int. Cl. C07c 51/14

U.S. Cl. 260—413 15 Claims

A process for preparation of carboxylic acids wherein the isomer distribution of the product is controlled by use of varied cocatalysts which comprises contacting an ethylenically unsaturated hydrocarbon, carbon monoxide and water under liquid phase conditions with a Group VIII noble metal catalyst in the presence of an iron cocatalyst such as an iron pentacarbonyl, di iron nonacarbonyl or iron chloride cocatalyst. The iron carbonyl cocatalysts have been found to increase the ratio of straight-chain acid to branched-chain acid and the iron chloride cocatalyst has been found to increase the ratio of branched-chain acid to straight-chain acid.

3,661,950

PROCESS FOR PRODUCING ALKANOIC ACIDS FROM NITROKETONES

John M. Larkin, Wappingers Falls, and Harry Chafetz, Poughkeepsie, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,791

Int. Cl. C08h 17/36

U.S. Cl. 260—413 10 Claims

A process for preparing alkanoic acids from vicinal nitroalkanones which comprises contacting the vicinal nitroalkanone under non-aqueous conditions with a catalyst comprising a sulfonic acid cation exchange resin at temperatures of at least 100° C.

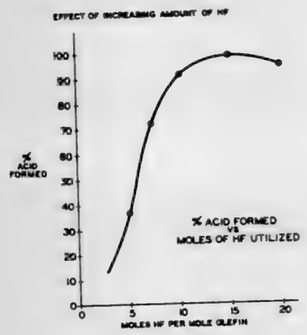
3,661,951
CARBOXYLATION OF OLEFINS

Eugene J. Miller, Jr., Wheaton, and Ago Maris, La Grange Park, Ill., assignors to Armour Industrial Chemical Company

Continuation of application Ser. No. 747,613, July 15, 1968, which is a continuation of application Ser. No. 450,836, Apr. 26, 1965. This application Dec. 1, 1969, Ser. No. 876,203

Int. Cl. C08h 17/36

U.S. Cl. 260—413 2 Claims



Method of carboxylating olefins with CO utilizing at least 10 moles of HF per mole of olefin plus water slightly in excess of the stoichiometric amount of olefin to obtain high yields of high quality acid.

3,661,952
ORGANOLEAD MANUFACTURE

Wilford H. Thomas, Paul Kobetz, and Albert P. Giraitis, Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

No Drawing. Filed July 29, 1970, Ser. No. 59,359

Int. Cl. C07f 7/24

U.S. Cl. 260—437 R 23 Claims

The process for the production of tetraalkyllead compounds from sodium-lead alloy and an alkyl halide is improved by the utilization of a hydrocarbyl-aluminum catalyst and a promoter or adjuvant selected from the group consisting of an alkali metal fluoride, an alkaline earth metal fluoride, an alkaline metal cyanide, an alkaline earth metal cyanide, an alkali metal alkoxide, an alkaline earth metal alkoxide and any mixture thereof. The hydrocarbyl-aluminum catalyst may be either a lower or alkyl aluminum halide or a lower alkyl aluminum alkoxide.

3,661,953
SYNERGISTIC METAL SEQUESTRANT

Ronald H. Carlson, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 680,011, Nov. 2, 1967. This application July 13, 1970, Ser. No. 54,665

Int. Cl. C07f 15/02

U.S. Cl. 260—439 R 20 Claims

Mixtures of tris(hydroxymethyl)phosphine oxide and an alkali metal tripolyphosphate exhibit marked synergism as sequestrant compositions over a broad pH range. The sequestrant compositions are useful as additives for detergents, metal cleaning baths, peroxide compositions and dyes. The chelate products are useful in the field of agriculture for the introduction of trace elements into plant life and especially in the treatment of iron chlorosis in plants.

3,661,954
SILYLALKYL PHENYLTHIOLATES

Gary E. LeGrow, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed July 13, 1970, Ser. No. 54,666

Int. Cl. C07f 7/10, 4/18

U.S. Cl. 260—448.2 N 4 Claims

Thiolbenzoic acid is added to alkenylsilanes or siloxanes to give compounds of the formula

$$C_6H_5C{=}OSR^8R'_aX_bO_{\frac{4-a-b}{2}}$$

For example, thiolbenzoic acid is added to vinyldimethylchlorosilane under the influence of ultraviolet light to give $C_6H_5C{=}OS(CH_3)_2Si(CH_3)_2Cl$. The thiolates are useful as intermediates in the preparation of mercaptoalkylsilanes and siloxanes.

3,661,955
POLYESTERS OF CITRIC ACID AND SORBITOL

Albert Peter Centolella, Edwardsburg, Mich., and Billy Gene Razor, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Nov. 3, 1969, Ser. No. 873,711

Int. Cl. C07c 69/66

U.S. Cl. 260—404 B 5 Claims

Polyesters of citric acid and sorbitol having less than one free carboxyl group per mole of citric acid in the polyester and physiologically acceptable salts thereof are disclosed, the polyesters having a molar ratio of citric acid to sorbitol between 1:2 and 2:3. These polyesters are useful as additives in yeast raised products.

3,661,956
POLYMERISED FATTY ACIDS AND THEIR ESTERS

Gerald Alfred Silverstone, Sale, England, assignor to Victor Wolf Limited, Manchester, England

No Drawing. Continuation-in-part of application Ser. No. 544,815, Apr. 25, 1966. This application May 1, 1969, Ser. No. 821,127

Int. Cl. C09f 7/06

U.S. Cl. 260—407 4 Claims

Alkyl esters of dimeric and polymeric fatty acids are produced by heating an alkyl ester of a hydroxy acid in a liquid hydrocarbon solvent which forms an azeotrope with water and in the presence of a dehydration catalyst selected from acid and alkaline clays, inorganic oxides, ion exchange resins and acid sulphates, thereby simultaneously dehydrating and polymerising the ester.

3,661,957
PREPARATION OF CARBOXYLIC ACIDS

Ronald L. Shubkin, Oak Park, Mich., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Dec. 8, 1969, Ser. No. 883,309

Int. Cl. C08h 17/36

U.S. Cl. 260—413 13 Claims

A process for preparing carboxylic acids from C_{10+} olefins, CO and H_2O using a cobalt catalyst and a ketone or ether solvent; and the use of pyridine as a promoter in this process, are disclosed.

3,661,958
PROCESS FOR THE MANUFACTURE OF DIALKYLTIN DIIODIDE FROM TIN AND ALKYL IODIDE

Mitsuo Onozuka and Kinji Iida, Fukushima-ken, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 10, 1969, Ser. No. 831,878

Claims priority, application Japan, June 25, 1968, 43/43,740; Aug. 21, 1968, 43/59,206; Sept. 19, 1968, 43/67,232, 43/67,233; Sept. 24, 1968, 43/68,289; Sept. 27, 1968, 43/69,524; Oct. 2, 1968, 43/71,172; Oct. 8, 1968, 43/72,830; Oct. 15, 1968, 43/74,661, 43/74,662, 43/74,663; Oct. 18, 1968, 43/75,601

Int. Cl. C07f 7/22

U.S. Cl. 260—429.7 13 Claims

A process for the manufacture of dialkyltin diiodides which comprises reacting metallic tin and an alkyl iodide having from 8 to 24 carbon atoms in the alkyl moiety, said alkyl iodide being present in a ratio of from 2.2 to 4.0 mols of alkyl iodide to 1.0 gr.-atom of said metallic tin, and further, said reaction being carried out in the presence of from 0.001–0.5 mols of a catalyst consisting essentially of a nitrogen-containing organic catalytic compound selected from the group consisting of a primary, secondary, and tertiary amine, a heterocyclic amine, and a lactam.

3,661,959
METHOD OF MAKING ORGANOGOLD CHLORIDE COMPLEXES

Lawrence G. Vaughan, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 30, 1970, Ser. No. 59,712

Int. Cl. C07f 1/12

U.S. Cl. 260—430 27 Claims

There is provided a method of making organogold(I) chloride complexes, L→AuCl, by reacting an organo ligand selected from the group consisting of organo isocyanides, arsines, phosphines, stibines and phosphites with a sulfide gold(I) monochloride complex, R_1R_2SAuCl, where R_1 and R_2 are aliphatic groups containing from 1 to 12 carbon atoms or combine to form a cycloaliphatic group. Also provided are certain new chloro(dialkylphenylisocyanide)gold(I), chloro(diarsine)gold(I)chloro(triarylstibine)gold(I) complexes.

3,661,960
SYNERGISTIC METAL SEQUESTRANT

Ronald H. Carlson, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 680,011, Nov. 2, 1967. This application July 13, 1970, Ser. No. 54,664

Int. Cl. C07f 15/02

U.S. Cl. 260—439 R 10 Claims

Mixtures of tris(hydroxymethyl)phosphine oxide, and tris(N,N-diacetoaminomethyl)phosphine as well as the alkali metal salts thereof, exhibit marked synergism as sequestrant compositions over a broad pH range. The sequestrant compositions are useful as additives for detergents, metal cleaning baths, peroxide compositions and dyes. The chelate products are useful in the field of agriculture for the introduction of trace elements into plant life and especially in the treatment of iron chlorosis in plants.

3,661,961
REACTION PRODUCTS OF SILICON MONOXIDE AND ALIPHATIC HYDROCARBONS AND METHOD OF MAKING THE SAME

Erich T. Schaschel, Toledo, Ohio, assignor to Owens-Illinois, Inc.

No Drawing. Filed Mar. 3, 1970, Ser. No. 16,228

Int. Cl. C07f 7/08, 7/18

U.S. Cl. 260—448.2 H 15 Claims

An organo silicon polymer is prepared by the reaction of silicon monoxide and the C—H bond of an aliphatic hydrocarbon to provide a polymer that is useful as a lubricant, as an ingredient for a coating composition, as a stop-cock grease, and as a filler for ceramic and plastic compositions.

3,661,962
MOLECULAR WEIGHT CONTROL AND POLYSILOXANES

Lothar Ernst Geipel, Adrian, Mich., assignor to Stauffer-Wacker Silicone Corporation, Adrian, Mich.

No Drawing. Filed May 9, 1969, Ser. No. 823,486

Int. Cl. C07f 7/08

U.S. Cl. 260—448.2 E 9 Claims

Hexamethyldisiloxane is used to control the molecular weight in the polymerization of cyclic siloxanes with a basic catalyst. The addition of a promoter, such as dimethylformamide, permits efficient utilization of the hexamethyldisiloxane and thereby permits accurate control over the molecular weight of the polysiloxane.

3,661,963
QUATERNARY AMMONIUM SALTS OF CHLOROMETHYLATED SILICON COMPOUNDS

Enrico J. Pepe, Amawalk, and Bernard Kanner, West Nyack, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 423,414, Dec. 31, 1964. This application Mar. 3, 1969, Ser. No. 803,973

Int. Cl. C07f 7/10, 7/18

U.S. Cl. 260—448.2 N 18 Claims

Quaternary ammonium salts of chloromethylated silanes or siloxanes which contain at least one

$$[Cl^-R_3''N^+CH_2{-}Ar{-}(R)_n]$$

radical directly linked to a silicon atom wherein Ar is an arylene radical, wherein R''_3N taken collectively is a tertiary amine radical and wherein the compounds are useful in conventional silicon applications such as antistatic agents, wetting agents, lubricants, hydraulic fluids, coating resins, elastomers and cationic surfactants.

3,661,964
METHOD FOR PREPARING AMINOALKYL-ALKOXY SILOXANES

Brian J. Griffiths, Herbert T. Cooper, and Peter F. Hudson, Glamorgan, Wales, assignors to Midland Silicones Limited, Reading, Berkshire, England

No Drawing. Filed July 17, 1970, Ser. No. 55,975

Int. Cl. C07f 7/08, 7/18

U.S. Cl. 260—448.8 R 3 Claims

Siloxane polymers containing both aminoalkyl and alkoxy substituents are defined by the general formula

$$R_3SiO(CH_3R'SiO)_x(CH_3R''SiO)_y(R'''_2SiO)_zSiR_3$$

where R and R''' are hydrocarbyl radicals, R' is an alkoxy or alkoxyalkoxy of less than 6 carbon atoms, R'' is $-XNY_2$ where X is alkylene of 3–20 carbon atoms, the nitrogen being at least 3 carbons removed from Si, Y is

hydrogen hydrocarbyl or trihydrocarbylsilyl, x is 5 to 95, y is 1 to 50, z is up to 10% of $x+y$, $x+y+z$ is 20 to 100. These siloxanes are useful as release agents and water repellents on paper and other substrates.

3,661,965
PROCESS FOR THE PRODUCTION OF ISONITRILES

Dieter Arit, Cologne-Buchheim, and Hermann Hagemann, Cologne-Flittard, Germany, and Peter Hoffmann, Hollywood, and Ivar Ugi, Santa Monica, Calif., assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 10, 1969, Ser. No. 798,101
Claims priority, application Germany, Feb. 24, 1968, P 16 68 100.8
Int. Cl. C07c *121/00, 121/12*
U.S. Cl. 260—464 6 Claims

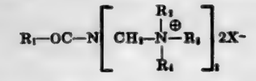
Process for producing isonitriles wherein an N-monosubstituted formamide is reacted with an acylating agent at a pH-value of between 4 and 14 in the presence of a hydrophobic solvent and of a base.

3,661,966
BISAMMONIUM COMPOUNDS AND PROCESS FOR PREPARING THEM

Wilhelm Bartmann, Frankfurt am Main, Dieter Duwel, Hofheim, Taunus, Volkmar Georgi, Frankfurt am Main, Erhard Wolf, Hofheim, Taunus, Claus Beermann, Neu-Isenburg, and Franz Landauer, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Aug. 4, 1969, Ser. No. 847,451
Claims priority, application Germany, Aug. 9, 1968, P 17 93 166.7
Int. Cl. C07c *125/06*
U.S. Cl. 260—482 C 15 Claims

Bis-ammonium compounds of the formula



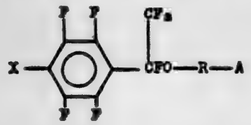
wherein R_1 is alkyl having 1 to 6 C-atoms, alkoxy having 1 to 25 carbon atoms, alkenyloxy having 3 to 18 C-atoms, cycloalkoxy having 4 to 8 C-atoms, cycloalkylalkoxy or alkylcycloalkoxy each having 5 to 8 C-atoms, and halogeno-alkoxy or alkoxyalkoxy each having 1 to 6 C-atoms, R_2 is alkyl having 1 to 3 C-atoms, R_3 is alkyl having 1 to 25 C-atoms, alkenyl having 3 to 18 C-atoms, cycloalkyl having 4 to 8 C-atoms or phenalkyl having 1 to 2 C-atoms in the alkylene radical and optionally one chlorine atom or a nitro group in the phenyl nucleus, R_4 is alkyl having 6 to 25 C-atoms or alkenyl having 5 to 25 C-atoms, and X^- is an anion of a non-toxic acid and a process for preparing them are described. The compounds have valuable enthelmintic properties.

3,661,967
CYANO CONTAINING POLYFLUOROAROMATIC COMPOUNDS

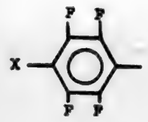
Richard W. Anderson, Midland County, and Hughie R. Frick, Bay County, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Sept. 25, 1968, Ser. No. 762,628
Int. Cl. C07c *121/52, 121/54*
U.S. Cl. 260—465 F 2 Claims

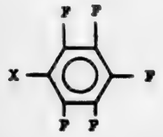
Compounds of the following type are provided:



wherein A is a halogen or



wherein R is a saturated, accyclic, perhalo, organic group consisting essentially of carbon, fluorine and optionally oxygen; and wherein X is an electron withdrawing substituent other than halogen or a group which readily undergoes nucleophilic attack. Also provided is a process for the preparation of these compounds, which comprises the reaction of



wherein X is as defined above, with a vinyl ether, in the presence of an alkali metal fluoride.

3,661,968
ORGANIC REDUCTION PROCESS

William Richard Johns, Reading, England, assignor to Imperial Chemical Industries Limited, London, England

Filed July 24, 1969, Ser. No. 844,483
Claims priority, application Great Britain, Aug. 1, 1968, 36,782/68
Int. Cl. C07c *121/26*
U.S. Cl. 260—465.8 3 Claims

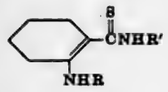
In the hydrodimerisation of α,β-olefinically unsaturated compounds, especially of acrylonitrile to adiponitrile, by means of alkali metal or alkaline earth metal amalgam in the presence of a polar solvent, separation of the product hydrodimer is effected by distilling or evaporating from the product mixture sufficient of the polar solvent and unreacted α,β-olefinically unsaturated compound, and, if necessary, adding to the product mixture sufficient water, to cause the product mixture to form two liquid phases, one essentially aqueous and the other essentially organic containing the hydrodimer, and then separating the two phases. A preferred method is to distil with steam.

3,661,969
[2-(ALKYLAMINO)-1-CYCLOHEXEN-YL]-CYANOTHIOANILIDES

John P. Clapp, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 523,867, Feb. 1, 1966. This application Sept. 8, 1969, Ser. No. 858,563
Int. Cl. C07c *121/50, 153/05*
U.S. Cl. 260—465 E 7 Claims

[2-(alkylamino)-1-cyclohexen-1-yl]thioanilides of the formula



wherein R is alkyl and wherein R' is phenyl, naphthyl, or biphenyl, each having from 1 to 2 cyano substituents. These thioanilides have utility as fungicides.

3,661,970
METHOD FOR REACTING A MIXTURE OF CARBOXYLIC ACIDS WITH AMMONIA TO PROVIDE NITRILES

David W. Canavan, Littleborough, England, assignor to Kraftco Corporation, New York, N.Y.

Filed May 20, 1969, Ser. No. 826,112
Int. Cl. C07c *121/10*
U.S. Cl. 260—465.2 9 Claims

A method of reacting a mixture of carboxylic acids which have varying boiling points with ammonia to provide nitriles. In the method, the mixture of carboxylic acids is reacted with ammonia in a liquid phase at a temperature above the boiling point of some of the carboxylic acids. The vapors from the liquid phase reaction are fractionated into a vapor containing ammonia and lower boiling carboxylic acids and a liquid containing higher boiling carboxylic acids and nitriles. The liquid from the fractionating step is returned to the liquid phase reaction as reflux. The vapor from the fractionating step is mixed with gaseous ammonia and is further reacted to provide nitriles.

3,661,971
N-CHLORO DERIVATIVES OF DIIMINOSUCCINONITRILE

Donald Ray Hartter, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 31, 1970, Ser. No. 68,496
Int. Cl. C07c *121/20, 121/40*
U.S. Cl. 260—465.5 7 Claims

N,N'-dichlorodiiminosuccinonitrile and N-chloro-diiminosuccinonitrile can be made by the action of chlorine on diiminosuccinonitrile or by the action of chlorine on diaminomaleonitrile. The chlorinated diiminosuccinonitriles are useful as herbicides, and provide control for lawn weeds such as crabgrass. Johnson grass and beggarticks were similarly controlled.

3,661,972
PURIFICATION OF HIGH BOILING ESTERS

Paul Biarnais, Melle, France, assignor to Melle-Bezons, Melle, Deux-Sevres, France

Filed Feb. 14, 1969, Ser. No. 799,298
Claims priority, application France, Feb. 26, 1968, 478
Int. Cl. C07c *69/06, 69/80*
U.S. Cl. 260—468 R 17 Claims

A process for purification of high boiling esters produced by the esterification of an alcohol with a carboxylic acid or anhydride in the presence of sulfuric acid wherein the raw esterification product is subject to reaction with water for hydrolyzation of the alkyl hydrogen sulfate produced by the reaction of sulfuric acid with alcohol whereby the products of the hydrolyzation are easily separated from the reaction product.

3,661,973
PROCESS FOR THE PREPARATION OF ADIPONITRILE FROM ADIPIC ACID AND AMMONIA

Yuichi Suzukawa, Hisashi Kono, Kenji Terai, Atushi Kuribayashi, and Takazumi Niwa, Yamaguchi-ken, Japan, assignors to Ube Industries, Ltd., Ube-shi, Yamaguchi-ken, Japan

Filed Feb. 28, 1966, Ser. No. 803,270
Claims priority, application Japan, Mar. 5, 1968, 43/13,796
Int. Cl. C07c *121/10*
U.S. Cl. 260—465.2 3 Claims

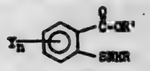
Process for preparing adiponitrile comprising reacting adipic acid and ammonia at 250 to 550° C. in a fluidized bed of a solid dehydration catalyst fluidized by ammonia gas, wherein a part of ammonia gas preheated at high temperatures is introduced into the fluidized bed through a funnel-shaped distributor positioned at the bottom of the fluidized bed; adipic acid in form of a hot aqueous solution is sprayed into the fluidized bed through a nozzle for spraying a hot aqueous solution of adipic acid provided at the central portion of said distributor; and the rest of ammonia gas preheated at high temperatures is injected into the fluidized bed as gas jet stream from an injection opening provided at the central portion of said distributor and around said nozzle.

3,661,974
2-CARBALKOXY-PHENYL SULFENAMIDES

John C. Grivas, South Holland, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Filed Apr. 27, 1970, Ser. No. 32,369
Int. Cl. C07c *145/00*
U.S. Cl. 260—470 10 Claims

The compounds disclosed herein are benzene sulfenamides and derivatives thereof having the formula



wherein R is hydrogen, hydrocarbon or substituted hydrocarbon as defined hereinafter, R' is hydrocarbon or substituted hydrocarbon as defined hereinafter, Y is an inert group, and n is an integer of 0 to 2 value. The process used for preparing these compounds involves the steps of halogenating an ester of 2-mercaptobenzoic acid or a derivative thereof and reacting the resultant halogenated intermediate with ammonia or a primary amine containing the desired R radical therein. These compounds are useful as intermediates in the preparation of cyclized derivatives useful for pharmaceutical purposes.

3,661,975
N-ACETYL-N-(2,4,6-TRIIODO-3-AMINOPHENYL)-β-AMINO-ISOBUTYRIC ACID

Johannes A. Korver, 7 Albertine Agneslaan, Naarden, Netherlands

No Drawing. Continuation-in-part of application Ser. No. 594,193, Nov. 14, 1966. This application July 31, 1967, Ser. No. 657,036
Claims priority, application Netherlands, Nov. 25, 1965, 6515305; May 26, 1966, 6607275
Int. Cl. C07c *103/32*
U.S. Cl. 260—471 A 8 Claims

N-acetyl-N-(2,4,6-triiodo-3-aminophenyl) - β - aminoisobutyric acid and its physiologically tolerated salts and esters are radiopaque and non-toxic in amounts adequate for cholecystography. They are prepared by reacting metanitraniline with methacrylic acid in a pyridine medium, acetylating the N-3-nitrophenyl-β-amino-isobutyric acid formed, and hydrogenating and iodating the N-acetyl derivative.

3,661,976
4,4'-(2-CYCLOALKYL-ALKYLIDENE)DIPHENOLS AND ETHERS AND ESTERS THEREOF

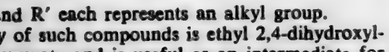
Eugene L. Wittle, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

No Drawing. Filed May 16, 1969, Ser. No. 825,432
Int. Cl. C07d *7/04*; C07c *69/16, 39/12*
U.S. Cl. 260—479 R 4 Claims

A series of 4,4'-(2-cycloalkylalkylidene)diphenols; lower alkyl and tetrahydropyranyl ethers; and esters with carboxylic and sulfonic acids. The compounds have pharmacological activities, especially as anti-fertility agents. They can be produced by (a) reacting a substituted phenyl-magnesium bromide with a carboxylate ester and hydrolyzing and dehydrating the product, (b) hydrolyzing an ether, (c) esterifying a diphenol, (d) hydrolyzing an ester, or (e) converting a diphenol to an ether.

3,661,977
NOVEL DIOXIMES AND PROCESSES FOR PREPARING THE SAME
Tsutomu Uchimoto, Kobe-shi, Hyogo, Japan, assignor to Shionogi & Co., Ltd., Osaka, Japan
No Drawing. Filed Apr. 3, 1969, Ser. No. 813,293
Claims priority, application Japan, Apr. 25, 1968, 43/27,918
Int. Cl. C07c *131/00*
U.S. Cl. 260—482 R 9 Claims

Novel dioximes of the following formula:



wherein R and R' each represents an alkyl group.

Exemplary of such compounds is ethyl 2,4-dihydroxyliminoacetylpyruvate and is useful as an intermediate for sulfa drugs or inhibitors for monoamine oxidation enzyme.

Alkyl 2,4-dihydroxyliminoacylpyruvates are prepared by treating alkyl acylpyruvates with hydroxylamine. The products are also prepared by treating one of alkyl 4-hydroxyliminoacylpyruvates obtainable by the previous treatment of the alkylacylpyruvates with hydroxylamine, with hydroxylamine.

3,661,978
PROCESS FOR ESTERIFICATION OF TERTIARY TERPENIC ALCOHOLS
Peter S. Gradeff, Somerset, and Bernard Finet, Princeton, N.J., assignors to Rhodia Inc., New York, N.Y.
No Drawing. Filed May 26, 1969, Ser. No. 827,940
Int. Cl. C07c *67/00*
U.S. Cl. 260—486 R 17 Claims

Tertiary terpenic alcohols, and tertiary vinyl alcohols, such as linalool and homologues thereof, are esterified using the corresponding aliphatic acid anhydride as an acylating agent, and without the necessity of a catalyst or solvent. Linalool can be converted to linalyl acetate using acetic anhydride to give yields in excess of 95% theory.

3,661,979
PROCESS FOR PREPARING METHYL HEXADIENOATES
Mario Dubini, Novara, and Franco Montino, Casale Monferrato, Alessandria, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy
No Drawing. Filed Apr. 1, 1969, Ser. No. 816,152
Claims priority, application Italy, Apr. 3, 1968, 14,760/68
Int. Cl. C07c *69/52*
U.S. Cl. 260—486 AC 5 Claims

A process for preparing methyl 2,5-hexadienoate starting from allyl chloride, acetylene, carbon oxide and methanol. The process is characterized in that a catalyst is prepared from carbonyl nickel, thiourea and allyl chloride in methanol. The catalyst is then made to react with allyl chloride, acetylene and carbon oxide at a pH value between 4 and 6.

3,661,980
CARBOXYLIC ESTERS OF 3-FORMYLBUTEN-(3)-OL-(1) AND THEIR PRODUCTION
Walter Himmele, Walldorf, Werner Quila, Ludwigshafen, and Richard Prinz, Waiblingen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Apr. 7, 1970, Ser. No. 26,440
Claims priority, application Germany, Apr. 12, 1969, P 19 18 695.9
Int. Cl. C07c *67/00, 69/14, 69/24*
U.S. Cl. 260—488 H 6 Claims

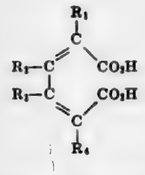
Production of carboxylic esters of 3-formylbuten-(3)-ol-(1) by reacting bismonocarboxylic esters of buten-(2)-diol-(1,4 with carbon monoxide and hydrogen in the presence of carbonyl complexes of rhodium at temperatures of 50° to 110° C. and pressures of 300 to 1000 atmospheres. The products are perfumes and intermediates for the manufacture of vitamin A.

3,661,981
CORROSION INHIBITORS
Samuel E. Jolly, Ridley Park, Pa., assignor to Sun Oil Company, Philadelphia, Pa.
No Drawing. Original application July 18, 1966, Ser. No. 565,701, now Patent No. 3,523,894, dated Aug. 11, 1970. Divided and this application Mar. 2, 1970, Ser. No. 15,926
Int. Cl. C07c *87/04*
U.S. Cl. 260—501.2 5 Claims

This specification discloses compositions and methods for inhibiting corrosion normally caused by oil well fluids. The compositions comprise a major amount of an amine salt wherein the amine is

$$RNHCH_2CH_2CH_2NH_2$$

wherein R is selected from the group consisting of aliphatic and cycloaliphatic hydrocarbon radicals having 12 to 30 carbon atoms and the acid is



wherein R_1, R_2, R_3 and R_4 are selected from the group consisting of CH_3 and H.

3,661,982
DICARBOXYLIC ACID SALTS OF TRANS, TRANS 4,4'-DIAMINODICYCLOHEXYLMETHANE
Geoffrey Ernest Beswick, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed May 17, 1968, Ser. No. 729,908
Claims priority, application Great Britain, May 24, 1967, 24,185/67; Mar. 18, 1968, 13,012/68
Int. Cl. C07c *87/14*
U.S. Cl. 260—501.2 5 Claims

Process for the separation of trans-trans rich salts of 4,4'-diaminodicyclohexylmethane and dicarboxylic acid by their preferential insolubility in methanol or benzyl alcohol over similar salts of the other geometrical isomers of 4,4' - diaminodicyclohexylmethane. Regeneration of trans-trans enriched 4,4' - diaminodicyclohexylmethane therefrom. The salts especially the dodecanedioic acid salt may be used for the manufacture of polyamides. Other solvents may be used in conjunction with methanol or benzyl alcohol.

3,661,983
DITHIOCARBONYLHYDRAZIDIC ACID AND DERIVATIVES AND THE METHOD OF MAKING SAME
Lawrence H. Nash, P.O. Box 596, Belle Glade, Fla. 33430
No Drawing. Filed Nov. 26, 1968, Ser. No. 779,252
Int. Cl. C07c *155/04, 155/06, 155/10*
U.S. Cl. 260—513.5 9 Claims

The compounds are the reaction of and derivatives of hydrazine and carbon bisulphide, reacted on a molecular basis. A representative compound of the invention being,

the "sodium N,N-dichloro-N-dithiocarbonylhydrazide." The compounds can be employed as insecticides, fungicides, bactericides, microbicides, etc. for the control of pathogens on humans, animals and plants.

3,661,984
OXIDATION OF AROMATIC COMPOUNDS
Henryk A. Cyba, Evanston, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Continuation-in-part of application Ser. No. 598,619, Dec. 2, 1966. This application Feb. 17, 1969, Ser. No. 799,949
The portion of the term of the patent subsequent to Feb. 18, 1986, has been disclaimed
Int. Cl. B01j *9/04*; C07c *63/02*
U.S. Cl. 260—524 R 9 Claims

Aromatic compounds, and particularly aromatic hydrocarbons, are treated with an excess of an oxygen-containing gas in the presence of a chain-transfer agent and water at elevated temperatures to prepare oxidized products thereof. This is exemplified by the conversion of p-xylene to terephthalic acid.

3,661,985
PROCESS FOR THE PRODUCTION OF NON-CAKING UREA
Jean Cluzel and Paul Souviron, Toulouse, France, assignors to Azote et Produits Chimiques S.A., Toulouse, France
No Drawing. Filed Jan. 2, 1969, Ser. No. 788,643
Claims priority, application France, Jan. 2, 1968, 134,582
Int. Cl. C07c *127/00*
U.S. Cl. 260—555 C 3 Claims

Urea with a small content of biuret and which does not cake on storage is produced by coating granulated urea having 0.9 to 1.2% by weight of water, obtained by starting from a concentrated solution at a temperature below 130°, with a film of hexamethylene tetramine formed in situ by reaction at 0 to 50° C. between a 32 to 42% by weight solution of formol (aqueous formaldehyde), having a pH of 3 to 6, atomized onto the granules, and excess ammonia content in said granules as they leave the granulation stage.

3,661,986
PREPARATION OF ALPHA-CHLOROALIPHATIC ACIDS
Paul H. Washecheck, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
No Drawing. Filed Feb. 5, 1969, Ser. No. 796,908
Int. Cl. C07c *51/26*
U.S. Cl. 260—530 R 3 Claims

Alpha-haloaliphatic acids can be prepared directly by halo-oxidation of enolizable aldehydes in a one-step process by contacting the aldehyde with a halide in an aqueous medium and the absence of light. Alternatively the alpha-haloaliphatic acid can be prepared from alpha-haloaldehyde by the same process.

3,661,987
PRODUCTION OF MUCOBROMIC ACID
Helmut Schlecht, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Nov. 4, 1969, Ser. No. 874,062
Claims priority, application Germany, Nov. 20, 1968, P 18 09 947.3
Int. Cl. C07c *51/32*
U.S. Cl. 260—530 R 8 Claims

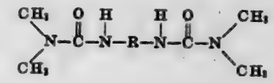
Production of mucobromic acid by reaction of furfurol with bromine in the presence of nitric or nitrous acid. The product is a starting material for the production of dyes and plant protection agents.

3,661,988
PROCESS FOR THE PREPARATION OF ACETIC ACID
Jacques Bolchard, Bernard Brossard, Michel Gay, and Raymond Janin, Rhone, France, assignors to Rhone-Poulenc S.A., Paris, France
Filed June 24, 1968, Ser. No. 739,456
Claims priority, application France, June 28, 1967, 112,277; Sept. 14, 1967, 121,024
Int. Cl. C07c *53/08*
U.S. Cl. 260—533 R 5 Claims

Acetic acid is prepared by oxidising propylene with nitric acid in the presence of a vanadium catalyst.

3,661,989
PROCESS FOR PREPARING CERTAIN SUBSTITUTED BIS-UREAS
Aleksandra Chrobok Nawakowski, 27 Fancett St., Glenbrook, Conn. 06906
No Drawing. Filed May 31, 1967, Ser. No. 642,329
Int. Cl. C07c *127/18*
U.S. Cl. 260—553 A 8 Claims

A process for preparing a compound having the formula:



comprising reacting two moles of dimethyl amine with one mole of a diisocyanate having the formula:

$$O{=}C{=}N{-}R{-}N{=}C{=}O$$

wherein R in both structural formulae is a divalent aromatic radical selected from the group consisting of unsubstituted phenylene, methyl substituted phenylene, dimethyl diphenylene and methylene diphenylene wherein said reaction is carried out in an aqueous medium at a temperature between about 10° C. and 30° C. and wherein the initial concentration of dimethyl amine in solution is between about 10% and 30%, by weight, based on the weight of the solution.

3,661,990
N-ALKYLSULFONYL BENZOYLHALOALKYL-SULFONANILIDES
Joseph Kenneth Harrington, Edina, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.
No Drawing. Filed Apr. 13, 1970, Ser. No. 28,123
Int. Cl. C07c *143/74*
U.S. Cl. 260—556 F 11 Claims

N-alkylsulfonyl benzoylhaloalkylsulfonalides in which the aromatic rings are optionally substituted. These compounds are active anti-inflammatory agents.

3,661,991
N-(1,1-DIALKYL-3-CHLOROACETONYL) BENZAMIDES
Patrick J. McNulty, Wyndmoor, Colin Swithenbank, Perkasie, Kenneth L. Viste, Warminster, and William C. von Meyer, Willow Grove, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.
No Drawing. Filed May 29, 1969, Ser. No. 829,084
Int. Cl. C07c *103/42*
U.S. Cl. 260—558 D 7 Claims

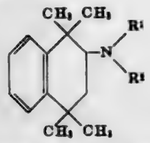
Novel compounds belonging to the class of N-(1,1-dialkyl-3-mono(di and tri)-chloroacetonyl)-3-(or -3,4-, -3,5- or -3,4,5-) substituted benzamides. These compounds are selective herbicides and fungicides.

3,661,992
1,2,3,4-TETRAHYDRO-1,1,4,4-TETRAMETHYL-2-NAPHTHYLAMINES

Royal E. Bright, Penfield Dowas, Richard W. Rees, Newtown Square, and Herchel Smith, Bryn Mawr, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed June 29, 1970, Ser. No. 51,000
Int. Cl. C07c 87/28, 87/66, 129/08
U.S. Cl. 260—570.8 R 7 Claims

Compounds of the formula



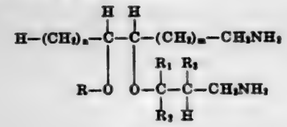
wherein R^1 is hydrogen or methyl; and R^2 is lower alkyl, lower alkenyl, phenyl (lower) alkyl, N-amidinoamidino, or 2-guanidino ethyl are prepared from 1,2,3,4-tetrahydro-1,1,4,4-tetramethyl-2-aminonaphthyl amine. The final compounds exert mydriatic activity.

3,661,993
ETHER DIAMINES

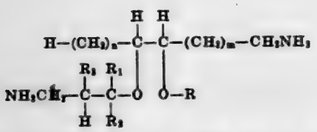
Robert C. Kuder, Excelsior, Minn., and Marwan R. Kamal, Dhahran, Saudi Arabia, assignors to General Mills, Inc.

No Drawing. Filed Apr. 25, 1969, Ser. No. 819,495
Int. Cl. C07c 93/02
U.S. Cl. 260—570.7 13 Claims

Ether diamines of the formulae



and

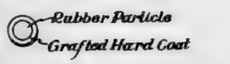


where n is 4 to 19, m is 0 to 15, the sum of n and m is 13 to 19, R_1, R_2 and R_3 are hydrogen or short chain alkyl groups of 1 to 4 carbon atoms and R is a monovalent organic radical. Diisocyanates derived therefrom with the same being useful for preparing polymers.

3,661,994
GRAFT POLYMERS OF RUBBER FOR REINFORCING PLASTICS

Jesse C. H. Hwa, Stamford, Conn., and Ruth E. Gallagher, Dobbs Ferry, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

Filed Nov. 14, 1969, Ser. No. 876,928
Int. Cl. C08f 15/00, 19/00
U.S. Cl. 260—879 2 Claims



Controlled emulsion polymerization provides multi-layered particles comprising a hard polymeric core, a coating of rubber and, if desired, one or more hard outer polymeric coating. These rubber-containing "sandwich" polymer particles are useful particularly as high impact plastics and modifiers to reinforce relatively rigid types of plastics.

3,661,995
PROCESS FOR THE MANUFACTURE OF α,ω-ALIPHATIC DIAMINES

Dhafir Yusuf Waddan and Derek Williams, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Jan. 7, 1969, Ser. No. 789,587
Claims priority, application Great Britain, Jan. 31, 1968, 4,959/68
Int. Cl. C07c 85/12
U.S. Cl. 260—583 K 8 Claims

Aliphatic α,ω-diamines are produced by the hydrogenation of aliphatic α,ω-dinitriles at pressures of from 1–500 atmospheres and at a temperature of 50–200° C. in the presence of a Ziegler catalyst prepared from Group VIII metal compounds and metal alkyls, metal aryls or hydrides of alkali metals.

3,661,996
PURIFICATION OF N-SUBSTITUTED HYDROXYLAMINES

Henry Bader, Newton Center, and Alexander Boag, Arlington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed Feb. 24, 1969, Ser. No. 801,820
Int. Cl. C07c 83/00, 83/02, 85/16
U.S. Cl. 260—584 C 15 Claims

N-substituted hydroxylamines are separated from non-basic impurities in their crude reaction mixtures by contacting the crude mixture with a strongly acidic ion exchange resin and removing the non-basic impurities by elution with an aqueous solution of an organic eluent. The hydroxylamine is then eluted from the resin using aqueous acid, and subsequently isolated from aqueous solution by solvent extraction.

3,661,997
MONO-OXO CAROTENES

Joseph Donald Surmatis and Armin Walser, West Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Feb. 23, 1967, Ser. No. 617,787, now Patent No. 3,558,712, dated Jan. 26, 1971. Divided and this application July 16, 1970, Ser. No. 55,565
Int. Cl. C07c 49/61
U.S. Cl. 260—586 1 Claim

Method by which zeaxanthins, xanthophylls and 3-oxo-β-carotene can be synthesized from the condensation product of mesityl oxide and aceto-acetic ester as well as new and novel intermediates produced in the synthesis. Zeaxanthin and xanthophyll are known coloring agents for foodstuffs, including beverages, pharmaceutical and cosmetic preparations. Furthermore, through the use of the condensation product of mesityl oxide and aceto-acetic acid, new compounds for coloring foodstuffs, including beverages, pharmaceutical and cosmetic preparations are produced.

3,661,998
BICYCLIC KETONES HAVING BIOLOGICAL ACTIVITY

Paul E. Hoch, Moraga, Calif., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 413,952, Nov. 25, 1964. This application Mar. 18, 1968, Ser. No. 714,058
Int. Cl. C07c 45/00, 49/00, 49/76
U.S. Cl. 260—586 R 1 Claim

Bicyclic ketones of the formula



wherein R^1, R^2, R^3, R^4, X^1, X^2, X^3, X^4 and X^5 are certain substituents selected from hydrogen, halogen, alkyl, alkenyl, halogenated alkyl, halogenated alkenyl, alkoxy, hydrocarbyl, halogen-subatituted hydrocarbyl, carboxy, hydroxy-substituted alkyl, alkoxy-substituted alkyl, and hydroxy-substituted alkoxyalkyl, with at least two of X^1, X^2, X^3 and X^4 being halogen, and X^5 is halogen. The bicyclic ketones are made by treating a corresponding tricyclic hemiketal with phosphorus halide and hydrolyzing. The bicyclic ketones are useful as chemical intermediates and as insecticides.

3,661,999
PHENANTHRENE DERIVATIVES

Wataru Nagata, Nishinomiya-shi, Tadao Terasawa, Takatsuki-shi, and Tsutomu Aoki, Amagasaki-shi, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

No Drawing. Filed Dec. 6, 1968, Ser. No. 781,964
Claims priority, application Japan, Dec. 26, 1967, 42/85,159, 42/85,160; Feb. 13, 1968, 43/9,012
Int. Cl. C07c 49/76
U.S. Cl. 260—590 9 Claims

Phenanthrene derivatives useful as medicaments for anti-androgenic therapy and acne-prophylactic or treatment thereof.

3,662,000
METHOD FOR TREATING A REACTION MIXTURE CONTAINING HYDROPEROXIDES

Ken Ito and Hiroshi Kaminaka, Toyonaka-shi, Norio Kotera, Amagasaki-shi, Shinji Yamamoto, Iwao Dohgane, and Kosuke Shigehiro, Nishinomiya-shi, Hiroshi Kuruma, Takarazuka-shi, Takashi Chisuki, Toyonaka-shi, Hiroshi Yoshitake and Kenji Tanimoto, Minoo-shi, Shinichi Hasegawa, Amagasaki-shi, and Nobuki Kobayashi, Osaka, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Mar. 6, 1969, Ser. No. 805,032
Claims priority, application Japan, Mar. 14, 1968, 43/16,915
Int. Cl. C07c 49/06, 49/08, 49/30
U.S. Cl. 260—593 7 Claims

In a process for obtaining an aromatic hydroxy compound and an aliphatic ketone by contacting an alkyl aromatic hydrocarbon with molecular oxygen containing gas, for example, O_2 gas or air, to obtain a mixture containing an aralkyl hydroperoxide and subjecting the hydroperoxide to an acid catalyzed cleavage, an improvement which comprises treating the mixture containing aralkyl hydroperoxide with an aqueous alkaline solution, for example, NaOH, prior to the acid-catalyzed cleavage step, whereby an acidic corrosive compound existing in the mixture is substantially excluded.

3,662,001
PRODUCTION OF 3-KETOBUTANOL-(1)

Herbert Mueller, Frankenthal, and Hermann Overwien, Harald Koehl, and Horst Pommer, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Apr. 25, 1969, Ser. No. 819,454
Claims priority, application Germany, May 7, 1968, P 17 68 377.1
The portion of the term of the patent subsequent to Dec. 1, 1987, has been disclaimed
Int. Cl. C07c 49/18
U.S. Cl. 260—594 8 Claims

Production of 3-ketobutanol by reaction of acetone with aqueous formaldehyde solution at a temperature above 210° up to 300° C. at a superatmospheric pressure. Methyl vinyl ketone (which can be polymerized to high molecular weight compounds) is prepared from 3-ketobutanol by elimination of water in the presence of aluminum oxide.

3,662,002
CATALYTIC PRODUCTION OF DIMETHYL SULFIDE

Helmut Magerlein, Erlenbach, Gerhard Meyer, Obernburg, and Hans-Dieter Rupp, Erlenbach, Germany, assignors to Glanzstoff AG, Wuppertal, Germany

No Drawing. Filed Aug. 11, 1969, Ser. No. 849,203
Claims priority, application Germany, Aug. 10, 1968, P 17 93 174.7
Int. Cl. C07c 149/10
U.S. Cl. 260—609 A 9 Claims

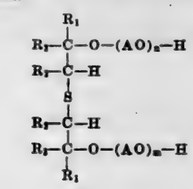
Process for the catalytic production of dimethyl sulfide in which methanol and hydrogen sulfide can be reacted in about equimolar amount to achieve almost quantitative yields of dimethyl sulfide by carrying out the reaction in the presence of a catalyst consisting essentially of aluminum oxide having a superimposed layer of up to about 10% by weight of silica applied thereto.

3,662,003
POLYALKYLENEGLYCOL ETHERS OF BIS-(HYDROXYALKYL)-SULFIDES

Wilfried Umbach, Langenfeld, Rhineland, Rainer Mehren, Neuss, Rhineland, Werner Stein, Erkrath-Unterbach, Rhineland, and Ernst Gott, Ratingen-Tiefenbroich, Rhineland, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Filed Oct. 2, 1969, Ser. No. 863,352
Claims priority, application Germany, Oct. 9, 1968, P 18 01 951.7
Int. Cl. C07c 149/18
U.S. Cl. 260—609 R 4 Claims

Polyalkyleneglycol ethers of bis(hydroxyalkyl)-sulfides having the formula



wherein R_1 is an alkyl having from 1 to 22 carbon atoms, R_2 and R_3 are members selected from the group consisting of hydrogen and alkyl having from 1 to 21 carbon atoms, with the proviso that the sum of the carbon atoms in each set of R_1, R_2 and R_3 is from 4 to 22, A is a bivalent member having from 2 to 4 carbon atoms selected from the group consisting of alkylene, haloalkylene and hydroxyalkylene, n and m represent integers from 0 to 100 with the proviso that the sum of n and m is an integer from 1 to 100. The compounds have surface active properties and are useful per se or as intermediates.

3,662,004
PROCESS FOR PRODUCING HYDROXYALKYL MERCAPTANS

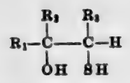
Wilfried Umbach, Langenfeld, Rainer Mehren, Neuss, and Werner Stein, Erkrath-Unterbach, Germany, assignors to Henkel & Cie. GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Continuation-in-part of application Ser. No. 818,390, Apr. 22, 1969. This application Oct. 2, 1969, Ser. No. 863,387
Claims priority, application Germany, Apr. 23, 1968, P 11 68 264.3; Oct. 5, 1968, P 18 01 551.5
Int. Cl. C07c 149/18
U.S. Cl. 260—609 R 17 Claims

Processes of reacting hydrogen sulfide with a mono or poly, terminal or non-terminal, aliphatic or cycloaliphatic epoxides having more than 3 carbon atoms in the

presence of 0.01% to 10% by weight of a strongly basic catalyst in the temperature range of from −20° C. to 200° C. at normal to elevated pressures in order to obtain a hydroxyalkyl mercaptan containing more than 3 carbon atoms.

The novel products are higher molecular weight hydroxyalkyl mercaptans of the formula



wherein R_1 is a member selected from the group consisting of alkyl having from 1 to 22 carbon atoms, alkylol having from 1 to 22 carbon atoms, alkoxyalkyl having from 2 to 22 carbon atoms, haloalkyl having from 1 to 22 carbon atoms, cycloalkylalkyl having from 6 to 22 carbon atoms and alkenyl having from 3 to 22 carbon, R_2 and R_3 are members selected from the group consisting of hydrogen and R_1 and, when taken together, alkylene having from 3 to 4 carbon atoms, with the proviso that the sum of the carbon atoms in R_1, R_2 and R_3 is from 6 to 22. The novel hydroxyalkyl mercaptans are useful as insecticides and fungicides, emulsifiers and intermediates in chemical synthesis.

3,662,005
ALKYLATION OF ALKOXY-SUBSTITUTED AROMATIC COMPOUNDS
George L. Hervert, Woodstock, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Continuation-in-part of application Ser. No. 686,690, Nov. 29, 1967. This application May 25, 1970, Ser. No. 40,453
Int. Cl. C07c *43/20*
U.S. Cl. 260—612 D **6 Claims**

The alkylation of alkoxy-substituted aromatic hydrocarbons is effected in the presence of a novel catalyst comprising a hydrogen fluoride-carbon dioxide complex to prepare alkylated alkoxy-substituted aromatic compounds.

3,662,006
HYDROXYLATION OF AROMATIC COMPOUNDS
Stephen N. Massie, Palatine, and Robert E. Daum, Cary, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed May 12, 1969, Ser. No. 823,984
Int. Cl. C07c *43/22, 37/00*
U.S. Cl. 260—613 D **10 Claims**

The nuclear hydroxylation of aromatic compounds is effected by treating an aromatic compound with hydrogen peroxide in the presence of a catalyst comprising metal in the valent state of zero at hydroxylation conditions.

3,662,007
PROCESS FOR PREPARING DIHYDRO-β-SANTALOL FROM 3-ENDO-METHYL-3-EXO(4'-METHYL-5'-HYDROXYPENTYL)NORCAMPHOR
Wayne I. Fanta, Colerain Township, Hamilton County, and William F. Erman, Springfield Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed Nov. 26, 1968, Ser. No. 779,233
Int. Cl. C07c *35/00*
U.S. Cl. 260—631.5 **8 Claims**

A process for preparing dihydro-β-santalol from 3-endo-methyl-3-exo(4'-methyl - 5' - hydroxypentyl)norcamphor comprising the steps of (1) reacting 1-endo-methyl-3-exo(4'-methyl - 5' - hydroxypentyl)norcamphor with either boric acid or boric anhydride to obtain the borate ester of 3-endo-methyl-3-exo(4'-methyl - 5' - hydroxypentyl)norcamphor, and (2) reacting the borate ester reaction product of Step (1) with a phosphorus compound such as methyltriphenylphosphonium bromide and subsequently hydrolyzing the reaction product with water to obtain dihydro-β-santalol is disclosed. Dihydro-β-santalol is useful as a perfume component.

3,662,008
PROCESS FOR PREPARING β-SANTALOL FROM 3-METHYLNORCAMPHOR
Herbert C. Kretschmar, Greenhills, and William F. Erman, Springfield Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed May 21, 1969, Ser. No. 826,682
Int. Cl. C07c *35/02*
U.S. Cl. 260—631.5 **6 Claims**

A process for preparing β-santalol, useful in perfume compositions, from 3-methylnorcamphor comprising the steps of (1) alkylating 3-methylnorcamphor in strong base with an allyl halide; (2) reacting the reaction product of Step (1) with a methylmetallic compound, such as methyllithium, followed by hydrolysis; (3) brominating the reaction product of Step (2); (4) dehydrobrominating the reaction product of Step (3) with a base, such as sodium amide; (5) dehydrating the reaction product of Step (4) with a dehydrating agent, such as thionyl chloride; (6) reacting the reaction product of Step (5) with a compound, such as di(sec.-iso-amyl)borane followed by an oxidation; (7) reacting the reaction product of Step (6) with (carbethoxyethylidene)triphenylphosphorane; and (8) reducing the reaction product of Step (7) with a reducing agent, such as lithium aluminum hydride, to obtain β-santalol, and novel compounds produced therein are disclosed.

3,662,009
PREPARATION OF UNSATURATED FLUOROCOMPOUNDS
William M. Hutchinson, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Nov. 24, 1969, Ser. No. 879,101
Int. Cl. C07c *21/18, 43/28*
U.S. Cl. 260—653.3 **9 Claims**

Unsaturated fluorocompounds are produced by a combination of steps comprising (a) reacting a perhaloethylene with an unsaturated compound to produce a corresponding cyclobutane derivative, (b) fluorinating said cyclobutane derivative to obtain the corresponding perfluorocyclobutane derivative, (c) pyrolyzing said perfluorocyclobutane derivative to form the unsaturated perfluorocompound and said starting perhaloethylene, and (d) recycling at least a portion of said perhaloethylene formed in said step (c) to said step (a).

3,662,010
TRICYCLODECENE DERIVATIVES
Pierre Legendre, Arthez-de-Bearn, France, assignor to Societe Nationale des Petroles d'Aquitaine, Courbevoie, France
No Drawing. Filed Nov. 28, 1969, Ser. No. 880,891
Claims priority, application France, Nov. 28, 1968, 175,735
Int. Cl. C07c *13/78*
U.S. Cl. 260—666 PY **12 Claims**

The invention relates to the preparation of unsaturated derivatives of tricyclodecene and, more particularly, of (5,2,1,$0^{2,6}$)-tricyclo-8-decenes, of which the carbon atom in the 6-position carries an unsaturated hydrocarbon radical, comprising one or more double bonds. The invention is also concerned with these new products.

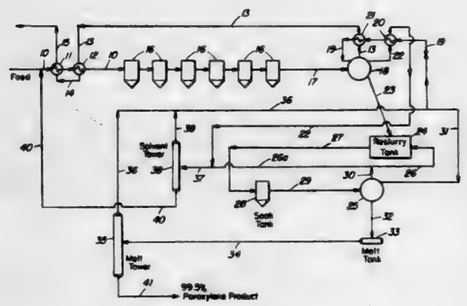
3,662,011
ISOMERIZATION OF ALKYL AROMATICS
Saul G. Hindin, Mendham, and Joseph C. Dettling, Jackson, N.J., assignors to Engelhard Minerals & Chemicals Corporation
No Drawing. Filed Dec. 23, 1970, Ser. No. 101,122
Int. Cl. C07c *5/24, 15/02*
U.S. Cl. 260—668 A **5 Claims**

An improvement in a process for the isomerization of alkyl aromatic hydrocarbons over platinum on acidic silica-alumina catalysts comprises incorporating ceria in the catalyst.

3,662,012
DISPROPORTIONATION OF LONG-CHAIN MONOALKYL AROMATIC COMPOUNDS
George C. Feighner, Franklin Lakes, N.J., and Gene E. Nicks, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
Continuation-in-part of application Ser. No. 529,284, Feb. 23, 1966, which is a continuation-in-part of application Ser. No. 446,661, Apr. 8, 1965. This application July 6, 1970, Ser. No. 53,352
Int. Cl. C07c *3/62*
U.S. Cl. 260—672 T **24 Claims**

This disclosure concerns the preparation of a hydrocarbon composition containing a major amount of alkyl aromatic compounds having two long-chain alkyl groups and a minor amount of alkyl-substituted tetrahydronaphthalenes by the disproportionation of aromatic compounds having one long-chain alkyl group using aluminum chloride or aluminum bromide as the catalyst. The term "long-chain" refers to linear alkyl groups containing from about 8 to about 18, preferably from about 10 to about 16, carbon atoms. The hydrocarbon composition (i.e. disproportionated product) is useful as a sulfonation feedstock and as a lubricant.

3,662,013
SINGLE STAGE CRYSTALLIZATION PROCESS FOR SEPARATING HIGH PURITY PARAXYLENE
Eugene F. Machell, New Canaan, Conn., John E. Wylie, Manhasset, N.Y., and Robert B. Thompson, Wilton, Conn., assignors to Mobil Oil Corporation
Filed Feb. 3, 1970, Ser. No. 8,215
Int. Cl. C07c *7/14*
U.S. Cl. 260—674 A **3 Claims**



High purity (above 99%) paraxylene is recovered from a mixture of xylene isomers in a one-stage crystallization process. The mixture is cooled down to the eutectic temperature and filtered. The filter cake is washed with toluene and then slurried in wash effluent, refiltered and washed with toluene.

3,662,014
ADSORBING COMPOSITIONS, THEIR MANUFACTURE AND USE IN A PROCESS FOR SEPARATING ALKYLBENZENES FROM MIXTURES THEREOF
Rene Avrillon, Maisons Laffitte, and Daniel Defives, Paris, France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Malmaison, Hauts-de-Seine, France
Filed May 7, 1970, Ser. No. 35,392
Claims priority, application France, May 9, 1969, 6915178
Int. Cl. C07c *7/12*; B01j *11/40*
U.S. Cl. 260—674 SA **14 Claims**

The invention relates to new adsorbents comprising a zeolite base, e.g., a CaX zeolite, having pore diameters between 6 and 10 A., preferably about 8 A., and an active substance of the general formula



wherein X is an oxygen atom or a =N—R group, R being a monovalent hydrocarbon radical.

Examples of the active substances are anthanthrone and N,N'-diphenyl-anthanthrimine.

The adsorbents may further contain other substances such as water, pyranthrone or pyromellitic anhydride which improve their efficiency.

3,662,015
METHOD OF PREVENTING DOUBLE BOND MIGRATION OF MONO-OLEFINIC HYDROCARBONS IN SELECTIVE HYDROGENATION
Youji Komatsu, Ichihara-shi, Yasuhiro Furukawa, Funabashi-shi, and Takashi Yokomizo, Ichihara-shi, Japan, assignors to Maruzen Oil Company, Ltd., Osaka, Japan
Filed May 27, 1969, Ser. No. 828,186
Claims priority, application Japan, May 27, 1968, 43/35,522
Int. Cl. C07c *5/16*
U.S. Cl. 260—677 H **14 Claims**

Method of preventing double bond migration of a mono-olefinic hydrocarbon during the selective hydrogenation of a poly-unsaturated hydrocarbon (e.g. polyolefinic hydrocarbon, acetylenic hydrocarbon) coexisting with a mono-olefinic hydrocarbon, each of the mono-olefinic hydrocarbons and poly-unsaturated hydrocarbons having at least four carbon atoms, in the presence of hydrogen, using a palladium- or nickel-hydrogenation catalyst, which comprises adding carbon monoxide to the reaction system in an amount 1 to 50 mol. percent based on said hydrogen under selective hydrogenation conditions.

3,662,016
METHOD FOR THE PRODUCTION OF ISOPRENE
Itsuo Furuoya, Amagasaki, Katsuhiko Ogino, Toyonaka, Yoshio Kamatani, Osaka, and Kenji Naito, Toyonaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
No Drawing. Filed Aug. 3, 1970, Ser. No. 60,766
Claims priority, application Japan, Aug. 2, 1969, 44/61,330
Int. Cl. C07c *1/00, 1/20*; B01j *11/06*
U.S. Cl. 260—681 **5 Claims**

Isoprene is produced in high yield by the condensation reaction between isobutylene and formaldehyde in the presence of a solid acid catalyst comprising silicon oxide and antimony oxide.

3,662,017

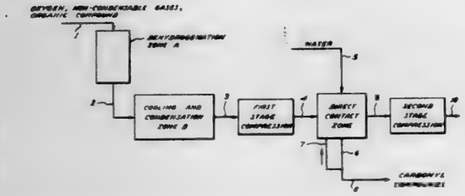
FOULING REDUCTION IN OXIDATIVE DEHYDROGENATION PROCESS

Rudolph C. Woerner, Houston, and Terry D. Funkhouser, La Porte, Tex., assignors to Petro-Texas Chemical Corporation, Houston, Tex.

Filed Aug. 4, 1970, Ser. No. 60,895

Int. Cl. C07c 3/00

U.S. Cl. 260—681.5 15 Claims



Reducing fouling of compressor pistons and cylinders used for the compression of gaseous compositions comprising unsaturated organic compounds and carbonyl compounds by compressing the gaseous composition with a multistage compressor with direct contact scrubbing of gases between compression stages. Preferred source of gaseous composition is from oxidative dehydrogenation process.

ERRATUM

For Class 260—683.68 see:
Patent No. 3,661,770

3,662,018

PROCESS OF IMPROVING THE SELECTIVITY OF DEHYDROGENATION CATALYSTS

Levi C. Parker, Port Arthur, Tex., and Charles A. Senn III, Greenville, S.C., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed May 15, 1970, Ser. No. 37,913

Int. Cl. C07c 3/28

U.S. Cl. 260—683.3 8 Claims

This invention concerns a process for improving the selectivity of noble metal-containing zeolite catalysts in dehydrogenation reactions comprising preliminarily contacting the catalyst for at least 18 hours at temperatures between 675° F. and 775° F. and preferably at space velocities of from about 2 to 5.

3,662,019

PRODUCTION OF MONOOLEFINS

Jan L. Stratenus, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed May 18, 1970, Ser. No. 38,584

Claims priority, application Netherlands, June 5, 1969, 6908540

Int. Cl. C07c 3/28

U.S. Cl. 260—683.3 7 Claims

Paraffins are dehydrogenated by contact with a supported noble metal catalyst, which additionally contains at least one metal of Groups IIb and VIIb, at a temperature of from 350° C. to 550° C. and in the presence of hydrogen.

3,662,020

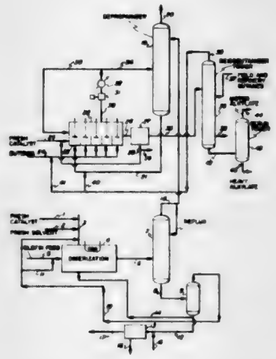
PROCESS FOR THE DIMERIZATION OF PROPYLENE AND ALKYLATION OF THE DIMER

Charles E. Hemminger, P.O. Box 103, Peapack, N.J. 07877, and Ivan Mayer, 145 Hillcrest Ave., Summit, N.J. 07901

Filed Feb. 9, 1970, Ser. No. 9,882

Int. Cl. C10c 3/10, 3/52, 3/54

U.S. Cl. 260—683.43 10 Claims



An integrated process prepares alkylated aliphatic hydrocarbons with (1) dimerization of a propylene-containing feed to produce a product containing a major amount of dimethylbutenes and (2) alkylation of the dimerization product with a C_3–C_5 olefin and isobutane to recover a product containing dimethylbutanes, isooctane and alkylate. The dimerization reaction is carried out with a specific catalyst complex while the alkylation catalyst may be either H_2SO_4, HF or crystalline aluminosilicate zeolites.

3,662,021

PROCESS FOR PREPARING LINEAR OLEFINS

Arthur W. Langer, Jr., Watchung, N.J., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 562,089, July 1, 1966, which is a continuation-in-part of application Ser. No. 428,836, Jan. 28, 1965, which in turn is a continuation-in-part of application Ser. No. 55,845, Sept. 8, 1960, now Patent No. 3,168,588. This application Dec. 13, 1968, Ser. No. 783,699

The portion of the term of the patent subsequent to Apr. 29, 1986, has been disclaimed

Int. Cl. C07c 3/10

U.S. Cl. 260—683.15 D 19 Claims

In a process for preparing linear olefins which comprises polymerizing an ethylene containing gas in the presence of a catalyst comprising the reaction product of a transition metal halide and an aluminum alkyl compound in the presence of a diluent and maintaining the mode ratio of ethylene to olefin reaction product at a relatively high level so as to produce a product comprising at least 90 mole percent linear olefins, the process is improved and the product purity is maintained by killing the activity of the catalyst prior to the occurrence of deleterious side reaction which tends to reduce the product purity.

3,662,022

CURABLE LIQUID COMPOSITION OF POLYENE, POLYMERCAPTAN AND ACRYLIC ACID

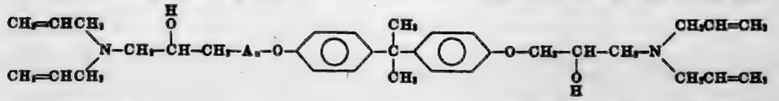
Edwin W. Lard, Bowie, Md., assignor to W. R. Grace & Co., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 74,185, Sept. 21, 1970. This application Nov. 2, 1970, Ser. No. 86,355

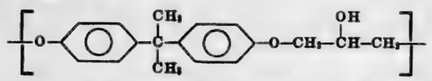
Int. Cl. C08g 45/04; C08f 27/06

U.S. Cl. 260—837 R 9 Claims

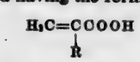
A curable liquid composition consisting essentially of:
(a) a polyene having the formula



where A is



and n is essentially 0 or greater (e.g., 0–20); and
(b) a polythiol, the equivalent ratio of polyene to polythiol being about 1:0.5–1.5; and
(c) a member selected from a group consisting of a monomeric acid having the formula



where R is H, CH_3 or C_2H_5 or a homopolymer or copolymer of such monomeric acid having an average molecular weight of about 140–1000, the group member constituting about 2–10% by weight of the composition.

The above composition can contain an effective amount of a photocuring rate accelerator.

3,662,023

CHEMICALLY CURABLE LIQUID POLYENE-POLYTHIOL POLYMER COMPOSITIONS

Clifton L. Kehr, Silver Spring, and Walter R. Wszolek, Sykesville, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 617,801, Feb. 23, 1967, which is a continuation-in-part of application Ser. No. 567,841, July 26, 1966. This application June 23, 1970, Ser. No. 49,207

Int. Cl. C08g 41/04, 11/54

U.S. Cl. 260—858 26 Claims

The invention disclosed is for a new chemically curable liquid polymer composition which includes a liquid polyene component having a molecule containing at least two unsaturated carbon-to-carbon bonds disposed at terminal positions on a main chain backbone of the molecule, and a polythiol component having a molecule containing a multiplicity of pendant or terminally positioned —SH functional groups per average molecule. The chemically curable liquid polymer composition upon curing in the presence of a chemical free radical generating reagent forms odorless, solid, elastomeric products which may serve as sealants, coatings, adhesives, and molded articles.

3,662,024

UNSATURATED POLYESTER RESIN FORMATION IN UNSATURATED ESTER MONOMER AS SOLVENT

Charles E. Greene, Marion, Va., assignor to The General Tire & Rubber Company

No Drawing. Filed Nov. 24, 1970, Ser. No. 92,538

Int. Cl. C08f 21/00

U.S. Cl. 260—863 12 Claims

Liquid compositions which are free of unreactive solvent and capable of being polymerized upon addition of free-radical polymerization catalysts (e.g., organic peroxide) into solid thermoset resins, are made by forming unsaturated polyesters having an average molecular weight of about 1,000 to 25,000 and an average of 6 to 110 double bond unsaturations, at least 50% of which are maleate unsaturations, by polymerization in the presence of a double metal cyanide complex catalyst of unsaturated dicarboxylic acid anhydrides and alkylene oxides in the presence of monomeric unsaturated esters that do not undergo appreciable copolymerization at temperatures of 100° C. or below, that are compatible with the unsaturated polyesters and that are capable of copolymerization with the polyesters. The monomeric unsaturated ester acts as a solvent for the polyester during its formation and in the liquid composition and serves to cross-link the polyester when the liquid composition is polymerized under the influence of the free-radical polymerization catalyst.

3,662,025

POLYMERIZABLE RESINOUS BLEND OF UNSATURATED POLYESTER RESIN AND POLYMERIZABLE MONOMER AND METHOD OF PREPARING THE SAME

Donald A. Buck, New City, N.Y., assignor to Reichhold Chemicals, Inc., White Plains, N.Y.

No Drawing. Filed Oct. 20, 1970, Ser. No. 82,545

Int. Cl. C08f 21/00, 21/02

U.S. Cl. 260—863 13 Claims

Polymerizable blend comprising (1) an unsaturated polyester resin prepared from (A) an alpha-beta-ethylenically unsaturated dicarboxylic acid or acid anhydride and (B) an excess of a polyhydric alcohol which is then reacted at a temperature ranging from about 150° C. to about 200° C. with (C) a phosphonate intermediate which is the reaction product of a phosphonate and an organic hydroxy acid or a lactone at a temperature ranging from about 110° C. to about 80° C. in the presence of a catalyst and (2) a polymerizable monomer containing a CH_2=CH group, said polymerizable resin blend possessing excellent flame-retardant properties, being very light in color, having long storage life and outstanding resistance to UV degradation, and method of making same.

3,662,026

PROCESS FOR PREPARING GRAFT COPOLYMERS CONTAINING N,N-DI(BETA-HYDROXYETHYL) GLYCINE SALTS

George L. Rushton, Trenton, N.J., assignor to Cities Service Company, New York, N.Y.

No Drawing. Filed June 1, 1970, Ser. No. 42,574

Int. Cl. C08f 15/04

U.S. Cl. 260—880 R 7 Claims

A composition comprising a graft copolymer resin and the alkali metal salt of N,N-di(beta-hydroxyethyl)glycine is characterized by improved color and gloss characteristics.

3,662,027

NITRILE TETRAPOLYMER-POLYVINYL-CHLORIDE BLENDS

Richard W. Czerwinski, Vienna, and Ralph P. Arthur, Parkersburg, W. Va., assignors to Borg-Warner Corporation, Chicago, Ill.

No Drawing. Filed Oct. 26, 1970, Ser. No. 84,213

Int. Cl. C08f 29/12, 29/56

U.S. Cl. 260—891 13 Claims

A homogeneous blend of a vinyl halide polymer, particularly polyvinyl chloride (10 to 90%) with an im-

proved nitrile elastomer comprising, by weight, 30 to 90 parts butadiene, 10 to 50 parts acrylonitrile, 1 to 9 parts of an alkyl acrylate, and 1 to 9 parts α-chloroacrylonitrile. These blends, which are useful for mechanical goods, hose, electrical insulation and shoe soles, have been found to exhibit excellent color retention, superior abrasion resistance, and improved aging, compression set, and tear resistance properties. The improved physical properties permit the incorporation of larger amounts of low-cost extenders and fillers, thereby reducing overall compound costs.

3,662,028

VINYLIDENE CHLORIDE POLYMER COMPOSITIONS CONTAINING PLASTICIZED POLYVINYL CHLORIDE

William M. Wineland, deceased, late of Midland, Mich., by Elizabeth R. Wineland, executrix, Midland, Frank V. Goff, Sanford, and Fred Stevenson, Beaverton, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 2, 1970, Ser. No. 15,857
Int. Cl. C08f *29/24*
U.S. Cl. 260—899 **2 Claims**

This invention is directed to vinylidene chloride polymer compositions and, in particular, to normally crystalline vinylidene chloride polymer compositions containing small but effective amounts of certain plasticized polyvinyl chlorides, which compositions are particularly useful for the preparation of essentially non-blocking, polymeric films having improved clarity.

3,662,029

PROCESS COMPRISING REACTION WITH ELEMENTAL PHOSPHORUS AND REACTION PRODUCT THEREOF

Chisung Wu, North Brunswick, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Original application Feb. 15, 1966, Ser. No. 527,492. Divided and this application May 21, 1969, Ser. No. 826,673
Int. Cl. C07f *9/02, 9/28, 9/40*
U.S. Cl. 260—920 **6 Claims**

Organophosphorus compositions produced by reacting (a) elemental phosphorus, (b) an epoxide or an episulfide, and (c) an alcohol or a mercaptan, in the presence of a catalytic quantity of a base, are further reacted with an activated olefin in proportions, at a temperature, and for a period of time sufficient to add said activated olefin to substantially all of the P-H moieties present in said organophosphorus compositions. The olefin-modified compositions can be oxidized to convert trivalent phosphorus to pentavalent phosphorus. The compositions have utility as flame-retardant additives for various polymeric systems including phenolic and epoxy resins.

3,662,030

PROCESS COMPRISING REACTION WITH ELEMENTAL PHOSPHORUS AND REACTION PRODUCT THEREOF

Chisung Wu, North Brunswick, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Original application Feb. 15, 1966, Ser. No. 527,492. Divided and this application May 21, 1969, Ser. No. 826,672
Int. Cl. C07f *9/08, 9/40*
U.S. Cl. 260—920 **4 Claims**

Organophosphorus compositions produced by reacting (a) elemental phosphorus, (b) an epoxide or an episulfide and (c) an alcohol or a mercaptan, in the presence of a catalytic quantity of a base reacting the product of (a), (b) and (c) with oxygen or other oxidizing agent in proportions, at a temperature and for a period of time sufficient to convert substantially all trivalent phosphorus to pentavalent phosphorus and thereafter reacting the product with an alkylene oxide to convert substantially all of the P–OH moieties in said organophosphorus composition to 2-hydroxyethoxyphosphorus groups. The compositions have utility in the preparation of urethane foams.

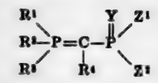
3,662,031

PHOSPHORYLATED PHOSPHONIUM YLIDS

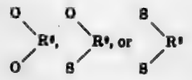
John G. Moffatt and Gordon H. Jones, Los Altos, Calif., assignors to Syntex Corporation, Panama, Panama

No Drawing. Continuation-in-part of abandoned application Ser. No. 654,056, July 18, 1967. This application Feb. 29, 1968, Ser. No. 709,234
Int. Cl. C07d *105/04*; C07f *9/54*
U.S. Cl. 260—927 R **16 Claims**

Phosphorylated phosphonium ylids represented by the formula



wherein each of R^1, R^2 and R^3 is alkyl, cycloalkyl, aryl, or substituted aryl; R^4 is hydrogen, alkyl, cycloalkyl, aryl or substituted aryl; Y is oxygen or sulfur; and each of Z^1 and Z^2 is OR^5 or SR^6 wherein each of R^5 and R^6 is alkyl, alkenyl, aryl or substituted aryl or Z^1 and Z^2 together are



wherein R^9 is alkylene or arylene. The novel ylids are useful as intermediates in the preparation of phosphonic acid or thiophosphonic acid derivatives therefrom and as intermediates for the preparation of insecticides, herbicides, oil additives and 5',6'-dideoxyhexofuranosylnucleoside 6'-phosphonic acid.

3,662,032

HYDROXY CONTAINING AROMATIC PHOSPHITES

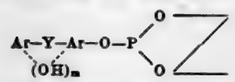
Otto S. Kauder, Jamaica, and William E. Leistner, Brooklyn, N.Y., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 160,237, Dec. 18, 1961. This application Feb. 25, 1966, Ser. No. 529,918
Int. Cl. C07f *9/12*; C08f *45/58*
U.S. Cl. 260—930 **6 Claims**

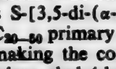
Organic phosphites are provided having in the molecule at least one polycarbocyclic phenolic group for each phosphite group, such polycarbocyclic phenolic group having from one to about thirty carbon atoms per phenolic group, and having the formula



and the phosphite having the formula



wherein Ar is a carbocyclic nucleus and at least one Ar nucleus has a phenolic hydroxyl group, *m* has a value from one to about five; and Z is taken in sufficient number to satisfy the valences of the two phosphite oxygen atoms and is selected from the group consisting of hydrogen, monovalent and bivalent organic hydrocarbon radicals having from about one to about twenty-four carbon atoms, and monovalent and bivalent phenolic groups having from one to about thirty carbon atoms per phenolic hydroxyl group, and selected from the group consisting of $(HO)_m$—AR and



which in polymeric phosphites are linked to additional phosphite groups, such polymeric phosphites containing at least one alkyl group per phosphite group, and Y is a linking nucleus selected from the group consisting of oxygen, alkylene, oxyalkylene, sulfoalkylene and cyclohexylene, the alkylene having from one to five carbon atoms.

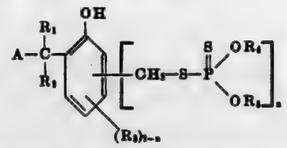
3,662,033

O,O-DIALKYL-S-DIARYL HYDROXYBENZYL PHOSPHORODITHIOATES

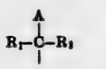
Bernard R. Meltsner, Royal Oak, Mich., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 707,428, Feb. 23, 1968. This application Oct. 29, 1968, Ser. No. 771,656
Int. Cl. C07f *9/18*; C08f *45/58*
U.S. Cl. 260—953 **9 Claims**

Styrene-butadiene rubber is stabilized by addition of a compound having the formula:



wherein A is an aryl radical containing from 6–18 carbon atoms, R_1 is a lower alkyl radical containing from 1–3 carbon atoms, R_2 is selected from hydrogen and lower alkyl radicals containing from 1–3 carbon atoms, R_3 is selected from the group consisting of alkyl radicals containing from 1–20 carbon atoms, cycloalkyl radicals containing from 6–20 carbon atoms and radicals having the formula:



wherein A, R_1 and R_2 are the same as above; R_4 and R_5 are independently selected from the group consisting of alkyl radicals containing from 1–50 carbon atoms and aryl radicals containing from 6–20 carbon atoms, and *n* is 1 or 2. An example is S-[3,5-di-(α-methylbenzyl)-4-hydroxybenzyl]-O,O-di-(C_{20-50} primary alkyl) phosphorodithioate. A process of making the compounds by the reaction of a 3,5 - di-hydrocarbyl-4-hydroxybenzyl halide with an O,O-di-hydrocarbyl dithiophosphoric acid in the presence of an alkali metal base or an alkaline earth metal base is also disclosed.

3,662,034

S-ALLYLIC AND S-VINYLIC O,S'-DIALKYL DITHIO-PHOSPHATES

Alexis A. Oswald, Mountainside, and Paul L. Valint, Jr., Woodbridge, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed Aug. 2, 1968, Ser. No. 749,575
Int. Cl. C07f *9/16*; A01n *9/36*; C10m *1/48*
U.S. Cl. 260—957 **20 Claims**

S-allylic and S-vinylic O,O'-dialkyldithiophosphates can be selectively dealkylated to form their corresponding salts, which then can be reacted with alkyl halides to form S-allylic and S-vinylic O,S'-dialkyldithiophosphates. Both the dealkylated products and the alkylated products are novel compositions, useful as pesticides, especially as insecticides, and as antioxidants, lubricating oil additives, etc.

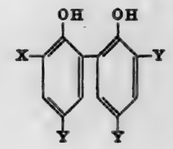
3,662,035

MONOPHOSPHORIC ACID ESTERS OF HALOGENATED BIPHENOL

Samuel Van der Meer, Amstelveen, Willem Kruyt, Haarlem, and Hendrik Pouwels, Amsterdam, Netherlands, assignors to ACF Chemiefarma N.V., Amsterdam, Netherlands

No Drawing. Original application Apr. 28, 1966, Ser. No. 545,890, now Patent No. 3,482,016, dated Dec. 2, 1969. Divided and this application May 12, 1969, Ser. No. 841,658
Int. Cl. C07d *105/04*; C07f *9/12*; A01n *9/36*
U.S. Cl. 260—953 **2 Claims**

Monophosphoric acid esters of a biphenol of the formula



wherein X is H or halogen and Y is halogen. The compounds have utility as antiparasitics.

3,662,036

PROCESS FOR THE PREPARATION OF O-ETHYL-O-p-NITROPHENYL-ETHYLPHOSPHONATE

Masahiko Ikemoto, Honmachi, Kiyoshi Ito and Kazuhiko Kimura, Ohtsu-shi, and Teruo Nakanishi, Kyoto-shi, Kyoto-fu, Japan, assignors to Kakenyaku Kako Kabushiki Kaisha, Tokyo-to, Japan

No Drawing. Continuation-in-part of application Ser. No. 760,701, Sept. 18, 1968. This application June 24, 1969, Ser. No. 836,140
Int. Cl. C07f *9/40, 9/42*
U.S. Cl. 260—969 **3 Claims**

O-ethyl-O-p-nitrophenyl-ethylphosphonate is prepared by dioxyethylating trichlorophosphine, reacting the diethyl chlorophosphite so produced with an alkali metal salt of p-nitrophenol to produce diethyl-p-nitrophenyl phosphite, and reacting this last-mentioned compound with an ethyl halide under heat and pressure. O-ethyl-O-p-nitrophenyl-ethylphosphonate is effective in solution in sterile distilled water for the treatment of glaucoma and accommodative convergent strabismus by dropping into the eye.

3,662,037

PROCESS FOR PREPARING OPEN RING TETROSE AND TRIOSE PHOSPHATE ACETALS AND PHOSPHATE KETALS

Hans Ulrich Bergmeyer, Erich Hald, and Michael Nelboeck-Hochstetter, Tutzing, Upper Bavaria, and Otmar Pelz, Feldafing, Upper Bavaria, Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim, Germany

No Drawing. Filed July 1, 1969, Ser. No. 838,345
Claims priority, application Germany, July 5, 1968, P 17 68 844.7
Int. Cl. C07f *9/02*
U.S. Cl. 260—968 **14 Claims**

Process for preparing open ring tetrose and triose phosphate acetals and phosphate ketals comprising acetalizing or ketalizing free aldose or ketose phosphoric acid or an acid salt thereof in the anhydrous state in an organic solvent, without causing simultaneous esterification of free phosphoric acid group.

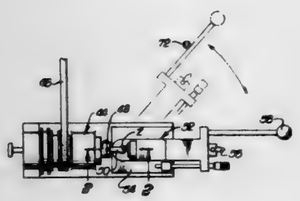
3,662,038
PROCESS COMPRISING REACTION WITH ELEMENTAL PHOSPHORUS
Chisung Wu, North Brunswick, N.J., assignor to Union Carbide Corporation, New York, N.Y.
No Drawing. Original application Feb. 15, 1966, Ser. No. 527,492. Divided and this application May 21, 1969, Ser. No. 826,714
Int. Cl. C07f 9/02, 9/28, 9/40
U.S. Cl. 260—985 5 Claims

Process which comprises reacting (a) elemental phosphorus, (b) an epoxide or an episulfide, and (c) an alcohol or a mercaptan, in the presence of a catalytic quantity of a base, further reacting the product with an activated olefin to add said olefin to substantially all of the P—M moieties present in said product and thereafter oxidizing the resultant product to convert substantially all trivalent phosphorus in said reactant products to pentavalent phosphorus.

3,662,039
GENATED METHYLENEDIPHOSPHONATES
Denzel Allan Nicholson, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed Oct. 25, 1968, Ser. No. 770,860
Int. Cl. C07c 69/38; C07f 9/40; C10m 1/46
U.S. Cl. 260—986 9 Claims

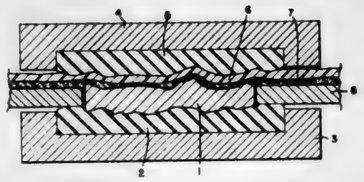
Halogenated methylenediphosphonate esters (7 to 22 carbon atoms in each ester group), halogenated malonate esters (4–22 carbon atoms in each ester group), and halogenated phosphonoacetate esters (8 to 22 carbon atoms in each ester group) are disclosed, wherein the halogen is present on the bridging carbon atom between the ester moieties. The compounds have utility as extreme pressure and anti-wear additives for lubricant compositions. Also disclosed is a process for preparing said halogenated esters by reacting the corresponding unhalogenated esters with hypohalite ions in an aqueous reaction medium containing a water-miscible organic solvent.

3,662,040
TECHNIQUE FOR LATHE GRINDING MULTIFOCAL CONTACT LENSES
Jacques Urbach, North Hollywood, and Harold W. Wiene, Pasadena, Calif., assignors to Uroptics International Incorporated, Los Angeles, Calif.
Filed Jan. 8, 1970, Ser. No. 1,444
Int. Cl. B29d 11/00
U.S. Cl. 264—1 8 Claims



A multifocal or bifocal contact lens is made on a convention radius turning lathe. The radius turning lathe has two supports, one for the work or lens blank and the other for the tool. The tool is rotated about an axis fixed on its support so that the point of the tool describes a circle. The blank is held fixed on its support. Upon relative angular movement of the supports, a spherical segment is cut in the blank, with the center of curvature falling along the axis of rotation of the tool whereby monocentricity is achieved. By such grinding technique, a segment for near view may be formed having a desirable configuration in which nasal rotation of the lens is noncritical.

3,662,041
PROCESS OF PRODUCING OPTICALLY PROJECTABLE REPLICAS OF PRESSURE COALESCIBLE FILM
Robert B. Hartman, Bridgeport, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.
Continuation of application Ser. No. 838,007, June 16, 1969. This application Oct. 5, 1970, Ser. No. 78,168
Int. Cl. B29c 17/00; B29d 7/22
U.S. Cl. 264—1 2 Claims



A process for producing optically projectable replicas of surfaces of coins, meals, bullet specimens and the like wherein an opaque pressure coalescible coating is mounted on an elastic transparent film, the film being placed against the article and pressure applied thereto. A soft backing pad is used in applying pressure to the film. The minute interconnecting cells of the film are opaque until they are collapsed. The elastic film causes pressure to be applied to the coating so that the major and minor surfaces, together with gradations therebetween, will be replicated.

3,662,042
METHOD OF MAKING A NUCLEAR REACTOR FUEL ELEMENT OF URANIUM MONONITRIDE IN A REFRACTORY METAL MATRIX
Donald E. Kizer, Columbus, Ohio, Roy A. Smith, Easton, Pa., and Edward O. Speidel, Columbus, Ohio, assignors to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed Sept. 25, 1970, Ser. No. 75,685
Int. Cl. C01g 1/08, 43/00; G21c 21/02
U.S. Cl. 264—5 7 Claims

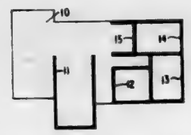
A high-temperature dimensionally stable nuclear reactor fuel element of uranium mononitride in a refractory metal matrix having evenly distributed porosity is prepared by cold pressing a mixture of a powdered refractory metal and powdered U_2N_3, forming a body which is then densified by heating under pressure to prevent complete decomposition of the U_2N_3. The densified body is then heated to decompose the U_2N_3 to UN, leaving evenly distributed porosity throughout the element.

3,662,043
PROCESS FOR MAKING A POLYURETHANE FOAM/EXPANDABLE THERMOPLASTIC PARTICLE COMPOSITE WITH HIGH FREQUENCY ELECTRICAL HEATING
Louis C. Rubens, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed May 11, 1970, Ser. No. 36,432
Int. Cl. B29d 27/04; B29h 5/26
U.S. Cl. 264—26 5 Claims

Where the exotherm from the polyurethane reaction is insufficient to cause expansion of expanded thermoplastic particles (beads) dispersed therein the particles may be substantially fully expanded by subjecting the composite foam to high frequency electrical energy for a time

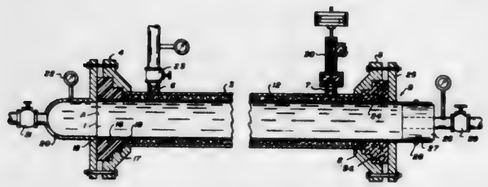
sufficient to expand them. This improved process is rapid, readily controlled and produces improved foam composites.

3,662,044
METHODS OF BUILDING
Daniel Marie Kuter, Immeuble Menard, Valles des Colons, Noumea, New Caledonia
Filed Nov. 25, 1970, Ser. No. 92,785
Claims priority, application Australia, Jan. 7, 1970, 26/70
Int. Cl. E04b 1/16; E04g 11/08
U.S. Cl. 264—34 2 Claims



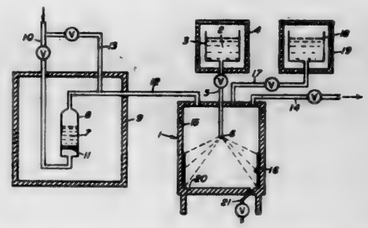
A method of building houses or flats which is intended to provide the economic advantages of prefabrication by the use of relatively simple on-site techniques in which a concrete slab is laid over the ground area of the building and on this three walls of a first room are cast in reinforced concrete by means of formwork and subsequently a roof is cast over them. This procedure is then continued in respect of each of the rooms of the house, the rooms being arranged so that the open space left by the absence of a fourth wall is closed wholly or partially by a wall of an adjacent room. The roof of the building is completed by pouring additional concrete slabs to cover corridors left between the rooms as a result of the previous steps. Internal doorways are provided at appropriate places in the walls between adjacent rooms, door and window frames being fixed in position in the walls during casting together with conduits for electricity and other services and weatherproof sealing means are provided at the junction of adjacent rooms where required. In building a multistorey building the roof of the building produced as described above is used as the floor slab for the next floor and the same procedures are then followed and repeated for each subsequent floor.

3,662,045
METHOD FOR PROVIDING A CEMENT SHEATHED PLASTIC LINER WITHIN A FLOWLINE
Kenneth Tiering, 39 Heron Road, Sherwood Park, Alberta, Canada
Filed Apr. 24, 1970, Ser. No. 31,651
Int. Cl. B32b 31/06
U.S. Cl. 264—35 2 Claims



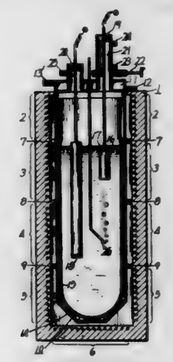
A thermoplastic liner is threaded into an oilfield flowline. An annular space is defined between liner and flowline. The liner is cemented in place by: plugging one end of the liner and the two ends of the annular space; filling the liner with water; pumping cement into the annulus while controlling the cement pumping pressure and the liner pressure so that the pressure within the liner is always greater than the pressure in the annulus but less than the liner rupture pressure.

3,662,046
METHOD OF MAKING REVERSE OSMOSIS MEMBRANES FOR DESALINATION OF WATER
Jung Woo Woo, Arlington, Va., Paul F. Waters, Washington, D.C., and Raymond H. Horowitz, Silver Spring, and Albert F. Hadermann, Hyattsville, Md., assignors to the United States of America as represented by the Secretary of the Interior
Filed June 3, 1970, Ser. No. 43,049
Int. Cl. B29d 7/20
U.S. Cl. 264—41 14 Claims



Reverse osmosis membranes are produced by spraying a film-forming solution onto a substrate in a zone into which is injected, throughout spraying, an inert gas saturated with polymer solvent vapor. Solvent is then evaporated from the film by reducing the degree of solvent saturation of the inert gas in the evaporation zone by introducing gas that is less than saturated with solvent, by lowering the atmospheric pressure in the zone or by heating the atmosphere. The film is then cured in the prior art manner by quenching and annealing. Electrostatic spraying is most effective.

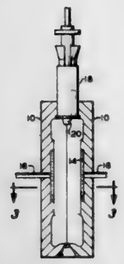
3,662,047
ELECTRODEPOSITION METHOD
Shin-ichi Tokumoto and Eiji Tanaka, Kanagawa, Japan, assignors to Sony Corporation, Shinagawa-ku, Tokyo, Japan
Filed Apr. 9, 1970, Ser. No. 26,845
Claims priority, application Japan, Apr. 14, 1969, 44/28,836
Int. Cl. C22d 3/00, 3/20
U.S. Cl. 204—64 T 32 Claims



A method for the electrodeposition of titanium or its alloys is shown. A fused salt electrolytic bath containing (1) a mixture of the chloride salts of barium, magnesium, sodium and calcium having a freezing point of less than 600° C., and (2) titanium dichloride, and if desired, (3) a source of a suitable alloy metal is electrolyzed. The electrolytic bath is maintained at a temperature of 400° C. to 580° C. and under such conditions as will maintain the molar ratio of titanium trichloride to titanium dichloride less than 0.5 in the vicinity of the electrode to be

electrodeposited. A portion of the bath is desirably maintained at a temperature above 500° C. to convert titanium trichloride to titanium dichloride to maintain the above molar ratio near the cathode. A unique polarized region is formed about the cathode as magnesium is simultaneously electrodeposited with titanium or its alloy and then rehalogenized into the electrolyte. The plate product is smooth in surface and numerous capital and operating efficiencies are achieved.

3,662,048
CONTROL OF WALL THICKNESS OF IRREGULARLY SHAPED BLOW MOLDED ARTICLES
Edward W. Turner, Deerfield, Mass., assignor to Phillips Petroleum Company
Filed Nov. 13, 1969, Ser. No. 876,496
Int. Cl. B29c *17/07*
U.S. Cl. 264—85 **12 Claims**



Irregularly shaped blow molded articles such as bottles having a generally flat configuration are produced having a more uniform wall thickness by providing a thin film of gaseous fluid between an expanding parison and the first portion of the mold wall to be contacted and/or providing a gaseous fluid jet to cool the portion of the parison which is expanding toward the side walls at the ends of the longer axis of the mold.

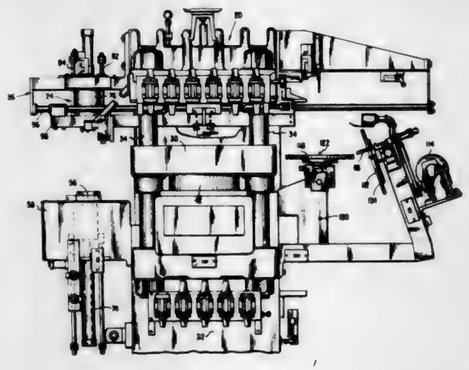
3,662,049
ORIENTED ARTICLES FROM RETRACTED BLANK
Dixie E. Gilbert, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Nov. 13, 1969, Ser. No. 876,309
Int. Cl. B29c *17/07, 17/14, 25/00*
U.S. Cl. 264—89 **12 Claims**



A parison or other preform blank is heated to orientation temperature, stretched, allowed to contract, and restretched prior to introduction of fluid pressure to expand same out into conformity with a mold zone. Improved clarity and strength are achieved utilizing this technique.

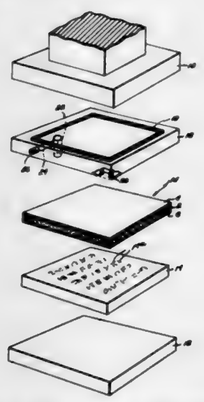
3,662,050
METHOD FOR MAKING MOLDED PRINTING PLATES
John A. Willett, 21 Beavenue St., Wellesley, Mass. 02181
Filed Apr. 19, 1968, Ser. No. 722,731
Int. Cl. B29c *1/02, 25/00*; B29d *9/02*; B41c *3/06*
U.S. Cl. 264—102 **6 Claims**

An improved duplicate printing plate of the letter press class is made from a gelled sheet of fluid printing plate material. The gelled sheet is required to be prepared under selectively controlled heating conditions. The selectively heated printing plate material thus produced is characterized by body and handling strength such that it may be manipulated and contained in an evacuated molding press. In the press the material is subjected to heat and pressure while in contact with a female mold. An important consideration is control of heating to maintain the gelled sheet in a state of limited plasticity so that cold



flowing is possible at the time the sheet is introduced into the press. In this limited state of plasticity the material throughout its layer thickness may, under suitable heat and pressure, be displaced into intimate contact with the mold depressions at all points therein. Continuing heat and pressure then converts the displaced plastic or gelled material into a completely fused and cured rubber-like mass to produce a permanently molded letter press printing plate which is free from stresses.

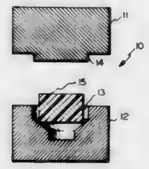
3,662,051
AUTOMATIC RECORD MOLDING APPARATUS AND METHOD
Loraine C. Harlow, Greenfield, and Stephen D. Ransburg and Lester L. Mehaffey, Indianapolis, Ind., assignors to RCA Corporation
Filed Feb. 25, 1969, Ser. No. 801,972
Int. Cl. B29d *17/00*
U.S. Cl. 264—107 **17 Claims**



An automatic record press apparatus includes means for assembling for transport to the molding press portion

of the apparatus, a sandwich arrangement consisting of a quantity of moldable material having adhered thereto on opposing surface areas, top and bottom record labels.

3,662,052
IMPACT MOLDING OF OXYBENZOYL POLYESTERS
Bernard E. Nowak, Lancaster, and James Economy and Steve G. Cottis, Buffalo, N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.
Filed May 28, 1969, Ser. No. 828,632
Int. Cl. B29f *5/02*; C08g *17/00, 39/00*
U.S. Cl. 264—119 **10 Claims**



Processes for forming shaped polyester articles of an oxybenzoyl polyester comprising compressing granules of the oxybenzoyl polyester into a slug and impact compressing the said slug into a desired shape by imparting to said slug an energy of from 10,000 foot pounds to 150,000 foot pounds.

3,662,053
PROCESS FOR COATING DIRECTLY VINYLIDENE CHLORIDE LATEX ON VINYL CHLORIDE RESIN MOLDINGS
Shinsuke Yoshikawa, Akira Yamamoto, and Masashi Kumasaka, Iwaki-shi, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
No Drawing. Filed July 1, 1970, Ser. No. 51,698
Claims priority, application Japan, July 1, 1969, 44/51,463
Int. Cl. B32b *27/08*
U.S. Cl. 264—129 **13 Claims**

A process for coating a vinyl chloride resin molding with a vinylidene chloride latex which comprises coating said molding immediately after molding said molding at a temperature of from 100 to 230° C. and while said molding is at its melting temperature, is disclosed.

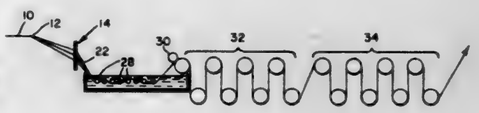
3,662,054
METHOD OF MANUFACTURE OF RUBBER ARTICLES
Ernest Wollmann, Pottschach, and Josef Zarti, Vienna, Austria, assignors to Semperit Osterreichisch-Amerikanische Gummiwerke Aktiengesellschaft, Viennna, Austria
No Drawing. Filed Mar. 19, 1970, Ser. No. 21,208
Claims priority, application Austria, Mar. 21, 1969, A 2,846/69
Int. Cl. B29c *25/00*
U.S. Cl. 264—131 **3 Claims**

A method of producing a rubber article manufactured according to the latex dipping method, in which the surface to come into contact with the human body is treated and prepared respectively with a buffer substance tolerated by the skin, selected from the group consisting of esters of oxy-benzoic acid, in order to neutralize traces of alkalis.

3,662,055
PRODUCTION OF VARIABLE DENIER YARNS OF SYNTHETIC POLYMERS
John Richard Bates, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed May 22, 1969, Ser. No. 827,074
Claims priority, application Great Britain, June 12, 1968, 27,906/68
Int. Cl. D01d *5/20*
U.S. Cl. 264—167 **12 Claims**

A process for making variable denier yarn of synthetic polymers at high yarn processing speeds comprises drawing the yarn while variably heating the same with a hot gaseous medium such as a narrow flame or jetted stream of hot gas. Either the yarn or the flame may be deflected to produce the variable heating effect.

3,662,056
PROCESS FOR FORMING A COHESIVE TOW BAND FROM A PLURALITY OF SEPARATE YARN BUNDLES
Wilbur Norbert Ross, Goodlettsville, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed July 20, 1970, Ser. No. 56,518
Int. Cl. D02j *1/22*
U.S. Cl. 264—290 R **6 Claims**



A tow drawing process in which a cohesive tow band is prepared from multiple yarn filament bundles by passing the bundles before combining them through a multi eyelet guide in which the eyelets are arranged in three stacked parallel rows. The outer rows are oscillated with respect to the center row so that the bundles cross and uncross each other to provide a tow band having a low level of filament intermingling.

3,662,057
METHOD OF FORMING AN EXPANDED POLYETHYLENE CAST ON A LIVING BODY
Joseph George Webster, Croydon, and William Henry Tuck, Kenton, England, assignors to Bakelite Xylonite Limited, London, England
Continuation of application Ser. No. 731,253, May 22, 1968. This application Oct. 21, 1969, Ser. No. 868,242
Claims priority, application Great Britain, May 25, 1967, 21,473/67
Int. Cl. B29d *27/00*
U.S. Cl. 264—321 **1 Claim**



Method of forming a cast for a living body from a sheet of partially cross-linked nitrogen expanded low density polyethylene having a thickness of between about 0.3

centimeters and about 2.5 centimeters. The method comprises heating the sheet to a temperature between 130° C. and 150° C. to render it pliable, then bringing the sheet into contact with a portion of a living body, shaping it so as to complement the portion of the living body and cooling the sheet to cause it to resume its original rigidity.

3,662,058

UTILIZATION OF MOLTEN SLAG FROM METALLURGICAL FURNACE IN MANUFACTURE OF FUSED CAST REFRACTORY SHAPES

Giovanni Crespi, Milan, Italy, assignor to Siderpatents, S.A., Lugano, Switzerland

No Drawing. Filed Jan. 21, 1969, Ser. No. 792,792
Claims priority, application Switzerland, Feb. 20, 1968, 2,439/68
Int. Cl. C04b 5/00, 35/62, 35/02
U.S. Cl. 264—332 17 Claims

Dolomite or magnesite either preheated or at room temperature is added directly to the molten slag in the furnace during the normal processing of a "heat" to raise the melting point of the slag-refractory mixture to at least 1800° C. This modified slag mixture is then cast into molds to form refractory shapes. Granular refractory material can also be added to the mold either prior to or simultaneous with the addition of the modified slag.

3,662,059

DENTIFRICE COMPOSITION

Wilfried Wiesner, West Paterson, and Morton Pader, West Englewood, N.J., assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Filed June 2, 1969, Ser. No. 829,799
The portion of the term of the patent subsequent to Nov. 3, 1987, has been disclaimed
Int. Cl. A61k 7/16
U.S. Cl. 424—52 22 Claims

This disclosure relates to a dentifrice composition containing a polymer of an olefin having 2 to 3 carbon atoms, a fluorine-containing compound and a silica xerogel. This dentifrice composition has a pH of about 4.5 or less.

3,662,060

TOOTHPASTES COMPRISING STABILIZED MILLED ALPHA-ALUMINA TRIHYDRATE

John Walter Clippingdale, Egham, and Charles Andrew Watson, Ruislip, England, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Filed Oct. 14, 1969, Ser. No. 866,397
Claims priority, application Great Britain, Oct. 29, 1968, 51,285/68
Int. Cl. A61k 7/16
U.S. Cl. 424—57 3 Claims

Using milled alpha-alumina trihydrate as a toothpaste abrasive can sometimes give rise to corrosion of unlacquered aluminum tubes accompained by the production of hydrogen gas. This can be prevented by stabilising the alumina by the action thereon of orthophosphate ions.

3,662,061

NOVEL LIP COLORING COSMETICS AND METHODS OF MAKING SAME

Felix Lachampt and Charles Zviak, Franconville, France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

No Drawing. Filed June 21, 1968, Ser. No. 738,841
Claims priority, application Luxembourg, June 30, 1967, 54,005
Int. Cl. A61k 7/02
U.S. Cl. 424—64 2 Claims

A salt of a bromo acid dye and an amine is dispersed in a fatty substance of the type used in the manufacture of lipsticks and the like.

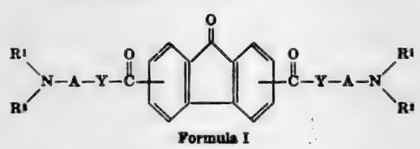
3,662,062

ANTIVIRAL COMPOSITIONS AND METHODS OF USE

Russell F. Krueger, Cincinnati, Harry W. Ritter, Sharonville, and Arthur D. Sill, Greenhills, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 818,412, Apr. 22, 1969, which is a continuation-in-part of application Ser. No. 720,332, Apr. 10, 1968, which in turn is a continuation-in-part of application Ser. No. 607,383, Jan. 5, 1968. This application Sept. 2, 1970, Ser. No. 69,144
Int. Cl. A61k 27/00
U.S. Cl. 424—85 17 Claims

Antiviral compositions and methods for inhibiting or inactivating viruses by subjecting a host to an antivirally effective quantity of a fluorenone of the following Formula I or acid addition salt thereof.



Formula I

wherein each Y is oxygen or sulfur; each A is alkylene of 2 to about 8 carbon atoms; and each R^1 and R^2 is hydrogen, alkyl of 1 to about 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, alkenyl of 3 to 6 carbon atoms, or each set of R^1 and R^2 together with the nitrogen atom to which they are attached can be a saturated monocyclic heterocyclic group. An illustrative fluorenone used in the invention is bis(3-dibutylaminopropyl)-9-oxofluorene-2,7-dicarboxylate dihydrochloride.

3,662,063

METHODS FOR STIMULATING THE GROWTH OF POULTRY WITH COUMERMYCIN

Julius Berger, Passaic, and Wilbur Lewis Marusich, Wayne, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of application Ser. No. 742,506, July 5, 1968. This application Apr. 24, 1969, Ser. No. 819,525
Int. Cl. A61k 21/00
U.S. Cl. 424—181 5 Claims

A composition and method for stimulating the growth of poultry and enhancing feed efficiency is described. The composition comprises the known antibiotic, coumermycin, in admixture with an edible, non-toxic diluent or carrier, the diluent or carrier preferably being a material which is a nutrient for poultry.

The method comprises feeding poultry, ad libitum, a ration which contains a ratio of from about 1.0 gram to about 50.0 grams of coumermycin per ton of feed.

3,662,064

REDUCTION OF THE PHYTOTOXICITY OF FUNGICIDIAL COMPOSITIONS CONTAINING MANGANESE ETHYLENE BISDITHIOCARBAMATE

Romke Wijmenga and Jan Wunderink, Soest, Netherlands, assignors to N.V. Chefaro Maatschappij

No Drawing. Filed Mar. 25, 1969, Ser. No. 810,342
Claims priority, application Netherlands, Apr. 4, 1968, 6804715
Int. Cl. A01n 9/20, 9/02
U.S. Cl. 424—145 1 Claim

The phytotoxicity of fungicidal compositions containing at least 80 wt. percent of manganese ethylene bisdithiocarbamate is reduced by intimately admixing therewith zinc oxide in an amount of from 0.1 to 10 wt. percent and most preferably from 0.5 to 3 wt. percent, based on the weight of manganese ethylene bisdithiocarbamate in the composition. The reduction of phytotoxicity is further enhanced by the addition to the aforementioned fungicidal compositions of a phenolic compound selected from among catechol, p-hydroquinone, metol, pyrogallol and propyl gallate, and which is added in an amount from 0.01 to 5 wt. percent, and most preferably from 0.1 to 1 wt. percent based on the weight of manganese ethylene bisdithiocarbamate.

3,662,065

CHLORO SUBSTITUTED BENZYL TRIPHENYL PHOSPHONIUM HALIDES AS ANTHELMINTICS

Robert J. Balske, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Feb. 9, 1970, Ser. No. 9,950
Int. Cl. A61k 27/00; A01n 9/36
U.S. Cl. 424—198 7 Claims

Usage of chloro substituted benzyl triphenylphosphonium halides for combating helminthiasis in animals.

3,662,066

COMPOSITIONS FOR INHIBITING ANOMALOUS DEPOSITION AND MOBILIZATION OF CALCIUM PHOSPHATE IN ANIMAL TISSUE

Marion D. Francis, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Continuation-in-part of application Ser. No. 709,883, Mar. 4, 1968. This application Mar. 4, 1970, Ser. No. 16,557
Int. Cl. A61k 27/00
U.S. Cl. 424—204 7 Claims

Compositions for inhibiting anomalous deposition and mobilization of calcium phosphates in animal tissue, comprising an effective amount of a cyclic tetraphosphonic acid or a salt thereof, in a pharmaceutical carrier; and a method for treating conditions involving pathological calcification and hard tissue demineralization in an animal comprising administering to such animal said compositions.

3,662,067

FUNGICIDAL METHOD AND COMPOSITION

Georges A. L. Richard, Bougival, Jean-Marie F. Cognet, La Celle-Saint-Cloud, Jean Heullant, Le Raincy, and Jean-Pierre Vallier, Paris, France, assignors to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed Mar. 18, 1969, Ser. No. 808,317
Claims priority, application France, Mar. 27, 1968, 145,625; Dec. 30, 1968, 181,920
Int. Cl. A01n 9/02, 9/12
U.S. Cl. 424—245 4 Claims

Fungicidal mixtures for seed treatment containing as active ingredients a mixture of a metal salt of a hydroxyquinoline and 2,3-dihydro-5-carboxanilido-6-methyl-1,4-oxathiin.

3,662,068

PROCESS AND COMPOSITION FOR BOTFLY LARVAE ELIMINATION

Richard J. Mack, Overland Park, Kans., assignor to Richardson-Merrell, Inc., New York, N.Y.

No Drawing. Filed June 11, 1970, Ser. No. 45,579
Int. Cl. A61k 27/00
U.S. Cl. 424—253 27 Claims

The use of choline xanthate to treat equine to eliminate botfly larvae from their gastrointestinal tract is improved by the concurrent use of an acidifying agent capable of releasing carbon disulfide from the choline xanthate upon reaction therewith. Novel coated and uncoated choline xanthate and acidifying substance mixtures are disclosed for this use.

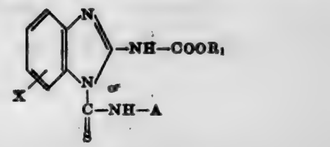
3,662,069

ALKYL 1-(N-SUBSTITUTED THIOCARBAMOYL)-2-BENZIMIDAZOLECARBAMATES AS FUNGICIDES AND MITE OVICIDES

Bruce I. Dittmar, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 16, 1969, Ser. No. 825,405
Int. Cl. A01n 9/22
U.S. Cl. 424—273 8 Claims

The novel compounds of the following structure are useful as fungicides and mite ovicides:



wherein

R_1 is methyl, ethyl, isopropyl or sec-butyl;
X is hydrogen, halogen, methyl, methoxy or nitro; and
A is various acyl, alkoxycarbonyl or alkyl sulfonyl groups.

These compounds are made by the reaction of an alkyl 2-benzimidazolecarbamate with a N-substituted isothiocyanate.

An exemplary specie of this class is 1-[(methoxycarbonyl)-thiocarbamoyl]-2-benzimidazolecarbamate.

3,662,070

METHOD OF TREATMENT OF EMESIS AND NERVOUS TENSION IN MAMMALS WITH CERTAIN INDOLES-2-CARBOXAMIDES AND DERIVATIVES THEREOF

Michel Leon Thominet, Paris, France, assignor to Societe d'Etudes Scientifiques et Industrielles de L'Ile-De-France, Paris, France

No Drawing. Continuation-in-part of application Ser. No. 657,010, July 31, 1967, now Patent No. 3,573,325, dated Mar. 30, 1971. This application Jan. 6, 1971, Ser. No. 104,500
Claims priority, application France, July 29, 1966, 72,905; Oct. 18, 1966, 80,482
Int. Cl. A61k 27/00
U.S. Cl. 424—274 8 Claims

Emesis and/or nervous tension in mammals are substantially diminished by administration of certain N-(1-alkyl-2-pyrrolidylmethyl)-3-alkoxy (or hydroxy)-indoles-2-carboxamides. Treatment may be given orally or parenterally.

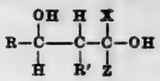
3,662,071

PHARMACEUTICAL COMPOSITION COMPRISING CERTAIN 1,3-SUBSTITUTED GLYCOLS

Carl M. Langkammerer, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 17, 1966, Ser. No. 551,884
Int. Cl. A61k 27/00
U.S. Cl. 424—275 2 Claims

1. A pharmaceutical composition comprising a pharmaceutically acceptable diluent and an effective pharmaceutical dose of a compound of the formula:



wherein

R is selected from the group consisting of hydrogen, alkyl of 1 through 4 carbon atoms, alkenyl of 2 through 4 carbon atoms, naphthyl, thienyl, furyl, and



A is selected from the group consisting of hydrogen, fluorine, chlorine, bromine, nitro, sulfonylamide, methyl, methoxy and phenyl;
D and E are separately selected from the group consisting of hydrogen, fluorine, chlorine, bromine, nitro, sulfonylamide, methyl and methoxy;
X and Z are separately selected from the group consisting of trifluoromethyl and chlorodifluoromethyl;
R' is selected from the group consisting of hydrogen and alkyl of 1 through 7 carbon atoms with the limitation that unless R is hydrogen the alkyl can have only 1 through 3 carbon atoms; and R and R' are joined to form a radical selected from the group consisting of cyclopentane, cyclohexane, cyclohexene, cyclododecane, tetrahydronaphthalene and norbornane.

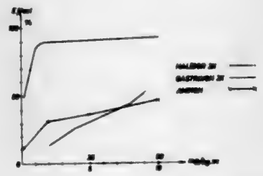
3,662,072
FEEDSTUFF CONTAINING SALICYL SALICYLIC ACID
Ingvar Wiberger, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden
No Drawing. Filed Apr. 1, 1970, Ser. No. 24,850
Claims priority, application Sweden, Apr. 3, 1969, 4,857/69
Int. Cl. A61k *27/00*
U.S. Cl. 424—230 **2 Claims**

A feedstuff, primarily intended for pigs and poultry, said stuff containing salicyl salicylic acid as a growth stimulant.

3,662,073
MEDICINAL MIXTURE FOR ALLEVIATION OF PAINFUL CONDITIONS AND METHOD FOR USING SAME
Dietrich Lorenz, Bensberg, Germany, assignor to Troponwerke Dinklage & Co., Cologne-Mulheim, Germany
No Drawing. Filed Apr. 24, 1969, Ser. No. 819,535
Claims priority, application Germany, Apr. 30, 1968, P 17 67 344.8
Int. Cl. A61k *27/00*
U.S. Cl. 424—250 **4 Claims**

A composition comprising (+)-1-benzyl-3-dimethylamino-2-methyl-1-phenylpropylpropionate (I) admixed with a compound selected from the group consisting of 2-chloro-9-(γ - dimethylaminopropylidene)-thioxanthene (II), 2 - chloro-9-[3-(N'-β-hydroxyethylpiperazino)-propylidene]-thioxanthene (III) and 2-trifluoromethyl-9-[3-(N'-β-hydroxyethylpiperazino)-propylidene]-thioxanthene (IV). Specific compositions are those in which the weight ratios of the components and, in the case of I and II, and I and III, from 1:1 to 64:1, and in the case of I and IV from 1:1 to 200:1. The compositions may be administered in dosage unit form. The analgesic effect of I and II, III or IV is more than additive, but the sedative effect of II, III or IV is not substantially affected.

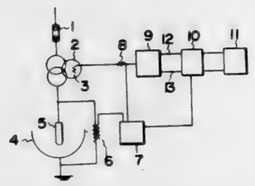
3,662,074
PHARMACEUTICAL COMPOSITIONS OF ANTI-ULCEROUS ACTIVITY
Lajos Voroshazy, Budapest, and Karoly Thuranszky and Andras Kekes-Szabo, Szeged, Hungary, assignors to Egyt Gyogyszervegyeszeti Gyar
Filed May 1, 1969, Ser. No. 820,950
Claims priority, application Hungary, May 9, 1968, VO-139
Int. Cl. A61k *27/00*
U.S. Cl. 424—265 **2 Claims**



A pharmaceutical composition having synergetic ulcer-inhibiting activity contains as its active ingredients 0.5 to 1.5 parts by weight of triopine-xanthene-9-carboxylic acid ester metho-bromide (Gastrixon), 50 to 150 parts by weight of 1-benzyl-1-(3-dimethylamino-propoxy)-cycloheptane or its fumarate (Halidor) and optionally 0.5 to 1.0 part by weight of 2-diethylaminoethyl-benzylate (Amikon).

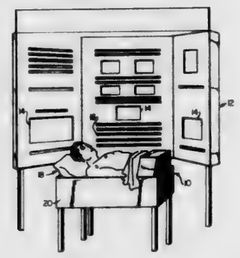
ELECTRICAL

3,662,075
METHOD AND SYSTEM FOR CONTROLLING ELECTRIC FURNACES AS A FUNCTION OF POWER FACTOR
Makoto Sakai, and Shinichi Miyao, both of Niigata, Japan, assignors to Nippon Kokan Kabushiki Kaisha
Filed Oct. 22, 1970, Ser. No. 82,898
Claims priority, application Japan, Oct. 30, 1969, 44/86640
Int. Cl. F27d *11/10*
U.S. Cl. 13—13 **10 Claims**



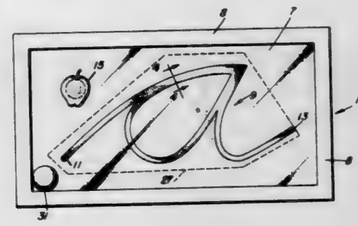
In an electric furnace control system of the type wherein an electrode driving mechanism is operated by the electrode control signals provided by an automatic current regulator responsive to the current flowing through the electrode, there are provided a program control connected between the automatic current regulator and the electrode driving mechanism for transmitting the electrode control signals to the electrode driving mechanism, and a power factor regulator responsive to the actual power factor of the furnace for controlling the program control.

3,662,076
CARDIAC TRAINING MANNIKIN
Michael S. Gordon, Miami, Fla., and Francis B. Mesmore, New York, N.Y., assignors to Research Corporation, New York, N.Y.
Filed Apr. 22, 1970, Ser. No. 30,831
Int. Cl. G09b *23/32*
U.S. Cl. 35—17 **14 Claims**



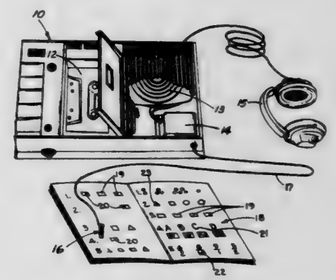
A training mannikin is disclosed for particular use in simulating various normal and abnormal cardiac conditions in the human body. The mannikin resembles in texture and appearance at least the upper portion of the human body, and has in its interior pulse-producing means including plunger means to simulate pulse points, and sound-producing means to simulate heart beat. Selectively interchangeable cam-operated control means are provided to operate the plunger means in a variety of sequence patterns to simulate a number of normal and abnormal cardiac conditions.

3,662,077
EDUCATIONAL DEVICE
Emile V. Kersten, P.O. Box 202, Avondale, Colo.
Filed Aug. 5, 1970, Ser. No. 61,072
Int. Cl. G09b *11/04*
U.S. Cl. 35—37 **7 Claims**



A device for teaching children writing skills. A housing having a top provided with a visible letter of the alphabet, a starter button which must be depressed by the right hand or the left hand of the child during operation and an object or symbol representing the letter being written which is illuminated upon successful completion of the tracing of the letter. A magnetic pencil with which the child follows or traces the letter indicia on the top, a steel ball which follows the course of the magnetic pencil in tracing the particular letter. A source of current, an electric circuit and an electric switch positioned at the end of the letter and closed by the magnetic ball when the ball reaches this point to thereby illuminate the object or symbol upon successful completion of tracing the letter. The attraction of the ball by the magnetic pencil is lost if the child tracing the letter indicia lets the pencil deviate from said letter indicia, if this occurs the ball will fall into a collection box to return to letter starting position for a further attempt at proper tracing by the learner.

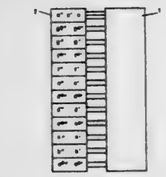
3,662,078
SELF TEACHING MACHINE
William Holiday, La Mirada, Calif., assignor to Mattel, Inc.
Filed Sept. 11, 1969, Ser. No. 857,016
Int. Cl. G09b *7/06*
U.S. Cl. 35—9 A **7 Claims**

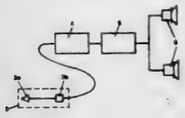


A self teaching machine wherein means are provided for recording and presenting a sequence of problems one at a time to a student. A prepared answer sheet has a plurality of answers for each question with the correct answer to each of the questions being associated with conductive areas. The wrong answers are associated with non-conductive areas that appear visually identical, that is, the conductivity or non-con-

ductivity of the associated areas is not discernable to the human eye. A student is provided with a probe means which is connected to a control means for advancing the recording and presenting means to ask another question and stopping the recording and presenting means when the question has been asked. The recording and presenting means is advanced to the next question when the student touches the probe means to a conductive area corresponding to a correct answer thereby completing a circuit in the advancing means.

3,662,079
TEACHING AID FOR AUDIBLY AND VISUALLY ILLUSTRATING THE NOTES OF THE STAFF
Hanurichard Schulz; Joachim Bulow; Berthold Schmitt, and Rudolf Schneider, all of Villingen, Germany, assignors to Firma Saba Schwarzwalder Apparatebauanstalt August Schwer Sohne G.m.b.H., Villingen, Germany
Filed Nov. 20, 1970, Ser. No. 91,248
Claims priority, application Germany, Nov. 26, 1969, P 19 59 309.0
Int. Cl. G09b *15/00*
U.S. Cl. 84—471 **21 Claims**





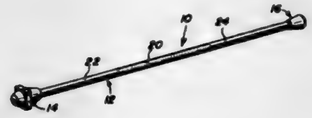
A blackboard, having one or more staffs and the notes thereof on its front face, has on its rear face a series of electric conductors aligned with the respective notes on the front face, each conductor being connected to an audio oscillator for producing the frequency of the corresponding note. The output of the capacitive pickup head, when the latter is placed on a note, is conducted to a low amplitude suppressor and afterwards to an amplifier, which latter is connected to a loudspeaker. The low amplitude suppressor insures that the tone of an audio oscillator is audibly reproduced, without swelling or dying away, only when the pickup head is very close to a note.

3,662,080
TWIRLING BATON
John F. Hale, 3729 Greenbay Drive, Dayton, Ohio, and Frederick J. Miller, 2150 E. Rahn Rd., Dayton, Ohio
Filed July 24, 1970, Ser. No. 58,117
Int. Cl. G09b *15/02*
U.S. Cl. 84—477 B **6 Claims**



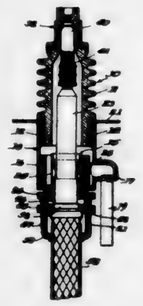
A twirling baton includes a resilient ball having an enlarged non-circular portion with at least two side surfaces formed thereon for preventing the baton from rolling away from the twirler after it has been dropped. In the preferred embodiment, the enlarged portion has a cross-section in the form of a square and provides four planar side surfaces which contact the ground and quickly bring the baton to rest.

3,662,081
TWIRLING BATON WITH SPOTTING MEANS
John F. Hale, 3729 Greenbay Drive, Dayton, Ohio, and Frederick J. Miller, 2150 E. Rahn Rd., Dayton, Ohio
Filed July 24, 1970, Ser. No. 58,116
Int. Cl. G09b *15/02*
U.S. Cl. 84—477 B **1 Claim**



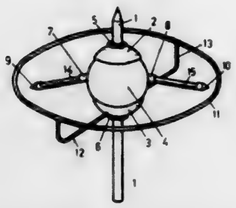
A twirling baton includes a shaft having means defining a textured area preferably on a central portion thereof for aiding the twirler to spot and follow a spinning baton against a bright background and for providing a surface for improved baton manipulation and control. In the preferred embodiment, the shaft is chrome-coated tubular stainless steel and the textured area is a sandblasted surface.

3,662,082
HIGH VOLTAGE CABLE TERMINATING ASSEMBLY
Donald R. Heppner, Chicago, Ill., assignor to G & W Electric Specialty Company, Blue Island, Ill.
Continuation-in-part of application Ser. No. 887,820, Dec. 24, 1969, now abandoned. This application Sept. 3, 1970, Ser. No. 69,334
Int. Cl. H02g *15/22*; **H01b** *17/30*
U.S. Cl. 174—18 **10 Claims**



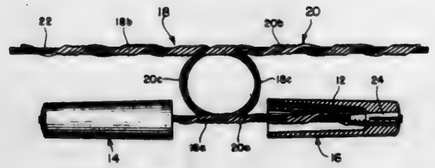
There is disclosed a factory assembled slip-on type of cable terminator in combination with electrical equipment comprising a cylindrical shell of insulating material, a dielectric media contained within the electric equipment and surrounding the insulating material of the cylindrical shell and a self-energizing resilient contact spring member within the cylindrical shell for improving the mechanical and electrical connections for current transfer. In addition, the self-energizing resilient contact spring member, together with other elements of the assembly, permits easy insertion of the cable connector although preventing accidental cable pull-out or cable blow-out under fault current conditions.

3,662,083
LIGHTNING CONDUCTOR
Rene Constant, Mol-Donk, Belgium, assignor to Centre d'Etude de l'Energie Nucleaire en abrege "C.E.N.,", Brussels, Belgium
Filed Apr. 14, 1970, Ser. No. 28,423
Claims priority, application Belgium, Apr. 15, 1969, 72,768
Int. Cl. H02g *13/00*
U.S. Cl. 174—4 C **14 Claims**



Lightning rods having around the rod at least one radioactive ionizing source comprising a chemically-inert gas such as Kr–85 whereby efficient lightning protection is insured and at the same time the danger present with solid radioactive material is eliminated.

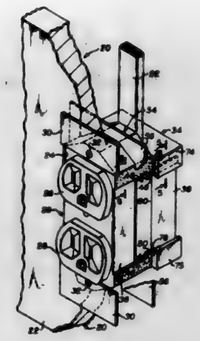
3,662,084
VIBRATION DAMPER
Clarence E. Smrekar, Cleveland, Ohio, assignor to Preformed Line Products Company, Cleveland, Ohio
Filed Aug. 13, 1971, Ser. No. 171,697
Int. Cl. H02g *7/14*
U.S. Cl. 174—42 **8 Claims**



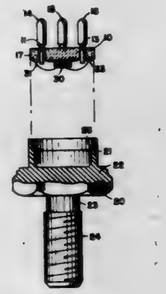
There is disclosed a vibration damper for an electrical transmission line or the like comprising a pair of weights supported at opposite ends of a rod and a pair of helically preformed dead-end appliances each having a pair of helical leg portions and an intermediate bight portion. One leg portion of each appliance is wrapped about the transmission line and the other leg of each appliance is wrapped about the rod, the appliances being applied so as to face in opposite directions with their respective bight portions overlapping to form a central loop.

3,662,085
MOUNTING BRACKET FOR SWITCH OR RECEPTACLE
Daniel E. Robinson, Metuchen, and Solomon Rubinstein, Fanwood, both of N.J., assignors to General Cable Corporation, New York, N.Y.
Filed Mar. 12, 1971, Ser. No. 123,715
Int. Cl. H02g *3/18*
U.S. Cl. 174—48 **10 Claims**

This electrical fitting, such as a wall outlet or a switch, has a housing that extends through an opening in a wall and has flange means that extend beyond the sides of the opening across the front of the wall to prevent the housing from being pushed through the opening. A bracket fits around the housing and is adjustable along the housing from front to back; and the bracket has a flange that contacts with a back surface of the wall. Complimentary locking means on confronting surfaces of the housing and the bracket selectively engage with one another at different positions of the bracket or accommodating the bracket to walls of different thickness.



3,662,086
SEMICONDUCTOR PACKAGE
Philip S. Hessinger, W. Caldwell, N.J., assignor to National Beryllia Corp., Haskell, N.J.
Filed May 25, 1970, Ser. No. 40,286
Int. Cl. H05k *5/04*
U.S. Cl. 174—52 S **5 Claims**

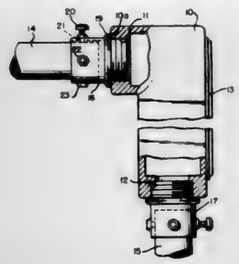


A ceramic disk for sealing the chamber built onto a metal stud acting as a heat sink, is provided with a surface that will be the interior surface when sealed, which acts as the substrate for the semiconductor or electronic circuit. The circuit on said disk can be completed and tested before it is sealed onto the stud.

3,662,087
UNIVERSAL CONDUIT CONNECTOR
Lloyd G. Singletary, 925 Lilley Ave., Columbus, Ohio
Filed Nov. 17, 1970, Ser. No. 90,395
Int. Cl. H02g *3/18*
U.S. Cl. 174—65 R **4 Claims**

A hollow tubular conduit connector is provided with external threads at one end for thread engaging a conduit fitting, and with an outstanding flange portion for surface engaging the fitting. The connector is also provided with a plurality of like-dimensioned threaded holes extending therethrough and disposed in a circular locus about the connector; and a

removable set screw interchangeable between said threaded holes extends through a selected one of said holes to



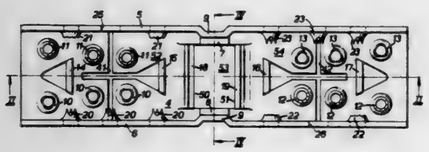
mechanically and electrically engage a section of conduit inserted into the connector.

3,662,088
ELECTOSTATICALLY COATED LAMINATED BUS BAR ASSEMBLY
George E. Wright, Barrington, and Leonard F. Wisniowicz, Wheaton, both of Ill., assignors to Methode Manufacturing Corp., Rolling Meadows, Ill.
Filed Jan. 20, 1970, Ser. No. 4,244
Int. Cl. H02g *5/00*
U.S. Cl. 174—72 B **1 Claim**



A multilayer, multiconductor bus bar or multilayer, multiconductor wiring panel with homogeneous insulation, bonding agent and encapsulant provided by simultaneous deposition of microscopic insulating compound to the electrically charged and heated conductors, —and method of manufacture.

3,662,089
MODIFICATIONS OF WIRE CONNECTORS
John Patrick Harding, Bushey, England, assignor to The Post Office, London, England
Filed Nov. 9, 1970, Ser. No. 87,715
Claims priority, application Great Britain, Nov. 15, 1969, 55,677/69
Int. Cl. H02g *15/08*
U.S. Cl. 174—84 C **6 Claims**



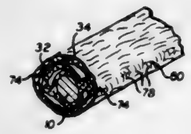
A clip for use in jointing wires particularly of multi-wire cables the clip being trough like in form of having tangs in its sidewalls in addition to wire engaging means in its base.

3,662,090
COAXIAL CABLE
William L. Grey, Hartsdale, N.Y., assignor to Anaconda Wire and Cable Company
Filed Apr. 16, 1971, Ser. No. 134,560
Int. Cl. H01b *11/18*
U.S. Cl. 174—107 **10 Claims**



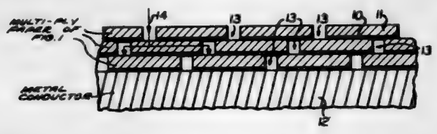
A coaxial cable has an outer conductor bonded to the cable jacket and an overlapped longitudinal seam. The seam is sealed with a layer of adhesive and has a bare stripe, free from adhesive, to allow metal-to-metal electric contact.

3,662,091
ELECTRICAL CONDUCTOR WITH PAPER INSULATION
Ludwik Jachimowicz, Elizabeth; Edwin W. Reasoner, Morristown, and Jerzy A. Olszewski, Edison, all of N.J., assignors to General Cable Corporation, New York, N.Y.
Original application May 16, 1968, Ser. No. 729,600, now Patent No. 3,597,311, dated Aug. 3, 1971. Divided and this application Mar. 29, 1971, Ser. No. 128,763
Int. Cl. H01b *7/02*
U.S. Cl. 174—110 P **8 Claims**



This electrical conductor is insulated with paper formed by squeezing the water out of a ribbon of woodpulp applied to the conductor. The novel features include the offcenter location of the conductor in the ribbon so that the portion of the ribbon extending from one side of the conductor is long enough to wrap all the way around the conductor and over itself in a lap seam. A stream of water is applied to one surface of the paper to refloat some of the fibers that are in position to extend across the seam to lock the seam closed when the ribbon is wrapped around the conductor.

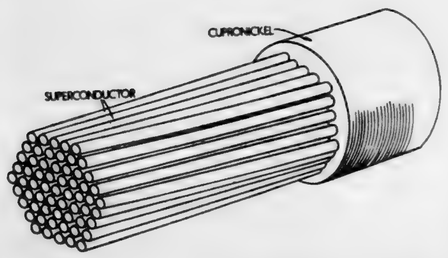
3,662,092
CABLE INSULATED WITH PAPER
Pasini Franco, Milan, Italy, assignor to Industrie Pirelli S. P. A., Milan, Italy
Original application Mar. 8, 1968, Ser. No. 711,582, now Patent No. 3,598,691. Divided and this application Sept. 17, 1970, Ser. No. 73,243
Int. Cl. H01b *7/02*
U.S. Cl. 174—120 FP **13 Claims**



Paper tape for insulating high tension cables is produced with a multi-layer construction. A low density core layer is

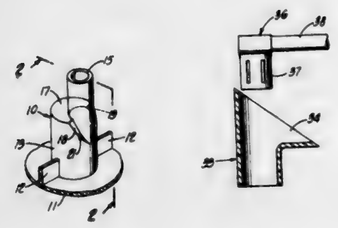
faced on one or both sides with thin high impermeability layers. The dielectric strength is a function of the latter while the impregnability and loss factor is a function of the former.

3,662,093
SUPERCONDUCTING ELECTRICAL CONDUCTORS
Martin Norman Wilson, Abingdon; Peter Faraday Smith, Newbury; Colin Russell Walters, Abingdon; John David Lewin, Oxford; Robert Walter Broomfield, Streetley, Sutton Coldfield, and Robert Leslie Graham, Four Oaks, Sutton Coldfield, all of England, assignors to Science Research Council, London and Imperial Metal Industries (Kynoch) Limited, Birmingham, England
Filed Apr. 1, 1969, Ser. No. 812,015
Claims priority, application Great Britain, Apr. 3, 1968, 16,023/68
Int. Cl. H01u *11/00*
U.S. Cl. 174—128 **17 Claims**



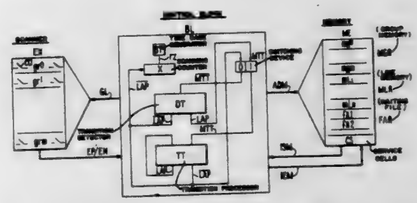
An electrical conductor comprising filaments of superconductor in a non-superconductor matrix, each filament having a maximum thickness of about 0.005 cm and being twisted or transposed about the other filaments in accordance with the given formula, and methods of making the same.

3,662,094
HEAT RECOVERABLE INSULATING COVER FOR ELECTRICAL TERMINAL, AND METHOD OF MANUFACTURE
Judson Douglas Wetmore, San Mateo, and Donald R. Allan, Menlo Park, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.
Filed July 6, 1970, Ser. No. 52,523
Int. Cl. H01b *17/00*
U.S. Cl. 174—138 F **6 Claims**



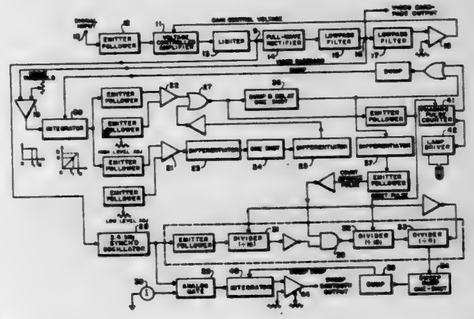
Heat-shrinkable plastic material is molded, expanded, laterally distorted and cooled to provide an insulating cover for a flag-type electrical terminal assembly having right-angle components. The cover when positioned to enclose such terminal assembly and when heated changes its shape to envelop the terminal assembly in close-fitting relationship.

3,662,095
A TELEGRAPH SIGNAL RECEIVING ARRANGEMENT FOR PERFORMING DETECTION AND PROCESSING OF SIGNALS ON INCOMING TELEGRAPH LINES
Henri Beamussa, Meudon; Ngoc-Sanh Bui, Hay-les-Roses, and Gerard Troubac, Paris, all of France, assignors to International Standard Electric Corporation, New York, N.Y.
Continuation of application Ser. No. 810,276, Mar. 25, 1969, now abandoned. This application Nov. 30, 1970, Ser. No. 93,910
Claims priority, application France, Mar. 28, 1968, 145858
Int. Cl. H04l *7/16*
U.S. Cl. 178—3 **8 Claims**



The invention concerns improvements to telegraph character receiving systems in which a control block is designed to perform both the transition or change detecting operation on a plurality of lines and the transition processing operation. The control block will initially be switched into the transition detecting operation wherein it scans the lines to detect transitions, upon detection of at least one transition, a switching circuit operates and switches the control block into the transition processing operation wherein it operates to reconstitute the characters whereto each transition belongs. When the processing of the transition is completed, the switching circuit operates anew and again switches the control block into the transition detection operation. The alternate operating process enables the use, for transition processing operations, of a large proportion of the circuits used for the transition detecting operations, and thereby economical utilization of the equipment.

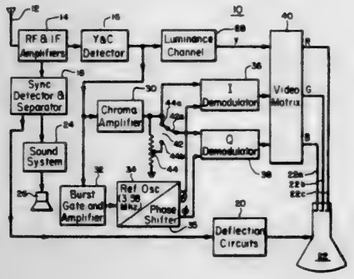
3,662,096
ELECTRONIC PHASING AND SYNCHRONIZING CIRCUIT FOR FACSIMILE RECORDERS
Scott D. Morton, Reseda, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed July 8, 1970, Ser. No. 53,046
Int. Cl. H04n *1/36*
U.S. Cl. 178—7.3 S **1 Claim**



In a facsimile recording system for recording facsimile video signals, apparatus for detecting a phasing bar received at the beginning of each line of said facsimile video signals. Modulated carrier facsimile video signals are demodulated. A

magnitude detector senses the magnitude of the demodulated facsimile video signals and produces an output when the magnitude of the demodulated signals substantially equals the known magnitude of the phasing bar. A bar width detector functions in response to the output of the magnitude detector to produce an output when the pulse width of the demodulated signals substantially equals the known pulse width of the phasing bar.

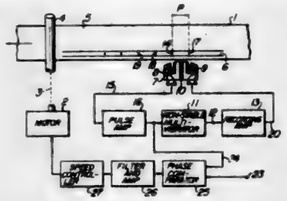
3,662,097
CHROMA PROCESSING CIRCUITRY WITH SELECTABLE COLOR CORRECTION MODE
John L. Rennick, Elmwood Park, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed May 18, 1970, Ser. No. 38,305
Int. Cl. H04n 9/12
U.S. Cl. 178—5.4 HE **10 Claims**



Chroma processing circuitry for a color television receiver wherein nominally derived primary color signals in accordance with extracted reference information in a first selectable mode of operation may be suitably modified in a second selectable mode of operation to minimize the effect of any phase errors otherwise readily discernible as undesirable departures in fleshtone hues. The referenced modification comprises a predetermined reduction in green-purple color information relative to derived luminance and orange-cyan information. Three embodiments are disclosed. In one such embodiment employing I and Q demodulation techniques, the chroma signal as applied to the input of the included Q demodulator is selectively reduced by associated control circuitry; the signal information along the Q axis or demodulation angle representing essentially green-purple color information. In another embodiment, employing convention (R–Y) and (B–Y) color difference demodulators, the desired reduction in green-purple information is provided by suitable alteration of the respective phase delays effected in components of the reference signal selectively applied to the demodulators which in turn alters each of the demodulation angles at which such demodulators operate. In still another embodiment, appropriate modification of the final primary color signals is accomplished by selected changes in the circuit parameters of an output matrix network associated with the color difference demodulators.

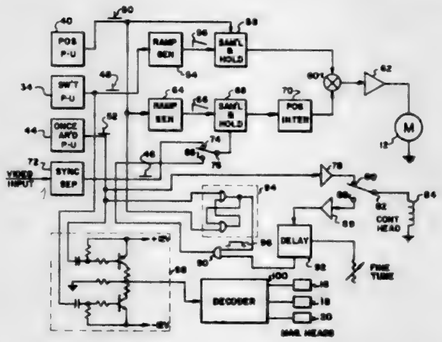
3,662,098
ROTARY HEAD-TYPE VIDEO TAPE MAGNETIC RECORDING AND REPRODUCING SYSTEM
Osahiko Yano, Kadoma; Takahiro Nakamura, Neyagawa, and Masahiro Deguchi, Yao, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 26, 1970, Ser. No. 40,666
Claims priority, application Japan, June 3, 1969, 44/44948; July 2, 1969, 44/53636
Int. Cl. G11b 5/26, 15/52; H04n 5/78
U.S. Cl. 178—6.6 P **2 Claims**

A rotary head-type video tape magnetic recording and reproducing system in which, at the time of recording, pulse signals are not only recorded on a running magnetic tape but are regenerated and a tape driving system is controlled in such a manner that the regenerated signals maintain a fixed phase relation with a reference signal; and in which, at the



time of reproduction, said pulse signals are regenerated and the tape driving system is so controlled that the regenerated signals and a reference signal maintain a fixed relation between each other, thus facilitating the compiling and recording operation of the magnetic tape.

3,662,099
SERVO SYSTEM FOR VIDEO RECORDER
Philip M. Crosne, Cupertino, Calif., assignor to Cartridge Television, Inc., San Jose, Calif.
Filed June 26, 1970, Ser. No. 50,061
Int. Cl. H04n 5/78; G11b 21/10
U.S. Cl. 178—6.6 P **10 Claims**

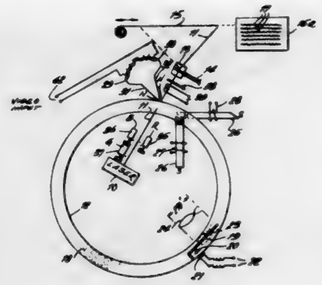


A video recorder has multiple rotating heads, the speed and phase of rotation of which must be accurately synchronized with the transmitted video signal or with a prerecorded control signal. This is accomplished by means of a servo which utilizes two fixedly positioned pick-up devices adjacent the rotating heads for detecting the passing of certain fixed points on a disk carrying the heads. The period of time for a point to pass between two detectors is compared with the reference to control the speed of the driving motor. The phase of the driving motor is controlled by developing a positional error signal as a result of any difference in time between the detection of a given point on the disk with the occurrence of either the video sync or a prerecorded control signal. Means are also provided for assuring the proper sequence of operation of the heads.

3,662,100
LASER TAPE RECORDING
R. Lee Hollingsworth, 110 Fox Boulevard, Massapequa, N.Y.
Continuation-in-part of application Ser. No. 396,842, Sept. 16, 1964. This application May 9, 1967, Ser. No. 637,157
Int. Cl. G03g 19/00
U.S. Cl. 178—6.6 **14 Claims**

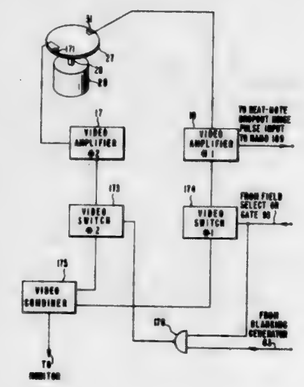
This is a tape recording system wherein the intelligence is supplied to the tape by means of a laser beam and involves

means to direct and modulate the laser beam. The modulating means include the use of an electromagnetic reed, the



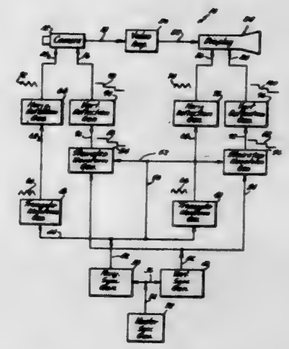
circulation of magnetic dust particles around a continuous circular transparent channel through which the light beam is passed and a transducer to provide energy at that point.

3,662,101
VIDEO TAPE RECORDER SYSTEM HAVING MEANS FOR SUPPRESSING VIDEO TRACK CROSSOVER NOISE DURING SLOW AND FAST MOTION OPERATION
Richard J. Segerstrom, Portola Valley, Calif., assignor to Video Logic Corporation
Filed Dec. 8, 1969, Ser. No. 882,971
Int. Cl. H04n 5/78, 7/12
U.S. Cl. 178—6.6 FS **28 Claims**



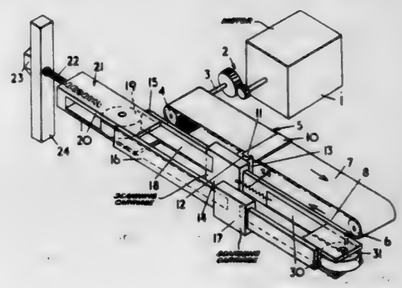
A helical scan video tape recorder suitable for slow and fast motion modes of operation is disclosed. A plurality of video fields are recorded in each video track extending across the video tape such that the burst of noise produced when the magnetic head crosses over the guard band between separate video tracks during the slow or fast mode of operation of the video recorder is encountered in only one of the field regions in the video track. This burst of noise is utilized to control the television monitor circuit so that the video field region which is free of noise is reproduced on the monitor while the video field region which contains the noise is blanked out from the monitor. As the noise progresses from one field region to the succeeding field region in the video track, means is provided for automatically switching to display of the noise-free field region. Means is provided for at times controlling the brightness of the monitor to compensate for those instances at switchover where two fields are reproduced in succession without the intervening blank period. A ramp generator circuit is provided for compensating for the change in timing of the vertical sync pulses during the slow and fast motion periods. In another embodiment, an additional magnetic head is utilized for reproducing the noise-free video field during the time period that the monitor would ordinarily be blanked out to thereby provide a 100 percent duty cycle in the video monitor.

3,662,102
BI-DIRECTIONAL TELEVISION SCAN SYSTEM
John W. Herndon, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy
Filed Sept. 15, 1970, Ser. No. 72,290
Int. Cl. H04n 3/16
U.S. Cl. 178—7.7 **1 Claim**



A television scansion system generates symmetrical triangular waveform horizontal deflection signals and linear ramp stairstep vertical deflection signals. The raster produced by these deflection signals is characterized as bi-directional horizontal scanning with vertical steps at alternate ends of the scans.

3,662,103
FACSIMILE APPARATUS
John Stanley Willmer, Chaldon, and Francis Maurus Anderson, Beckenham, both of England, assignors to Muirhead Limited, Beckenham, Kent, England
Filed Aug. 5, 1969, Ser. No. 847,602
Claims priority, application Great Britain, Sept. 20, 1968, 44,843/68
Int. Cl. H04n 1/14
U.S. Cl. 178—7.6 **7 Claims**



Facsimile scanning apparatus is provided with two carriages which move in antiphase with one another along parallel rails and respectively scan alternate lines. The two car-

riages are interconnected by a tensioned inextensible loop passing around a pulley at one end of the rails. The pulley is movable towards and away from the rails so that the phase relationship of the carriages may be adjusted while the apparatus is in use, thus ensuring that the desired 180° antiphase relationship necessary for good facsimile reproduction can be attained quickly and easily.

3,662,104

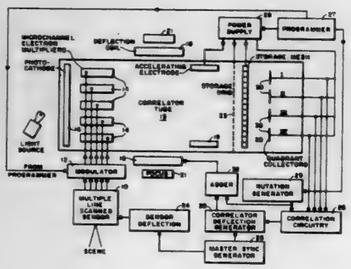
ELECTRONIC AREA CORRELATOR WITH MULTIPLE INPUT SIGNALS

Marvin P. Nordseth, Corona, and Werner G. Hueber, Riverside, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Continuation-in-part of application Ser. No. 614,530, Feb. 1, 1967, now abandoned. This application Apr. 25, 1968, Ser. No. 725,270

Int. Cl. H04n *3/16*

U.S. Cl. 178—6.8 **4 Claims**



A closed loop electronic area correlation tracker consisting of an electronic image storage tube with microchannel electron multipliers as input devices to allow use of a multiplicity of simultaneous input signals supplied from a matrix type input sensor and the like.

3,662,105

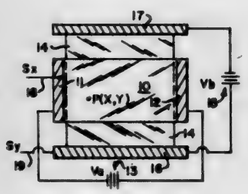
ELECTRICAL SENSOR OF PLANE COORDINATES

George S. Hurst, and James E. Parks, both of Lexington, Ky., assignors to The University of Kentucky Research Foundation, Lexington, Ky.

Filed May 21, 1970, Ser. No. 39,353

Int. Cl. H04n *1/00*

U.S. Cl. 178—18 **13 Claims**



An inexpensive electrical sensor of plane coordinates employs juxtaposed sheets of conducting material having electrical equipotential lines extending across each sheet and arranged normal to each other. A probe upon touching each sheet at a selected intersection of the equipotential lines causes separate signals to be applied to one or more conventional information-indicating units.

3,662,106

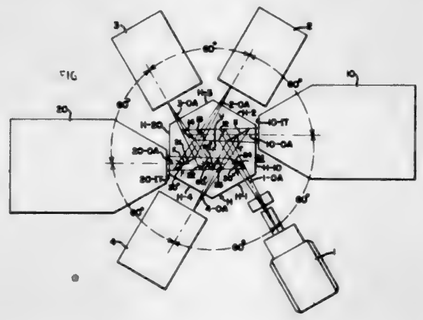
OPTICAL MULTIPLEXING DEVICE AND SYSTEM FOR TELEVISION TRANSMITTERS

Dale F. Buller, Liverpool, and Douglas W. Rohrs, Baldwinsville, both of N.Y., assignors to General Electric Company

Filed Mar. 24, 1969, Ser. No. 809,514

Int. Cl. H04n *5/24*

U.S. Cl. 178—7.88 **11 Claims**



A device and system for establishing two alternative optical paths between each of four image sources and two discrete color television cameras. This system provides eight identical optical path lengths. It also includes a multiplexing device which comprises a hexagonally configured housing wherein there are arranged eight slidably movable mirrors. Each of these mirrors is of the first surface type, having a reflective surface disposed in one of the optical paths.

3,662,107

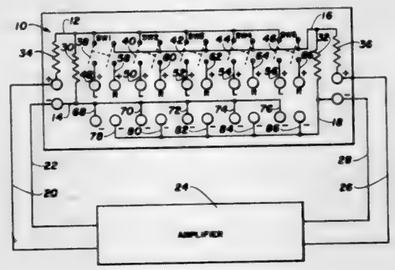
MULTISTEREOPHONIC SPEAKER SWITCHING DEVICE

Harry Vorgan, 3676 Stone Canyon Avenue, Sherman Oaks, Calif.

Filed May 25, 1970, Ser. No. 40,939

Int. Cl. H04r *5/00;* **H01r** *13/70*

U.S. Cl. 179—1 SW **7 Claims**



Main left and right speaker positive and negative input circuits connectable to a stereophonic unit amplifier circuit are connected in the device through a series of switches to a series of sets of left and right speaker positive and negative output circuits, each set of left and right speaker positive and negative output circuits being connectable to a set of left and right speakers. Each of the switches is of double pole type so that actuation of one switch simultaneously connects one of the sets of left and right speaker positive and negative output circuits to the main left and right speaker positive and negative input circuits permitting the connection of a given number of left and right speaker sets into the stereophonic amplifier circuit. A low resistance resistor is connected in series into at least one of the positive and negative input circuits of the main left and right speaker input circuits to provide a load for and prevent damage to the transistors of a transistor circuit type of stereophonic unit, and a higher resistance resistor is connected in parallel across each of the main left and right speaker positive and negative input circuits to prevent overloading of vacuum tubes of a vacuum tube type of stereophonic unit, thereby permitting the device to be used with either a transistor circuit type or a vacuum tube type of stereophonic unit.

3,662,108

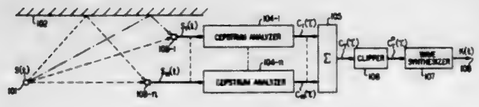
APPARATUS FOR REDUCING MULTIPATH DISTORTION OF SIGNALS UTILIZING CEPSTRUM TECHNIQUE

James Loton Flanagan, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 8, 1970, Ser. No. 44,269

Int. Cl. G10l *1/00*

U.S. Cl. 179—1 SA **11 Claims**



Distortion of an acoustic signal caused by multipath transmission is minimized by utilizing a cepstrum technique. Signals received at a plurality of microphones are processed to obtain signal representations of their complex cepstrums. The cepstrum signals are then summed. In summing, the portions of the cepstrum signals representative of the undistorted acoustic signal cohere while the portions of the cepstrum signals representative of the multipath transmitted signals do not. Selective clipping of the summed cepstrum signal eliminates the distortion components. Inverse transformation of the clipped summed cepstrum signal yields a replica of the original acoustic signal.

3,662,109

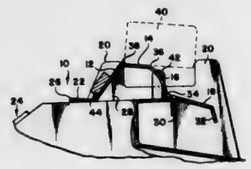
HANDSET LIFTER

Mark A. Beathan, 344 King Road West, Ithaca, N.Y.

Filed Jan. 6, 1970, Ser. No. 941

Int. Cl. H04m *1/08*

U.S. Cl. 179—1 HS **8 Claims**



A telephone accessory for raising the handset of a desk type telephone from an initial rest position on the cradle means of the telephone base toward an elevated position in which the handset is supported at a height sufficient to permit the switch operating plunger means to extend from the telephone base to electrically connect the telephone instrument for dialing and transmission and reception. The invention is characterized in that the accessory comprises a unitary body member that is formed of sheet material and includes cam and supporting planes. The accessory is rearwardly displaceable, when the handset is in the initial rest position, from an initial forward position relative to the handset toward a rearward position in which the cam plane operates to raise the handset to the aforementioned elevated position. The handset may then be completely removed from the cradle, and upon subsequent replacement of the handset in an inclined position in the cradle, the handset will engage the cam plane to automatically slide the accessory to the forward position, thereby permitting the handset to depress the switch plungers to an open circuit condition.

3,662,110

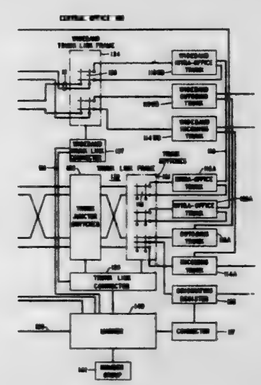
COMBINED WIDEBAND NARROWBAND COMMUNICATION SYSTEM

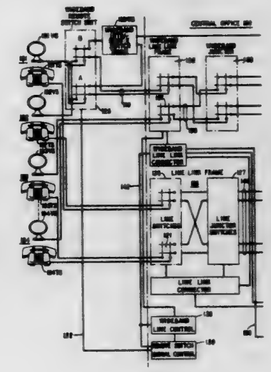
Marvin Dale Van Fossen, and James Glenn Whitemyer, both of Reynoldsberg, Ohio, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 9, 1970, Ser. No. 9,691

Int. Cl. H04m *11/00;* **H04q** *3/42*

U.S. Cl. 179—2 TV **16 Claims**

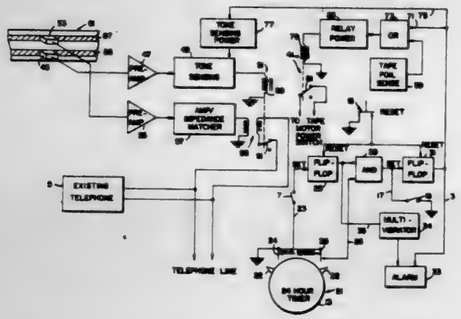




A communication system is disclosed for voice transmission and wideband transmission such as video telephone ser-

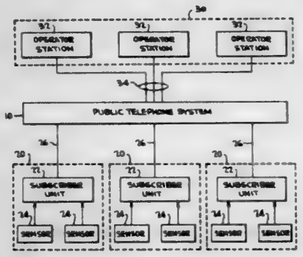
vice. The central switching office is equipped with separate voiceband and wideband switching networks which can be controlled independently by the same common equipment.

3,662,111
AUTOMATIC TELEPHONE CARE DEVICE
Morton K. Rubinstein, Los Angeles, Calif., assignor to Morton K. Rubinstein, Los Angeles and Herbert J. Rubinstein, Los Gatos, Calif.
Filed Aug. 13, 1970, Ser. No. 63,434
Int. Cl. H04m *11/04*
U.S. Cl. 179—5 P 9 Claims



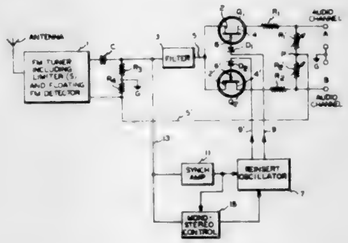
Apparatus that attaches or couples to a patient's telephone which automatically calls for help when the patient is incapacitated or for any reason is unable to reach his telephone. The apparatus attempts to warn or advise persons at predetermined telephone numbers such as the patient's relatives, friends, neighbors or doctor in the event of his incapacity, without any effort or physical acts on the part of the patient. In addition, the patient may manually remotely trigger the unit when an emergency situation arises and he cannot physically reach the device. An alarm signal is cyclically generated at predetermined time intervals. If a manual switch is not activated within a predetermined time subsequent to the initiation of the alarm signal, a predetermined telephone number is dialed and a prerecorded message is transmitted. Remote manual activation of the dialing and message is also provided.

3,662,112
AUTOMATIC SECURITY SYSTEM
Stephen J. Martin, Miami, Fla., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Dec. 22, 1969, Ser. No. 887,250
Int. Cl. H04m *11/04*
U.S. Cl. 179—5 P 36 Claims



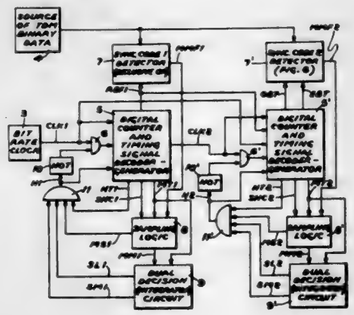
An automatic security system for use with public telephone facilities to centrally monitor various alarm events occurring at any one of a plurality of remote locations. The system includes a central monitoring complex having a number of operator stations connected to a local public telephone exchange, and a plurality of subscriber unit circuits, one for each remote location to be monitored, also coupled to public telephone exchange apparatus by conventional telephone lines. A number of sensing devices at each remote location operate in response to various alarm conditions to energize the subscriber unit causing automatic dialing of the central complex whereupon one of the operator stations will receive the call. The system includes solid-state circuitry for enabling effective operator station control of the various functions of the subscriber unit during an emergency by utilizing timed command tone signals.

3,662,113
STEREOPHONIC DEMODULATOR APPARATUS AND AUTOMATIC MONOPHONIC-STEREOPHONIC SWITCHING CIRCUIT
Daniel R. Von Recklinghausen, Arlington, Mass., assignor to H. H. Scott, Inc., Maynard, Mass.
Filed Mar. 27, 1968, Ser. No. 716,449
Int. Cl. H04h *5/00*
U.S. Cl. 179—15 BT 10 Claims



This disclosure deals with stereophonic demodulator apparatus using field effect transistors that eliminate the need for critically balanced bridge detector elements and additionally serve automatically as monophonic-stereophonic transientless switching circuits.

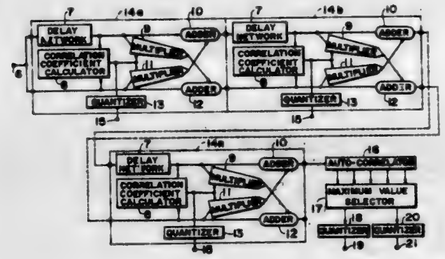
3,662,114
FRAME SYNCHRONIZATION SYSTEM
James M. Clark, Cedar Grove, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed May 13, 1970, Ser. No. 36,744
Int. Cl. H04j *3/06*
U.S. Cl. 179—15 BS 7 Claims



Frame synchronization for a binary data signal having a multi-frame including N frames, each of the frames including

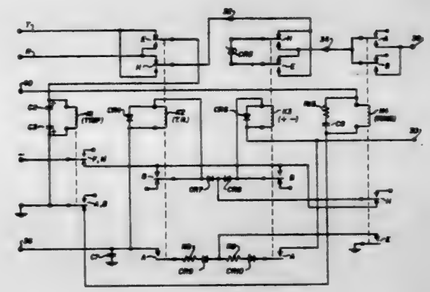
M channels and a first sync signal, at least one of the channel signals including in each of the frames a different one of (N-1) subchannel signals and a second sync signal is accomplished by employing two sync signal detectors, one being responsive to the first sync signal and a first predetermined local timing signal therefor to provide a first control signal indicative of the phase relation between these two signals and the other being responsive to the second sync signal and a second predetermined local timing signal therefor to provide a second control signal indicative to the phase relation between these two signals. The two control signals are samples by two different sampling circuits. The outputs of the sampling circuits are applied to two different decision circuits whose outputs control the timing of two cascade connected digital counters and timing signal generators used to generate necessary timing signals including the two predetermined local timing signals. The first digital counter and generator is driven by a bit rate clock which is inhibited when the decision circuit associated therewith indicates an out-of-sync condition. The second digital counter and generator is driven by a frame rate clock from the first counter and generator which is inhibited when the decision circuit associated therewith indicates an out-of-sync condition. In one embodiment, the decision circuits are dual integrators each generating two signals to separately control the inhibiting when required. In another embodiment, the decision circuits are single integrators each producing one signal to control the inhibiting when required, the signal of the decision circuit associated with the second sync signal being connected in a cooperating manner with the signal of the decision circuit associated with the first sync signal to control the inhibiting of the bit rate clock.

3,662,115
AUDIO RESPONSE APPARATUS USING PARTIAL AUTOCORRELATION TECHNIQUES
Shuzo Saito; Fumitada Itakura; Masaaki Nishikawa, and Tsunehiko Koike, all of Tokyo, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan
Filed Oct. 9, 1970, Ser. No. 79,430
Claims priority, application Japan, Feb. 7, 1970, 45/10992; 45/10993
Int. Cl. C10l *1/00*; H04m *11/00*
U.S. Cl. 179—15 A 6 Claims



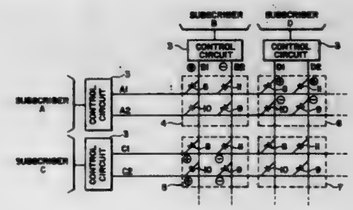
The audio response apparatus comprises means for storing speech parameters including partial autocorrelation coefficients between two closely adjacent time instants of speech signal, which are derived by removing the redundant components from the actual speech signal levels of the two adjacent instants in consideration of the effect of intermediate sample levels between them and an excitation source information determined from sampled values at remotely spaced time instants, a memory to store the speech parameters, read out means to read out the speech parameters from the memory which are designated by an electronic computer, and a speech synthesizer to reconstruct the speech signal from the output of the readout means. The synthesizer is comprised by high speed logic elements and operates to synthesize multichannel audio outputs on the time division basis.

3,662,116
SUBSCRIBER SUPERIMPOSED SIGNALING UNIT
John Philip Wittman, Raleigh, N.C., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Oct. 2, 1970, Ser. No. 77,603
Int. Cl. H04m *3/56*
U.S. Cl. 179—17 E 5 Claims



Ringing control tone is provided to operate the ringing circuit of any one of a plurality of party line subscribers. Ringing depends upon operation of control relays which direct signals with a superimposed dc of one or the other polarity on the tip or ring side of the called subscriber's line. The control relays are locked in position on operation of the relay which provides ring tone. In this way "bell tap," or "cross ringing," is prevented.

3,662,117
CROSSTALK MINIMIZATION IN MULTI-WIRE NETWORKS
Jayantkumar Bhatt, Ottawa, Ontario; John George Mlacak, Kanata, Ontario, and Thomas Arthur Wislow, Ottawa, Ontario, all of Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada
Filed Dec. 3, 1970, Ser. No. 94,800
Int. Cl. H04q *3/50*
U.S. Cl. 179—18 GF 5 Claims

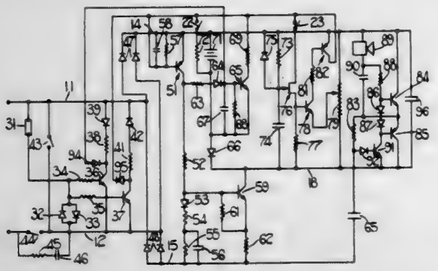


The crosstalk in a two-wire network is minimized by cancelling the crosstalk signal at every crosspoint. This is achieved by providing each crosspoint of a two-wire network with a pair of capacitive elements each having substantially the same capacitance as that of a non-actuated switch used for the crosspoint. These elements are connected at the pair of intersections of the horizontal and vertical conductors of the crosspoint other than those at which the switches are connected.

3,662,118
CIRCUITRY MEANS TO ENABLE THE AUTOMATIC DIALLING OF TELEPHONE NUMBERS WITHOUT LIFTING THE HANDSET

Lancelot Phoenix, Birmingham, and Joseph David Foulkes Taylor, Eardiston, near Tenbury Wells, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Apr. 8, 1970, Ser. No. 26,735
Claims priority, application Great Britain, May 15, 1969, 24,746/69
Int. Cl. H04m *1/26*
U.S. Cl. 179—90 B **3 Claims**

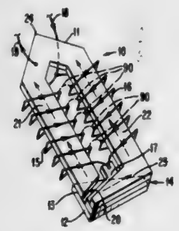


Automatic Telephone Dialling Apparatus of the kind having a handset and switch means operable manually to dial automatically a pre-selected telephone address. The Apparatus includes a pair of DC supply lines and a rectifier coupling the DC supply lines to the telephone lines to provide power to the DC supply lines. A trigger circuit is connected between the DC supply lines and controls the supply of power thereto. An amplifier and an associated loudspeaker are connected between the DC supply lines and are coupled to the telephone lines, so that when the trigger circuit is operative the loudspeaker will produce an audible amplified version of the signals on the telephone lines. There is provided means operable when the switch means is operated to dial a selected telephone address for driving the trigger circuit to its operative state, and inserting across the telephone lines an impedance which simulates lifting of the handset. Further means is provided for driving the circuit to its inoperative state when the handset is lifted the trigger circuit incorporating a battery for maintaining the trigger circuit in its operative state during dialling.

3,662,119
THIN FILM MAGNETIC TRANSDUCER HEAD

Lubomyr T. Romankiw, Millwood, and George A. Wardly, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1970, Ser. No. 51,186
Int. Cl. G11b *5/12, 5/42*
U.S. Cl. 179—100.2 C **9 Claims**

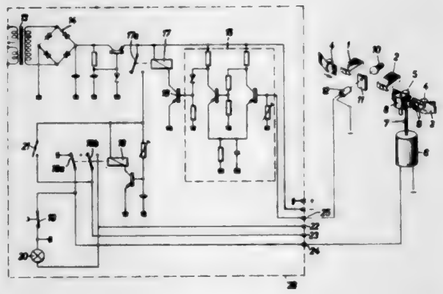


A rectangular thin film transducer head includes a magnetic core composed of overlapping laminations of permalloy film joined together magnetically and electrically, near an air gap, at one end of the rectangle, between the two laminations, which gap couples flux to the magnetic recording medium. Two electrically parallel insulated thin film copper windings starting at the end opposite the gap are deposited about the core joining electrically at the end adjacent to the gap to a conductor coupled to both permalloy laminations which conduct return current through the legs of the core inside of the windings. Alternatively, a single series winding passes around the core and through the gap. The head is manufactured by means of photolithographic, vacuum, and thin film techniques.

3,662,120
TAPE RECORDER USEFUL AS AN AUTOMATED TEACHING APPARATUS

Rene Hess, Avon, France, assignor to Compagnie internationale pour la diffusion de la culture europeenne, societe anonyme (Cidice), Fribourg, Canton of Fribourg, Switzerland

Filed June 3, 1969, Ser. No. 829,953
Claims priority, application Switzerland, June 13, 1968, 8777/68
Int. Cl. G11b *15/06*
U.S. Cl. 179—100.2 S **8 Claims**



In addition to having all of the conventional components, the tape recorder has a detection head for detecting non-magnetic markers on a specially prepared tape. A separately housed control circuit automatically switches the different functions of the recorder in response to the output of the detection head.

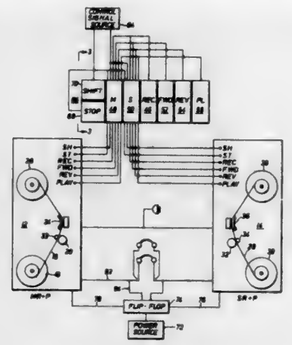
3,662,121
PLURAL RECORDER AND INTERSPERSING PLAYBACK

James P. Cruger, 41600 Apartado, Mexico, 10 D.F., Mexico

Filed July 18, 1969, Ser. No. 842,840
Int. Cl. G11b *15/02, 27/30*
U.S. Cl. 179—100.2 S **6 Claims**

Recording means are provided for recording sequentially a series of recordings, such as questions, on a first recording medium, then on playing it back, it will stop at the end of each recording of the series and while so stopped after each recording, a recording to be interposed thereafter on ultimate playback may be made on a second recording medium, thereby providing a second series of sequential recordings such as answers to the questions respectively, on the second medium, then for alternately playing the first series and interposing therebetween on ultimate playback, the respective recordings of the second series, providing a continuous sequential playback of alternate first and second recordings such as a sequential question and answer series playback. A special dual signal recording and stop control is provided whereby a stop of recording and playback may be effected and whereby at the end of each recording of each series a control signal recording is made on the same medium before

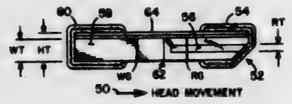
the stop control is effective. The playback has an automatic control whereby during playback upon encountering one of such recorded control signals, the playback will be interrupted and driving power shifted to the other recording medium. A single instead of a dual recording device may be employed for making the recording on each recording medium, even though the dual device is usually preferable.



3,662,122
WIDE-RECORD NARROW-READ LAMINATED MAGNETIC HEAD

Matthias J. Grundtner, St Paul, and George E. Melink, Burnsville, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 4, 1969, Ser. No. 882,252
Int. Cl. G11b *5/16, 5/26*
U.S. Cl. 179—100.2 C **9 Claims**



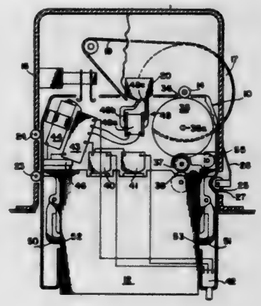
An improved magnetic head for recording and reading information on a magnetic medium is described. The head includes a recording portion for recording information on a track having a predetermined width, and a reading portion centered on the recording portion for reading information from only a portion of the predetermined width, thereby permitting accurate recovery of information even through the reading head position over the recorded track may shift slightly prior to reading. The head also includes an improved construction for supporting the recording portion and the reading portion centered to very close tolerances with respect to one another.

3,662,123
CARTRIDGE ADAPTOR

William B. Huber, Park Forest, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 18, 1970, Ser. No. 47,545
Int. Cl. G11b *5/00*
U.S. Cl. 179—100.2 Z **3 Claims**

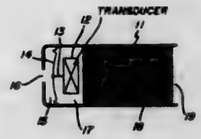
A converter cartridge is arranged to receive a two track cartridge of prerecorded tape and cause reproduction of the tape therein through an eight track stereo tape player. Drive means are provided within the converter cartridge to couple tape transport power from a capstan within the eight track stereo tape player to the drive wheel within the two track cartridge. The drive means includes a first drive wheel engaging the capstan and a pivotal idler drive wheel intermediate the first drive wheel and the two track cartridge to engage the drive wheel only when a two track cartridge is inserted into the converter cartridge. Also, the intermediate idler wheel has portions of different diameter to compensate for friction losses.



3,662,124
DIRECTIONAL MICROPHONE FOR HEARING AID

Otto Hausler, and Johannes Wittkowski, both of Hamburg, Germany, assignors to Wilko-Horgerate Medizinische Apparatebau GmbH, Hamburg, Germany

Continuation of application Ser. No. 682,346, Nov. 13, 1967, now abandoned. This application Sept. 25, 1970, Ser. No. 75,548
Claims priority, application Germany, June 5, 1967, W 44 116
Int. Cl. H04r *1/38*
U.S. Cl. 179—121 D **9 Claims**



The disclosure is directed to an improvement in a microphone used primarily in head-worn hearing aids in which the microphone achieves a directional characteristic. The chamber and aperture in front of the diaphragm or other speech-responsive member is constructed in the normal manner while the chamber to the rear of the diaphragm or other speecharesponsive member has a plurality of hollow elongated members secured within the walls of the microphone housing. The elongated members may be formed from sintered porous material such as metal, glass, or plastic, and may be arranged side-by-side or in a honeycomb arrangement. The elongated members attenuate the propagation of the sound waves, the attenuation being approximately 20 decibels lower than that reaching the other side of the diaphragm or other speech-responsive member without materially changing the inherent response characteristic of the microphone.

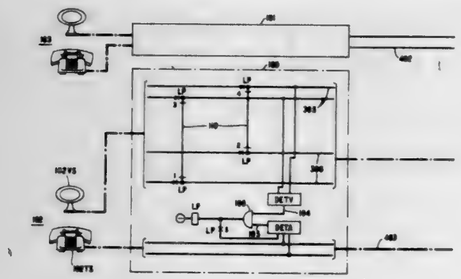
3,662,125
TELEPHONE LINE TESTING ARRANGEMENT

Charles William Haas, Jr., Middletown, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed June 3, 1970, Ser. No. 43,079
Int. Cl. H04m *3/22*; H04b *3/46*
U.S. Cl. 179—175.2 R **13 Claims**

A four-wire communication system for interconnecting wideband lines is disclosed. The continuity and transmission

characteristics of the selected network channels and the four-wire lines are tested prior to each use. The test is made by transmitting a predetermined signal over a pair of wires and,



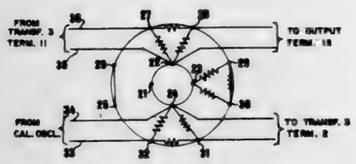
through a loopback arrangement, returned over the other pair of wires. The returned signal is then compared with signals of preselected value and if the test is satisfactory, the loopback arrangement is removed.

3,662,126

PROCESS FOR THE SIMULTANEOUS ADJUSTMENT OF ATTENUATION OF A TRANSMISSION CHAIN AND OF THE LEVEL OF A TEST SIGNAL AND APPARATUS THEREFOR

Robert Jean Chaumont, Sceaux, France, assignor to Societe Anonyme De Telecommunications, Paris, France

Filed Jan. 29, 1970, Ser. No. 6,877
Claims priority, application France, Apr. 24, 1969, 6913115
Int. Cl. H04m *1/24*; H04b *3/46*
U.S. Cl. 179—175.3 **7 Claims**



This invention relates to the maintenance of a transmission chain which, from a variable input level, delivers a constant output level. To do this, the said transmission chain comprises, in addition to its functional components, an artificial line with adjustable attenuation, which the operator can use when faced with an input level determined by elements situated up-side the said chain, so as to obtain the constant output level necessary for the working of the elements situated down-side the said chain.

In accordance with this process the value of the artificial attenuation line varies inversely to the value of the artificial attenuation line integrated in the said transmission chain.

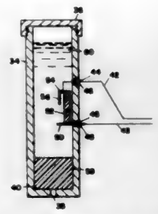
3,662,127

DIFFUSION TIMING MECHANISM

John R. Gimler, Succasunna; Stephen E. Jurman, Ledgewood, and Robert W. Schnettler, Wharton, all of N.J., assignors to Hercules Incorporated, Wilmington, Del.

Filed Sept. 26, 1969, Ser. No. 861,298
Int. Cl. H01h *7/03*, *43/00*
U.S. Cl. 200—34 **4 Claims**

A timing device for controlling mechanical, electrical or chemical systems is provided which functions in response to



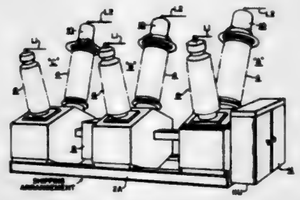
controlled diffusion of solvent through an elastomer.

3,662,128

READILY TRANSPORTABLE CIRCUIT BREAKER OF TWO-PIECE SEGMENTED FRAME CONSTRUCTION AND TWO-POSITION OPERATING MECHANISM HOUSING

David H. Neudorfer, Pittsburgh; Ronald W. Crookston, Trafford, and August U. Bertolino, Jeannette, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 13, 1970, Ser. No. 54,257
Int. Cl. H01h *31/00*
U.S. Cl. 200—48 **8 Claims**



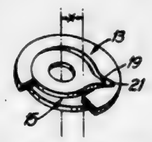
A high-power circuit interrupter frame construction is provided having a two-piece, or two-part independent frame construction rendering it adaptable for ready transportation by flat car, and having an end housing capable of being moved to two positions. The end housing, which in this case contains the gas system, terminal blocks, etc. but could also contain the operating mechanism, is moved upwardly during rail transportation on the flat car, and following assemblage in the field, the housing is lowered to its operative lowered position. As a result, a minimum of piping connections and adjustments need be made, and all major components can be tested and adjusted at the factory prior to shipment.

3,662,129

ROTARY ELECTRICAL SWITCH ASSEMBLY HAVING A ROTOR AND AN ECCENTRICALLY MOUNTED CONTACT MEMBER

Keith Lewis, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Dec. 8, 1969, Ser. No. 882,855
Claims priority, application Great Britain, Dec. 16, 1968, 59,637/68
Int. Cl. H01h *9/06*
U.S. Cl. 200—61.88 **4 Claims**



A switch for use with an automatic transmission drive selector lever of a road vehicle in which the contacts of the

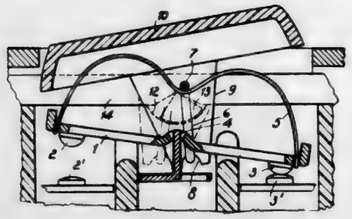
switch are arranged with sufficient clearance therebetween to avoid arcing between the contacts and permit physical mounting of the contacts while allowing the switch to be operated by a small angular movement. Thus, the switch may be mounted in the very small space available since the moving contact moves through a larger angular distance than the input member or shaft thereby enabling the fixed contacts to be easily accommodated.

3,662,130

RELEASE DEVICE, PARTICULARLY FOR SWITCHES OR SIMILAR, OF SMALL POWER

Angelo Bonetalli, Via Lazio 39, Varese, Italy

Filed Nov. 12, 1970, Ser. No. 88,766
Claims priority, application Italy, Nov. 29, 1969, 25127 A/69
Int. Cl. H01h *13/28*
U.S. Cl. 200—67 G **10 Claims**



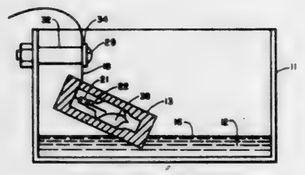
An electric switch in which the movable contact-carrier is in the form of a rockable lever, the ends of which are engaged by the ends of an arcuated leaf spring depressed by a U-shaped member. This rockable lever is operated by a rockable operating member which is provided with two parallel depending projections, embracing the U-shaped member and the movable contact-carrier.

3,662,131

ELECTRICAL LIQUID LEVEL SENSOR

Frank T. Leistiko, 5230 Bloomington Avenue South, Minneapolis, Minn.

Filed June 25, 1970, Ser. No. 49,880
Int. Cl. G08b *21/00*
U.S. Cl. 200—84 R **8 Claims**



An electrical liquid level sensor utilizing a mercury switch encased in a liquid-proof, low density thermoplastic case which floats on the surface of the liquid. The mercury switch is electrically connected through the low density case by flexible electrical conductors which act as a hinge.

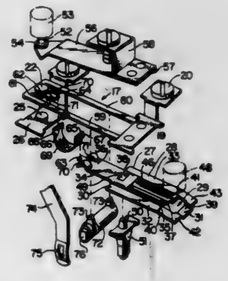
3,662,132

ELECTRICAL SWITCH CONSTRUCTION

Arthur L. Good, Elkhart, Ind., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Jan. 26, 1970, Ser. No. 5,710
Int. Cl. H01h *13/36*
U.S. Cl. 200—67 **6 Claims**

An electrical switch construction having a support means carrying a first blade and a second blade, the blades respectively having projections extending toward each other with a rolling C-shaped spring having opposite ends provided with openings respectively receiving the projections of the blades therein. The blades each has a pair of tabs on opposite sides



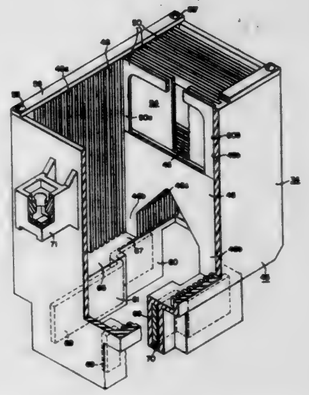
of its respective projection and being bent relative to the spring to provide knife edges bearing against the rolling spring in aligned relation with the respective slot of the rolling spring.

3,662,133

SPACE-PLATE ARC-CHUTE FOR AN AIR-BREAK CIRCUIT BREAKER

Fred Bould, and John H. Taylor, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

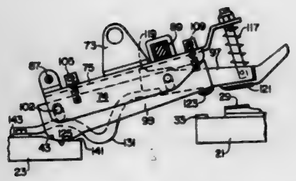
Filed Feb. 18, 1969, Ser. No. 800,106
Int. Cl. H01h *33/08*
U.S. Cl. 200—144 R **7 Claims**



An arc-chute of the space-plate type is provide for an air-break circuit breaker in which a molded insulating casing is provided with grooves for supporting the spaced magnetizable conducting plates. The casing has an enlarged lower opening communicating with a laterally disposed restricted opening. Additionally, the insulating casing has flange, or shelf means integrally formed therewith to prevent downward movement or blasting of the arcing gases, which are heated during the arcing interrupting operation.

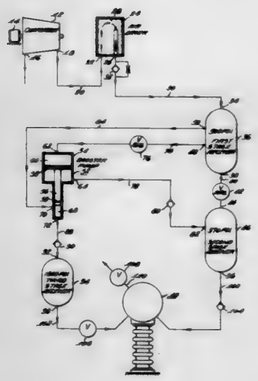
Above the space metallic magnetizable plates are provided a plurality of spaced expansion chambers, which are partitioned from each other by vertically extending solid insulating plate portions interspersed lengthwise of the arc-chute along the upper portion thereof.

3,662,134
CIRCUIT BREAKER WITH IMPROVED CURRENT PATH AND CONTACT MEANS
Albert R. Cellerini, Beaver, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 11, 1969, Ser. No. 832,099
Int. Cl. H01h *33/12*
U.S. Cl. 200—146 R 9 Claims



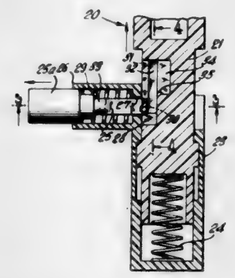
A circuit breaker, of the type comprising bridging main contact arms and an arcing contact arm, comprises an improved current path and contact means. The main contact arms and arcing contact arm are supported under the bight portion of an inverted generally U-shaped support member that is pivotally supported, above the bight portion thereof, for movement about a fixed pivot. Contact means on the main contact arms engage slanted stationary contact means generally under the fixed pivot of the support member. Improved means is provided for supporting biasing springs on the contact means.

3,662,135
GAS SUPPLY SYSTEM FOR GAS BLAST CIRCUIT BREAKER
Thomas F. Clark, Dorchester, Mass., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Dec. 10, 1970, Ser. No. 96,734
Int. Cl. H01h *33/54*
U.S. Cl. 200—148 R 10 Claims



An air blast circuit breaker requires two constantly available supplies of compressed air, one at low pressure (370 psi) and the other at high pressure (1,500 psi). An air compressor takes air at atmospheric pressure, compresses it to 500 psi, and supplies it through an air drier to a first stage reservoir or receiver. Air is supplied on demand from the first stage reservoir to replenish a second stage reservoir or receiver which supplies the low pressure air to the breaker. Air is also supplied on demand from the first stage reservoir to operate and to feed a booster pump which compresses the feed-air from 500 psi to 1,500 psi and replenishes a third stage reservoir or receiver which supplies the high pressure air to the breaker. Exhaust operating air from the booster pump is supplied to the second stage reservoir. After use in the breaker, the air is exhausted to atmosphere.

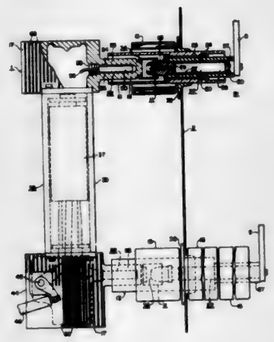
3,662,136
TRIGGER MECHANISM FOR POWER TOOL
Wolfgang F. Bienwald, Huntington Station, and William J. Bowie, Bethpage, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Brooklyn, N.Y.
Filed May 20, 1971, Ser. No. 145,124
Int. Cl. H01h *13/02*
U.S. Cl. 200—157 9 Claims



A trigger mechanism for operating a power tool which may be assembled for "Lock-Out" operation to prevent accidental operation of the tool or for a "Lock-In" operation for continuous operation of the tool.

The trigger mechanism includes a movable trigger which operates an electrical switch and a control pin which controls movement of the trigger in operation of the switch.

3,662,137
SWITCHGEAR HAVING HEAT PIPES INCORPORATED IN THE DISCONNECTING STRUCTURES AND POWER CONDUCTORS
Charles M. Cleaveland, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 21, 1970, Ser. No. 4,479
Int. Cl. H01h *1/62*
U.S. Cl. 200—166 K 8 Claims

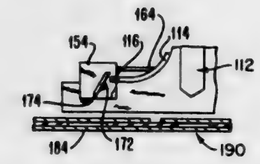


The primary disconnecting contacts of a metal-clad switchgear unit has at least one, and preferably two, heat pipes incorporated in the structure thereof. The use of one or more heat pipes conducts the heat generated adjacent the point of contact separations, and removes it to a remote area, at which heat sinks may be readily provided to more easily dissipate the heat generated at the separable contact structure. The advantage results that a cheaper material, such as aluminum, of small cross-sectional area, may be utilized instead of a solid copper disconnecting contact structure or higher currents may be carried where large conductors are restricted by available space.

Suitable finned structures may be associated with the one or more heat pipes to serve as heat-sink structures.

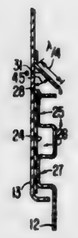
Also, where power conductors pass through locations, where radial heat flow is impeded, a heat pipe may advantageously be incorporated therein.

3,662,138
ACTUATOR FOR MOMENTARY CLOSURE OF AN ELASTIC DIAPHRAGM SWITCH
Richard H. Harris, and George J. Laurer, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 31, 1970, Ser. No. 24,309
Int. Cl. H01h *13/50*
U.S. Cl. 200—160 7 Claims



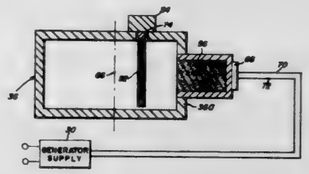
An elastic diaphragm switch is operated by moving a ribbon along a predetermined path obstructed by a bearing surface on a hammer. A projection on the ribbon presses against the bearing surface on the hammer, displacing the hammer against a spring supporting the hammer. Once the hammer is fully displaced, the ribbon passes beyond the bearing surface releasing the hammer to strike the elastic diaphragm of a switch, thereby momentarily closing the elastic diaphragm switch.

3,662,139
CAVITY RESONATOR HAVING MEANS FOR REDUCING LEAKAGE OF R.F. ENERGY AT A COVERED ACCESS POINT
Kenneth E. Love, Belmont, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed Mar. 4, 1970, Ser. No. 16,496
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 8 Claims



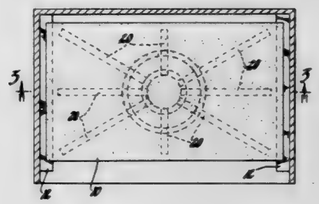
A conveyorized multimode cavity resonator is disclosed as utilized for applying microwave energy to products to be treated. The cavity includes an access port in one of the walls thereof such access port being covered by a removable cover. A conductive vane is carried from the cover and extends into the cavity adjacent the marginal lip of the access opening for reducing leakage of microwave energy from the cavity through the space between the cover and the wall of the cavity when the cover is seated in place over the access opening.

3,662,140
HIGH FREQUENCY ELECTRONIC HEATING APPARATUS
William C. Jones, Natick, Mass., and Dan R. McConnell, Iowa City, Iowa, assignors to Raytheon Company, Lexington, Mass.
Filed Oct. 7, 1970, Ser. No. 78,713
Int. Cl. H05b *5/00*
U.S. Cl. 219—10.55 7 Claims



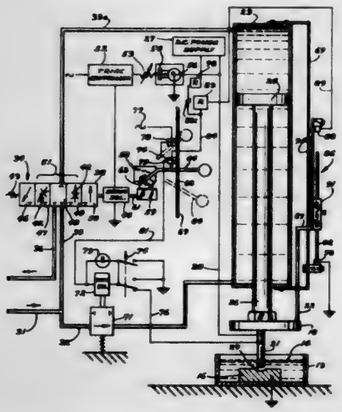
A no-load sensor in the form of a ferrite circulator is provided in the launching section of high frequency electronic heating apparatus with the body of a ferrimagnetic material oriented to display the field-displacement effect and yield nonreciprocal attenuation of electromagnetic energy. Launched energy initially is propagated to a heating enclosure with low loss. Reflected energy above a predetermined level resulting from the absence of a load or any malfunction is diverted to an energy absorber and thermal relay to terminate operation of the energy generator.

3,662,141
OVEN SHELF ADAPTED TO ABSORB MICROWAVE ENERGY AND CONDUCT HEAT TO A LOAD
George W. Schauer, Jr., Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed June 6, 1968, Ser. No. 734,944
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 1 Claim



This invention relates to a shelf for use in microwave ovens. A base member made up of microwave energy absorptive material is shaped to conform to the interior perimeter of the cavity with which it is to be used for converting the microwave energy into heat. Embedded within the base member are a plurality of rods of a heat conductive material arranged in a preselected pattern which will convey the heat generated within the microwave energy absorptive base material in the presence of microwave energy to an oven load.

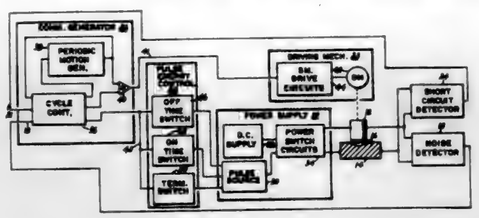
3,662,142
EDM MACHINE HEAD AND HYDRAULIC PRESSURE APPARATUS
Sven O. Olsson, Edina, Minn., assignor to Essar Corporation, Minneapolis, Minn.
Original application Apr. 24, 1969, Ser. No. 819,006, now Patent No. 3,604,884. Divided and this application Dec. 8, 1970, Ser. No. 96,024. The portion of the term of the patent subsequent to Sept. 14, 1988, has been disclaimed.
Int. Cl. B23p 1/08, 1/14
U.S. Cl. 219—69 G 13 Claims



An electrical discharge machining device or EDM machine having a head carrying an electrode which is movable toward and away from a work piece by a hydraulically operated double acting cylinder. A control valve, combined with a servo solenoid and manually operated lever, is operable to control the flow of hydraulic fluid to the cylinder. A light responsive electrical control operates the servo solenoid in response to the size of the electrical discharge gap between the electrode and the work piece. Interposed in the fluid line to the hydraulic cylinder is a lock valve operable to lock the cylinder and fix the position of the electrode relative to the work piece. The manually controlled lever is operable to engage switches to override the lock valve control during the electrical machining and elevation of the electrode operations of the device. Hydraulic pressure is continuously supplied to the control valve from a pair of liquid storing chambers connected to the control valve with a switching valve. Fluid under pressure in either one of the chambers operates the switching valve to provide a continuous source of hydraulic fluid under pressure to the control valve. The head contains the hydraulic pressure source, control valve, EDM power supply, electric control circuit for the valve and the double acting cylinder.

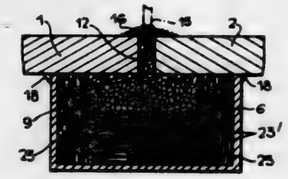
3,662,143
METHOD AND APPARATUS FOR DETECTING AND CONTROLLING BY RELATIVE MOVEMENT BETWEEN THE TOOL AND WORKPIECE ARCING CONDITIONS IN AN EDM PROCESS
Malcolm F. Davis, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Dec. 21, 1970, Ser. No. 99,751
Int. Cl. B23p 1/08, 1/14
U.S. Cl. 219—69 G 9 Claims

In an EDM process, a method and apparatus for controlling arcing conditions in a machining gap. An apparatus is provided for detecting the presence of a noise signal contained in a discharge. The absence of this noise signal is indicative of an arcing condition which may be detected during a single or a predetermined number of discharges. Upon detection of the absence of said noise signal, corrective action



is taken by moving the tool relative to the workpiece in a manner effective to alleviate said arcing condition.

3,662,144
APPARATUS FOR BACKING WORKPIECES FOR WELDING
Robert Jean De Haeck, Uccle, Brussels, Belgium, assignor to La Soudure Electrique Autogene, Procedes Arcos, Anderlecht, Belgium
Original application Jan. 31, 1967, Ser. No. 612,864, now Patent No. 3,511,960, dated May 12, 1970. Divided and this application June 30, 1969, Ser. No. 837,771
Claims priority, application Belgium, Feb. 11, 1966, 23971; Sept. 8, 1966, 33086; Dec. 16, 1966, 37319
Int. Cl. B23k 9/18
U.S. Cl. 219—73 5 Claims

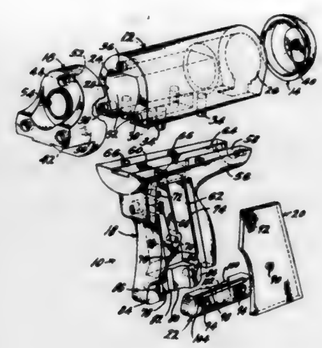


The invention relates to an apparatus for electric arc welding of two spaced plates forming a horizontal weld groove. The apparatus comprises a U-shaped trough which is beneath the weld groove, which extends from one plate to another and which contains a granular refractory material in position to contact the plates along the welding groove, elastic and compressible cushions being interposed between the said granular material and respectively both lateral arms of the U-shaped trough and contacting elastically both plates along these arms, another elastic and compressible cushion being further interposed and elastically compressed between the said granular material and the base of the said U-shaped trough.

3,662,145
STUD WELDING TOOL CONSTRUCTION
Howard N. Wieland, Amherst, Ohio, assignor to TRW Inc., Cleveland, Ohio
Original application Apr. 19, 1968, Ser. No. 722,607, now abandoned. Divided and this application May 20, 1970, Ser. No. 51,029
Int. Cl. B23k 9/20
U.S. Cl. 219—98 2 Claims

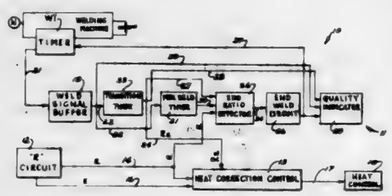
The body of a stud welding tool is made of a plurality of separate parts. The main housing of the tool thereby can be employed for different applications without the necessity of designing and molding a different housing for each application. The handle of the welding tool body is made of several portions which enable an operator to have access to the interior more readily and more easily. The welding tool also has an internal component through which current is supplied

to a chuck of the tool, and which causes fasteners to be transferred from a point behind the chuck into the chuck.



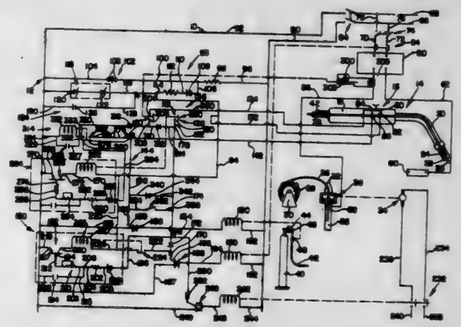
The component is compact and relatively maintenance free. In particular, the welding tool can be substantially shorter and lighter than those of a like nature heretofore employed.

3,662,146
END WELD CONTROL CIRCUIT
Peter W. Vanderhelst, Livonia, Mich., assignor to Robotron Corporation, Detroit, Mich.
Original application July 3, 1967, Ser. No. 650,789, now Patent No. 3,518,395, dated Aug. 30, 1970. Divided and this application Jan. 19, 1970, Ser. No. 8,140
Int. Cl. B23k 9/10
U.S. Cl. 219—110 3 Claims



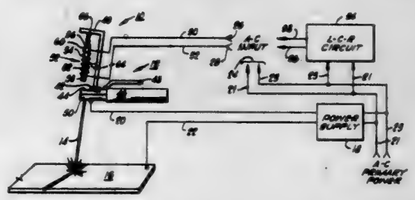
A resistance drop welding control circuit includes apparatus operable in conjunction with the weld timer of a resistance welding machine for terminating the weld interval in response to a drop of the welding resistance value to a preselected fraction of its peak value. A buffer circuit driven by the weld timer provides an output during the weld interval. A transition timer energized thereby provides a first transition signal during the initial part welding interval during which resistance irregularities and instabilities are likely to occur and a second transition signal for the remainder of the weld interval. A signal proportional to the instantaneous welding resistance is applied to an end ratio detector. The second transition signal is applied to the end ratio detector to allow it to store the peak value of the resistance signal. After the minimum time normally required to achieve a good weld has passed a minimum weld timer energizes the end ratio detector in synchronism with the alternating power supply to the welding machine to cause the end ratio detector to provide an output upon concurrence of completion of a whole number of cycles of welding current flow and a drop in the instantaneous welding resistance to a preselected fraction of its peak value. An end weld circuit energized by said output thereupon causes the weld timer to terminate the weld interval. A quality indicator responds to termination of the weld interval by the weld timer prior to energization of the end weld circuit to indicate a possible defective weld.

3,662,147
WELDING GUN TRIGGER CONTROL CIRCUIT
Ralph Ogden, Sr., Munster, and Gerald E. Enoksen, Crown Point, both of Ind., assignors to Ogden Engineering Corporation, by said Gerald E. Enoksen
Filed Mar. 26, 1970, Ser. No. 22,948
Int. Cl. B23k 9/10
U.S. Cl. 219—131 R 5 Claims



A MIG welding gun trigger control circuit in which the welding gun trigger is employed to control the supply of welding gas, welding current, and welding wire feed to the gun, with the arrangement being such that to start the welding the operator presses the trigger to obtain a pre-welding gas purge without welding current or wire feed, and after the pre-welding gas purge is completed, the trigger is released to start the wire feed and provide welding current as well as continue the shielding gas flow. If the arc forms, the operator proceeds and completes the weld without having to hold the trigger switch closed, and when the weld is complete, the operator again presses the trigger switch to stop the wire feed but provide continued gas flow for post-welding purge, this action setting into motion a timer circuit that briefly continues welding current supply for stub burn off. After post-purge, release of the trigger switch shuts off the welding system and re-sets the system for the next welding operation. If the arc fails to form during the start cycle or if the arc or the weld current is broken during the actual weld, the control system automatically shuts itself off.

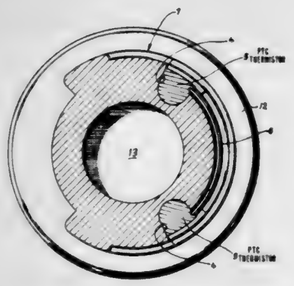
3,662,148
WELDING AID ATTACHMENT
Robert W. Blosser, 305 East Ridgewood Drive, Midwest City, Okla., and Gordon L. Richard, 1400 Brookdale, Del City, Okla.
Filed June 18, 1970, Ser. No. 47,525
Int. Cl. B23k 9/30
U.S. Cl. 219—136 5 Claims



Apparatus for detachable affixture to or integral design in an electric arc welding manual electrode holder, the ap-

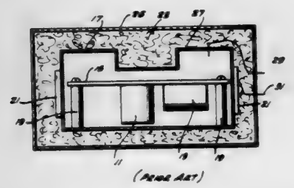
paratus consisting of an electrically driven, lineally oscillatable vibratile element which is driven in synchronous relationship with current application to the electric are welding electrode thereby to set up a uniform vibrational pattern of the welding electrode relative to a work piece in order both to avoid sticking and to insure uniformity of the welding bead.

3,662,149
HEATED LOCK FOR MOTORCARS
Reinhard Lipinski, Altbach, Germany, assignor to Pebra GmbH Paul Braun, Esslingen, Germany
Filed Sept. 14, 1970, Ser. No. 71,861
Claims priority, application Germany, Sept. 19, 1969, G 69 36 767.5; Feb. 20, 1970, P 20 07 885.7
Int. Cl. H05b *3/02*; E05b *17/00*; H05b *1/02*
U.S. Cl. 219—201 **5 Claims**



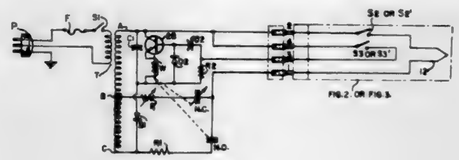
At least one PTC thermistor whose resistance rises abruptly at a temperature near 32° F. is mounted on the casing or cylinder of a car lock and permanently connected to the car battery for heating the lock by the ohmic resistance of the thermistor without draining the battery at higher temperatures to prevent freezing of the lock. "In one embodiment, the thermistors, enveloped in a minimum amount of potting compound, are locked within radially extending blind bores provided in the outer surface of the casing. In another embodiment, the thermistors are positioned in any available recess on the outer surface of the casing and held in close thermal contact therewith by a split ring clamp. As a further alternative, the thermistors may be installed in a normally movable lock part, such as the cylinder."

3,662,150
CONTROLLED TEMPERATURE CIRCUIT PACKAGE
Dale H. Hartung, Costa Mesa, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Jan. 18, 1971, Ser. No. 107,378
Int. Cl. H05b *1/00*
U.S. Cl. 219—209 **9 Claims**



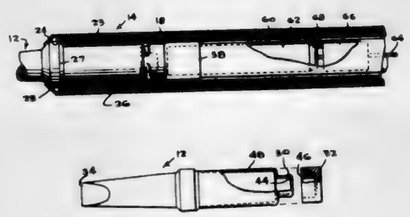
A circuit board, carrying a plurality of electrical components on one side is enclosed in a housing. The board is thermally conductive and carries a resistive film on its opposite side through which current may be driven to keep the filter components at a desired temperature.

3,662,151
CAUTERY
Paul C. Haffey, Duxbury, Mass., assignor to Codman & Shurtleff, Inc.
Filed Nov. 17, 1969, Ser. No. 877,339
Int. Cl. H05b *1/00*, *1/02*
U.S. Cl. 219—233 **9 Claims**



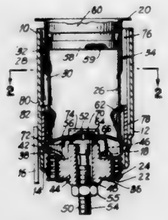
A hot wire surgical cautery has a casing which serves as a handle. A resistance wire cautery tip is connected to one end of the handle. Associated with the handle are two switches. The first switch responds to pressure from the surgeons's finger to cause electric current to flow through the tip and heat the tip to the desired cauterizing temperature. The other switch, which may be either a finger-pressure actuated switch similar to the first switch or a mercury switch automatically operated by raising the tip end of the tool, enables an electric circuit connected to the cautery to increase the voltage applied to the tip and thereby appreciably increasing the temperature thereof. This increase in temperature cleans the tip by burning off undesired residue clinging thereto. The increase in tip temperature for cleaning purposes is only temporary and the normal tip energization is automatically restored after a short period of time regardless of whether the second switch remains closed. A temperature control provides the exact tip temperature desired.

3,662,152
THERMOMAGNETIC SOLDERING TIP ASSEMBLY AND METHOD
Carl E. Weller, Easton, and Wilbur A. Solt, Northampton, both of Pa., assignors to Cooper Industries, Inc.
Filed Mar. 5, 1971, Ser. No. 121,389
Int. Cl. B23k *3/02*; H05b *1/02*
U.S. Cl. 219—241 **8 Claims**



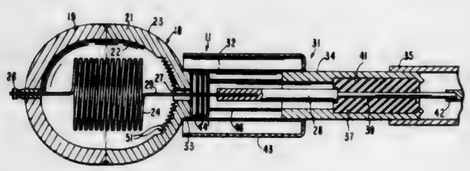
A cup-shaped thermomagnetic temperature sensing element is secured to the soldering tip of a heat controlled electric soldering iron by electroplating the shank end of the tip which fits into the cup-shaped thermomagnetic element with a thin coat of iron. The electrodeposited iron coating produces an enlargement at the edges of the reduced diameter shank forming a tapering surface axially inwardly. The cup-shaped thermomagnetic element may then be positioned over the enlargement and mechanically deformed around said enlargement to securely hold the thermomagnetic element to the end of the soldering tip.

3,662,153
ELECTRIC CIGAR LIGHTERS
Robert Gilbert Barnes, Jr., and Arthur Warren Schnick, both of Meriden, Conn., assignors to AMF Incorporated
Filed Oct. 26, 1970, Ser. No. 83,876
Int. Cl. F23g *7/24*
U.S. Cl. 219—265 **4 Claims**



An electric cigar lighter having a socket assembly and a lighter plug including a heating element in said socket assembly. Thermostatic means for interrupting the electric current through the socket assembly in the event the lighter plug is held in energizing position for a longer time than needed to bring the heating element of the plug to incandescence.

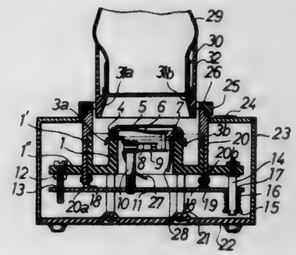
3,662,154
SPHERICAL TITANIUM SUBLIMATOR
David J. Harra, Palo Alto, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed Oct. 19, 1970, Ser. No. 81,982
Int. Cl. F22b *1/28*
U.S. Cl. 219—271 **18 Claims**



A sublimator is described for subliming a material such as titanium. The sublimator comprises a generally spherical hollow body of the material to be sublimated enclosing a source of heating energy. The wall of the hollow body is uniformly thick over its full extent, and the configuration of the heat source is correlated to the inner surface of the spherical body to provide a generally uniform rate of total heat energy absorption at substantially all portions of the body. The result is that the body sublimates uniformly from its full outer surface, and at the time in which any one portion of the body is fully dissipated, i.e., when an aperture appears through the body, the remaining portion of the body is also substantially dissipated.

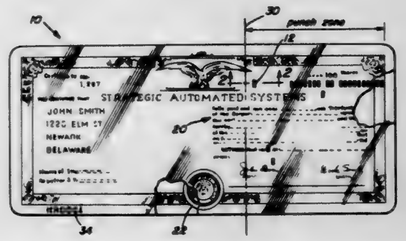
3,662,155
BASE UNIT FOR ELECTRIC LIQUID WARMER
Yujiro Komazaki, Urawa, and Takeshi Watanabe, Chigasaki, both of Japan, assignors to Nakano Shunsuke, Tokyo, Japan
Filed Aug. 7, 1970, Ser. No. 61,994
Claims priority, application Japan, Aug. 19, 1969, 44/78120
Int. Cl. H05b *1/02*, *3/02*
U.S. Cl. 219—432 **4 Claims**

An electric liquid warmenr includes a vessel having an electric heater at its lower periphery and a base unit which detachably receives the vessel. The base unit and vessel have cooperating electrical contacts whereby the circuit to the heater is completed when the vessel is supported on the base unit. Carried by the base unit is an adjustable temperature control for effecting on-off control of the heater circuit. The control includes a fixed heat sensing plate disposed close to the bottom of the vessel and a thermostat including a bimetal, a fixed contact and a movable contact. One end of



the bimetal is secured to the plate and the free end thereof operates the movable contact. A pivoted supporting plate carries the contacts. The position of the supporting plate and thereby the position of the movable contact relative to the bimetal is adjustable by a ring cam coupled to a temperature control ring on the base surrounding the vessel, whereby the on-off temperature can be selectively adjusted.

3,662,156
LAMINATED RECORD CARD COMPRISING INTERNAL LAYER OF HIGH TENSILE STRANDS
Gregory Grosbard, Long Beach, N.Y., assignor to Strategic Automated Systems, Inc.
Filed Sept. 16, 1968, Ser. No. 759,840
Int. Cl. G06k *19/08*; B32b *5/08*
U.S. Cl. 235—61.12 **26 Claims**

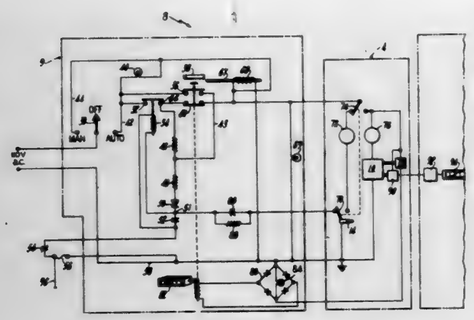


A record card made from a body of material so formed as to provide security against unauthorized use and coding. High tensile strands distributed within an internal layer of the card limit punch hole recording to a particular computer program as well as to increase the strength of the card and form internal surfaces for reception of printed matter and magnetic read out coatings.

3,662,157
POST PAY CONTROL SYSTEM
William P. Somers, Cheshire, Conn., assignor to Veeder Industries Inc., Hartford, Conn.
Filed Apr. 17, 1970, Ser. No. 29,446
Int. Cl. G01f *11/00*
U.S. Cl. 235—92 FL **13 Claims**

A self-service automotive service station is provided with an electrical control system for controlling and recording the dispensing of fuel at a remote location including a momentary contact switch for energizing a remote relay which is latched in during each dispensing operation and a switch at

the dispensing station which momentarily shunts the relay coil at the end of each dispensing operation through a capacitor to open the relay. The system includes interlocks for preventing the resetting of the remote register during



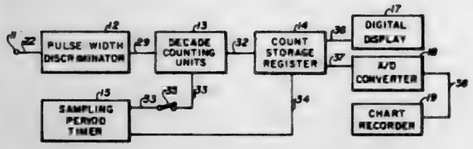
operation and for assuring the complete resetting of the register prior to the energization of the coil. It may include a remote cumulative register which is not disabled during attendant operation.

3,662,158

VIDEO TAPE ANALYZER AND METHOD

Janet C. Wong, Foster City, and Sidney C. Chao, Palo Alto, both of Calif., assignors to Kaltronics, Belmont, Calif.

Filed Mar. 3, 1969, Ser. No. 803,919
Int. Cl. G06m *11/00*
U.S. Cl. 235—92 PC **2 Claims**



A video tape analyzer including means for generating and counting pulses indicative of defects in the tape. Digital display tubes indicate either the number of defects occurring during individual sampling periods of predetermined length or the total for successive periods. A chart recorder provides a profile record of the characteristics of the tape.

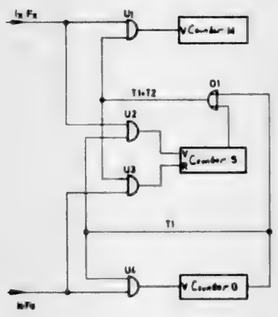
3,662,159

METHOD OF DIGITALLY COMPUTING THE SQUARE OF THE RATIO OF A VARIABLE MEASURING FREQUENCY TO A CONSTANT BASE FREQUENCY

Alfred Schief, Karlsruhe, Germany, assignor to August Sauter KG, Ebingen, Germany

Filed Sept. 9, 1970, Ser. No. 70,699
Claims priority, application Germany, Sept. 19, 1969, P 19 47 605.2
Int. Cl. G06f *7/46*
U.S. Cl. 235—150.3 **7 Claims**

A method of digitally computing the square of the ratio of a variable measuring frequency f_x to a constant base frequency f_{x_0} using a constant reference frequency f_0, especially in measuring weights on a string-type scale by employing a measuring counter, a base time counter and a control counter, comprising the steps of simultaneously with the initiating of the counting operation producing a series of electrical pulses I_x with a frequency F_x proportional to the signal frequency f_x, feeding this series of pulses to the measuring counter for a counting period comprising two counting phases the first one of which is set by the base time counter, producing a series of electrical reference pulses I_0 with a frequency F_0 proportion to the base frequency f_{x_0}, feeding the reference pulses I_0 in excess of pulses I_x to the control counter which sets the second one of the counting phases, the measuring frequency f_x after the beginning of the counting is fed to the measuring counter M over a first AND gate U1 and over a second AND gate U2 to an input V of the control counter S also having a second input R, the reference frequency f_0 being fed to the second input R over a third AND gate U3, and also over a fourth AND gate U4 to the base time counter G which



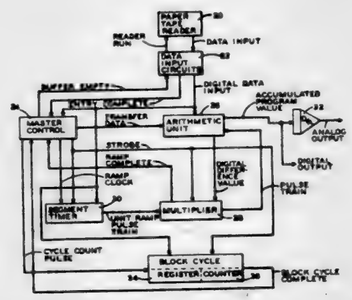
counts from zero up to a predetermined number and thereby sets the period T2 of the first counting phase during which an output signal of the base time counter is fed into the second and fourth AND gates U2, U4, such output signal keeping the second and fourth AND gates open during the first phase, the control counter S attaining a count during the fist counting phase which during the second counting phase determined by the time period T2 of the control counter S is reduced by the reference frequency f_0 to zero and, at the end of such time period T2 the first AND gate U1 becomes closed which has been kept open till the end of such time period T2 by an output signal of the control counter S.

3,662,160

ARBITRARY FUNCTION GENERATOR

Ronald R. Hoppes, Royersford, Pa., assignor to Weston Instrument, Inc., Newark, N.J.

Filed Jan. 11, 1971, Ser. No. 105,465
Int. Cl. G06j *1/00*; G06g *7/26*
U.S. Cl. 235—150.53 **3 Claims**



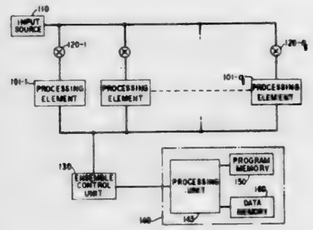
A function generator is provided which accepts digital commands and produces a desired arbitrary function of time as a digital and analog output signal. The generated output functions are composed of sequentially connected linear ramp segments.

3,662,161

GLOBAL HIGHLY PARALLEL FAST FOURIER TRANSFORM PROCESSOR

Glenn D. Bergland, Morris Township, Morris County, and Donald E. Wilson, Brookside, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 3, 1969, Ser. No. 873,587
Int. Cl. G06f *7/38, 15/34*
U.S. Cl. 235—156 **17 Claims**



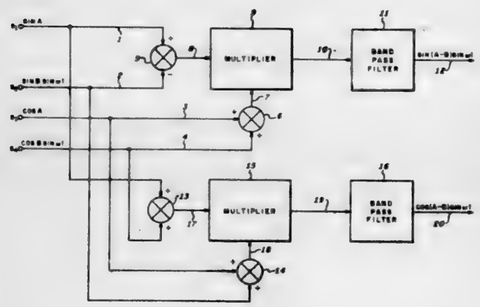
A fast Fourier transform processor and associated process wherein an input sequence of samples is broadcast to each of a plurality of parallel processing elements where sets of accumulated sums of products of these samples with appropriate trigonometric function values are maintained. These sets of accumulated sums are then individually Fourier transformed in parallel to form the Fourier coefficients corresponding to the original input sequence.

3,662,162

SUM OR DIFFERENCE ANGLE COMPUTATION APPARATUS

Frank H. Kallio, Black Canyon City, Ariz., assignor to Sperry Rand Corporation

Filed Apr. 24, 1970, Ser. No. 31,544
Int. Cl. G06g *7/22*
U.S. Cl. 235—186 **9 Claims**



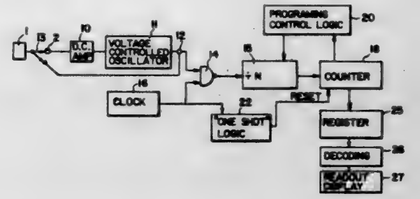
Apparatus for providing a signal representative of a trigonometric function of the sum or difference between two angle variables including a pair of linear combiners responsive to respective input trigonometric functions of the angle variables and a multiplier connected to receive the combiner outputs for producing a resultant product signal containing d.c. and second harmonic components in addition to the desired trigonometric function, the latter being readily separated from the remainder of the signal by means of appropriate frequency selective apparatus connected to the multiplier output.

3,662,163

DIGITAL SIGNAL LINEARIZER

David E. Miller, Beverly, and Robert C. Heil, Peabody, both of Mass., assignors to General Electric Company

Filed Aug. 4, 1970, Ser. No. 60,820
Int. Cl. G06f *15/34*; H03k *13/20*
U.S. Cl. 235—197 **7 Claims**



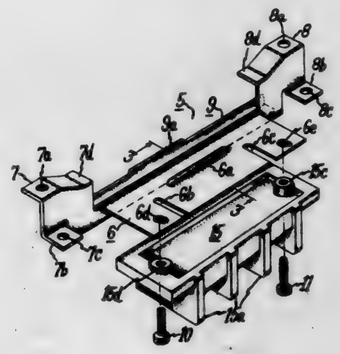
A digital signal linearizer for obtaining a linear digital output from a non-linear input. The input voltage is a non-linear representation of a quantity, such as temperature as measured by a thermocouple sensor. A voltage controlled oscillator converts the input voltage to a pulse train having a pulse rate which is a linear representation of the input voltage, but like the input voltage, is a non-linear representation of the measured quantity. The pulses are connected through a NAND gate to programmable N frequency divider for fixed repeated intervals. Hence, the number of pulses passed depends directly on the repetition rate of the oscillator output pulses. Since the voltage, and hence pulse rate v. Quantity measured characteristics of the sensor are known, the divider is programmed to provide a division factor n which varies over different segment of the range of interest so that the output pulse count from the divider is linearly related to the quantity being measured.

3,662,164

LUMINAIRE BALLAST BRACKET

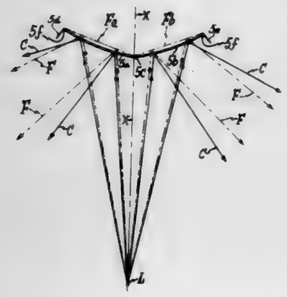
David L. Wood, Hendersonville, N.C., assignor to General Electric Company

Filed Nov. 18, 1970, Ser. No. 90,724
Int. Cl. F21s *1/10*; H05b *33/02*
U.S. Cl. 240—25 **14 Claims**



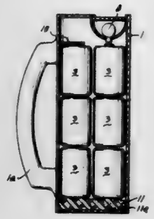
A bracket for holding electrical ballast devices of different sizes within the housing of a street lighting luminaire. The bracket is hung within the luminaire housing and has portions of different levels for accommodating ballasts of different widths, and it positions the ballast in selective engagement with stepped bearing bosses formed in the housing top wall.

3,662,165
LUMINAIRE REFLECTOR
Mitchell M. Osteen, Zirconia, and James L. Grindle, Hendersonville, both of N.C., assignors to General Electric Company
Filed Mar. 2, 1970, Ser. No. 15,449
Int. Cl. F21v 7/09
U.S. Cl. 240—103 R 6 Claims



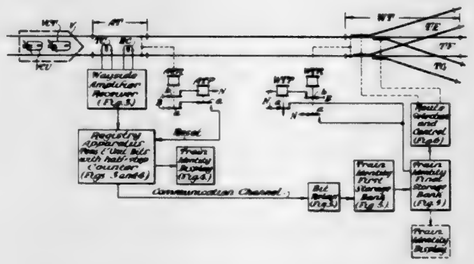
An industrial luminaire has a dome-shaped reflector formed of vertically elongated facets arranged at angles to one another around the axis of the reflector, each facet having a convex reflecting surface, so that rays are not reflected back through the light source and are dispersed by each facet to overlap the illumination provided by other facets.

3,662,166
BATTERY-OPERATED UNIT
Johannes Dietz, P.O. Box 61.800, Caracas, Venezuela
Filed Apr. 17, 1970, Ser. No. 29,452
Int. Cl. F21l 7/00
U.S. Cl. 240—10.68 8 Claims



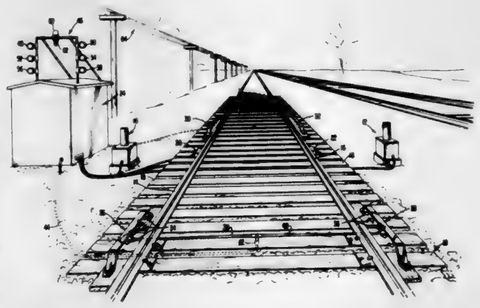
A battery-operated unit has a casing one of whose opposite ends is provided with an end wall. At least one battery is received in the casing and has two spaced contacts of opposite polarity one of which faces the endwall. Conductive means contacts the other pole and extends to the region of the end wall. An element composed of synthetic plastic foam material, either made electrically conductive by embedding of metallic material, or metallic coated or metallically wrapped completely or in part, is elastically compressed between the battery and the end wall and in conductive contact with the aforementioned one pole and with the conductive means. A switch is provided in the thus established circuit for opening and closing the same as desired, and an electrical user device is also connected in the circuit, such as a light bulb, a radio receiver, a motor or the like.

3,662,167
TRAIN IDENTITY CONTROL SYSTEM
Joel E. Elcan, Monroeville, and Arthur Paul Jackel, Penn Hills Township, Allegheny County, both of Pa., assignors to Westinghouse Air Brake Company, Swissvale, Pa.
Filed Apr. 9, 1970, Ser. No. 26,884
Int. Cl. B61l 11/08
U.S. Cl. 246—2 F 11 Claims



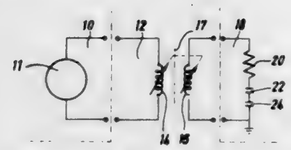
A selectively tuned train coil is provided for each digit of a train's identity number, mounted to successively couple, in descending digit order, with coils of the wayside receiving apparatus. Each digit successively received by the wayside apparatus is immediately translated from decimal to a two-out-of-five code format and temporarily registered in a separate bank of code bit relays. This identity code is transmitted to a remote location including a route type interlocking control system. Each identity code is received and cascaded through a series of relay storage banks, reaching the final bank when the corresponding train is next to arrive at the interlocking. The code readout circuit network, which automatically selects the desired route control relay, includes a code format checking matrix, to assure that two but only two bits are actually registered for each identity digit, and a translation matrix to reconvert the unit digit code to decimal form.

3,662,168
VEHICLE FAULT INDICATING APPARATUS
William M. Pelino; Raymond A. Moenich; Benjamin F. McLean, all of Richmond, and James C. Hamblin, Highland Springs, all of Va., assignors to Railtron Corporation, Richmond, Va.
Filed Mar. 24, 1969, Ser. No. 809,633
Int. Cl. B61l 3/06; B61k 9/06
U.S. Cl. 246—169 D 10 Claims



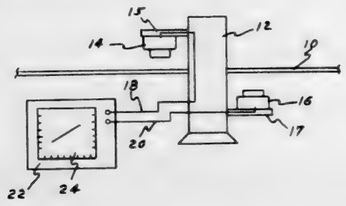
An apparatus for providing visual indications of vehicle faults including an indicator light array and improved means for selective spraying of vehicle members with a marking fluid.

3,662,169
APPARATUS FOR EXPOSING A WEB MATERIAL TO A CONTROLLABLE SPARK DISCHARGE
Bent Sorensen, and Frank Hogfeldt, both of Trittau, Germany, assignors to Softal Elektronik GmbH, Hamburg, Germany
Filed Apr. 10, 1970, Ser. No. 27,252
Claims priority, application Germany, Apr. 10, 1969, P 19 18 145.4
Int. Cl. H01j 37/00; G01n 23/00
U.S. Cl. 250—49.5 TC 4 Claims



Apparatus for spark discharge treatment of a web of material wherein the discharge is continuous. A constant frequency oscillator drives the primary of a high-frequency power transformer which is closely coupled to the secondary of the transformer on a closed ferrite-core having low dispersion. The self-induction of the core is variable to keep the product of inductance and load impedance constant. The spark gap is connected to the transformer secondary. The inductance is chosen so that, with the capacitance of the spark gap and of the material web, the circuit is resonant at the operating frequency. The load on the oscillator is accordingly purely resistive.

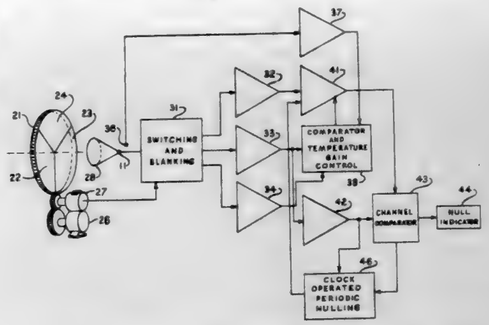
3,662,170
METHOD AND APPARATUS FOR MEASURING THE THICKNESS MOISTURE PROFILE OF FIBROUS WEBS
Marion A. Keyes, IV, South Beloit, Ill., assignor to Beloit Corporation, Beloit, Wis.
Filed May 21, 1970, Ser. No. 39,356
Int. Cl. G01t 1/16
U.S. Cl. 250—83.3 H 6 Claims



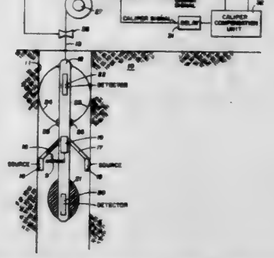
A method and apparatus therefore for measuring the "Z" direction moisture profile in fibrous webs by the use of a pair of backscatter type gauges mounted in operable relationship with a fibrous web and adapted to transmit a signal in proportion to moisture in the web, such that measurement of the moisture from each side of the web permits distance averaging of the moisture to obtain a "Z" direction or thickness moisture profile.

3,662,171
METHANE GAS DETECTION SYSTEM USING INFRARED
Andrew J. Brengman, Santa Clara, and Maxwell R. Krasno, San Mateo, both of Calif., assignors to Textron, Inc., Belmont, Calif.
Filed Sept. 21, 1970, Ser. No. 73,787
Int. Cl. G01n 21/26
U.S. Cl. 250—83.3 H 11 Claims

A gas detection system utilizing infrared absorption properties of the gas in a very narrow, predetermined wavelength band located in an atmospheric spectrum window. An airborne surveillance system employs the earth as a temperature source and compensates for temperature changes by utilization of reference and analysis frequency bands while employing a large field of view.



3,662,172
RADIOACTIVITY WELL LOGGING SYSTEM HAVING A PAD MOUNTED NEUTRON SOURCE AND A CENTRALIZED RADIATION DETECTOR THAT PROVIDES COMPENSATION FOR BOREHOLE FLUID DENSITY AND BOREHOLE DIAMETER VARIATIONS
Arthur H. Youmans, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Oct. 24, 1969, Ser. No. 869,082
Int. Cl. G01t 3/00; G01v 5/00
U.S. Cl. 250—83.3 R 8 Claims

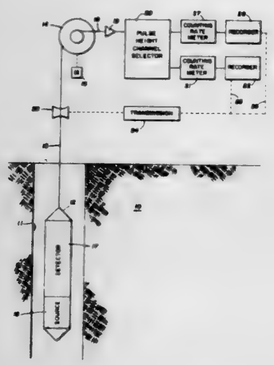


A well logging instrument adapted for traversing an earth borehole has a plurality of neutron sources mounted in pads which contact the wall of the earth borehole. The radiation detector is centralized in the borehole and the system provides compensation for natural gamma radiation and variations in borehole fluid density and borehole diameter.

3,662,173
WELL LOGGING METHOD FOR DETERMINING THE PRESENCE OF ALUMINUM AND MAGNESIUM
Arthur H. Youmans, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Oct. 27, 1969, Ser. No. 869,633
Int. Cl. G01v 5/00
U.S. Cl. 250—83.3 R 10 Claims

An activation well logging method for determining the presence and quantity of aluminum and magnesium in formations surrounding a borehole. The formations are irradiated

with 14 mev neutrons which produce aluminum and magnesium activity with half lives of 20 milliseconds and gamma ray energy of 473 kev. The neutron source is turned on for a period of time sufficient to activate aluminum and magnesium and then turned off for 20 milliseconds. During the first 4 milliseconds while the source is off, no measurement is made. During the remaining 16 milliseconds, pulses are counted



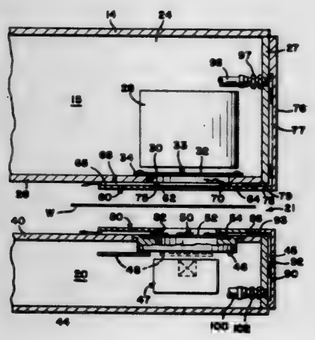
which fall in the amplitude range representing gamma ray energies from 450 kev to 500 kev. The rate of occurrence of these pulses is an indication of the aluminum and magnesium content of the formation. To correct for undesired background, the rate of occurrence of pulses in the energy intervals immediately above and below the 450 to 500 kev interval is determined and subtracted from the 450 to 500 kev measurement.

3,662,174

NUCLEONIC GAUGES HAVING SOURCE WINDOW PROTECTOR PLATES WITH COMPRESSED AIR WIPE ARRANGEMENTS FOR USE IN OIL SPRAY ENVIRONMENTS

James M. McMullen, Columbus, and Douglas A. Berg, Worthington, both of Ohio, assignors to Industrial Nucleonics Corporation

Filed Dec. 15, 1969, Ser. No. 885,222
Int. Cl. G01t 1/16
U.S. Cl. 250—83.3 D **9 Claims**



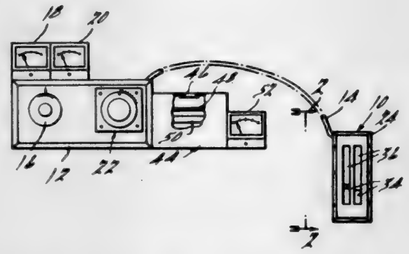
A nucleonic gauge for use with moving strip or web material in which oil particles or oil mist is entrained with the web. The nucleonic gauge incorporates protector plates, there being one plate associated with the source housing and another plate associated with the detector housing. Each plate includes air passageways through which air is directed under pressure at a region closely adjacent the source window and the detector window for preventing the occurrence of oil droplets or other foreign material on these windows. The plates further provide mechanical protection against window damage in the event that there is a break in the sheet material.

3,662,175

APPARATUS FOR GENERATING ULTRA VIOLET LIGHT

George L. Davidson, and Renaldo M. Beltramo, both of Cincinnati, Ohio, assignors to Tuttle, Incorporated, Cincinnati, Ohio

Filed Dec. 22, 1969, Ser. No. 886,987
Int. Cl. H01j 5/16
U.S. Cl. 250—86 **1 Claim**



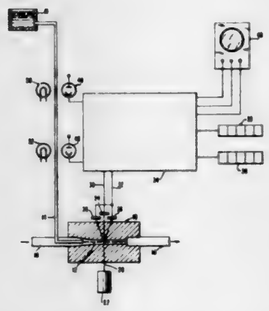
Apparatus for generating ultra-violet light which can be controlled to provide a controlled erythemal effect.

3,662,176

PHOTO-OPTICAL PARTICLE ANALYSIS METHOD AND APPARATUS

Louis A. Kamentsky, Briarcliff Manor, and Isaac Klinger, Yorktown Heights, both of N.Y., assignors to Bio/Physics Systems, Inc., Katonah, N.Y.

Filed Apr. 6, 1970, Ser. No. 25,931
Int. Cl. G01n 21/26, 33/16
U.S. Cl. 250—218 **25 Claims**



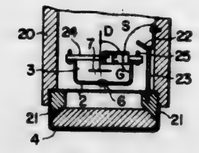
At least two different electrical optical reaction signal pulses are generated by particles passing through a beam of light. These signal pulses are electrically analyzed to discriminate true particle pulses from spurious noise pulses, to count the total number of particles, and to count a fraction of the total number of particles having particular characteristics to be distinguished.

3,662,177

IONIZATION TYPE SMOKE DETECTORS WITH FET PROTECTED AGAINST OPEN CIRCUIT INPUT

Kaju Sasaki, Tokyo, and Akihiro Kobayashi, Fujisawa, both of Japan, assignors to Nittan Company Limited, Tokyo, Japan

Filed June 5, 1969, Ser. No. 830,817
Claims priority, application Japan, July 11, 1968, 43/58518
Int. Cl. G01n 23/12
U.S. Cl. 250—44 **3 Claims**



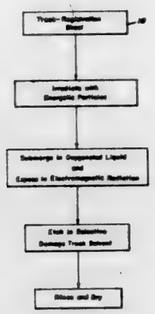
In an ionization type smoke detector wherein smoke is introduced in an ionization chamber through a mesh electrode and the change in the ionization current caused by the smoke is detected by the potential difference between the gate and source electrodes of a field effect transistor, means is provided to short circuit the gate and source electrodes in response to the removal of the mesh electrode.

3,662,178

TRACK-REGISTRATION PROCESS

Roger W. Caputi, Walnut Creek, and Wayne T. Crawford, Pleasanton, both of Calif., assignors to General Electric Company

Filed Feb. 9, 1970, Ser. No. 9,818
Int. Cl. G01t 5/00
U.S. Cl. 250—83 CD **16 Claims**



A pre-etching treatment of a track-registration film wherein the irradiated film is exposed to ultra-violet radiation immersed in oxygenated water whereby the damage tracks are sensitized while annealing of the damage tracks is prevented.

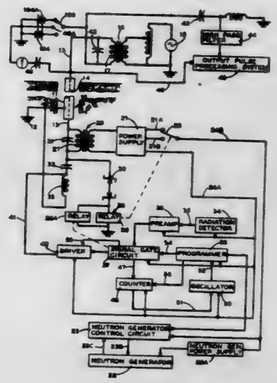
3,662,179

PULSE NEUTRON LOGGING TOOL CONTROL AND TRANSMISSION SYSTEM

Arthur H. Frentrop, and John S. Wahl, both of Ridgefield, Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Apr. 25, 1969, Ser. No. 819,378
Int. Cl. G01v 5/00
U.S. Cl. 250—83.3 R **6 Claims**

An illustrative embodiment of the invention measures the thermal neutron decay time in earth formations traversed by a borehole. For example, with a latching relay downhole, only one electrical conductor and a ground return is needed to send power and neutron generator control signals to the logging tool. The repetition rate and the duration of the neutron bursts, as well as the decay time measurements, all are regulated automatically through downhole circuits in response to the neutron characteristics of the formation



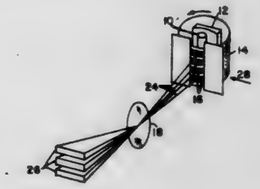
under study. The single conductor and ground return also transmit the decay time measurements to the earth's surface. A gate enabling relay downhole also responds to direct current signals and selects detector count information for transmission to the surface through a manipulation of the thermal neutron decay time information signal polarity. Other information signals, of which casing collar locator signals are typical, also can be transmitted through the conductor.

3,662,180

ANGLE CODING NAVIGATION BEACON

Stig W. Jorgensen, Hollis, and Philip M. Johnson, Windham, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Nov. 17, 1969, Ser. No. 877,333
Int. Cl. H04b 9/00
U.S. Cl. 250—199 **25 Claims**



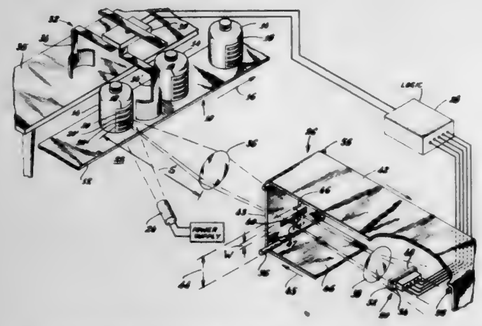
An angle coding navigation beacon comprises radiant energy projector in combination with a coded mask whereby an angle dependent code is projected into space. The angular disposition of a remote observer or receiver may be determined relative to the axis of the beacon by the type, number and sequence of energy pulses received during a predetermined time interval. The invention is amenable with a variety of energy sources including optical, acoustic and microwave energy.

3,662,181

SCANNING APPARATUS FOR THE DETECTION AND IDENTIFICATION OF LUMINESCING CODE BARS ON ARTICLES

Michael Hercher, Rochester, N.Y., and Michael Madalo, Whitehouse Station, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 22, 1970, Ser. No. 30,814
Int. Cl. G08c 9/06
U.S. Cl. 250—219 D 18 Claims



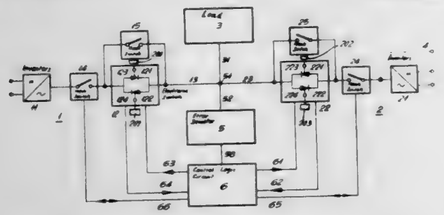
A scanning apparatus is provided to identify information encoded in a series of parallel code bars on articles moving on a conveyor. The code bars are each made up of one or more materials capable of emitting light of a distinct color when exposed to ultraviolet light. The bars are illuminated and scanned transversely by an optical system including a focussing lens and a moving belt having a slit. The moving belt is generally opaque to the emitted light from the code bars. The moving belt moves in the focal plane of the lens. A diffusing lens is located behind the belt to diffuse the image received through the slit over a group of photo detectors, each photo detector being optically filtered to respond to one of the distinct colors with an electrical output signal. The output signals of the detectors actuate logic circuitry to identify and/or sort the article.

3,662,182

METHOD AND APPARATUS FOR THE UNINTERRUPTED SWITCHING OF AT LEAST ONE ALTERNATING-CURRENT CONSUMER OF A VOLTAGE SUPPLY SOURCE OR CURRENT SUPPLY SOURCE TO A DIFFERENT VOLTAGE SUPPLY SOURCE OR CURRENT SUPPLY SOURCE

Werner Ullmann, Locarno; Renato Derighetti, Muralto, and Valentino Marazzi, Gordola, all of Switzerland, assignors to AG. Fur Industrielle Elektronik AGIE Losone bei Locarno, Losone, Switzerland

Filed July 20, 1970, Ser. No. 56,590
Claims priority, application Switzerland, Oct. 9, 1969, 15212/69
Int. Cl. H02j 7/00
U.S. Cl. 307—64 10 Claims



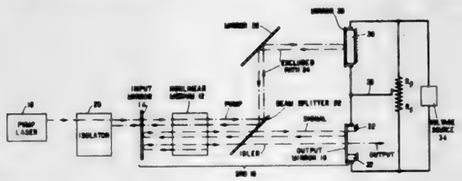
A method and apparatus for switching at least one alternating-current load from one power supply, such as a voltage supply or current supply, to another power supply, such as a voltage supply or current supply, upon the appearance of an error in the power supply coupled with the load. Each power supply possesses electronic switch means at the connection conductors to the load. An error detector determines the deviations of the waveshape of the load voltage from a predetermined waveshape of a reference voltage for a successive time interval, and upon exceeding an adjustable maximum deviation value, the electronic switch means are actuated for coupling the first-mentioned power supply to the other power supply.

3,662,183

CONTINUOUSLY TUNABLE OPTICAL PARAMETRIC OSCILLATOR

Arthur Ashkin, Rumson, and John Ernst Bjorkholm, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 28, 1970, Ser. No. 101,608
Int. Cl. H03f 7/00
U.S. Cl. 307—88.3 14 Claims



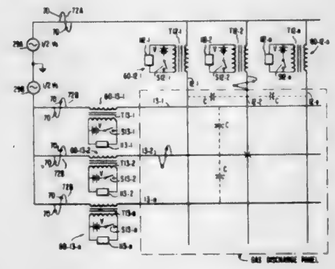
The gain curve peak and the signal axial modes are made to track together in a continuously tunable, singly resonant optical parametric oscillator (SRO) in which nonresonant pump radiation and nonresonant idler radiation are each made to reflect back upon themselves and to traverse the nonlinear medium twice. In a preferred embodiment, in at least a portion of the oscillator the pump is made to propagate in an optical path excluding the resonated signal (nonresonant idler SRO). In this portion and in the signal resonator the round-trip optical path lengths of the pump and resonated signals, respectively, are varied in accordance with a prescribed relationship. The path lengths may be altered by several means including transparent wedges, gas cells, rotating plates or piezoelectric crystals mounted on appropriate mirrors.

3,662,184

ELECTRONIC CIRCUITRY FOR A FLAT GASEOUS DISCHARGE DISPLAY PANEL

William E. Johnson, Temperance, Mich., assignor to Owens-Illinois, Inc.

Original application July 14, 1968, Ser. No. 752,626, now Patent No. 3,513,327. Divided and this application Apr. 13, 1970, Ser. No. 27,595
Int. Cl. G11c 11/28
U.S. Cl. 307—106 2 Claims



An improved pulse generator circuit primarily for multiple discharge gaseous display and/or memory panels having

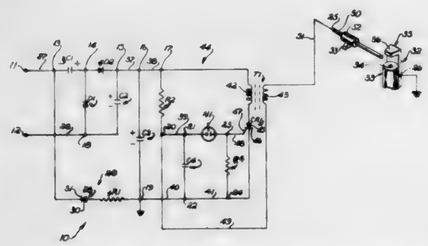
crosstalk eliminating means. A low level voltage signal from an addressing logic system is inductively translated to a high voltage unidirectional pulse and added to a periodic alternating sustaining voltage at selected times to control "on"-"off" states of selected discharge units. The improvements relate to utilization of an electronic switching circuit responsive to a spurious voltage signal to provide a low impedance to voltages induced or capacitively coupled to display lines associated therewith from other conductors. Consult the specification for other features and details.

3,662,185

SPARK GENERATOR AND COMPONENTS THEREFOR

Said Sapir, Westlake Village, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 1, 1970, Ser. No. 77,070
Int. Cl. H03k 3/00
U.S. Cl. 307—106 6 Claims



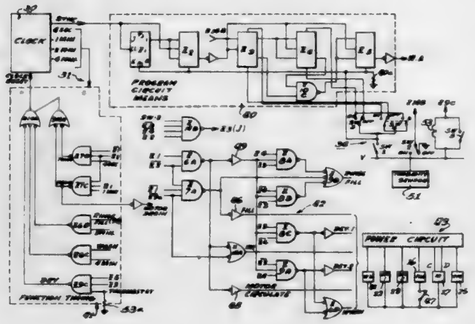
A spark igniter for gas fired devices wherein the isolated capacitor of a diode-capacitor voltage tripler is used to store electrical charge for firing the igniter. A timer is used to fire the igniter, whereby peak line current is kept very small. A special circuit is employed to disable the timer when the gas is lit.

3,662,186

ELECTRONIC CONTROL CIRCUIT FOR APPLIANCES

Joseph Karklys, St. Joseph, Mich., assignor to Whirlpool Corporation

Filed June 27, 1969, Ser. No. 837,163
Int. Cl. B01f 3/00; B28c 7/00
U.S. Cl. 307—141 36 Claims



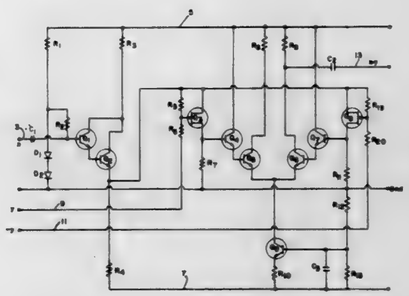
A control for a multiple function apparatus, such as an appliance, utilizing an electronic clock, or timer, electronic program circuitry and digital circuitry to select and control the functions to be performed. The electronic program circuitry has a plurality of bistable circuits, one portion controlling a series of steps repeated in each of several subcycles and the other portion controlling the sequence of subcycles. The second portion may be preset to establish a desired operating program. The digital circuitry is responsive to the condition of the bistable program circuits and to the clock to control the operation of the appliance.

3,662,187

FAST ANALOG MULTIPLIER

Dwight T. Ayres, Boalsburg, and Leon H. Sibul, State College, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy

Filed July 1, 1971, Ser. No. 158,840
Int. Cl. G06g 7/12
U.S. Cl. 307—229 5 Claims



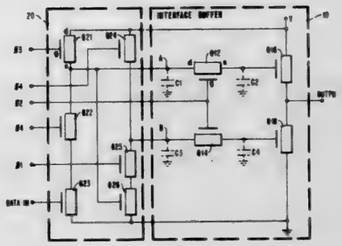
Subject disclosure relates to novel and improved high speed analog apparatus which employs field effect transistors connected in a balanced bridge circuit to obtain the product of two arbitrary input signals. One input signal drives the source-drain circuits of the field effect transistors and the other input signal drives the gate circuits of the field effect transistors. A portion of the one signal is also coupled to the gate circuits of the field effect transistors to extend the dynamic range of the same.

3,662,188

FIELD EFFECT TRANSISTOR DYNAMIC LOGIC BUFFER

Thomas A. Williams, Reston, Va., assignor to International Business Machines Corporation, Armonk, N.Y.

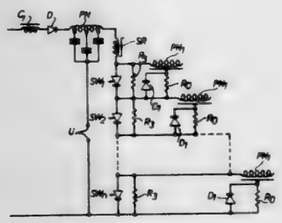
Filed Sept. 28, 1970, Ser. No. 76,183
Int. Cl. H03k 19/08
U.S. Cl. 307—233 5 Claims



A buffer circuit for interfacing multi-phase dynamic field effect transistor (FET) logic circuits with conventional logic circuits by converting pulsating logic signals to steady-state logic signals. A sampling stage gates the true and complement phases of the pulsating signal at an equilibrium state, thereby converting the pulsating signal to a steady-state level. An output stage detects the steady-state level and provides the output drive. The buffer is fabricated in accordance with

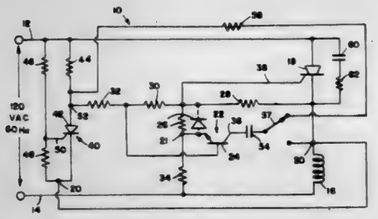
FET technology and is placed on the same monolithic chip with the multi-phase FET circuits. Circuits for generating true and complement phases of the pulsating signal are also disclosed.

3,662,189
TRIGGERABLE PULSE GENERATORS
Trevor Howard Robinson, Boreham; Alan William Cameron, and Philip Joan Fitz, both of Chelmsford, all of England, assignors to The Marconi Company Limited, London, England
Filed Dec. 11, 1970, Ser. No. 97,066
Int. Cl. H03k 17/00
U.S. Cl. 307—252 L 3 Claims



A triggerable pulse generator of the type having a series sequence of triggerable switches, that require priming, fed via a saturable inductance, a pulse forming network and a charging circuit to which D.C. voltage is applied has connected in shunt across each of the triggerable switches a damped series resonant circuit. The damped series resonant circuit is so dimensioned as to provide, for the switch with which it is in shunt the required correct priming current pulse for that switch.

3,662,190
CONTROL CIRCUIT FOR SINGLE STROKE ELECTRICAL TOOLS
Joseph S. Naber, Marengo, Ill., assignor to Fastener Corporation, Franklin Park, Ill.
Filed June 16, 1969, Ser. No. 833,321
Int. Cl. H03k 17/00
U.S. Cl. 307—252 N 20 Claims



A simplified control circuit for a single stroke electrical tool comprises a first triggerable gate connected in series with the tool across a source of supply. A series circuit including a second gate, a trigger capacitor, and a manually actuated switch is then connected between a trigger terminal and a current terminal of the first gate. A silicon controlled rectifier pulse generating circuit supplies synchronizing pulses of one polarity to the second gate and charging current of the opposite polarity to the trigger capacitor. Positive feedback from the trigger terminal of the first gate to the input of the second gate gives improved triggering sensitivity and renders the circuit relatively insensitive to changes in the value of components. Multiple firing is prevented by connecting a resistor or diode between the trigger capacitor circuitry and the trigger terminal of the first gate, and by utilizing the voltage drop across the load to aid in fully discharging the trigger capacitor.

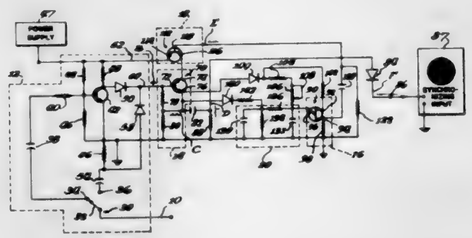
3,662,191
MEMORY DRIVE CIRCUIT
Albert H. Aley, Holliston, Mass., assignor to GTE Sylvania Incorporated
Filed Jan. 20, 1971, Ser. No. 108,090
Int. Cl. H03k 3/02
U.S. Cl. 307—270 6 Claims

A	B	C	D	E	F	G	H	I	J	K	OD_1	OD_2	OD_3	OD_4
0	0	1	1	0	1	1	1	1	1	1	ON	off	off	off
0	0	0	0	1	1	1	1	1	1	1	OFF	off	off	off
0	1	1	1	1	1	0	1	1	1	1	off	ON	off	off
0	1	0	1	1	0	1	1	1	1	1	off	OFF	off	off
1	0	1	1	1	1	1	1	0	1	1	off	off	ON	off
1	0	0	1	1	1	1	0	1	1	1	off	off	OFF	off
1	1	1	1	1	1	1	1	1	1	0	off	off	off	ON
1	1	0	1	1	1	1	1	1	0	1	off	off	off	OFF

ON = FORWARD BIASING CURRENT FLOWS THROUGH TRANSFORMER
OFF = REVERSE BIASING CURRENT FLOWS THROUGH TRANSFORMER
off = NO CURRENT FLOWS THROUGH TRANSFORMER

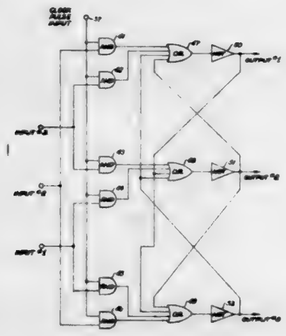
Floating switch type of memory drive circuit having a transformer with the ends of the secondary winding connected to the base and emitter of a driving transistor. TTL NAND logic gates of the type having a pull-up transistor are connected to each end of the primary winding. When one of the gates is operated to produce a logic O at its output and the other gate is operated to produce a logic 1 at its output, the driving transistor turns on rapidly. When the operating states of the gates are subsequently reversed, the driving transistor turns off rapidly.

3,662,192
FREQUENCY-SENSITIVE TRIGGERING TECHNIQUES
Michael J. Hallnaki, Arlington Heights, and Larry J. Wanechek, Chicago, both of Ill., assignors to Sun Electric Corporation
Filed Apr. 14, 1969, Ser. No. 815,794
Int. Cl. H03k 17/26
U.S. Cl. 307—293 9 Claims



A reliable trigger signal may be produced from a periodic electrical signal having several voltage peaks in each cycle by providing a controlled rectifier that is switched to its conductive state by the receipt of one of the voltage peaks. The switching of the controlled rectifier energizes a signal generator that returns the controlled rectifier to its nonconductive state only after the occurrence of all voltage peaks in each cycle. As a result, only one trigger signal is produced in each cycle. The signal generator is controlled by a timing circuit that is charged to a progressively higher voltage as the cyclical repetition rate of the periodic electrical signal increases, thereby decreasing the time in each cycle in which the controlled rectifier conducts.

3,662,193
TRI-STABLE CIRCUIT
Robert C. Braddock, Encino, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed May 24, 1971, Ser. No. 146,091
Int. Cl. H03k 19/34, 19/24
U.S. Cl. 307—291 7 Claims



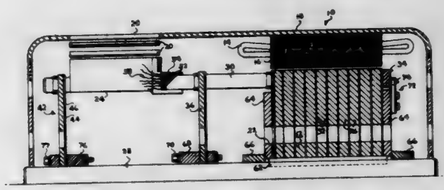
A tri-stable digital logic circuit, the outputs of which follow the inputs at the next clock pulse. Each of the three inputs and outputs is adapted to accept a two-level, i.e., binary input and to provide a corresponding output and store the said input condition through successive clock pulses until a change of at least one of the input values occurs.

3,662,194
HIGH-VOLTAGE PIEZOELECTRIC TRANSFORMER HOUSED WITH DIODES
Juichi Morlki, 1-33 Chitosecho, Nishinomiya-shi; Teruo Itoh, 1-2, Matsushitacho; Masaharu Shiozaki, 6-23, Mizuo-2-chome, both of Ibaragi-shi; Yojin Maeda, 498, Aza Shimotahara, Shijonawatecho, Kitakawachi-gun; Hisataka Kuroki, 5-35, Sawaragihigashicho, Ibaragi-shi; Kenshiro Sumi, No. 807, Shimamachi-7-Jo-Jutaku, Higashishiabiokojicho, Shimamachi-7-Jo-Segaru, Shimokyo-ku, Kyoto, and Hidekazu Shimura, 1-70, Higashimikunicho, Higashiyodogawa-ku, all of Japan
Continuation of application Ser. No. 712,902, Mar. 11, 1968, now abandoned. This application July 8, 1970, Ser. No. 53,164
Int. Cl. H01v 7/00
U.S. Cl. 310—9.4 7 Claims



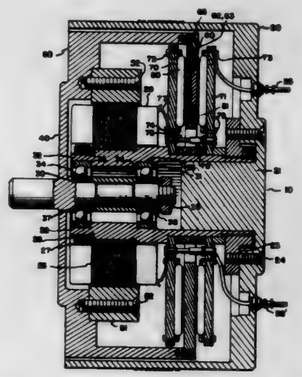
A support structure for a piezoelectric transformer of the kind operable in accordance with the λ-mode, which supports the piezoelectric transformer at the node of minimum displacement of the drive section of the transformer and is an electrical conductor so that it serves also as a lead wire. An assembly including the piezoelectric transformer, the support structure and a rectifier element is housed in a casing or enclosed in an envelope made vacuous or filled with an insulating gas so that it is usable as a high-voltage generator for television receivers.

3,662,195
HIGH SLIP INDUCTION MOTOR HAVING AN END RING FORMED OF BIFURCATED MEMBERS
Warren Pierce Wielt, Schenectady, N.Y., assignor to General Electric Company
Filed Oct. 26, 1970, Ser. No. 84,024
Int. Cl. H02k 9/22
U.S. Cl. 310—64 6 Claims



A high slip induction motor is described wherein the protruding ends of extended aluminum rotor bars are interconnected by cast aluminum end ring strips having an elongated radial length to function as a fan maximizing heat transfer from the rotor bars. The strips preferably are a bifurcated design with a protruding nose at the interconnected end of the strips remote from the rotor bars while juxtaposition of the bifurcated strips forms a pocket between adjacent strips to snugly receive the rotor bars which are then welded to the strips. Radial and arcuate restraint of the extended end of the rotor is achieved by support wheels formed of rotor laminations situated at both ends of the end ring strips to receive the extended rotor bars and protruding noses, respectively, within the conductor slots of the laminations.

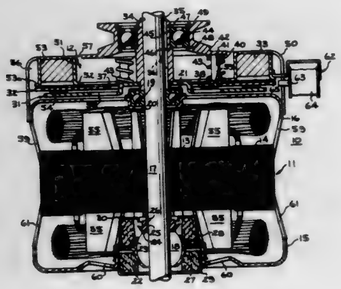
3,662,196
MAGNETICALLY COMMUTATED BRUSHLESS D.C. TORQUE MOTOR
Fred Ruschmann, Port Washington, N.Y., assignor to Kollsman Instrument Corporation, Syosset, N.Y.
Filed Aug. 12, 1970, Ser. No. 63,169
Int. Cl. H02k 11/00
U.S. Cl. 310—68 B 6 Claims



A brushless direct current motor operating through the interaction of a permanent magnet field with a commutated electro-magnetic field of changing polarity wherein current is carried from the external circuit to the windings of the armature by magnetic reed switches, each switch connected at one end to the external circuit and at the other end to the terminal of successive armature windings. The switches are placed in two circular arrays, each array containing in this instance 33 equiangularly-aligned members. A rotating magnet

and plate assembly with two permanent magnet locations facing each of the arrays sequentially closes switches in two pairs, each pair consisting of one switch in the first array and one in the second array, to energize the armature windings at each operative position of the rotating magnet and plate assembly.

3,662,197
COMBINATION MOTOR-CLUTCH APPARATUS
Joseph C. Worst, Louisville, Ky., assignor to General Electric Company
Filed Nov. 12, 1970, Ser. No. 88,937
Int. Cl. H02k 7/108
U.S. Cl. 310—78 1 Claim



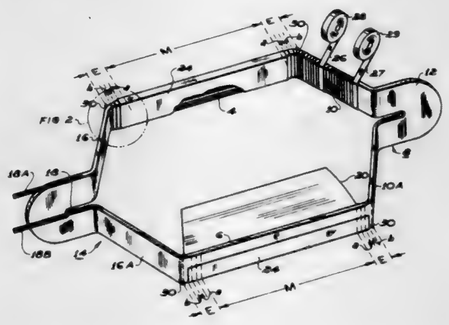
A combination motor-clutch assembly wherein the input and output members of the clutch are normally held in driving engagement by a biasing means, and having an electromagnetic coil which induces a magnetic field in the output member to overcome the operation of the biasing means and to move the output member axially to control the torque transmitted between the input member and the output member and to effect disengagement of these members.

3,662,198
TRACTION MOTOR INSPECTION COVER
John Adams, Jr., 250 South Oak Knoll Avenue, Pasadena, Calif.
Filed Dec. 4, 1970, Ser. No. 95,272
Int. Cl. H02k 5/10
U.S. Cl. 310—89 13 Claims



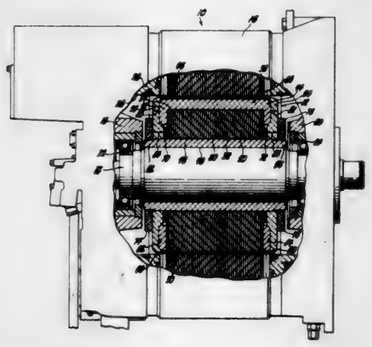
A railroad electric traction motor has a hinged door of curved rigid sheet metal for closing and conveniently opening a square inspection opening in the periphery of the curved motor housing which encloses the commutator. The door has a lock which is operable from the outside of the rigid sheet, but which has all of its parts located below the sheet top surface.

3,662,199
HIGH VOLTAGE INSULATED COIL AND MACHINE UTILIZING THE SAME
Robert L. Anderson, Bay Village, and Marvin M. Fromm, Cleveland Heights, both of Ohio, assignors to Portec, Inc., Cleveland, Ohio
Filed Mar. 1, 1971, Ser. No. 119,571
Int. Cl. H02k 3/32
U.S. Cl. 310—208 16 Claims



An improved insulated coil for an electrodynamic machine is prepared by wrapping multiple layers of a wide insulative wrapper impregnated with a B-staged resin bonding material around the straight section of the coil, in overlapping contact with a narrow insulative tape impregnated with the identical or a chemically compatible B-staged resin bonding material. The tape is overlapped with the ends of the wide wrapper and the wrapped assembly is then heat and pressure treated to cure the resin impregnate to a permanent, solid set and to form thereby an insulated coil with a continuous, unitary insulative joint between the wrapper and the tape.

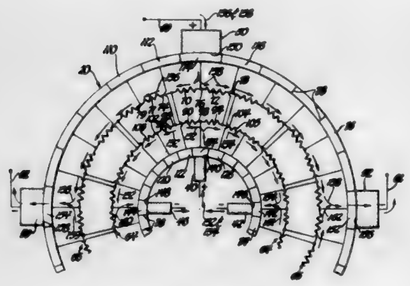
3,662,200
SQUIRREL CAGE ROTOR WITH INTERFERENCE FIT SLEEVE BETWEEN SHAFT AND CORE
William E. Rank, Dayton, and Gene L. Dafler, New Lebanon, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed July 6, 1970, Ser. No. 52,558
Int. Cl. H32k 3/06
U.S. Cl. 310—211 3 Claims



A rotor for a dynamoelectric machine includes a laminated rotor core mounted on a shaft sleeve which is mechanically expanded by an interference fit with the motor shaft. A pair

of rotor end supports are mounted on the shaft sleeve in an axially supporting relationship with the ends of the rotor core and in a circumferentially supporting relationship with the ends of a winding carried by the rotor core.

3,662,201
COMMUTATION SYSTEM FOR DYNAMOELECTRIC MACHINES
John E. Madsen, Lemont, Ill., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 14, 1970, Ser. No. 97,614
Int. Cl. H01r 39/46
U.S. Cl. 310—220 4 Claims



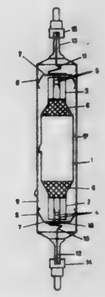
In a preferred form, a commutation system for dynamoelectric machines includes a pair of commutator rings connected to an armature winding and carrying two sets of brushes. A plurality of working circuits are formed between pairs of brushes in the two brush sets so that work current in each working circuit flows through one pair of brush contacts. However, coils undergoing commutation in the armature winding are short-circuited by two pairs of brush contacts. This increases the brush contact resistances through which local current must flow when it is developed in the coils undergoing commutation. The increased brush contact resistances develop higher brush voltage drops to reduce the undesirable effects of the local currents without increasing losses in the work currents.

3,662,202
BRUSH HOLDING ASSEMBLY FOR MINIATURE ELECTRIC MOTOR
Takaichi Mabuchi, Tokyo, Japan, assignor to Tokyo Kagaku Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 25, 1970, Ser. No. 66,760
Claims priority, application Japan, Aug. 30, 1969, 44/81959
Int. Cl. H02k 19/04
U.S. Cl. 310—239 4 Claims



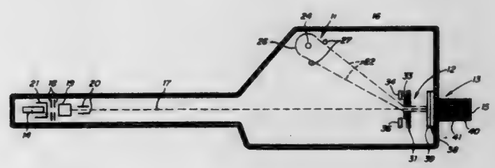
A brush holding assembly for a miniature electric motor comprising a pair of recessed channels provided inside of the end cover of the motor casing at diametrically opposed portions of the cover, and a pair of bores formed at opposite sides of each of said channels to receive terminals of brushes. Such a brush holding assembly is capable of a selective brush mounting according to the direction of rotor rotation.

3,662,203
HIGH PRESSURE SATURATED METAL VAPOR, PREFERABLY SODIUM OR METAL HALIDE VAPOR DISCHARGE LAMP
Bernhard Kuhl, Grunwald-Geiselgasteig, and Alexander Dobrusskin, Taufkirchen, both of Germany, assignors to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH, Munich, Germany
Filed May 11, 1970, Ser. No. 36,318
Claims priority, application Germany, Nov. 18, 1969, P 19 57 978.3; May 20, 1969, G 69 20 340.3
Int. Cl. H01j 61/34, 61/35
U.S. Cl. 313—25 18 Claims



The outer envelope is of thermally highly loadable material capable of withstanding operating temperatures exceeding 500° C, such as quartz glass. It surrounds the actual arc enclosing vessel, which is likewise of thermally highly loadable material, such as quartz glass. The spacing is so close that additional heating, by thermal radiation from the outer envelope results in increased vapor density in the arc since the metal vapors in metal halide vapor discharge lamps are essentially saturated during lamp operation. A suitable ratio of the inner diameter of the outer envelope to the outer diameter of the discharge vessel is 3:1 to 1.05:1; the diameter difference being smaller than 2 cm.

3,662,204
LINE SCANNING CATHODE RAY TUBE HAVING SLOTTED STORAGE ELEMENT
Omer F. Hamann, La Jolla, Calif., assignor to Stromberg Datagraphic, Inc., San Diego, Calif.
Filed Apr. 3, 1970, Ser. No. 25,335
Int. Cl. H01j 31/18, 31/58, 29/24
U.S. Cl. 313—68 D 2 Claims

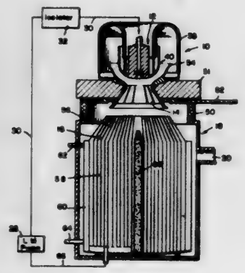


A line scanning cathode ray tube is disclosed, wherein light output is increased by provision of a flood gun and a line image storage element between the flood gun and the electron target. Resolution is maintained by disposing the storage surface along the edge of a narrow slit in an electron opaque plate. In the preferred embodiment, a fiber optics faceplate is provided to more efficiently utilize the light output.

3,662,205
ELECTRICAL SWITCH DEVICE HAVING A FED LIQUID-METAL CATHODE AND PARTIALLY INTERCEPTING ANODE

Kenneth T. Lian, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation-in-part of application Ser. No. 720,707, Apr. 11, 1968, now abandoned. This application July 2, 1970, Ser. No. 52,078
Int. Cl. H01j 1/10
U.S. Cl. 313—34 14 Claims



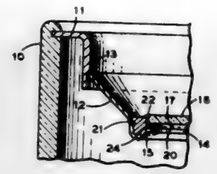
The electrical switch device has an envelope in which is mounted a liquid-metal cathode, an anode, and a condenser. The cathode is capable of very high electron-to-atom emission ratio. A desirable value for the electron-to-atom emission ratio is on the order of 100 or more and is attainable by means of a cathode such as disclosed in U.S. Pat. No. 3,475,636. The condenser has a very much larger area than the exposed liquid metal area on the cathode, and it is kept at a low enough temperature to efficiently condense the liquid-metal vapor emitted by the cathode. With mercury used as the liquid metal, the condenser temperature is kept substantially below 0° C., preferably at about −35° C. which is just above the melting point of mercury. When arcing occurs from the liquid metal, a plasma jet of electrons, ions, and neutral particles is emitted from the arc spot. The anode is mounted between the cathode and the condenser, and it partially intercepts the plasma jet. The combination of the high electron-to-atom emission ratio of the cathode with the large, low-temperature condenser results in an equilibrium background pressure (i.e., pressure outside the plasma jet) of at least as low as 10^{-3} Torr during arcing, and lower than 10^{-4} Torr during non-arcing periods. These low pressures are obtained by maintaining the condenser in the range of low temperatures defined above. This low background pressure, in turn, permits the essentially unperturbed propagation of the plasma jet between the cathode and the surfaces upon which it impinges, i.e., condenser and anode. Such a discharge mode is commonly referred to as a "vacuum arc." The fact that the plasma jet is emitted only during arcing, and that the pressure within the space surrounding this jet is kept low, results in the ability to hold off electric fields up to 50 kV per centimeter between anode and cathode immediately after cessation of arcing.

3,662,206
CATHODE RAY TUBE HAVING INERT BARRIER BETWEEN SILVER CHLORIDE SEAL AND PHOTO CATHODE

Horst G. Fleck, Titusville, N.J., assignor to Weston Instruments, Inc., Newark, N.J.

Original application Feb. 20, 1968, Ser. No. 706,967, now Patent No. 3,510,925, dated May 12, 1970. Divided and this application Feb. 24, 1970, Ser. No. 16,997
Int. Cl. H01j 39/02, 39/00
U.S. Cl. 313—94 4 Claims

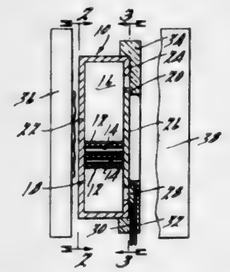
An illustrative embodiment of the invention shown a method and apparatus for joining a crystalline magnesium fluoride faceplate to the envelope of a photomultiplier tube. The bialkali photocathode deposited on the faceplate is protected from the chemically incompatible silver chloride sealing compound by a preglazed glass frit that acts as a barrier between the photocathode and the seal.



3,662,207
MICROCHANNEL PLATE WITH RESPECTIVE FACE ELECTRODES THEREOF FORMED TO TERMINATE ON ONE FACE

Neal C. Thomas, Brighton, and Walter J. Dippold, Pinckney, both of Mich., assignors to The Bendix Corporation

Filed Jan. 11, 1971, Ser. No. 105,502
Int. Cl. H01j 43/06
U.S. Cl. 313—104 6 Claims



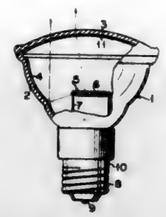
Electron multiplier apparatus comprising a plurality of substantially equal length electron multiplier tubes stacked in a parallel relationship so as to form a cylindrical body known as a microchannel plate. The body has a pair of faces at the ends of the tube and a coating of electrically conducting material is applied to one of the faces and wrapped around the body so as to extend onto the other face. A second conductive coating on said other face has an annular space between it and the first conductive coating and lead wires, adapted to be connected to a voltage source, are connected to the coatings on opposite sides of the space for applying an electric potential between the ends of the multiplier tubes.

3,662,208
REFLECTOR TYPE INCANDESCENT LAMPS

Kenji Ohmae; Tomiyoshi Hirano, both of Yokohama-shi, and Takao Akaishi, Kita Kyushu-shi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Jan. 27, 1970, Ser. No. 6,204
Int. Cl. H01l 5/16, 61/40; H01k 1/32
U.S. Cl. 313—112 5 Claims

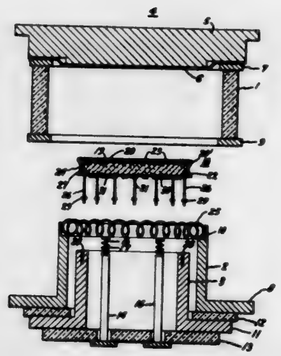
In a reflector type incandescent lamp having a concave reflector and a front glass, an electroconductive coating of transparent metal oxides is applied on the inner surface of the front glass and the thickness of the coating is set to manifest a percentage of interception of infrared rays of 20 to 80 percent of that of glass for input powers of less than 0.55 W per cubic centimeter of the volume of the lamp.



3,662,209
ELECTRON DISCHARGE DEVICE WITH HELICAL CONDUCTOR PROVIDING SWAP FIT

James E. Beggs, Schenectady, N.Y., assignor to General Electric Company

Filed May 21, 1970, Ser. No. 39,284
Int. Cl. H01j 1/00
U.S. Cl. 313—237 9 Claims



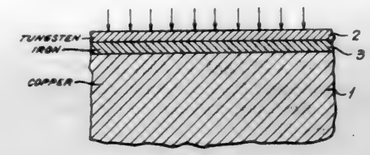
An electron discharge device which is easily manufactured and assembled consists of three concentric cylinders, unitary cathode grid and heater assembly, a garter spring arrangement for snapping the assembly into position with respect to one of these cylinders, and arrangements for making connections to the heater, the cathode, and the control grid as the assembly is snapped into position. In one version, the device is open to the atmosphere so that it can be used in space environment to take advantage of the extremely high vacuum conditions existing in such environment.

3,662,210
ELECTRODE FOR PULSE HIGH-POWER ELECTROVACUUM DEVICES

Viktor Fedorovich Maximov, ul. 8-go Marta II, kv. 7, Moscow, U.S.S.R.

Continuation of application Ser. No. 662,652, Aug. 23, 1967, now abandoned. This application Apr. 28, 1970, Ser. No. 31,818
Int. Cl. H01j 1/14, 1/48
U.S. Cl. 313—311 6 Claims

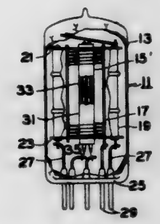
A copper electrode with a multi-layer coating wherein, for example, the outer layer is of tungsten and the inner layer is of iron, the outer layer functioning as a refractory material and the inner layer being a transitional layer having thermal physical properties between those of the electrode and those of the outer layer. Electrode with special coating to protect the same against heat.



3,662,211
CATHODE CONSTRUCTION

Walter T. Mills, Owensboro, Ky., assignor to General Electric Company

Continuation of application Ser. No. 95,932, Mar. 15, 1961, now abandoned. This application Jan. 15, 1970, Ser. No. 4,167
Int. Cl. H01j 1/24
U.S. Cl. 313—340 5 Claims

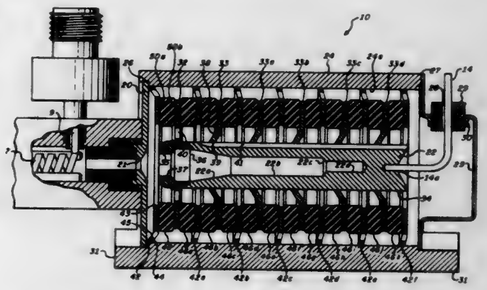


Structures and methods are disclosed for accelerating the warm-up time of an electron discharge device having an indirectly heated cathode either by coating the cathode with a high heat absorption material or by increasing the heat radiation properties of the heater.

3,662,212
DEPRESSED ELECTRON BEAM COLLECTOR

John L. Rawls, Jr., Archer, Fla., assignor to Sperry Rand Corporation

Filed July 15, 1970, Ser. No. 54,943
Int. Cl. H01j 25/34
U.S. Cl. 315—3.5 9 Claims



A rugged electron beam collector structure for velocity modulation or other high power electron beam vacuum tubes is characterized by means for providing high electrical volt-

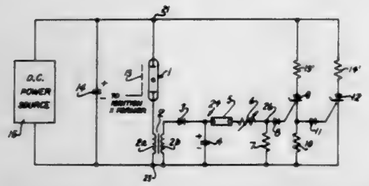
age insulation along a low thermal impedance heat flow path. The structure is constructed of stacked ceramic and metallic elements bonded together in a configuration providing improved tolerance to thermal and other shock mechanisms.

3,662,213

CASCADED THYRISTOR QUENCHING ARRANGEMENT FOR A PULSED FLASH DEVICE

Rolf Dieter Dennewitz; Emil A. Exner, and Henning Zierau, all of Berlin, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 3, 1970, Ser. No. 8,271
Claims priority, application Germany, June 3, 1969, 19 28 157.3
Int. Cl. H05b *37/02*
U.S. Cl. 315—149 **10 Claims**



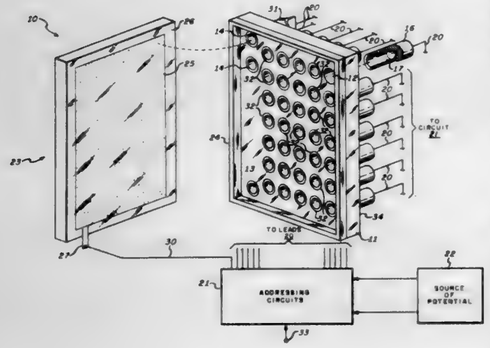
A compact, high-speed quenching arrangement is described for use with a portable flash unit that is required to handle moderately high peak currents during quench. A pair of normally nonconductive cascaded thyristors are connected in shunt with the flash tube. When a predetermined quantity of emitted light has been monitored and integrated by the flash unit, the first thyristor is switched into conduction. The resulting build-up of current in the transconductive path of the first thyristor is converted to a proportional control voltage which triggers the second thyristor into conduction to handle the portion of the quench load that exceeds the capacity of the first thyristor. Protective resistors in the respective transconductive paths of the thyristors may be suitably selected to accommodate a range of peak current conditions of the flash device.

3,662,214

GAS DISCHARGE DISPLAY APPARATUS UTILIZING HOLLOW CATHODE LIGHT SOURCES

Claude D. Lustig, Lexington, Mass., assignor to Sperry Rand Corporation, Great Neck, N.Y.

Filed Apr. 13, 1970, Ser. No. 27,608
Int. Cl. H05b *37/00*
U.S. Cl. 315—167 **33 Claims**



Gas discharge display apparatus comprising a plurality of hollow cathodes and associated anodes enclosed in a gastight envelope with an ionizable gas. The hollow cathodes are arranged in a predetermined pattern in order that ignition of gas discharges in the hollow portions of selected cathodes provides the desired display. The anodes are proximate to the hollow portions of the cathodes and the hollow portions have a depth such that only cathode glow discharges substantially confined thereto may occur. Thus, sputtered cathodic material is substantially confined to the interiors of the hollow portions. The anodes are disposed adjacent the hollow portions of the cathodes but exterior thereof for minimizing interelectrode short-circuiting due to sputtering. An individual display light source having a hollow cathode member and a transparent member sealed to the cathode member enclosing the hollow portion thereof and an associated anode with an ionizable gas is also disclosed.

3,662,215

A TRIGGERING CIRCUIT FOR TRIGGERING SERIES-CONNECTED SPARK GAPS

Asle Schei, Ludvika, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Continuation of application Ser. No. 801,639, Feb. 24, 1969, now abandoned. This application Mar. 25, 1971, Ser. No. 128,195
Claims priority, application Sweden, Feb. 28, 1968, 2533/68
Int. Cl. H05b *37/00, 39/00*
U.S. Cl. 315—189 **4 Claims**



A chain of series-connected spark gap piles have two grading chains in parallel therewith with connections therebetween. An arrangement is provided for triggering one of the spark gap piles. When this pile is triggered, all the spark gap piles in the chain spark over if the voltage over the spark gap piles between two connections from a grading chain is not less than the spark-over voltage for each of these piles. One grading chain is formed of a number of resistors and capacitors in parallel connected across each end gap pile and each pair of other gap piles, and the other grading chain is formed of resistors in the chain between the pairs of gap piles and circuits formed of a capacitor and a resistor in parallel with each pair of gap piles.

3,662,216

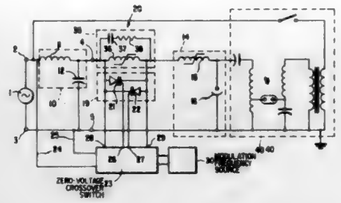
ALTERNATING CURRENT POWER MODULATOR WITH PARALLEL LC CIRCUIT CONTROLLING THE RELATIVE PHASE OF VOLTAGE AND CURRENT APPLIED TO SWITCHING MEANS

Andy M. Hildebrant, San Jose, Calif., assignor to General Electric, Utica, N.Y.

Filed June 18, 1970, Ser. No. 47,307
Int. Cl. G05f *1/38*
U.S. Cl. 315—205 **18 Claims**

A gated, bilateral switch is coupled between a resonant power supply and an alternating current load. A detuned, parallel-connected LC circuit is connected across the switch to control the phase difference between current and voltage applied to the switch and assure commutation. In the absence of triggering signals applied to the switch, the LC current

provides a first, low level of energy to the load. A zero-voltage crossover at the alternating switch gates the switch at the beginning of alternate half cycles. Power is modulated in



response to a logic circuit which alternately enables and disables the zero-voltage crossover switch at a selectable frequency and a selectable duty cycle.

3,662,217

VEHICLE CONSTRUCTION

Constantin Graf Von Berckheim, Friedrichstrasse 9, 694 Weinhein a.d.B., Germany

Filed Dec. 17, 1970, Ser. No. 99,098
Claims priority, application Germany, Dec. 22, 1969, P 19 64 069.8
Int. Cl. H01t *19/00*
U.S. Cl. 317—4 **12 Claims**

An automotive vehicle has a passenger compartment provided in a window opening provided with a windowpane which is electrically conductive at least on the side facing the interior of the compartment. At least one air supply channel is provided which discharges a stream of air along the inner side of the window and an ion-producing device is provided in the channel upstream of the window for enriching the stream of air with ions. An arrangement may also be provided for establishing and maintaining the interior of the compartment an electrostatic field.

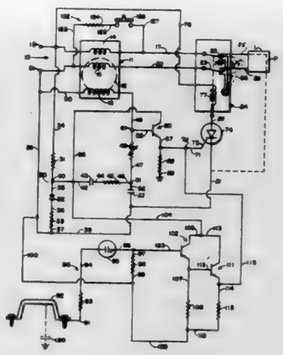
3,662,218

GROUND FAULT INTERRUPTOR CIRCUIT

George A. Whitlow, 815 Clebud Drive, Euless, Tex.

Filed June 19, 1970, Ser. No. 47,649
Int. Cl. H02h *1/02, 3/28*
U.S. Cl. 317—18 D **4 Claims**

A circuit for actuating a circuit breaker to disconnect a load from across conductors connecting the load across an input circuit which has one neutral side upon the occurrence of an imbalance in the currents flowing in the conductors. The circuit includes a differential transformer having a bifilar pair of windings wound on a toroidal core, the winding being connected in series with separate conductors of the input circuit. The permeability of the toroidal core of the transformer is quite low when the currents in the two conductors are equal or almost equal and increases greatly to decrease the inductance of a sensing winding, also wound about the core and energized with a pulsating current, upon the occurrence of an imbalance in the currents flowing in the two conductors. The circuit includes a transistor and SCR circuit responsive to the change in the inductance of the sensing winding for energizing the circuit breaker upon an increase in the inductance of the sensing winding to disconnect the load from across the two conductors. The circuit may also include a check circuit for insuring that the windings of the differential transformer are properly connected across the input circuit.

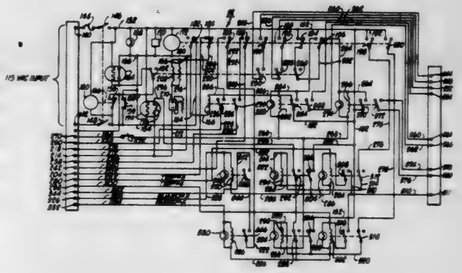


3,662,219

APPARATUS FOR AUTOMATIC RELAY SYSTEM TESTING

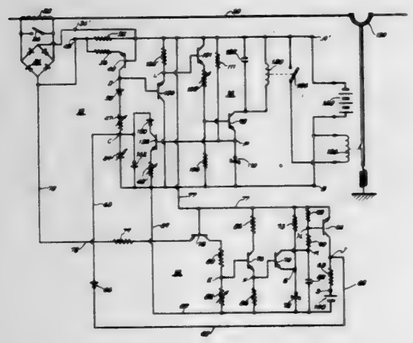
Marion D. Knox, 2409 N.W. 115 Place, Oklahoma City, Okla.

Filed Mar. 16, 1970, Ser. No. 19,869
Int. Cl. G01r *15/12;* **G08b** *1/08*
U.S. Cl. 317—28 R **14 Claims**



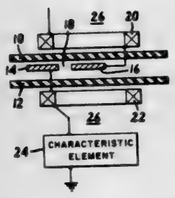
Apparatus for enabling check out and functional testing of directional comparison relaying circuitry in combination with transfer trip relaying circuitry having one or more channels in one or more directions, as may be located at one or more positions. The apparatus consists of periodically actuatable test units which provide a plurality of programmed outputs to effect transmission and reception tests of transfer trip channels as well as the proper operation and function of associated directional comparison relaying equipment. A master testing unit located at a first position initiates operation and functions with one or more slaved remote test units to key transmissions and verify received signals between all directional comparison channels. Thereafter, the test units block the respective receiver trip output if necessary, to verify that a guard signal is present and then it returns the indication over the directional comparison relaying equipment to the transfer-trip transmitter location, to command trip signals which are then verified for each channel.

3,662,220
TIME DELAY DEVICE
Richard E. Riebs, Hales Corners, Wis., assignor to McGraw-Edison Company, Milwaukee, Wis.
Filed Mar. 19, 1959, Ser. No. 800,567
Int. Cl. H01h 47/18
U.S. Cl. 317—36 TD 28 Claims



This invention relates to time delay devices and more particularly to electronic time delay devices that have particular but not exclusive application as a time delay means for repeating circuit interrupters or reclosers.

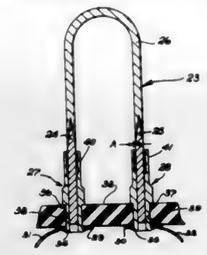
3,662,221
ELECTRIC APPARATUS
Naoya Yamada, Yao, and Shoji Tada, Nishinomiya, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed June 14, 1971, Ser. No. 152,812
Int. Cl. H02h 9/06
U.S. Cl. 317—62 3 Claims



A lightning arrester is disclosed including a volume of electrically negative fluid and a pair of spaced arc-extinguishing plates formed of a copolymer of acetal including —C—C— bonds.

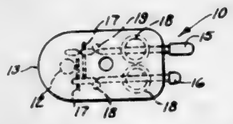
3,662,222
ELECTRIC RESISTANCE WIRE IGNITER WITH A COOLING TERMINAL POSTS CONSTRUCTION
William A. Ray, North Hollywood, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed May 7, 1970, Ser. No. 35,396
Int. Cl. F23g 7/10
U.S. Cl. 317—98 1 Claim

A resistance wire igniter for a pilot light of a gas fuel burning apparatus including an electric current heated filament having molybdenum and portions tapered toward and fixed with a molybdenum disilicide central portion. Terminal posts



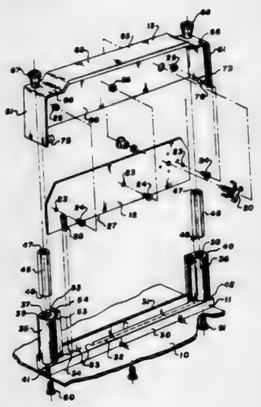
construction for keeping the filament ends cool so that they will not oxidize.

3,662,223
PRE-AMPLIFIER PLUG FOR MUSICAL INSTRUMENTS WITH BATTERY RETAINING AND SWITCH ACTIVATING ROD MEANS
Walker L. Marshall, P.O. Box 105, West Burlington, Iowa
Filed July 2, 1971, Ser. No. 159,434
Int. Cl. H02b 1/10; H03f 1/00
U.S. Cl. 317—99 3 Claims



A plug with a self-contained solid state preamplifier primarily for musical instruments. This device includes resisters, capacitors and battery means, coupled to pre-amplify input signals to conventional amplifiers.

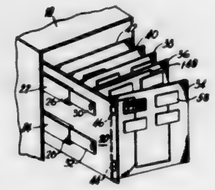
3,662,224
HOLDER FOR ELECTRICAL MODULES WITH CASING ENCLOSING AND CARRYING PRINTED CIRCUIT CARD
Gerhard J. Rauch, Burnaby, British Columbia, Canada, assignor to Cascade Electronics Ltd., Port Moody, British Columbia, Canada
Filed June 22, 1970, Ser. No. 48,266
Int. Cl. H05k 5/02, 7/14
U.S. Cl. 317—101 DH 5 Claims



A module and module guide particularly but not necessarily exclusively for cable television amplifiers in which the

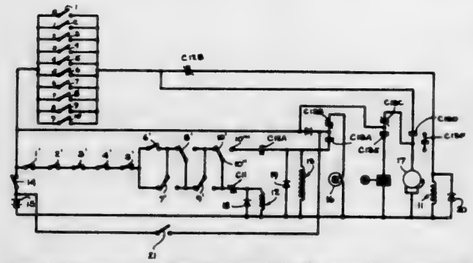
guide includes means by which it may be secured to a chassis board and means by which a casing for the module may be secured to the guide.

3,662,225
MULTI-PRINTED CIRCUIT ASSEMBLY
Robert W. Carter, Bayonne; Steve Chichanowski, and Frances Chichanowski, both of Dayton, all of N.J., assignors to Qicrys Systems, Inc., Dayton, N.J.
Filed Jan. 9, 1970, Ser. No. 1,615
Int. Cl. H02k 7/16; H05k 11/14
U.S. Cl. 317—118 2 Claims



An electronic system modular assembly. A plurality of printed circuit boards including sockets for integrated circuits are mounted on a plurality of support boards which are slidably connected to a housing. Modules are formed of individual of groups of printed circuit boards or by complete support boards. Access to any module is achieved by sliding the support boards out from the housing.

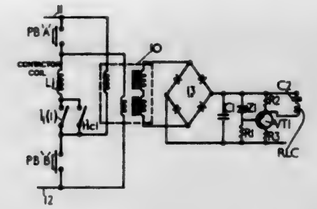
3,662,226
SEQUENTIALLY CODED ELECTRICAL LOCKING MEANS
William Tonkowich; John A. Meditz, both of Franklin Lakes, and Paul Vignola, Succasunna, all of N.J., assignors to Safetech, Inc., Fairfield, N.J.
Filed Mar. 5, 1971, Ser. No. 121,413
Int. Cl. H01h 47/00; E05b 49/00
U.S. Cl. 317—134 12 Claims



A switch operated electrical lock is disclosed. A group of switches is provided, a number of which must be operated in an exact sequence to operate the lock. The operation of any single switch out of sequence requires all of the switches to be reset and the switching operation to be repeated.

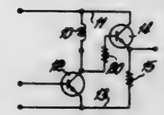
3,662,227
CONTROL SYSTEMS
John J. Morrison, Disley, and John Morton, Hazel Grove, both of England, assignors to Cableform Limited, Cheshire, England
Filed Feb. 10, 1970, Ser. No. 10,198
Claims priority, application Great Britain, Feb. 13, 1969, 7,815/69
Int. Cl. H01h 47/00
U.S. Cl. 317—135 2 Claims

An electrically operated machine has a bi-manual or double button control system which requires an operator to depress both buttons to institute operation, provision being made that both buttons have to be operated within a delay period thus preventing one or other button being wedged-on.



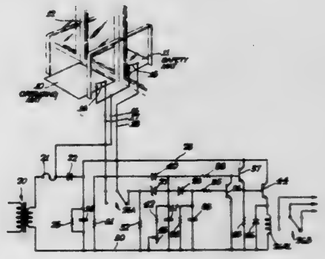
If operation of both buttons does not occur within the delay period the circuit is disabled and can only be re-enabled by releasing both buttons.

3,662,228
CIRCUIT ARRANGEMENT FOR GENERATING A SIGNAL AND FOR SUPPRESSING VOLTAGE PEAKS
Karl-Ernst Boeters, Berlin; Gerhard Conzelmann, Leinfelden; Klaus Streit, Tuebingen, and Hans-Joachim Fleischer, Berlin, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed July 17, 1970, Ser. No. 55,881
Claims priority, application Germany, July 22, 1969, P 19 37 114.3
Int. Cl. H01h 47/32
U.S. Cl. 317—148.5 R 9 Claims



The diode comprised between two electrodes of a transistor is shunted across the inductor, the third transistor electrode being the output electrode. The diode is connected with respect to its polarity so that it only conducts when the current flow through the inductor is broken.

3,662,229
AUTOMATIC DOOR CONTROL UNIT
Richard Graff, 42 Godfrey Drive, and Svend A. H. Holm, 831 Berkshire Drive, both of London, Ontario, Canada
Filed Dec. 14, 1970, Ser. No. 97,755
Int. Cl. H01h 47/32
U.S. Cl. 317—148.5 R 3 Claims



An automatic door control unit for connection to an operating mat and a safety mat to actuate the unit. The unit

includes an amplifier connected to the operating mat to provide a signal actuating a door operating relay, and the amplifier includes an input impedance forming a network decreasing sensitivity to operating mat degradation of resistance. A transistor circuit is connected across the amplifier unit and controlled by the safety mat to prevent operation of the amplifier. The safety mat actuates the transistor circuit when the door is closed and there is traffic on the safety mat. The transistor circuit includes an impedance forming a network decreasing sensitivity to safety mat degradation of resistance and further includes a Zener diode at the input thereof to provide a barrier to voltage resulting from open circuit safety mat resistance degradation. There is a separate time delay associated with the operating mat and with the safety mat.

3,662,230

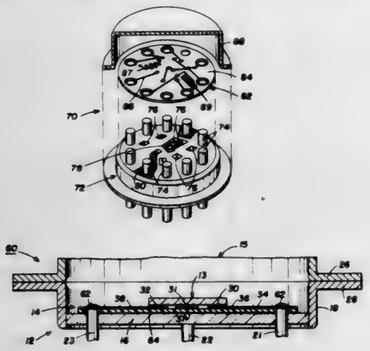
A SEMICONDUCTOR INTERCONNECTING SYSTEM USING CONDUCTIVE PATTERNS BONDED TO THIN FLEXIBLE INSULATING FILMS

James O. Redwantz, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of application Ser. No. 739,855, June 25, 1968, now abandoned. This application Nov. 30, 1970, Ser. No. 93,912

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R **4 Claims**



A highly reliable, low cost packaging system for one or more semiconductor chips each having metal contact pads on at least one face. A rigid support is provided for the semiconductor chip and also the large leads which are used to connect the packaged device in an external circuit. A set of thin metallic film strips are bonded to a thin flexible dielectric sheet for support. The set of metal strips interconnects the contact pads on the semiconductor chips and selected leads to electrically interconnect the semiconductor device and the leads. Where a plurality of semiconductor devices are used, a plurality of dielectric sheets can be stacked and electrical connections made between the different layers of metal film strips through openings in the dielectric sheets. Several processes for assembling the packages are also described.

3,662,231

MOUNTING DEVICES FOR THYRISTORS

Ronald Goodacre, Basingstoke, England, assignor to Lansing Bagnall Limited, Basingstoke, Hampshire, England

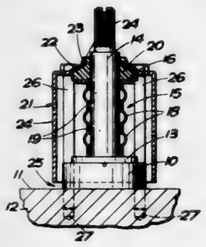
Filed June 30, 1970, Ser. No. 51,121

Claims priority, application Great Britain, July 2, 1969, 33,380/69

Int. Cl. H01l *3/00*

U.S. Cl. 317—234 R **9 Claims**

A mounting device for a thyristor comprising a longitudinally collapsible corrugated tube one end of which engages the thyristor when it is resting against a surface. A clamping structure engages the other end of the tube, and there are means to secure the clamping structure to the surface, which means are adjustable to urge the structure towards the surface so as to deform the tube longitudinally and thereby press the thyristor against the surface. The construction of the collapsible tube is such that the load in the tube, when it is deformed, is substantially independent of the extent of its deformation.



3,662,232

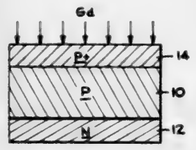
SEMICONDUCTOR DEVICES HAVING LOW MINORITY CARRIER LIFETIME AND PROCESS FOR PRODUCING SAME

Donald F. Stahr, Johnstown, Pa., assignor to FMC Corporation, San Jose, Calif.

Filed Dec. 10, 1970, Ser. No. 96,801

Int. Cl. H01l *7/02, 5/00*

U.S. Cl. 317—234 **11 Claims**



Silicon diodes and silicon controlled rectifiers are provided with reduced minority carrier lifetimes without a significant increase in forward voltage drop or reverse leakage current by means of a gadolinium dopant which is diffused into the semiconductor wafers after first being applied on one face thereof by means of a conventional sputtering process. Gadolinium is sputtered onto the base side of the rectifiers from a foil of the pure metal in a vacuum. The wafers are then placed in a furnace at a temperature above 820° C where the diffusion process takes place.

3,662,233

SEMICONDUCTOR AVALANCHE DIODE

Denis Clerc, Wettingen, and Dieter Zahn, Baden, both of Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed June 16, 1969, Ser. No. 833,386

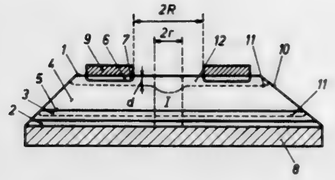
Claims priority, application Switzerland, July 22, 1968, 10977/68

Int. Cl. H01l *5/00*

U.S. Cl. 317—235 T **2 Claims**

A p+ p n n+ semiconductor diode comprises a disc of semiconductor material such as silicon with a bevelled edge, a carrier plate of molybdenum in contact with the outer, p+ zone and an axially centered annular electrode in contact with an annular n+ region of the n-doped zone. The radius of the opening within the annular electrode and the underlying

n+ region is greater than that of a central cylindrical region of the semiconductor material which has the minimum specific resistance of the overall disc material, and the annular region of the semiconductor material which lies between the central cylindrical region of lowest specific resistance and the inner boundary of the annular n+ region has a resistance characteristic such that when a current flows through such annular region at which no destruction of the semiconductor material yet occurs in the event of avalanche breakdown, the voltage drop which is produced is equal to the difference between the breakdown voltage in the central region of lowest resistance where avalanche breakdown is started and the means breakdown voltage in the remaining part of the semiconductor disc.



3,662,234

SEMICONDUCTOR ELECTROMECHANICAL TRANSDUCER ELEMENT HAVING A P-N-P OR N-P-N AMPLIFYING JUNCTION INTEGRALLY ASSOCIATED WITH A STRAIN-SENSITIVE REGION

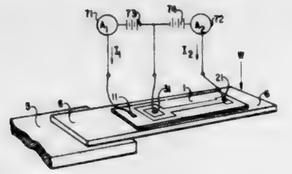
Katsuyuki Ishii, Nagoya, Japan, assignor to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan

Filed Oct. 30, 1970, Ser. No. 85,414

Claims priority, application Japan, Nov. 13, 1969, 44/90981

Int. Cl. H01l *11/00, 15/00*

U.S. Cl. 317—235 R **7 Claims**



A highly sensitive, stable output, electromechanical semiconductor transducer element is formed from a unitary body of a semiconductor material wherein three regions are formed to provide a strain-senaitive region and P-N junctions which can provide a high gain electrical output which is based on a piezoresistive effect produced in the strain-sensitive region which is amplified by the presence of P-N junctions.

3,662,235

CO-AXIAL TUNING CAPACITOR DEVICES

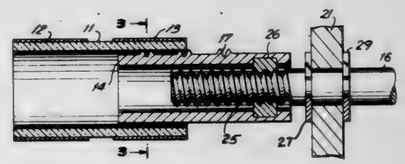
Seymour Napolin, Westbury, N.Y., assignor to Melsey Corporation, Carle Place, N.Y.

Filed Dec. 8, 1970, Ser. No. 96,000

Int. Cl. H01g *5/14*

U.S. Cl. 317—249 T **6 Claims**

A tunable capacitor for use in precision frequency tunable circuits having a tunable slug for movement within a dielectric tube with a capacitive outer surface, wherein protrusions such as dimples are distributed on the surface of the slug in order to maintain a constant and evenly distributed air dielectric between the slug and the tube.



3,662,236

CAPACITOR IN A SEALED METAL CASE

Mark Markarian, Williamstown, and Robert J. McDonough, North Adams, both of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Mar. 12, 1971, Ser. No. 123,722

Int. Cl. H01g *1/02*

U.S. Cl. 317—260 **7 Claims**



An integral rigid axial electrical connector extends from an electrode of a capacitance section through an insulating plug closure in the open end of a metal casing. The connector provides a fluid tight seal with the insulating plug and serves as the mandrel on which the capacitance section is rolled.

3,662,237

COMMUTATED MOTOR INCLUDING COMMUTATION MEANS RESPONSIVE TO REACTIVE VOLTAGE INDUCED IN ARMATURE WINDINGS

Robert Favre, Servan 36, Lausanne, Switzerland

Continuation-in-part of application Ser. No. 682,176, Nov. 13, 1967, now abandoned. This application May 28, 1970, Ser. No. 41,331

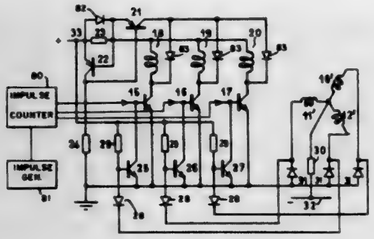
Claims priority, application Switzerland, Nov. 11, 1966, 16307/66; Dec. 16, 1966, 18207/66

Int. Cl. H02k *29/00*

U.S. Cl. 318—254 **12 Claims**

An electronically commutated polyphase motor operating from a direct current supply is provided with means for avoiding excessive short circuit current being produced in the motor windings by reactive voltage induced in the windings, for example under light load conditions.

Transistors in the commutating circuit are thereby protected from overload. Further safety means prevents malfunction



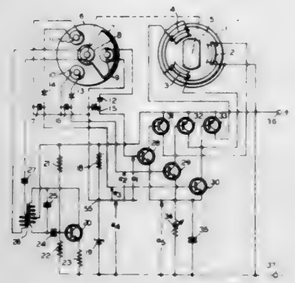
caused by reactive voltage induced in inductive coupling between the commutating circuit and a control circuit.

3,662,238

ELECTRONICALLY COMMUTATED MOTOR

Kazutsugu Kobayashi; Hisayuki Matsumoto, and Yoshiaki Igarashi, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd.

Filed May 20, 1969, Ser. No. 826,191
Claims priority, application Japan, May 21, 1968, 43/35220; May 22, 1968, 43/35252
Int. Cl. H02k 29/00
U.S. Cl. 318—254 5 Claims



An electronically commutated motor and control means therefor.

The electronically commutated motor has no dead zone and no overlap despite an imperfect position detecting signal. The transition of the commutation is carried out in a differential manner. Any fluctuation in the operating temperature and/or deviation of the supply voltage does not disturb the commutation. The generating torque of the motor is easily controlled by a small power without using any additional power control means. A constant torque motor and a constant speed motor are illustrated.

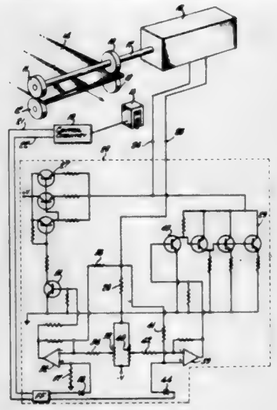
3,662,239

STITCHING MACHINE WITH INERTIAL (DC) MOTOR FOR PULL ROLLS AND ELECTRONIC CONTROL THEREOF

Keith Jefferts, Summit, N.J., assignor to Flynn & Emrich Company, Baltimore, Md.

Filed Feb. 1, 1971, Ser. No. 111,198
Int. Cl. B27f 7/22
U.S. Cl. 318—270 12 Claims

An extremely simple, high speed stitching machine is disclosed which includes pull rollers for moving a workpiece to be stitched along a path adjacent to a stitching head, a DC motor for directly driving the pull rollers and control circuitry for coordinating the operation of the DC motor and stitching head. Additionally current limiting circuitry is provided for electronically controlling the acceleration and deceleration of the motor thereby limiting the torque which



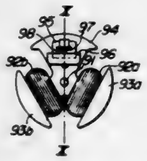
will be applied by the rollers to the workpiece. In a preferred embodiment the extent of acceleration and deceleration (and the torque control) can be selectively varied in accordance with the strength of the media comprising the workpiece.

3,662,240

SMALL-SIZE DIRECT CURRENT MOTOR

Toshio Yukisada, Daito; Takao Noma, Hirakata; Masanori Mizawa, Moriguchi, and Osamu Hashimoto, Higashiosaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 21, 1970, Ser. No. 39,221
Claims priority, application Japan, May 28, 1969, 44/43032
Int. Cl. H02k 27/20
U.S. Cl. 318—325 5 Claims



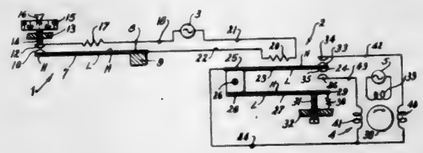
Improvements in small size DC electric motors for use in portable record players, small-size tape recorders, car stereos, etc., and particularly the armature construction of the motor.

3,662,241

TRANSMITTER-RECEIVER SYSTEM

Russell P. Sweger, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed Mar. 29, 1971, Ser. No. 128,890
Int. Cl. H02p 1/04
U.S. Cl. 318—473 11 Claims



A transmitter-receiver system is based upon electrically heated bimetal contactors. The transmitter is percentage on timer that responds to a sensed condition, while the receiver

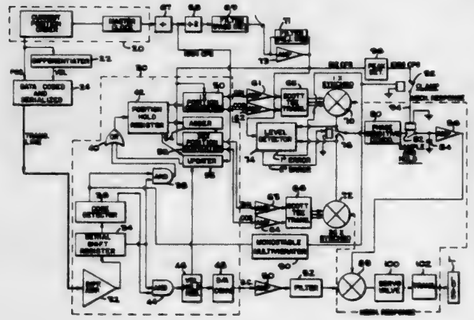
bimetal takes a position that is a function of the percentage on time. The heaters for both transmitter and receiver are connected in series so that fluctuations in supply voltage are compensated. Changes in ambient temperature at either transmitter or receiver or both may be compensated by means of compensating bimetals.

3,662,242

DIGITAL SERVO POWER DRIVE CONTROL INCLUDING VELOCITY UPDATING

Charles J. Wacker, New Brighton; George W. Miller, Anoka, and James B. Dietel, Minneapolis, all of Minn., assignors to FMC Corporation, San Jose, Calif.

Filed May 13, 1970, Ser. No. 36,747
Int. Cl. G05b 19/24, 5/01
U.S. Cl. 318—573 26 Claims



Digital signal orders are received at preset time intervals from a computer which signals indicate the desired angular position of a rotatably mounted load, such as a missile launcher mount. Velocity orders are derived from the position orders and both the velocity and position orders are converted to analog signals. A servomechanism is provided wherein the mechanical response of the load and the position signals provide continuous inputs for a synchro control transformer the output of which indicates the error in load position. The error signal is transmitted to a power drive system to drive the load after it has passed through a sample and hold controller which samples normally only at the time when a new position order is received but which may be operated to sample a plurality of times between position orders when an error of more than a predetermined amount is present.

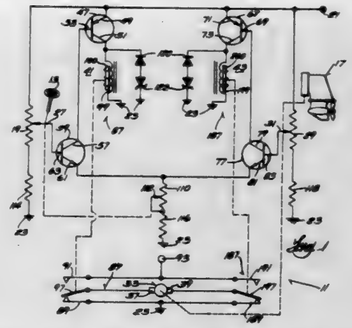
3,662,243

ELECTRICAL CIRCUIT FOR STEERING AND THROTTLE CONTROL OF A MARINE PROPULSION DEVICE

David T. Cavil, Menomonee Falls; William R. Krueger, Milwaukee, and Henry J. Schmidt, Menomonee Falls, all of Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Nov. 16, 1970, Ser. No. 89,792
Int. Cl. G05d 1/08; B63h 25/02
U.S. Cl. 318—588 9 Claims

Disclosed herein is a steering control for the steerable unit of a marine propulsion device, such as a stern drive unit, which control includes a first potentiometer connected to a source of electrical current and having a first wiper connected to a steering wheel to afford variation in the potential at the first wiper in accordance with the steering wheel setting, together with a second potentiometer connected to the current source and including a second wiper connected to the steering unit to afford variation in the potential of the second wiper in accordance with the position of the steering unit, and transistorized switch means connected to the cur-



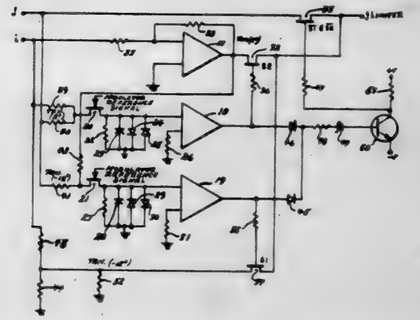
rent source and to the wipers and selectively operable for causing movement of the steering unit in response to movement of the steering wheel.

3,662,244

ELECTRONIC ANGLE LIMITING DEVICE FOR SERVO MECHANISM SYSTEM

Richard A. Day, Playa Del Rey; William E. French, and Michael A. Riley, both of Los Angeles, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force

Filed June 15, 1971, Ser. No. 153,311
Int. Cl. G05g 5/00
U.S. Cl. 318—626 1 Claim



Angle limiting is achieved in a tangent servo system by modifying the sine input to the servo system. The product of the cosine input and the appropriate one of two constants representing the tangents of the maximum excursion angles is selected by control circuits and switched into the servo motor drive circuit when such maximum excursion is reached. An unmodified sine input is provided by the control circuits for normal operation between maximum excursion limits.

3,662,245

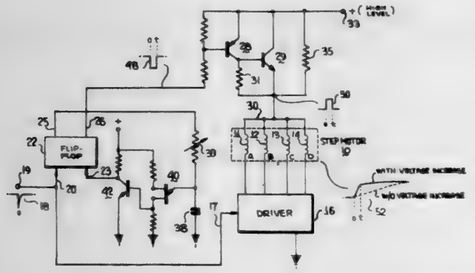
CONTROL CIRCUIT FOR ENERGIZING THE WINDINGS OF MULTI-PHASE STEP MOTORS INCLUDING A TWO LEVEL SUPPLY VOLTAGE

Harold R. Newell, South Newbury, N.H., assignor to Mesur-Matic Electronics Corporation, Warner, N.H.

Filed Dec. 16, 1969, Ser. No. 885,552
Int. Cl. H02k 37/00
U.S. Cl. 318—696 12 Claims

A control circuit for multi-phase step motors includes a driven circuit responsive to timed incoming pulses to excite the motor phases according to a predetermined switching

format. A power supply provides energization to the motor windings as the associated phases are excited, the energizing power normally supplied via a substantial dropping impedance. A network is provided in circuit with the dropping



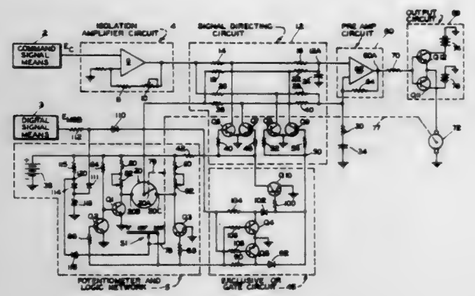
impedance to bypass that impedance and supply virtually the total power of the power supply to the windings associated with the excited motor phases, at selectable portions of the switching format.

3,662,246

DIGITAL CONTINUOUS POTENTIOMETER SERVO FEEDBACK ELEMENT

Richard Cohen, Old Bridge; Harold Moreines, Springfield, and Walter Parfomak, Wallington, all of N.J., assignors to The Bendix Corporation

Filed Mar. 25, 1971, Ser. No. 127,908
Int. Cl. G05b *1/06*
U.S. Cl. 318—663 **9 Claims**



A servo system feedback element including a potentiometer in association with commutating and logic circuitry for providing a continuous and non-ambiguous saw-tooth follow-up output.

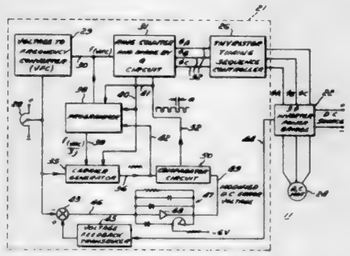
3,662,247

PULSE WIDTH MODULATED INVERTER ADAPTIVE LOGIC

Robert G. Schleman, Cleveland Heights, Ohio, assignor to Reliance Electric Company

Filed Oct. 1, 1970, Ser. No. 77,108
Int. Cl. H02m *1/12*, *7/52*; H02p *5/38*
U.S. Cl. 321—5 **40 Claims**

A pulse width modulated inverter is disclosed wherein adaptive logic is provided to control conduction of the switch means in the inverter. This logic controls the inverter switching rate and modulating pulse and notch width so that the power inverter section does not overheat because of a switching rate or fail because of a narrow modulating pulse. The adaptive logic is responsive to pulse width, notch width and a maximum or minimum carrier frequency all controlling the change of the ratio of carrier frequency to fundamental frequency. A three-phase system is described wherein the ratio of carrier to fundamental frequency is capable of being maintained at 3:1, which establishes a non-symmetrical wave



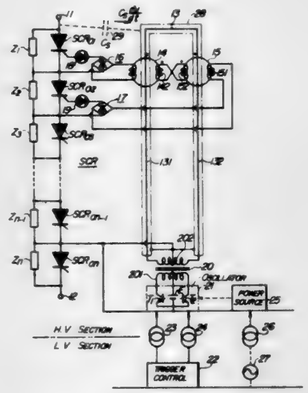
with second harmonics in the fundamental output frequency yet which establishes a higher output voltage than a ratio of 6:1 of the carrier to fundamental frequencies and eliminates a large step of voltage when changing from a carrier to fundamental frequency ratio of 6:1 up to an unmodulated six-step output voltage from the inverter.

3,662,248

TRIGGER CIRCUIT FOR CONTROLLED RECTIFIERS

Hisao Amano; Akiteru Ueda; Kenjiro Yokoyama, and Fumio Ogata, all of Hitachi, Japan, assignors to Hitachi Ltd., Chiyoda-ku, Tokyo, Japan

Filed July 23, 1970, Ser. No. 57,734
Claims priority, application Japan, July 25, 1969, 44/58342; 44/58343; Oct. 3, 1969, 44/78587
Int. Cl. H02m *7/24*; H03k *17/00*; H01f *27/28*
U.S. Cl. 321—11 **17 Claims**



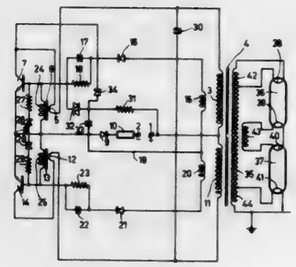
A trigger circuit for controlled rectifiers connected in series such as a converter in DC transmission systems. A trigger signal for controlled rectifiers is supplied from secondary windings which are disposed on an iron core together with a primary conductor in a current transformer system. Said primary conductor consists of a two-way circuit in which circulates a current for producing a trigger signal. Compensating windings are additionally disposed on said iron core, which combine with said two-way circuit of said primary conductor to prevent an erroneous trigger signal from being generated.

3,662,249

DC-AC CONVERTER

Dan Bernardus Wijsboom, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 31, 1970, Ser. No. 68,401
Claims priority, application Netherlands, Sept. 18, 1969, 6914125
Int. Cl. H02m *1/18*
U.S. Cl. 321—11 **9 Claims**



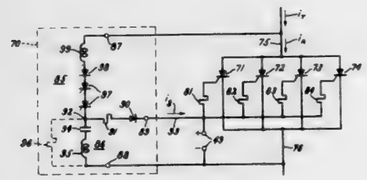
The invention relates to a DC-AC converter using a transistor whose base-emitter circuit is shunted by a transformer winding. According to the invention, a total current of comparatively high value is generated in this winding due to induction and conduction so that this current removes charge carriers from the base of the transistor when this transistor becomes non-conducting. As a result this transistor is quickly ready again for blocking a voltage across its main electrodes. The invention is especially important in the use of highly resistive transistors for a high voltage.

3,662,250

THYRISTOR OVERVOLTAGE PROTECTIVE CIRCUIT

Dante E. Piccone, Philadelphia, and Istvan Somos, Lansdowne, both of Pa., assignors to General Electric Company

Filed Nov. 12, 1970, Ser. No. 88,853
Int. Cl. H02m *1/18*
U.S. Cl. 321—11 **20 Claims**



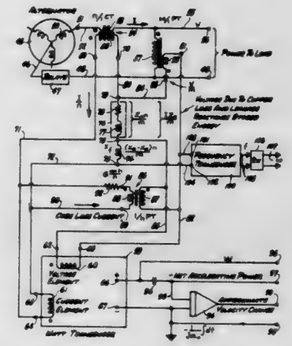
A high-power main thyristor is protected from forward voltage breakover by connecting in parallel relationship therewith an improved overvoltage responsive trigger scheme comprising at least one PNPN semiconductor element and a series L-C circuit. The PNPN element is connected between the anode and the gate of the main thyristor, and the L-C circuit is connected between the gate and the cathode. The element is selected to turn on in a voltage breakover mode when the forward bias voltage on the main thyristor attains a predetermined magnitude which is lower than the breakover level of the thyristor, whereupon the latter is triggered by a sharp gate punch.

3,662,251

METHOD AND SYSTEM FOR MEASURING ACCELERATION AND VELOCITY

Otto Joseph Mitchell Smith, 612 Euclid Avenue, Berkeley, Calif.

Filed June 22, 1970, Ser. No. 48,130
Int. Cl. H02p *9/38*
U.S. Cl. 322—23 **47 Claims**



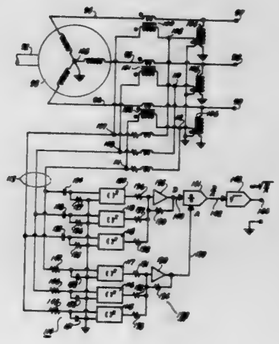
The acceleration of the shaft of a synchronous alternator is measured accurately with low noise by computing the power going into acceleration, which is the input shaft power plus the excitation power less the measured generator output less the computed losses. The accelerating power is divided by the speed to determine the accelerating torque. The accelerating torque is divided by the moment of inertia of the alternator to determine the acceleration. The integral of the acceleration is the shaft angular velocity so that both acceleration and velocity signals are simultaneously available in accordance with this invention.

3,662,252

TACHOMETER AND METHOD FOR OBTAINING A SIGNAL INDICATIVE OF ALTERNATOR SHAFT SPEED

Otto Joseph Mitchell Smith, 612 Euclid Avenue, Berkeley, Calif.

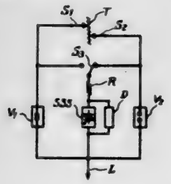
Filed June 22, 1970, Ser. No. 48,075
Int. Cl. H02p *9/00*
U.S. Cl. 322—89 **25 Claims**



An improved tachometer which includes an alternator connected to a shaft whose speed is to be measured and which generates an alternating voltage. Electrical circuits perform a non-linear operation on the generated alternating voltage and produce a unidirectional output proportional to the speed of

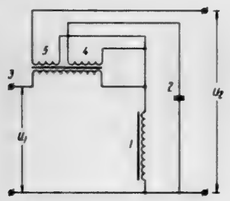
the shaft by order-independent iterative pairwise binary operations. One embodiment of electrical apparatus for performing such operations is a sine wave generator followed by square law operations on the generated voltages followed by an operational summer. Another embodiment includes a square wave generator followed by bridge rectification of the square waves to produce a unidirectional signal followed by a star or tree of diodes to produce an auctioneering circuit which passes the largest rectified voltage. Another embodiment of this invention is a tachometer in which a velocity signal is derived from computations based on the alternator terminal potentials and currents.

3,662,253
TAP CHANGING SYSTEM FOR REGULATING TRANSFORMERS
Saburo Yamamoto, 90-2 Kumegawa-Kodan, 1-4 Misumi-cho, Higashimurayama-shi, Tokyo, Japan
Filed Oct. 23, 1970, Ser. No. 83,383
Claims priority, application Japan, Nov. 4, 1969, 44/88266
Int. Cl. G05f 1/14; H02p 13/06
U.S. Cl. 323—43.5 S **4 Claims**



A tap changing system for regulating transformers disclosed here is of one resistor type in which vacuum switches are used for its main arcing contacts and a semiconductor switch or a semiconductor controlled switch bidirectionally conductive on AC is used in series to a current limiting resistor circuit which is switchably connected in parallel to said vacuum switches. Tap changing of one resistor method is effected by on-off operation of the vacuum switches, whereby on-off operation of the semiconductor switch is automatically effected.

3,662,254
FERRORESONANCE VOLTAGE STABILIZER
Alexandr Fedorovich Gorbuntsov, Kremlevskaya, 4, kv. 3; Efim Petrovich Berlinblau, ulitsa Schastlivaya, 7, kv. 89, and Nikolai Kuzmich Pul, Kremlevskaya, 63, kv. 20, all of Zaporozhie, U.S.S.R.
Filed Dec. 1, 1970, Ser. No. 93,954
Int. Cl. G05f 3/06
U.S. Cl. 323—45 **2 Claims**



A ferroresonance voltage stabilizer for stabilizing a power supply voltage by minimizing voltage variations in an output circuit thereof, of the type having a saturable transformer winding in series with a linear choke, a compensating winding connected in series with an output circuit and a capacitor making a ferroresonant circuit with the transformer winding, in which an additional compensating winding is provided in series with the capacitor to compensate variations of voltage in the capacitor circuit, thereby to get a well regulated and stabilized output voltage.

3,662,255
APPARATUS FOR LOCATING CONCEALED OR BURIED METAL BODIES AND A STABLE INDUCTOR USABLE IN SUCH DETECTORS
Charles L. Garrett, 1201 Ravina Drive, Garland, Tex.
Filed Apr. 13, 1970, Ser. No. 27,575
Int. Cl. G01v 3/10
U.S. Cl. 324—3 **12 Claims**

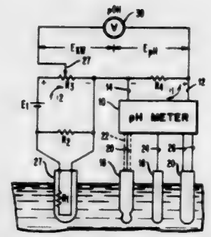


A metal detector for locating metal bodies buried in the ground or embedded in other structures having a probe assembly which is movable parallel to the surface of the earth or such structure and whose inductance varies as the inductor assembly is moved into the proximity of such concealed object, the detector providing an output signal whose frequency varies in accordance with the inductance of the probe assembly, wherein the probe assembly includes large diameter and small diameter inductor assemblies selectively connectible in a frequency determining circuit of an oscillator and wherein the signal produced by the detector may be indicated visually by means of a meter, audibly by a speaker to which the output of the detector is transmitted, or by neon bulbs mounted on the inductor assemblies which light up with a frequency which varies in accordance with the frequency of the output of the detector.

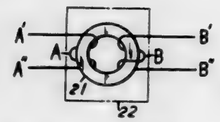
A stable inductor assembly usable in detectors of the type described and having an inductor coil formed of a coaxial cable whose inner conductor is connected in the frequency determining circuit of an oscillator and whose outer coaxial conductor is grounded to form a partial Faraday shield between the inner conductor and a Faraday shield mounted exteriorly of the coil.

3,662,256
HYDROXYL ION MEASURING SYSTEM
Edgar L. Eckfeldt, Ambler, Pa., assignor to Leeds & Northrup Company, Philadelphia, Pa.
Filed Apr. 27, 1970, Ser. No. 31,900
Int. Cl. G01n 27/42
U.S. Cl. 324—29 **11 Claims**

A system for measuring the pOH value of a solution by subtracting a signal representing the pH value of the solution from a signal representing the value of the logarithm of the reciprocal of the ionization constant of water at the solution temperature. The circuit for providing the value of the logarithm utilizes a temperature sensitive resistive element having a positive temperature coefficient. That element is shunted by a fixed resistor and the shunt combination is in series with another fixed resistor and a source of fixed potential so that the current through the circuit is proportional to the value of the logarithm.

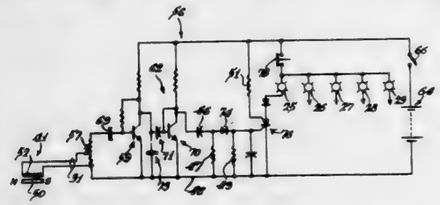


3,662,257
POSITION DETECTOR USING A SWITCHABLE MAGNETIC CORE
Nobutsune Fujiwara, Chiba-shi, Japan, assignor to Fujisash Industries, Ltd., Kanagawa, Japan
Filed Sept. 8, 1969, Ser. No. 855,980
Int. Cl. G01r 33/00
U.S. Cl. 324—34 PS **5 Claims**



A position detector using a switchable magnetic core comprising a permanent magnet and a detector comprising a ring magnetic core having a primary coil adapted to be energized by a pulsed current and a secondary coil from which a signal is adapted to be taken out to an indicating means. Residual induction of the core is to be disturbed by relative motion of the permanent magnet to the detector. The disturbance is sensed by the indicating means so as to detect the relative motion. The source of the pulsed current and the indicating means may be disconnected from the detector acted on by the permanent magnet and the information may be obtained afterwards by connecting the source of pulsed current and indicating means again.

3,662,258
DEVICE FOR LOCATING NAILS BENEATH THE SURFACE OF A BOWLING LANE
Patrick J. Murphy, and Robert C. Thompson, both of Muskegon, Mich., assignors to Brunswick Corporation
Filed Sept. 16, 1969, Ser. No. 858,485
Int. Cl. G01r 33/00
U.S. Cl. 324—41 **1 Claim**



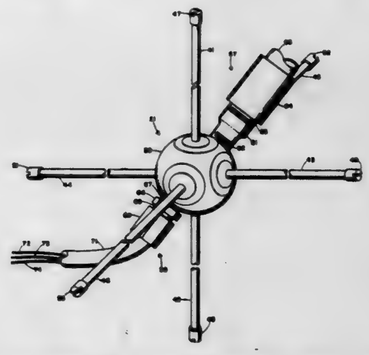
A nail locator for determining the location of nails close to the surface of a bowling lane including a base with a plurality of overlapping magnetic detectors mounted thereon with each of the detectors consisting of a permanent magnet and a coil potted in epoxy and arranged to induce a current in an input circuit upon relative movement of a sufficiently close nail, there being provided a plurality of detecting circuits each responsive to one of the magnetic detector input circuits and visual indicating lamps on a panel of the locator positioned to identify the approximate location of the nail.

3,662,259
CIRCUIT CONTINUITY TESTER WITH WIRE INSULATION PIERCING MEANS
August A. Dapilito, 55 Bowers St., Jersey City, N.J.
Filed May 8, 1970, Ser. No. 35,790
Int. Cl. G01r 31/02
U.S. Cl. 324—51 **1 Claim**



A circuit continuity tester for automotive circuits and the like features a simplified wire stabilizing and piercing means which prevents the wire from shifting as the pointed piercing element enters the same. The point of the piercing element is protected. A long bearing contact surface is provided between the piercing rod and the wire stabilizer. The structure is simplified, durable and economical.

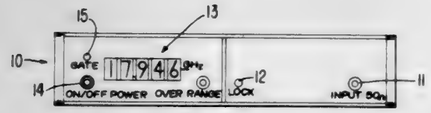
3,662,260
ELECTRIC FIELD MEASURING INSTRUMENT WITH PROBE FOR SENSING THREE ORTHOGONAL COMPONENTS
Aubrey M. Thomas, and Aubrey G. Holston, both of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy
Filed Feb. 12, 1971, Ser. No. 114,921
Int. Cl. G01r 31/02
U.S. Cl. 324—72 **10 Claims**



An instrument is disclosed which includes a probe for sensing the *x*, *y*, and *z* orthogonal components of an electric

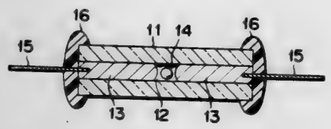
field occurring at any given place in an environmental medium and for producing a trio of analog signals proportional thereto. A computer is connected to said probe for the processing and resolving of said analog signals in such manner as to cause an output signal to be produced thereby that is proportional to the magnitude of the resultant thereof. Further computer structure is optionally employed to make computations and produce signals that are proportional to the vector quantity of the aforesaid resultant with respect to a given reference, as well as the angles thereof relative to the x, y, and z axes which are coincident with the aforesaid sensed electric field x, y, and z orthogonal components. Any or all of said signals are read out in terms warranted by any given operational circumstances.

3,662,261
AUTOMATIC FREQUENCY METER
Roy R. Barthold, Los Altos; William J. Keane, San Jose, and Lawrence F. Miller, Saratoga, all of Calif., assignors to EIP Labs, Santa Clara, Calif.
Filed June 3, 1969, Ser. No. 829,899
Int. Cl. G01r *23/02*
U.S. Cl. 324—78 R **5 Claims**



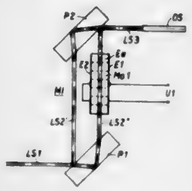
An automatic frequency meter is disclosed including a resonant frequency structure coupled to a transmission line with the frequency of the resonant structure continuously swept and change in level of the signal on the transmission line detected for a determination of the resonant frequency of the structure and therefore the frequency of the signal. The resonant frequency structure can be YIG coupled to the transmission line in an absorbtion mode. The YIG can be coupled to the line by positioning adjacent a slot in the center conductor with the slot aligned parallel to the magnetic field for coupling to the 210 mode or perpendicular to the magnetic field for coupling to the 110 mode of the YIG.

3,662,262
MERCURY COULOMETER HAVING AN ELECTRODE SPACER
Hiroshi Shimizu, Shizuoka-ken, Japan, assignor to Terumo Ceramics Co., Ltd., Shizuoka-ken, Japan
Filed Oct. 20, 1970, Ser. No. 82,261
Claims priority, application Japan, Nov. 13, 1969, 44/107165
Int. Cl. G01r *27/22*
U.S. Cl. 324—94 **10 Claims**



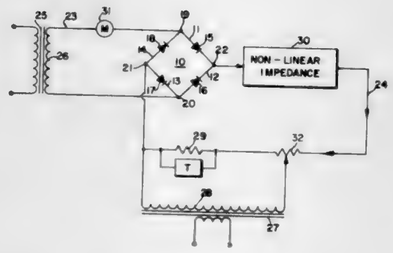
A mercury coulometer prepared by sealing in a bored capillary tube a pair of spatially disposed mercury columns with an electrolyte interposed therebetween and drawing out an electrode from said both mercury columns, characterized in that the coulometer has a spacing member placed in the electrolyte between the mercury columns to prevent them from being brought into mutual contact. The inner diameter of the bore is from 0.1 to 2 mm and the spacing member has a dimension of about 80 – 90 percent of the inner diameter of the bore in the direction of the diameter of the bore.

3,662,263
APPARATUS FOR MEASURING CURRENT IN HIGH-VOLTAGE LINES
Joachim Bensel, Steinau, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany
Filed Oct. 28, 1970, Ser. No. 84,636
Claims priority, application Germany, Oct. 30, 1969, P 19 55 403.1
Int. Cl. G01r *31/00*
U.S. Cl. 324—96 **14 Claims**



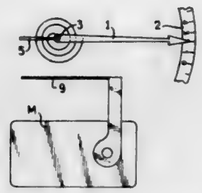
An apparatus for measuring the current flowing through a high-voltage line and transferring the result to a low-potential locality has at the high line-voltage side a magnetic or electric field which varies in dependence upon the current to be measured. An optical modulator controlled by the field variations is interposed in one of two beams of coherent light to modulate this one beam relative to the other. An interferometer or the like device superimposes the modulated and unmodulated beams to produce an interference fringe pattern of alternately bright and dark stripes which travel from one to the other side of the pattern area. Light conductors transmit the resulting optical pulses to photoelectric sensors on low potential. The corresponding electric pulses control a device for counting the interference stripes. At any time the count corresponds to the then obtaining intensity value of the current.

3,662,264
RECTIFIER BRIDGE TYPE WATTMETER
Clarence Wilson Hewlett, Jr, Hampton, N.H., assignor to General Electric Company
Filed June 26, 1969, Ser. No. 836,717
Int. Cl. G01r *7/00, 21/00*
U.S. Cl. 324—142 **7 Claims**



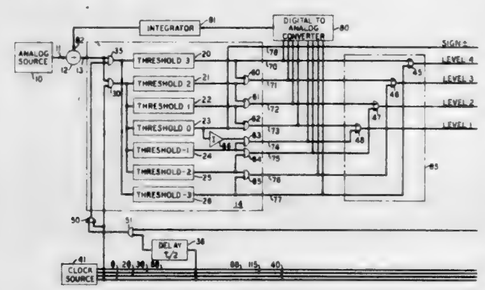
A wattmeter of the rectifier bridge type using a four-arm diode bridge having input and output circuits into which current and voltage signals are introduced. A squaring network comprising parallel connected resistors and diodes permits the product of the voltage and current signals to be read out by a milliammeter in the input circuit.

3,662,265
COMBINED MOTOR AND VOLTMETER
Serge Besancenot, 5 rue Edouard Sylvestre, Sevran (Seine-St.-Denis), France
Filed Nov. 7, 1969, Ser. No. 875,181
Int. Cl. G01r *1/20*
U.S. Cl. 324—157 **1 Claim**



A voltmeter associated with a motor is operated by the magnetic field produced by the motor. A metal sensitizing element which is adjustable controls the sensitivity of the meter to the field.

3,662,266
NONLINEARLY SAMPLED DIFFERENTIAL QUANTIZER FOR VARIABLE LENGTH ENCODING
John Ormond Limb, New Shrewsbury, and Frank William Mounts, Colts Neck, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 18, 1970, Ser. No. 38,317
Int. Cl. H04b *1/66*
U.S. Cl. 325—38 B **3 Claims**

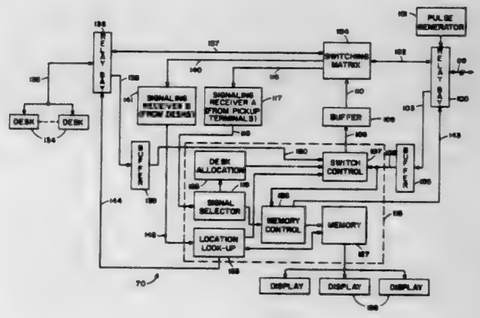


A differential quantizer for predictive PCM transmission systems in which difference signals are quantized at the Nyquist rate when they are below a predetermined level but are quantized at twice the Nyquist rate when they exceed that level. The difference signals are encoded for transmission but an extra bit follows each code word representing a level above the predetermined threshold to indicate to the receiver whether that sample is to be inserted by the receiver at a Nyquist interval or one-half a Nyquist interval from the preceding sample. Where the difference signal to be encoded is large due to a substantial change in the input signal, several such samples taken at twice the Nyquist rate serve to rapidly reduce the difference signal and provide a better approximation of the input signal to the receiver.

3,662,267
SYSTEM FOR LOCATING AND COMMUNICATING WITH MOBILE UNITS
Roger R. Reed, Arlington, Mass., assignor to Sylvania Electric Products Incorporated
Filed May 20, 1970, Ser. No. 39,100
Int. Cl. H04b *3/60, 7/00*
U.S. Cl. 325—53 **8 Claims**

System for posting the location of each of a plurality of mobile units, for example, police cars, at a central office. The geographic area under the surveillance of the central office is divided into sectors. Each sector has a fixed pickup terminal which radiates a carrier frequency. Five different carrier frequencies are used so that each pickup terminal radiates at a frequency different from those radiated in contiguous sectors.

When a mobile unit moves from one sector to another sector, it senses that the strongest carrier frequency present is that being radiated from the pickup terminal in its new sector. The mobile unit transmits its unique identification coded signal on the one of five companion carrier frequencies which corresponds to the carrier frequency radiated by the pickup terminal of the new sector. Only pickup terminals radiating a carrier frequency of the frequency of the pickup terminal in the new sector and tuned to receive the companion carrier frequency with the identification coded signal, and its strength is such that it is detected only by the pickup terminal in the new sector.



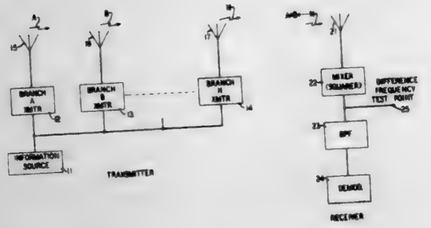
The pickup terminal detects the identification coded signal and transfers it over connecting wires to the central office. The central office determines the particular mobile unit by the identification coded signal and determines its location by the particular connecting wires over which the signal is received. This data is stored in a memory at the central office, and is updated each time the mobile unit leaves one sector and enters a new sector.

The system may also provide for two-way voice communication between each mobile unit and the one of several control desks at the central office to which it is assigned. Communications between a mobile unit and the pickup terminal of the sector in which it is located is by radio employing the two carrier frequencies associated with the sector. Communication from the pickup terminal to the central office is by connecting wires. When a control desk initiates a call to a particular mobile unit, the memory is searched to determine the location of the mobile unit and the control desk is connected to the proper pickup terminal.

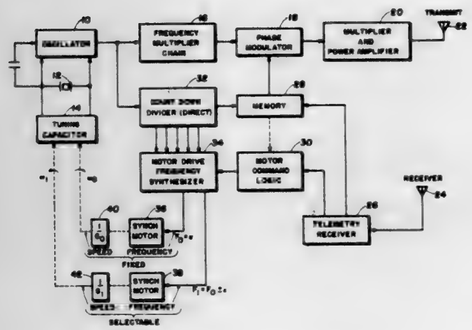
3,662,268
DIVERSITY COMMUNICATION SYSTEM USING DISTINCT SPECTRAL ARRANGEMENTS FOR EACH BRANCH
Michael James Gans, New Shrewsbury, Monmouth County, and Douglas Otto John Reudink, Colts Neck, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Nov. 17, 1970, Ser. No. 90,396
Int. Cl. H04b *1/02*
U.S. Cl. 325—56 **17 Claims**

The output of each branch of a diversity system contains a pilot signal and a modulated carrier. The spectrum of each branch output is distinct, but the difference frequency component between the signal and pilot is identical for all branches. The same intelligence is applied to each branch. In

a unitary branch combiner, a single mixer performs all cophasing and combining. All of the pilot and carrier signals are beat together to produce in-phase addition of the difference components derived from the individual signal pairs, and the spectra are selected so that negligible interference is generated by cross modulation products.



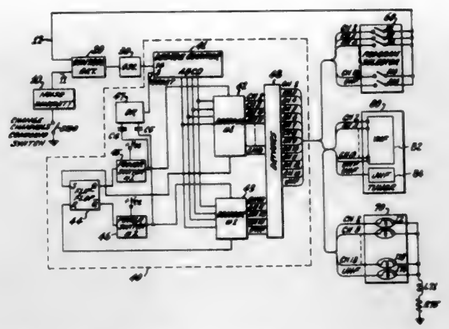
3,662,269
REMOTE DRIFT RATE COMPENSATOR FOR FREQUENCY STANDARDS
Eugene F. Osborne, Baltimore, and Lauren J. Rueger, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy
Filed Apr. 28, 1969, Ser. No. 819,596
Int. Cl. H04b 1/66; H03b 3/04
U.S. Cl. 325—63 **2 Claims**



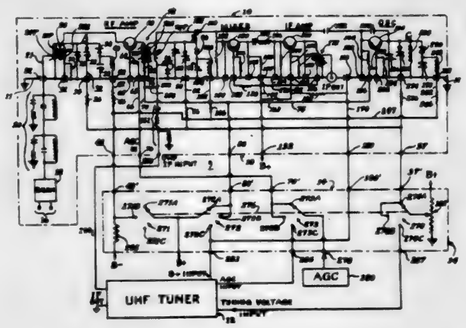
A drift rate compensator for secondary frequency standards of the quartz crystal type, which provides adjustment by remote control for long term rate of frequency change. Invention is particularly useful for maintaining the frequency stability of the oscillator in an orbiting satellite.

3,662,270
VHF/UHF INTERLOCK CIRCUIT
Wayne Wheeler Evans, Indianapolis, Ind., assignor to RCA Corporation
Filed July 16, 1969, Ser. No. 842,179
Int. Cl. H04b 1/16
U.S. Cl. 325—390 **8 Claims**

In a television receiver having an electronically controlled tuner, a circuit for automatically tuning the receiver to a particular one of the channels, when, for any reason, the electronic tuning system is disconnected from the receiver.



3,662,271
SOLID STATE TELEVISION TUNER
Mutsuo Nakanishi, Villa Park, Ill., assignor to Standard Kollsman Industries, Inc., Melrose Park, Ill.
Filed July 7, 1969, Ser. No. 839,168
Int. Cl. H04b 1/16; H03j 5/00
U.S. Cl. 325—459 **15 Claims**

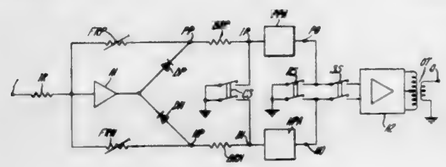


A UHF-VHF all channel television tuning system including a solid state voltage-variable capacitor (varactor) tuned VHF television tuner in five embodiments is disclosed. The first VHF tuner is a three matched tuned circuit tuner including one varactor tuned preselector circuit, one varactor tuned RF amplifier load circuit and one varactor tuned oscillator circuit. Each of the three varactors of the three tuned circuits are controlled from a single voltage source and each of the tuned circuits has provisions for solid state switching between the lower and upper VHF bands so that the same voltage source can tune both VHF bands.

The VHF tuner includes four stages: a first RF amplifier stage, an IF amplifier stage, a mixer stage and an oscillator stage. Provisions are made for employing the IF amplifier stage and the mixer stage as cascaded IF amplifier stages when receiving a UHF television signal, with the same IF output terminal yielding signal outputs for both UHF and VHF modes of operation. Provision is also made for automatically alternating the gain of the cascaded amplifiers between the UHF and VHF modes to obtain a parity between the modulated IF outputs in both modes.

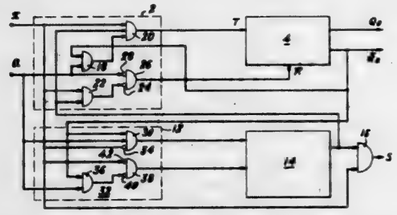
Also disclosed are four alternative embodiments of the VHF tuner of the invention; one in which two inductively coupled IF filter circuits are provided between the mixer stage and the amplifier stage to reduce noise and cross-modulation, a second in which a field effect transistor (FET) is provided as the IF amplifier stages amplifying device for the same end and a third which is a three circuit three stage VHF tuner without provision for UHF signal accommodation. The fifth embodiment is a four tuned circuit VHF tuner capable of use in the system, which tuner includes a varactor tuned preselector circuit, a varactor double tuned interstage circuit and an oscillator varactor tuner circuit as well as IF amplifier stage that is employed for both UHF and VHF modes of operation and provision for altering the gain of the mixer and IF amplifier stages between UHF and VHF modes of operation to achieve parity between UHF and VHF IF outputs.

3,662,272
ELECTRONIC APPARATUS
Reginald C. Bolt, London, England, assignor to Molins Machine Company Limited, London, England
Filed Aug. 18, 1969, Ser. No. 851,016
Claims priority, application Great Britain, Aug. 22, 1968, 40,309/68
Int. Cl. G01r 5/22
U.S. Cl. 328—104 **9 Claims**



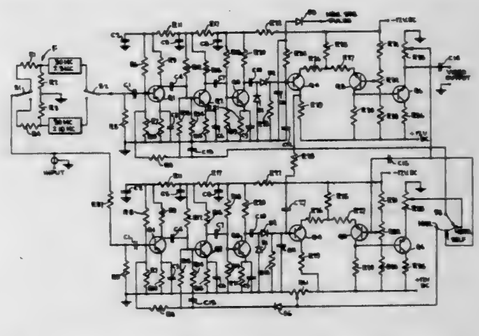
A pulse adder, producing an output representing the sum of the amplitudes of a sequence of electric pulses, has a storage capacitor charged by each pulse and stabilizing means opposing any reduction of voltage across the storage capacitor. Apparatus is also disclosed for producing a signal representing the average value of continuously-variable voltage over a period, comprising switching means for chopping said voltage into pulses, two pulse adders receiving said pulses, one adder for pulses of each polarity, and a different amplifier receiving outputs from both adders at the end of the period and producing a signal representing the difference of the adder outputs, i.e. the aforesaid average value.

3,662,273
APPARATUS FOR SAMPLING RAMDOM PULSE
Armand Chicheportiche, Orsay; Rene Louis Vallee, Chilly-Mazarin, and Pierre Verges, Massy, all of France, assignors to Commissariat A l'Energie Atomique, Paris, France
Filed June 24, 1970, Ser. No. 49,426
Claims priority, application France, July 7, 1969, 6922984
Int. Cl. H03k 17/00
U.S. Cl. 328—151 **4 Claims**



An apparatus for sampling a train I_e of pulses of random duration and position wherein, the sampling operation being controlled by the pulses of a second train I_c of pulses of the same type, the pulses of both trains excite a combinational device which in turn drives the reset and set inputs of a flip-flop unit having four stable states of equilibrium the pulses of both trains also excite a second combinational device which drives one of the inputs of a bistable unit, the complement of the output quantity of the flip-flop unit is fed back to the input of the second combinational device, the output quantity of the bistable unit is fed back to the input of the first combinational device, and the output of the bistable unit as well as the first train of random pulses are applied respectively to the two inputs of an AND circuit which selects the sampled pulses.

3,662,274
DUAL-CHANNEL LOGARITHMIC AMPLIFIER
Donald A. Pritchard, Orange, and Aldan Dunne Gomez, San Diego, both of Calif., assignors to Ametek, Inc., New York, N.Y.
Continuation of application Ser. No. 735,224, June 7, 1968.
This application June 8, 1970, Ser. No. 48,799
Int. Cl. H03d 1/14
U.S. Cl. 329—192 **20 Claims**

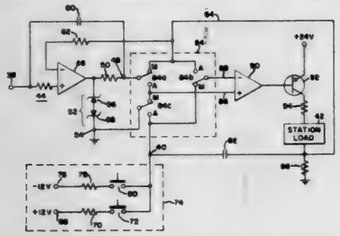


A dual-channel logarithmic amplifier for amplifying and detecting frequency components of an input signal comprising a plurality of frequency components and particularly for amplifying and detecting desired frequency components in the presence of high level, wide band noise. The inventive apparatus comprises a first amplifier means responsive only to a relatively narrow band of the frequency components comprising the input signal for amplifying desired frequency components in the narrow band and producing an output signal. Second amplifier means are provided responsive to a relatively wide band of the frequency components comprising the input signal including high level, wide band noise adjacent to the desired frequency components for amplifying the same. Negative feedback means are connected from the second amplifier means to the first amplifier means so as to reduce the input gain of the first amplifier means in response to the output from the second amplifier means. In this manner, the detection and amplification of small amplitude desired frequency components is made possible even in the presence of high level, wide band noise.

3,662,275
MANUAL/AUTOMATIC STATION FOR USE IN PROCESS CONTROL SYSTEMS
John E. Riley, Saugus, Mass., assignor to General Electric Company
Filed Oct. 1, 1970, Ser. No. 77,104
Int. Cl. H03f 1/34
U.S. Cl. 330—1 A **6 Claims**

A manual/automatic station including two amplifiers and a switching circuit for interconnecting the amplifiers in either

an automatic configuration or a manual configuration. In the automatic configuration, the two amplifiers are in series. In the manual configuration, the output of a circuit associated with the first amplifier receives a feedback current from the station load circuit. A shunt capacitor connected between an input to the first amplifier and the circuit output charges to the difference between a feedback voltage developed in the station load circuit and an automatic control signal. The out-



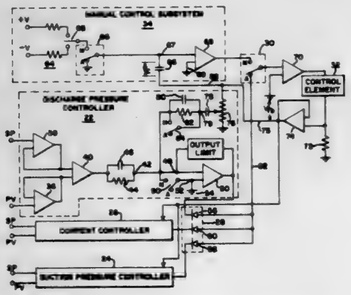
put of the first amplifier, which becomes saturated in the manual configuration, is limited by Zener diodes. On return to the automatic configuration, the Zener-limited voltage across the shunt capacitor. The current establishes a ramp voltage across the input to the second amplifier and, consequently, across the load until the first amplifier is driven from saturation. The shunt capacitor passes changes in input signals to the second amplifier during ramping.

3,662,276

BUMPLESS TRANSFER CIRCUITS FOR PROCESS CONTROL SYSTEMS

Donald Roy Hyer, Lynnfield, Mass., assignor to General Electric Company

Filed Oct. 2, 1970, Ser. No. 77,563
Int. Cl. H03f 1/32
U.S. Cl. 330—1 A **7 Claims**



A process control system including automatic and manual control subsystems which alternatively regulate current supplied to a control element. The system includes means for providing bumpless transfer from one subsystem to the other. Memory capacitors in feedback paths to the subsystems store charges proportional to the voltage across the control element. The stored charges provide feedback bias to each amplifier in the subsystem to which control is being transferred.

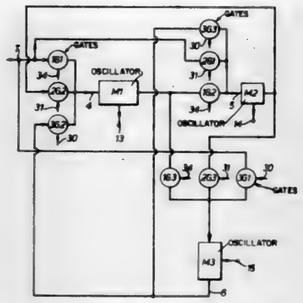
3,662,277

CLOCK OSCILLATOR ARRANGEMENTS

Colin Graham White, Chelmsford, England, assignor to The Marconi Company Limited, London, England

Filed Apr. 9, 1970, Ser. No. 27,012
Claims priority, application Great Britain, Apr. 14, 1969, 19,089/69
Int. Cl. H03b 3/04
U.S. Cl. 331—2 **6 Claims**

A clock oscillator arrangement including a plurality of at least three oscillator units so arranged that at any one time one of said oscillator units acts as a master oscillator unit controlling the remaining units, the arrangement being such that upon the occurrence of a phase fault between the unit



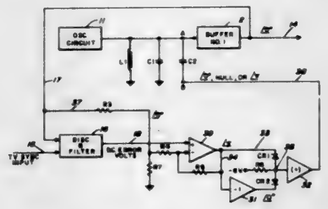
for the time being acting as the master and one of the remaining units, the unit acting as the master is changed from said one to one of the other of the remaining oscillator units.

3,662,278

AUTOMATIC PHASE CONTROL CIRCUIT FOR TV SYSTEM

Gerhard A. Kladde, Westport, Conn., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 16, 1970, Ser. No. 72,680
Int. Cl. H03b 3/04
U.S. Cl. 331—17 **6 Claims**



An automatic phase control circuit to synchronize the frequency and phase of a TV system having a discriminator to produce an error signal from the discrimination of the TV sync signal frequency and the frequency from a reference local oscillator to develop, through buffer amplifiers and a unijunction negative resistance control source or through operational amplifiers and a varactor bridge, a zero phase signal, a null signal, or an out-of-phase signal to control the effective capacitive reactance of an L–C tank circuit coupled to control the reference local oscillator thus controlling the alternating current for the local oscillator thereby synchronizing its frequency and phase with the TV frequency and phase.

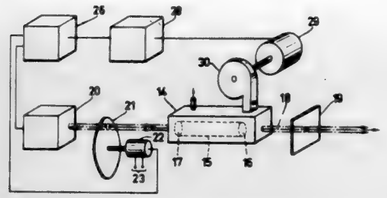
3,662,279

DEVICE FOR CONTROLLING THE FREQUENCY OF A LASER BEAM

Unto Sandstrom, Stureparken 4, 114 26 Stockholm; Nils Abramson, Bergtorpsvagen 62, Taby, 183 64; Ulf Sjolin, Celsiusgatan 7, 112 30 Stockholm; Henrick Murray, Tradgardsgatan 32, ltr, 172 38 Sundbyberg, and Bertil Colding, Ploggatan 30, 724 66 Vasteras, all of Sweden

Filed Oct. 20, 1970, Ser. No. 82,347
Claims priority, application Sweden, Oct. 31, 1969, 14968/69
Int. Cl. H01s 3/09
U.S. Cl. 331—94.5 **14 Claims**

A system for stabilizing the frequency of a laser having the resonator reflectors mounted on the ends of a gas discharge



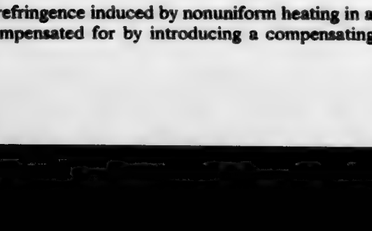
tube by controlling the temperature of the tube in response to an optical output signal from the laser.

3,662,280

EXPLOSIVELY DRIVEN PULSED CHEMICAL LASER

Reed J. Jensen, and Walter W. Rice, Jr., both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 16, 1970, Ser. No. 89,888
Int. Cl. H01s 3/09
U.S. Cl. 331—94.5 **9 Claims**



Reactions of the type

$$QA_x \rightarrow Q + xA$$

$$A + BC \rightarrow AB^* + C$$

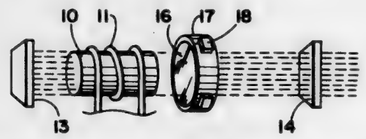
where Q, A, B and C are atoms, are driven by means of a very fast explosive reaction which does not produce the lasing molecule AB^* but rather drives the lasing reaction by providing copious quantities of the atomic species A to undergo the lasing reaction. Provided that a sufficient distance in the binding energies of A's molecular precursor QA_x and BC exists, so that QA_x is selectively dissociated, intiation of a rapid explosive reaction in a gaseous branching chain explosive mixed with QA_x and BC produces an intense laser pulse chain in an optical cavity.

3,662,281

METHOD AND MEANS FOR COMPENSATING BIREFRINGENCE IN LASER SYSTEMS

Walter Koechner, Malibu, Calif., assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 11, 1970, Ser. No. 10,513
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 **7 Claims**



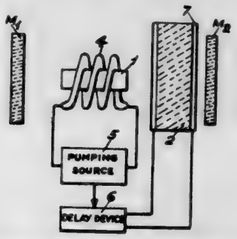
Birefringence induced by nonuniform heating in a laser rod is compensated for by introducing a compensating material of similar physical properties to the rod and artificially inducing birefringence in the compensating material in a sense opposite to that taking place in the laser rod.

3,662,282

STIMULATED EMISSION SOURCE OF LIGHT

Georges Bret, and Francois Gires, both of Paris, France, assignors to CSF-Compagnie General De Telegraphie Sans Fil

Continuation of application Ser. No. 441,094, Mar. 19, 1965. This application July 24, 1970, Ser. No. 58,159
Claims priority, application France, Mar. 20, 1964, 968037
Int. Cl. H01s 3/11
U.S. Cl. 331—94.5 **2 Claims**



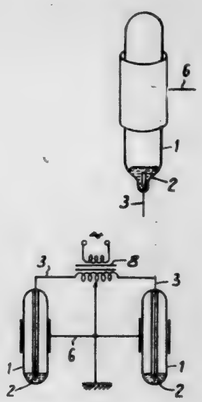
A stimulated emission source of light comprises an active body located between two mirrors, at least one of them being only partly reflecting and a pumping source. A plate of a material having a transmission ratio increasing with the intensity of the light incident thereon is placed between the active body and one of the mirrors.

3,662,283

HIGH FREQUENCY ELECTRONIC PULSE GENERATOR

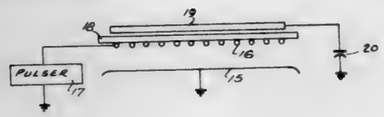
Jean E. Usse, Villemomble, and Henri Spindler, Colmar, both of France, assignors to Centrale D'Exploitation et de Commerce, French (Societe Anonyme), Paris, France

Filed Jan. 13, 1970, Ser. No. 2,508
Claims priority, application France, Jan. 24, 1969, 01343
Int. Cl. H01s 1/04
U.S. Cl. 331—94 **11 Claims**



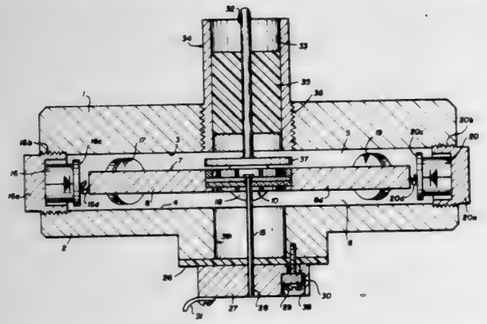
An electronic generator of very high voltage pulses at a very high frequency constituted by a tube enclosing a cathode fed with a very high voltage, said cathode being constituted by mercury in which a cathode spot is formed or else by gallium which melts at the temperature of operation while the tube is filled with the vapors of the cathode-forming metal. Said cathode, which is associated with an anode or otherwise, produces in an auxiliary conductive component located inside or outside the tube the desired high frequency pulses.

3,662,284
DOUBLE DISCHARGE LASER
Alexandre J. Beaulieu, and Albert Laflamme, both of Ste. Foy, Quebec, Canada, assignors to Her Majesty the Queen in right of Canada represented by the Minister of National Defence of Her Majesty's Canadian Government
Filed Aug. 20, 1970, Ser. No. 65,588
Claims priority, application Canada, Aug. 29, 1969, 60,715
Int. Cl. H01s 3/09
U.S. Cl. 331—94.5 4 Claims



A transverse excitation system is disclosed in which a preliminary discharge between an auxiliary electrode and a main electrode is initiated prior to initiation of the main discharge. The preliminary discharge ionizes the gas adjacent the main electrode and reduces the probability of the onset of bright arc discharge, thus enhancing the efficiency of gas excitation.

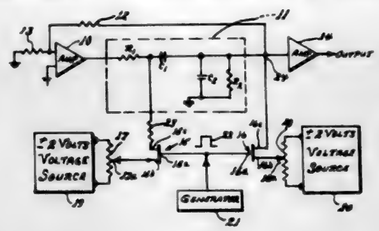
3,662,285
MICROWAVE TRANSDUCER AND COUPLING NETWORK
Charles T. Rucker, Clearwater, Fla., assignor to Sperry Rand Corporation
Filed Dec. 1, 1970, Ser. No. 94,046
Int. Cl. H03b 7/14
U.S. Cl. 331—107 R 11 Claims



An active semiconductor array coupled to high frequency fields supported by a symmetric passive array of radial transmission line elements serves as a high frequency transducer for amplifying the high frequency fields. The radial transmission line configuration achieves stable low-loss combining power from the individual diodes of the diode array and permits coupling of the several passive circuits to a common output with suppression of undesired oscillation modes.

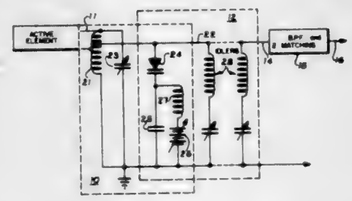
3,662,286
GATED OSCILLATOR
John Eugene Krupa, Morrestown, N.J., assignor to The United States of America as represented by the Secretary of the Air Force
Filed Jan. 20, 1971, Ser. No. 107,962
Int. Cl. H03b 5/24
U.S. Cl. 331—108 2 Claims

A gated oscillator is provided which reproduces any part of or any number of sine wave cycles such as a cosine squared pulse, for example. The equation for the output may be expressed as $e_o = \sin(wt + \phi)$ where ϕ and t are determined by the gating. Since ϕ is the initial phase angle or amplitude of



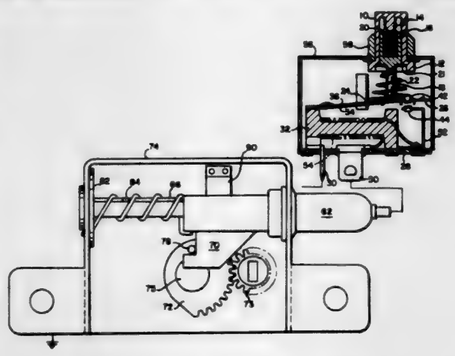
the sine wave and it determines the number of cycles, it is possible to start the sine wave at any angle from 0° to 360° and let it continue for any number of cycles.

3,662,287
VOLTAGE CONTROLLED OSCILLATOR MULTIPLIER
Harry F. Egbert, Port Hueneme, and James R. Falls, Jr., Camarillo, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed Feb. 24, 1971, Ser. No. 118,274
Int. Cl. H02m 5/20
U.S. Cl. 331—117 4 Claims



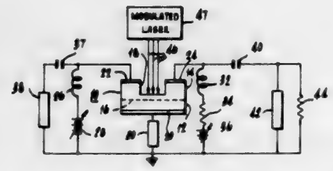
A voltage controlled oscillator and varactor multiplier circuit having a varactor network coupling the output of an oscillator through a band pass filter to an output in which a single varactor produces frequencies tuned by varying the bias thereon and produces frequency multiplication.

3,662,288
MAGNETIC SWITCH SYSTEM
Peter T. Carlson, Canton; Frederick J. Weremey, Milton, and Edward B. Mitchell, Belmont, all of Mass., assignors to TRW Inc., Cleveland, Ohio
Original application Sept. 12, 1968, Ser. No. 759,286. Divided and this application Apr. 21, 1970, Ser. No. 38,626
Int. Cl. H01h 50/30
U.S. Cl. 335—192 1 Claim



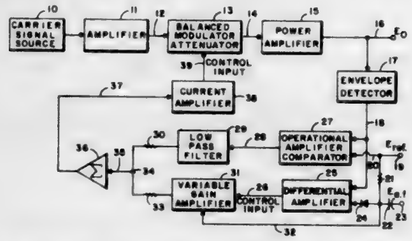
This is a magnetic switch in which a plunger urges a contact at the end of an armature against a fixed contact passing a current through the winding around the core which causes a magnetic field to be formed around the core that holds the armature to the core until the circuit is broken by another means.

3,662,289
FREQUENCY MODULATION BY LIGHT IMPINGEMENT ON A SOLID STATE OSCILLATOR
Joseph F. Dienst, Princeton, N.J., assignor to RCA Corporation
Continuation of application Ser. No. 733,000, May 29, 1968, now abandoned. This application July 30, 1970, Ser. No. 64,112
Int. Cl. H03c 3/36, 3/38
U.S. Cl. 332—3 7 Claims



Frequency modulation by varying the intensity of light impinging on a three terminal GaAs microwave oscillator.

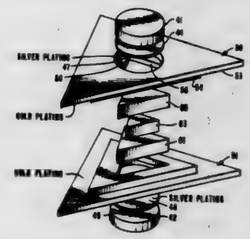
3,662,290
AUTOMATIC CONTROL FOR AMPLITUDE-MODULATED SIGNAL SOURCE
William S. Elliott, Cedar Rapids, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa
Filed Aug. 5, 1970, Ser. No. 61,132
Int. Cl. H03c 1/00
U.S. Cl. 332—38 6 Claims



An automatic level control maintains an accurate output level measurement under conditions of high modulation index by developing a control signal proportional to the deviation of output level from a desired norm. Output level is determined as a function of the time that the modulation envelope thereof exceeds a predetermined threshold. The control is independent of distortions in recovered modulation envelope waveform introduced by conventional envelope detectors due to diode offset voltage and/or high modulation index and permits independent application of carrier level and modulation index controls.

3,662,291
WAVEGUIDE FERRITE CIRCULATOR HAVING CONDUCTIVE SIDE OF DIELECTRIC DISC IN CONTACT WITH FERRITE
John J. Cotter, Agoura, Calif., assignor to E & M Laboratories
Filed June 19, 1970, Ser. No. 47,676
Int. Cl. H01p 1/32, 5/12
U.S. Cl. 333—1.1 20 Claims

A high speed microwave device comprises a dielectric waveguide body with conductive interior surfaces, upper and lower triangular transition plates, upper and lower pole pieces extending through the top and bottom walls of the waveguide and partway through the upper and lower transition plates respectively, upper and lower thin dielectric discs within the upper and lower transition plates and in contact with the upper and lower pole pieces respectively, each of the discs having a conductive surface opposite the surface



which is in contact with the pole piece, and upper and lower ferrite elements disposed between the transition elements, each including a terminal face in planar abutment with the upper and lower conductive surfaces respectively. The circulator further may include an electromagnet providing rapidly changeable magnetic fields to operate at high switching speeds with excellent wave transmission characteristics but is readily manufactured and assembled.

3,662,292
HELICAL SPRING FOR PRODUCING ARTIFICIAL REVERBERATION
Werner Fidi, Baden Bei Wien, and Bernhard A. Weingartner, Wien, both of Austria, assignors to AKG Akustische U. Kino-Gerate GmbH, Wien, Austria
Filed Aug. 10, 1970, Ser. No. 62,441
Claims priority, application Austria, Aug. 18, 1969, A 7890/69
Int. Cl. H03h 9/30
U.S. Cl. 333—29 10 Claims

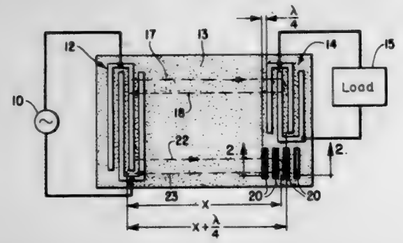


A system for producing artificial reverberation using unidimensional wave guides reflectively terminated at both ends incorporates a helical spring excited into torsional vibrations by an electro-mechanical drive transducer, and includes at least one pick-off transducer converting mechanical vibrations into electrical vibrations. The drive transducer is at one end of the spring and the distance between the drive transducer and the pick-off transducer most remote therefrom corresponds to a signal transit time of substantially 50 ms. The overall length of the spring is at least 4 to 5 times this distance, and corresponds to a signal transit time of at least 200 ms. The surface of the helical spring is partially or wholly formed irregularly, and the spring has individual turns which are irregularly deformed.

3,662,293
ACOUSTIC-WAVE TRANSMITTING DEVICE
Adrian J. De Vries, Elmhurst, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Mar. 17, 1971, Ser. No. 125,100
Int. Cl. H03h 7/02, 7/30, 9/00
U.S. Cl. 333—30 R 9 Claims

Acoustic-surface-wave transducers are spaced apart on the surface of a wave-propagating substrate. In response to an input signal, one transducer launches surface waves toward

the other which responds thereto by developing an output signal. Without more, an undesired time-delayed output signal or "ghost" may be produced by reason of surface waves reflected back to the input transducer from the output transducer. In order to inhibit the development of ghosts, a plurality of surface discontinuities, such as grooves, are formed in the wave-propagating surface alongside the output

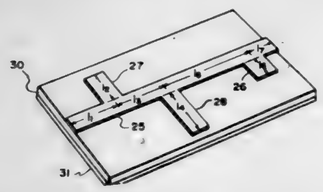


transducer. These grooves also reflect surface waves and they are spaced from the input transducer by such a distance that surface waves reflected from the grooves reach one of the transducers in a predetermined time and phase relation with respect to an acoustic surface wave reflected by the output transducer to cause cancellation so that the development of ghosts is inhibited.

3,662,294
MICROSTRIP IMPEDANCE MATCHING CIRCUIT WITH HARMONIC TERMINATIONS

Paul H. Jacobs; Robert L. Peay, both of Schaumburg, and David S. Wisherd, Mt. Prospect, all of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed May 5, 1970, Ser. No. 34,695
Int. Cl. H03b 7/38; H01p 3/08
U.S. Cl. 333—33 **3 Claims**



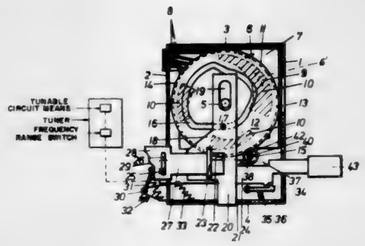
A microstrip impedance matching circuit has fixed harmonic terminations in the form of a pair of open-circuited stubs, each having a length equal to a quarter wavelength of a different harmonic frequency, connected to the main transmission line to cause the impedance at the harmonic frequencies to be made constant irrespective of the nature of the load impedance at the harmonic frequencies.

3,662,295
ADJUSTING DEVICE FOR A COMMUNICATIONS RECEIVER

Heribert Rummer, Ingolstadt, Germany, assignor to Licentia, Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Mar. 26, 1970, Ser. No. 22,856
Claims priority, application Germany, Apr. 1, 1969, G 69 13 115.3
Int. Cl. H03j 5/08
U.S. Cl. 334—7 **10 Claims**

An adjusting device for a communications receiver which comprises a plurality of potentiometers each having a plurality of resistance sections for different frequencies that can be moved over in succession by a movable wiper member. There is an actuator member for each potentiometer as well as a common frequency band changer device associated with a tuner in the receiver. The device is actuated by a linkage

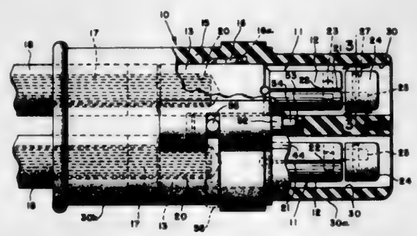


associated with said potentiometer between the movable wiper member, the actuator member and the frequency band changer device in dependence on the position of the movable wiper member when the actuator is operated.

3,662,296
SAFETY ELECTRICAL CONNECTOR

Albert P. Newman, Springfield Township, Hamilton County, Ohio, assignor to KDI Sealtron Corporation, Cincinnati, Ohio

Filed Apr. 20, 1970, Ser. No. 29,873
Int. Cl. H01r 13/52
U.S. Cl. 339—36 **7 Claims**



A safe electrical connector assembly is provided for engaging with a mating connector, either or both connectors terminating an electrical cable, the safe electrical connector assembly including an insulating housing and therein a male contact portion having a concentric non-conductive cap. The male contact portion is disposed within a passageway in the housing of an assembly, the cap and the restricted clearance between male contact and passageway cooperating to prevent dangerous exposure to electrical surfaces.

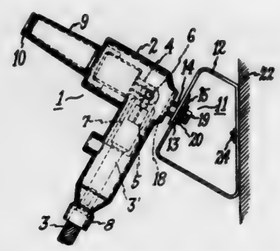
3,662,297
SUPPORT MEANS FOR PIVOTALLY MOUNTING A POWER CABLE TERMINATION HOUSING

Henry N. Tachick, Pittsfield, and James E. Belcher, Dalton, both of Mass., assignors to General Electric Company

Filed Mar. 23, 1970, Ser. No. 21,712
Int. Cl. H01r 15/10, 13/60
U.S. Cl. 339—60 R **9 Claims**

Support means are provided for pivotally mounting a cable termination housing in a suitable holding bracket to position the housing in a manner such that a resilient portion of the

termination housing that forms a water-tight seal around an electric cable connected thereto is protected from undue

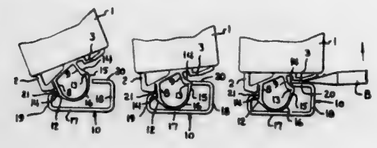


mechanical loading so that the water-tight seal is not destroyed by such loading.

3,662,298
MODULAR TERMINAL BLOCK WITH MOUNTING FOOT

Hermanus Petrus Johannes Gilissen, Vlijmen, Netherlands, assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of application Ser. No. 774,721, Nov. 12, 1968, which is a continuation-in-part of application Ser. No. 638,802, May 16, 1967, now Patent No. 3,437,983, dated Apr. 8, 1969. This application Oct. 7, 1970, Ser. No. 78,950
Int. Cl. H01r 9/22
U.S. Cl. 339—198 GA **3 Claims**



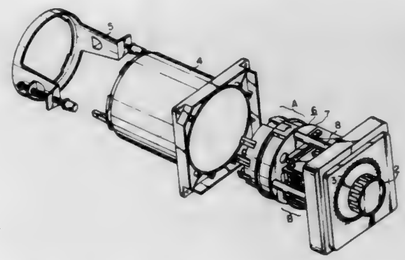
A modular terminal block has two legs extending away from the block joined at their free ends by an arcuate flexible strap to form a foot for mounting the block on a rail. The strap deforms on engagement with the bottom of the rail to urge the legs apart so that detents on the legs firmly engage the sidewalls of the rail. One leg is inclined with respect to the block so that on removing the block from the rail the detent on that leg is more readily disengaged.

3,662,299
TIME LIMIT RELAY

Katsumi Maruchi; Jiro Yataka; Yasukazu Tatsumi; Masayasu Wakita, and Tadashi Yamayoshi, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Apr. 13, 1971, Ser. No. 133,517
Int. Cl. H01h 7/14
U.S. Cl. 335—68 **5 Claims**

A motor-driven time limit relay including electromagnetically controlled relay contacts, in which motor driving and contact control sections are separated by a base plate. The electromagnet of the contact control section is secured laterally to one side of said base plate. The yoke extends from an end secured to the electromagnet core to the other end, along upper face of the magnet and, at the extended end of the yoke, an armature is pivoted. A plate actuator likewise extends above the magnet and is coupled at one end to the armature for integral movement with the latter. The other free end of the actuator is normally biased to its lower position of the armature's de-attracted state. A sliding member for controlling the relay contacts positioned above the actuator is slidably mounted to a guide means secured to the other opposite end of the magnet to the armature, and is coupled to the free end of the actuator. Upward movement of the actuator free end at the time of armature attraction allows the

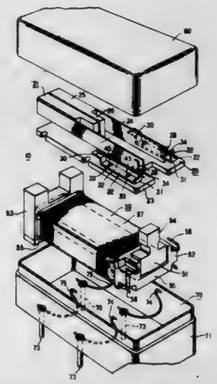


sliding member to slide upward for relaying operation, but the sliding is normally locked by a locking lever secured to the guide means until a preset limited time reaches.

3,662,300
VIBRATING REED SELECTOR HAVING IMPROVED CONTACT CONFIGURATION

Larry Lee Wiese, Pickerington, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 23, 1970, Ser. No. 101,003
Int. Cl. H01h 51/34
U.S. Cl. 335—97 **5 Claims**



A vibrating reed selector is disclosed which includes a housing, a motor assembly and a contact assembly wherein the contact assembly includes two vibrating tines, two contact brackets and a ceramic circuit board. Each tine carries a hook contact, each contact bracket carries a finger contact and the bracket and tines are arranged so that one finger contact is located between one hook contact and its supporting tine, and the other hook contact is located between its supporting tine and the other finger contact.

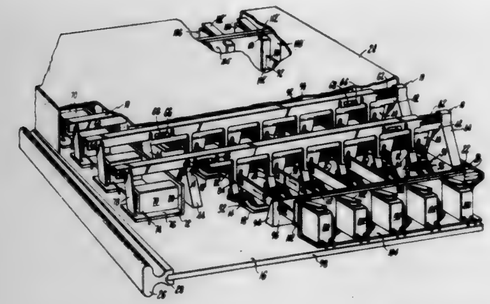
3,662,301
SWITCHING SYSTEM

Grant N. Willis, Bristol, Conn., assignor to Frederick H. Clymer, Jr., Harwinton; Jack R. Whiting, Bloomfield, Conn.; Mack C. Jones, Longport, N.J.; Robert E. Dalton and Warren E. Dion, Bristol, Conn., part interest to each.

Continuation-in-part of application Ser. No. 775,414, Nov. 13, 1968. This application May 27, 1970, Ser. No. 40,760
Int. Cl. H01h 67/26
U.S. Cl. 335—112 **54 Claims**

The switching system of this invention includes a plurality of coordinate contact sets arranged in rows and columns, ac-

tuating means corresponding to each column for selectively actuating a contact selector bar corresponding to each row when the contact selector bar has been operated to transmit



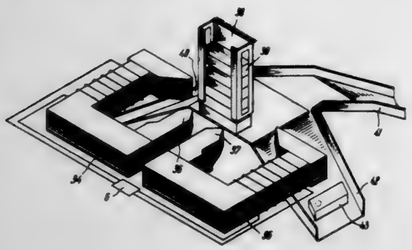
contact closing and opening forces thereto, and a contact operator at each coordinate operable by the selector bar to effect movement and an automatic latching of a selected contact set.

3,662,302

METHOD OF ORIENTATION OF ELECTRICALLY CONDUCTIVE BODIES BY MAGNETIC FIELD AND DEVICE FOR PERFORMING THIS METHOD

Benyamin Alexandrovich Ioffe, ulitsa Raunasa, 45/2, kv. 81; Mikhail Khaimovich Lapidus, ulitsa Suvorava, 70, kv. 9, both of Riga; Vladimir Viktorovich Preis, prospekt Lenina, 82, kv. 12, Tula; Robert Karlovich Kalnin, ulitsa Gorkogo, 53, kv. 19, Riga; Gunar Yanovich Sermons, ulitsa Skolas, 22, kv. 17, Riga; Vyacheslav Semenovich Dorofeev, ulitsa Frunzes, II, kv. 5, Riga; Bruno Domenikovich Zheigur, poselok Salaspils, Rizhsky raion, ulitsa Miera, 18, kv. 7, poselok Salaspils Rizhsky raion; Alexandr Alexandrovich Shevchenko, ulitsa Suvorava, 23, kv. 4, Riga; Gennady Alexandrovich Denisov, ulitsa Shirotnava, 8, kv. 9, Gorky; Artur Eduardovich Mikelson, poselok Salaspils Rizhsky raion, ulitsa Mera, 16, kv. 36, poselok Salaspils Rizhsky raion, and Aron Judovich Makhlin, Schelkovskoe shosse, 67, korpus 2, kv. 6, Moscow, all of U.S.S.R.

Filed Dec. 16, 1969, Ser. No. 885,533
Claims priority, application U.S.S.R., Dec. 25, 1968, 1,289,059; 1,289,061
Int. Cl. H01f *7/00*
U.S. Cl. 335—219 6 Claims



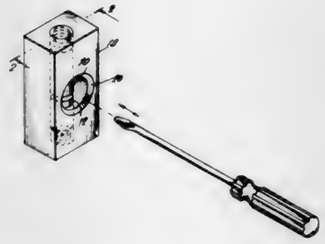
A method and device for establishing within a zone of orientation at least two cyclically varying magnetic fluxes spaced from each other by a distance not exceeding the length of a body being oriented; with the body being positioned in this zone so that one of the two fluxes should pass through one portion of the body and the other one of said two fluxes should pass through the other portion of the body.

3,662,303

INSTANT MAGNETIZER AND DEMAGNETIZER

Anatoli Arilef, 3641 E. 8th St., P.O. Box 23011, Los Angeles, Calif.

Filed Mar. 8, 1971, Ser. No. 122,054
Int. Cl. H01f *13/00*
U.S. Cl. 335—284 6 Claims



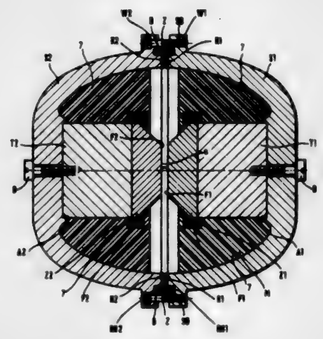
An elongated non-magnetic body has longitudinal and transverse intersecting bores. Two bar magnets are disposed in aligned end to end position in the longitudinal bore and are biased toward each other by spring means. The abutting ends are oppositely poled.

3,662,304

MAGNETIC CIRCUIT STRUCTURE FOR HIGH-RESOLUTION NUCLEAR RESONANCE SPECTROMETERS

Wolfgang Bringe, Palmbach; Eberhard Querfurth; Hans-Alfor. Schanbacher, both of Karlsruhe; Hans-Jurgen Seiberth, Worth, and Wolfgang Vieser, Ettlingen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed July 2, 1970, Ser. No. 51,979
Claims priority, application Germany, July 25, 1969, P 19 37 794.7
Int. Cl. H01f *3/00*
U.S. Cl. 335—297 7 Claims



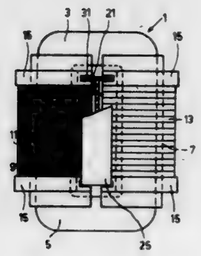
A pair of shells of approximately half-spherical form have magnetic members mounted therein with the end faces of the pole pieces coplanar with the annular end faces of the shells, coplanarity being achieved by lapping. Distance pieces are placed in notches in the annular end faces of the shells, which are filled with insulating material up to a level below the end faces of the pole pieces.

3,662,305

TRANSFORMER

Peter Martinus Cornelis Van Der Linden, and Hans Hubert Hakkenberg Van Gaasbeek, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 28, 1971, Ser. No. 110,479
Claims priority, application Netherlands, Feb. 18, 1970, 7002230
Int. Cl. H01f *15/04*
U.S. Cl. 336—84 2 Claims



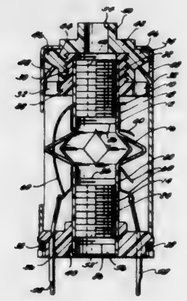
A transformer comprising an insulating body between the relatively parallel coil formers, said body being formed by a rectangular plate having upright edges on either side, the edges located in the core frame being slipped into incised parts of the coil former flanges.

3,662,306

ADJUSTABLY COUPLED RADIO FREQUENCY TRANSFORMER

Robert P. Heinis, Totowa, N.J., assignor to General Instrument Corporation, Newark, N.J.

Filed Mar. 24, 1971, Ser. No. 127,566
Int. Cl. H01f *21/04, 21/06*
U.S. Cl. 336—119 6 Claims



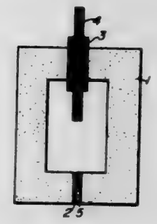
An adjustably coupled transformer comprising a one-piece coil form, preferably a cylindrical form, made of a plastic material, having two sections separated by an integral deflectable part to permit the axial adjustment of one of the form sections relative to the other, a transformer winding being mounted on each of the coil form sections adjacent the deflectable part, with means for axially adjusting one of the coil form sections relative to the other. The transformer structure is mounted in a transformer housing.

3,662,307

FLYBACK TRANSFORMER

Teruhiro Tsukuda, Moriguchi-shi, and Takashi Tsutsumi, Suita-shi, both of Japan, assignors to Matsushita Electric Co., Ltd., Osaka, Japan

Filed Dec. 10, 1969, Ser. No. 883,806
Claims priority, application Japan, Dec. 12, 1968, 43/91461; June 18, 1969, 44/59008
Int. Cl. H01f *17/06*
U.S. Cl. 336—178 3 Claims



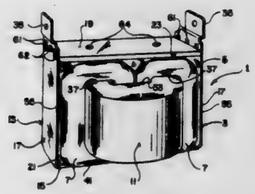
Temperature increase becomes a problem with a flyback transformer of a television receiver since it handles a high voltage. In order to cope with this, it has conventionally been the usual practice to make the core gap sufficiently great to provide allowance for the design. With such a construction, however, the transformer becomes large in size, and the high-voltage stability thereof is deteriorated. In view of this, in accordance with the present invention, a temperature-sensitive ferrite is provided in the gap of the core to prevent the slope of the B–H curve from becoming unduly small and to stabilize the high voltage during normal operation. In case the temperature is increased, the Curie point of this temperature-sensitive ferrite is utilized to improve the temperature stability of the flyback transformer.

3,662,308

TRANSFORMER CORE AND COIL MOUNTING FRAME

Peter W. Muschong, St. Louis, Mo., assignor to Central Moloney Inc., Pine Bluff, Ark.

Filed Apr. 29, 1971, Ser. No. 138,722
Int. Cl. H01f *27/26*
U.S. Cl. 336—210 19 Claims



A transformer core and coil mounting in which two generally rectangular core loops disposed side-by-side and having a coil surrounding their two adjacent legs are held in a rectangular frame for mounting the unit in a transformer tank, with means extending laterally of the frame and projecting up from the bottom and down from the top of the frame between the adjacent legs of the loops and having a close fit in the coil for holding it against shifting laterally relative to the frame, and with said flanges extending up from the bottom of the frame, the core loops being supported on the upper edges of the flanges whereby the core loops are electrically grounded to the frame.

3,662,309
ELECTRICAL FUSEHOLDER

Emerson R. Harmon, Lisbon, Wis., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 28, 1970, Ser. No. 67,727
Int. Cl. H01h 85/20
U.S. Cl. 337—202 9 Claims

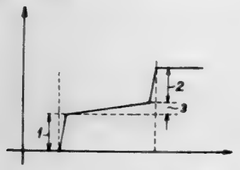


An electrical fuseholder designed to be leakproof and adaptable for submersion in a cooling fluid. The fuseholder has metal terminals wound into and extending through a surrounding fiberglass wall. An electrical contact surface of each metal terminal appears at the inner fiberglass wall. An elastomeric sealing means provides a bonded leakproof seal between the metal terminals and the fiberglass wall.

3,662,310
SAND-FILLED ELECTRIC FUSES

Per Ostergaard Nielsen, Copenhagen, Denmark, assignor to Aktieselskabet Laur. Knudsen, Nordisk Elektricitets Selskab, Copenhagen, Denmark

Filed July 9, 1970, Ser. No. 53,348
Claims priority, application Denmark, May 4, 1970, 2250/70
Int. Cl. H01h 85/38
U.S. Cl. 337—290 3 Claims

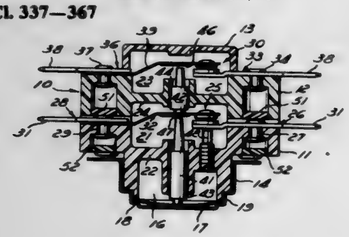


In a sand-filled electric fuse, the fuse element and the surrounding sand consist of or contain such materials that mutually react chemically in an exothermic process at temperatures above the melting point of the fuse element. The fuse element may predominantly consist of aluminum or magnesium and the filler material may be quartz sand.

3,662,311
THERMOSTAT WITH DOUBLE POLE SWITCH

Harold F. Snider, and Anton J. Gerich, both of Mansfield, Ohio, assignors to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Jan. 19, 1970, Ser. No. 3,729
Int. Cl. H01h 37/70
U.S. Cl. 337—367 4 Claims

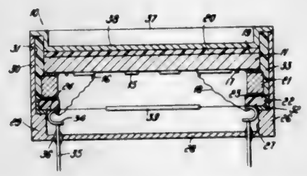


A double pole thermostat is disclosed in which two switches are mounted in separate switch cavities separated by insulating material so that arc splatter cannot produce a conductive path between the switches. The switches are sequentially operated by a bimetallic snap disc with a first bumper extending between one switch and the disc, and a second bumper extending between the two switches. The second bumper provides lost motion to insure sequential operation of the switches and to insure that unequal contact wear will not result in one switch blocking the other switch open.

3,662,312
SEMICONDUCTOR STRAIN TRANSDUCERS

William Thorp, Timperley, and Charles Trevor Jones, Wilmslow, both of England, assignors to Ferranti, Limited, Hollinwood, Lancashire, England

Filed Mar. 24, 1969, Ser. No. 809,848
Claims priority, application Great Britain, Mar. 23, 1968, 14,139/68
Int. Cl. G01l 9/06
U.S. Cl. 338—4 15 Claims

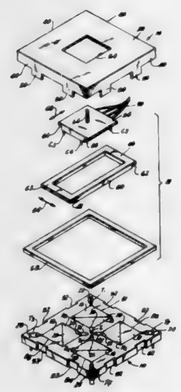


A strain transducer having a plurality of piezo-resistive sensing elements formed adjacent to one major face of a semiconductor wafer is wholly assembled by employing techniques compatible with the structure of the semiconductor wafer, these techniques including bonding the wafer to a rigid metal supporting ring which in turn is bonded to an annular insulating member secured to the transducer housing.

3,662,313
SINGLE CONTROL DEVICE FOR PLURAL VARIABLE RESISTORS

Hiroaki Komatsu, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1971, Ser. No. 133,941
Int. Cl. H01c 9/02
U.S. Cl. 338—90 24 Claims

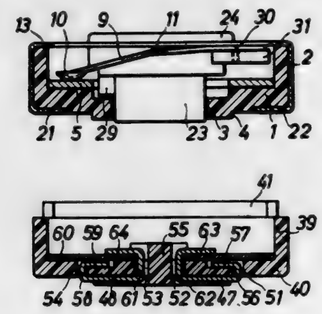


A control device for use in volume adjustment of a multi-speaker sound system utilizes a floating carrier adapted to move within a housing enclosure in two dimensions. The carrier is provided with a plurality of electrical contacts adapted to slidingly engage respectively a plurality of resistive elements on a substrate. The carrier is moved by a control member extending through a window in the housing. The shape of the window and the resistive patterns of the plurality of resistive elements is such that the operative resistances may be simultaneously varied to adjust the sound volume of a plurality of speakers in correlation with the position of the control member within the housing window.

3,662,314
ADJUSTABLE ANNULAR POTENTIOMETER WITH TERMINAL ATTACHMENT MEANS

Juan-Luis Heredero, Barcelona, Spain, assignor to Piher S.A., Barcelona, Spain

Filed July 28, 1969, Ser. No. 845,200
Claims priority, application Spain, July 30, 1968, 356,952; May 13, 1969, 367,693
Int. Cl. H01c 9/02
U.S. Cl. 338—163 2 Claims

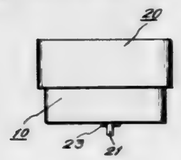


A potentiometer comprising a casing having a short height relative to its diameter and constituting a receptacle for a resistor element and a sliding contact for contact with the latter, the resistor element being supported on the bottom of the casing and the sliding contact being arranged in permanent mechanical and electric contact therewith, being of annular and laminar shape and having a diameter substantially equal to that of the resistor, the shape of which constitutes an incomplete circular annulus having a zone of discontinuity exhibiting a small angle, corresponding to a projection formed on the bottom of the casing and serving as a travel-limiting stop in either direction in order to limit the rotational travel of the axial actuating element, the manipulation of which produces the rotation of the sliding contact on the resistor element.

3,662,315
CONTACTLESS PUSH-BUTTON TYPE SWITCHING APPARATUS

Toshio Mogi, Ayasemachi, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1970, Ser. No. 80,091
Claims priority, application Japan, Oct. 13, 1969, 44/97451; 44/97452; 44/97453
Int. Cl. H01c 7/16
U.S. Cl. 338—32 H 10 Claims

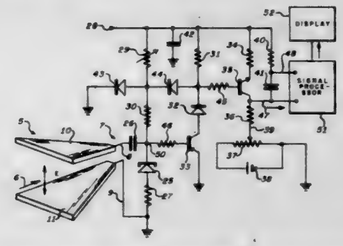


A contactless push-button type switching apparatus comprised of a base, a push-button cap which is always held at the limit upward position by a resetting means, a guide tube for the cap, a magnetic path composed of a U-shaped magnetic frame, and a movable yoke which moves about one of its ends as a fulcrum at one leg of the U-shaped magnetic frame and the moving end of the yoke closely approaches the other of the legs whenever no pressure is applied to the push-button cap, a galvano-magnetro effect device fixed to the free end of the magnetic frame near the moving yoke and which varies the magnetic flux applied with rotation of the movable yoke, and a projection from the cap to cause the moving yoke to rotate when the cap is depressed.

3,662,316
SHORT BASE-BAND PULSE RECEIVER

Kenneth W. Robbins, Wilmington, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 12, 1971, Ser. No. 123,720
Int. Cl. H03b 3/02; H03d 1/18; H04b 7/00
U.S. Cl. 340—167 R 12 Claims

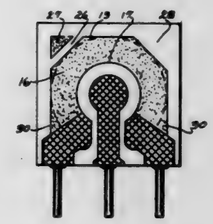


A pulse receiver for detecting short base-band electromagnetic pulses employs a dispersionless, broad band transmission line antenna with a circuit cooperating with a biased semiconductor diode located within the transmission line for instantaneously detecting substantially the total energy of the base-band pulse and providing a corresponding output suitable for application in conventional utilization circuits.

3,662,317
ABRADED VARIABLE RESISTANCE CONTROL AND METHOD OF MANUFACTURE

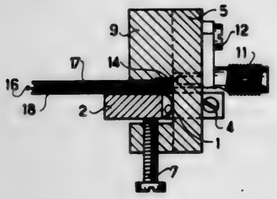
Joseph Digirolamo, Elkhart, and Ronald L. Stuckey, Berne, both of Ind., assignors to CTS Corporation, Elkhart, Ind.

Filed Aug. 5, 1970, Ser. No. 61,282
Int. Cl. H01c 9/02
U.S. Cl. 338—174 11 Claims



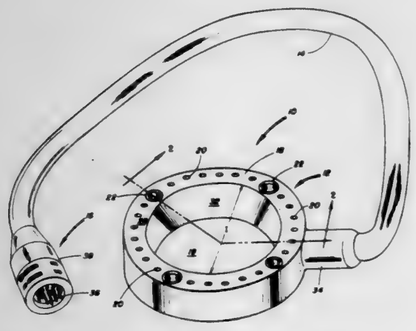
A variable resistance control is provided wherein a resistance path having an inner edge defined by a circular arc and an outer edge defined by straight lines tangent to an imaginary circular arc concentric with the circular arc defining the inner edge is supported on a nonconductive base. The straight lines intersect to define corners at the outer periphery of the resistance path. In order to bring the resistance within specified tolerances without materially affecting the linearity of the resistant path, the corners are abraded by removing a portion of the resistance material between the imaginary circular arc and the outer edge at the corners.

3,662,318
TRANSITION DEVICE BETWEEN COAXIAL AND MICROSTRIP LINES
Jean-Claude Decuyper, Paris, France, assignor to Compagnie Generale D'Electricite, Paris, France
Filed Dec. 23, 1970, Ser. No. 100,943
Int. Cl. H01p 3/08; H01r 17/04
U.S. Cl. 339—17 R 8 Claims



A conversion device for an ultra-high frequency coaxial line and a metal strip without welding comprises a brass support body in which a base plate, held tight by screws forces the metal strip against the central conductor and a plate spring to ensure an electrical contact between the ground wires of the two lines along a particularly short path free from stationary waves.

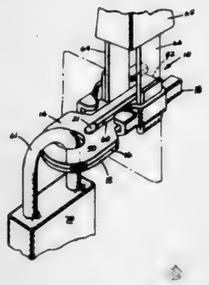
3,662,319
ELECTRICAL CONNECTOR ASSEMBLY
Paul L. Culver, Ellicott City, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed May 28, 1970, Ser. No. 41,237
Int. Cl. H01r 11/00, 13/50
U.S. Cl. 339—28 3 Claims



An electrical connector assembly having a male connector and a ring-shaped female connector interconnected by a flexible cable wherein the connector assembly is constructed in a one piece completely molded unit. The female connector has a plurality of sockets and guide holes formed in one surface of the ring.

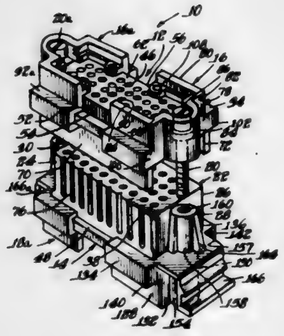
3,662,320
PLUG LOCK
Arthur J. Marx, 1048 Indian Hill Blvd., Van Wert, Ohio
Filed Dec. 24, 1970, Ser. No. 101,262
Int. Cl. H01r 13/44
U.S. Cl. 339—37 11 Claims

A lock for a conventional electrical plug comprising a frame and bolt which cooperates with the frame to secure the lock to the prongs of the plug, thereby to short circuit the prongs of the plug and to prevent the same from being inserted into a conventional electrical outlet until the lock is removed. In a specific embodiment, the frame and bolt have openings therein which coincide when the frame and bolt are



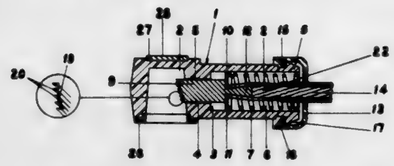
in a locking position such that the shackle of a padlock can be positioned in the openings thereby to prevent the frame and bolt of the lock of the invention from being removed from a plug without removing the padlock from the lock.

3,662,321
ELECTRICAL CONNECTOR ASSEMBLY
Allen J. Bury, Prospect Heights, Ill., assignor to Molex Products Company, Downers Grove, Ill.
Filed July 10, 1970, Ser. No. 53,862
Int. Cl. H01r 13/54
U.S. Cl. 339—92 M 10 Claims



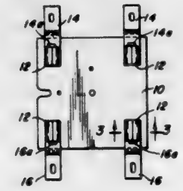
An electrical connector assembly is disclosed herein and generally comprises a plug element adapted to encase the terminal ends of a first group of wires and a receptacle element adapted to encase the terminal ends of a second group of wires. The receptacle element is further adapted to receive and mate with the plug element for electrically connecting the first group of wires to the second group of wires. In order to achieve this mating operation, a clamp arrangement is provided and includes a pair of plug clamps and a pair of receptacle clamps assembled to the plug element and the receptacle element respectively. The clamp arrangement also includes a pair of elongated fastening members insertable through cooperating openings in the plug and receptacle clamps for bringing the plug and receptacle elements into mating engagement with each other.

3,662,322
BATTERY TERMINAL CONNECTORS
Charles Archer Morrison, Port Elizabeth, Republic of South Africa, assignor to Droody Importers Proprietary Limited, Worcester, Cape Province, Republic of South Africa
Filed Aug. 7, 1970, Ser. No. 62,084
Claims priority, application South Africa, Aug. 8, 1969, 69/5686
Int. Cl. H01r 11/24
U.S. Cl. 339—95 B 11 Claims



This invention is concerned with connectors for connecting electrical cables to batteries wherein a socket for the terminal post is provided with a radially extended formation housing a springloaded post engaging plug and a cap is fitted to retain the plug in position with the cable secured to the plug.

3,662,323
METER SOCKET BASE ASSEMBLY
Harris I. Stanback, Lexington, Ky., assignor to Square D Company, Park Ridge Ill.
Continuation of application Ser. No. 771,463, Oct. 29, 1968, now abandoned. This application May 18, 1970, Ser. No. 38,472
Int. Cl. H01r 9/00
U.S. Cl. 339—198 M 4 Claims

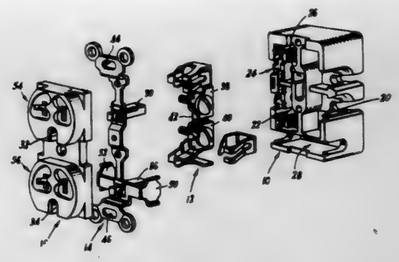




A flanged cup is inserted in an aperture in an insulation plate from one side, and a terminal strap and a plug-in contact jaw member are secured by a screw and nut to a flat bottom of the cup on the other side of the insulation plate.

3,662,324
REINFORCED ELECTRICAL CONTACT
Walter C. Schumacher, Warwick, R.I., assignor to General Electric Company
Filed Jan. 29, 1971, Ser. No. 111,020
Int. Cl. H01r 11/22
U.S. Cl. 339—255 R 1 Claim

Improved contact pressure on power blades of an electrical cap is provided by an electrical contact formed to accept power blades in two orientations at right angles. The contact is made of a strip of metal of high conductivity and low

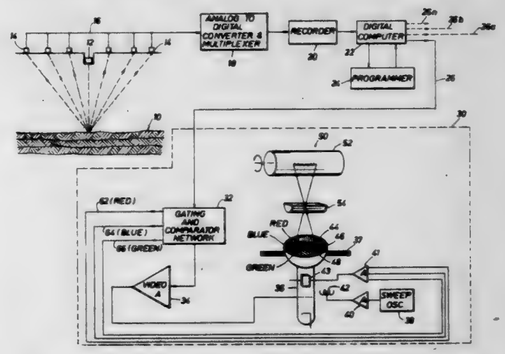


spring properties and is reinforced by a metal clip of lower conductivity and higher spring properties of a general "U" configuration.

ERRATA

For Classes 339—60 R, 336—198 GA see:
Patent Nos. 3,662,296 thru 3,662,298

3,662,325
METHOD OF DISPLAYING SEISMIC DATA
Carl H. Savit, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.
Filed Aug. 27, 1969, Ser. No. 853,467
Int. Cl. G01v 1/34
U.S. Cl. 340—15.5 DS 23 Claims

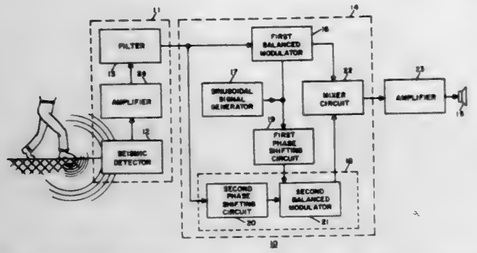


This invention is concerned with displays of characteristics which are intrinsic properties of subterranean formations. They include acoustic velocity, acoustic attenuation, Poisson's ratio, acoustic impedance, elasticity (bulk modulus), density, velocity and attenuation of shear waves, etc. The intrinsic properties themselves are typically obtained and processed from the seismic data provided by conventional or modified seismic CDP or other observations.

3,662,326
SUBAUDIBLE FREQUENCY DETECTION SYSTEM
Paul S. Dennis, Jr., East Northport, N.Y., assignor to Hazeltine Corporation
Filed Nov. 4, 1969, Ser. No. 873,867
Int. Cl. G08b 13/00
U.S. Cl. 340—15 10 Claims

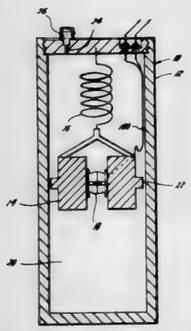
Disclosed are systems usable in detecting subaudible frequencies. In one embodiment a seismic detector is shown

positioned in the earth and responding to the subaudible frequency vibrations caused by a moving person. A subaudible frequency signal is developed in response to the detected vibrations and is translated by modulating and mixer circuitry into an output signal in which each frequency component in



the subaudible frequency signal is represented by a single corresponding audio frequency component. The output signal is supplied to a loudspeaker for aurally distinguishing the representative audio frequency components to detect the person. Other embodiments are also covered.

3,662,327
SEISMOMETER
Gale White, 6115 Crab Orchard, Houston, Tex.
Filed Apr. 30, 1970, Ser. No. 33,472
Int. Cl. G01v 1/16
U.S. Cl. 340—17 **6 Claims**

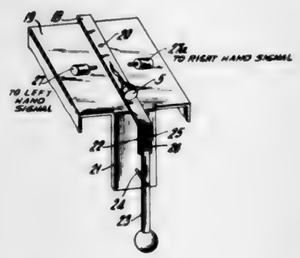


A temperature compensating seismometer in which a spring supports a mass movable in a case wherein the effect of movement of the mass due to temperature changes on the spring is avoided by providing a fluid bypass between the fluid on opposite sides of the mass in the case, the bypass being sized to allow passage of fluid during slow movement of the mass, but sized to retard movement of the fluid during fast movement of the mass. A seismometer which provides a mechanical magnification of the signals to be measured by making the cross-sectional area of the mass larger than the cross-sectional area of the differential pressure measuring transducer. An improved differential pressure transducer in a seismometer which provides improved sensitivity.

3,662,328
APPARATUS FOR DETERMINING THE PROXIMITY OF MOVING VEHICLES
David Spivak, One Washington Square Village, New York, N.Y.
Filed Apr. 30, 1969, Ser. No. 820,386
Int. Cl. G08g 1/00
U.S. Cl. 340—33 **6 Claims**

The present invention provides means adaptable for use on vehicles to determine the proximity between vehicles. The apparatus generally provides means for transmitting a signal and means for receiving a signal on a vehicle with the transmitted signal preferably ultrasonic and proportional to the speed of the transmitting vehicle. The emission member is mounted on the transmitting vehicle in a manner so as to automatically selectively orient itself so that the transmitted signal follows the path of the vehicle under changing road contours and is preferably further provided with means for particular orientation for turns or merging traffic situations.

The intensity of the transmitted signal is correlated with the speed of the vehicle through circuitry associated with the speedometer mechanism either as a means to vary the re-

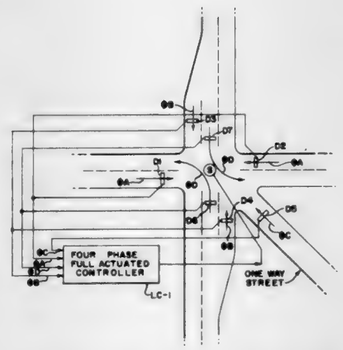


sistance on the transmitting circuit in ratio to the needle deflection of the speedometer or by use of the speedometer mechanism as a source for the generation of an electromotive force.

Thus, a vehicle within the reception zone will receive a warning that it is in a hazard zone as between itself and another moving or stationary vehicle and that the distance between them should accordingly be adjusted.

In its preferred embodiment, the apparatus of the present invention further includes a hazard warning device integrated within the system for selected actuation during desired situations, generally when the transmitting vehicle is at rest or during lane changes or merging traffic.

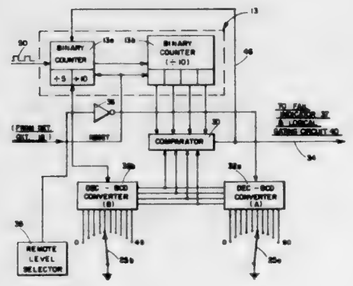
3,662,329
MULTI-PHASE TRAFFIC CONTROL SYSTEM
Frank W. Hill, Moline, Ill.; Peter G. Bartlett, and Larry K. Clark, both of Davenport, Iowa, assignors to Gulf & Western Industries, New York, N.Y.
Filed Aug. 20, 1968, Ser. No. 812,476
Int. Cl. G08g 1/08
U.S. Cl. 340—37 **19 Claims**



The control system includes multi-phase solid state traffic controllers for controlling the operation of traffic signals in accordance with traffic demand. These controllers include phase selection circuitry for directly transferring a go signal

activation for one phase to a second phase for which a go signal is called for by a traffic detector without first allocating a go signal activation to another phase in which a traffic detector is not calling, i.e., is not traffic actuated. Circuitry is also provided for preempting the operation of a controller to allocate a particular preselected pattern of traffic signals. Also, circuitry is provided to ensure that after operating power has been lost and restored consistent traffic signals will be activated for all traffic phases.

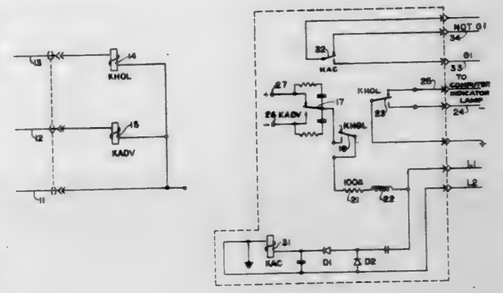
3,662,330
FAIL-SAFE VEHICLE DETECTOR SYSTEM
Gary L. Meredith, Anaheim, Calif., assignor to Tamar Electronics Industries, Inc., Anaheim, Calif.
Filed Jan. 18, 1971, Ser. No. 107,017
Int. Cl. G08g 1/00
U.S. Cl. 340—38 R **9 Claims**



Primary and secondary vehicle sensors are utilized to detect vehicles moving along a roadway, this information being available for use in a traffic control system. Primary and secondary counters associated with the primary and secondary vehicle sensors respectively are driven by a timing pulse source. The counters are reset to zero in response to their associated vehicle sensors so that the maximum count thereon is indicative of the time between successive actuations of such sensors. A timing limit selector is utilized to select a timing interval indicative of a probable failure in the operation of either of the vehicle sensors. This selected timing output is separately compared with the outputs of the counters, and when coincidence between the selected timing output and the output of either of the counters is reached, a failure signal is generated. This failure signal is utilized both to actuate an appropriate fail indicator and to control logical gating circuitry to provide an output signal solely in response to the vehicle sensor not associated with this failure signal.

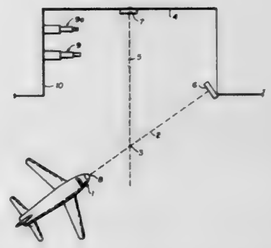
3,662,331
CENTRAL TRAFFIC SIGNAL CONTROL
Gregory Siklos, Bronx, N.Y., assignor to The Marbelite Company, Inc., Brooklyn, N.Y.
Filed Nov. 1, 1968, Ser. No. 772,486
Int. Cl. G08g 1/07
U.S. Cl. 340—40 **16 Claims**

Two lines interconnect a central traffic signal control station with a local control station. The two lines carry signals from the central station to the local station that determines whether the local station is under local or central control. When on central control, the two lines carry signals that cause the traffic signal at the local station to advance to the next condition. In addition, the two lines carry signals from the local station to the central station indicative of a predetermined condition, such as the main thoroughfare



signal being green so that s shift from local control to central control may be effected without interrupting the smooth flow of traffic during the changeover.

3,662,332
AIRCRAFT PARKING SYSTEM
Alvin L. Zechnowitz, Monsey, and James A. Xenakis, Roslyn Harbor, both of N.Y., assignors to Sperry Rand Corporation
Filed Oct. 16, 1970, Ser. No. 81,218
Int. Cl. G08g 1/14
U.S. Cl. 340—51 **9 Claims**

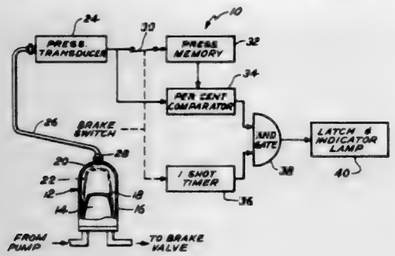


Apparatus for accurately maneuvering an aircraft on an airport surface to a predetermined parking position involves cooperating optical sensors and guidance display systems for aiding the pilot in controlling motion of the craft. The apparatus aids moving the craft along a preliminary guidance or approach path to intersection of a second guidance path leading the craft precisely to a final stopped position at the parking station.

3,662,333
HYDRAULIC ACCUMULATOR CHARGE DETECTOR AND INDICATING SYSTEM
Donald W. Howard, and Dewey W. Eppley, both of South Bend, Ind., assignors to The Bendix Corporation
Filed Sept. 8, 1970, Ser. No. 70,255
Int. Cl. B60q 1/00; B60t 17/00
U.S. Cl. 340—52 C **11 Claims**

In a hydraulic braking system, a means for determining if the charge on an accumulator is low. A pressure sensitive transistor gives an output that is proportional to the pressure in the accumulator. When the brake switch is closed, the output of the pressure sensitive transistor is memorized. After a given time period, if the actual pressure in the accumulator

has dropped a predetermined amount below the memorized pressure, an output will light a warning indicator lamp. A



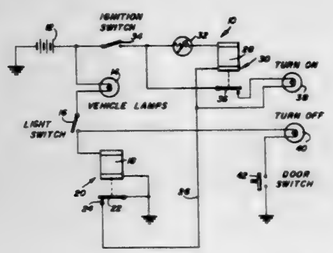
latching arrangement will keep the light on even if the pressure later increases and the brake pedal is released.

3,662,334

VEHICLE LIGHT WARNING SYSTEM

Ralph M. Seaslin, 212 Franklin Street, Paterson, N.J.

Filed Nov. 17, 1969, Ser. No. 877,233
Int. Cl. B60q *1/00*
U.S. Cl. 340—52 D **4 Claims**



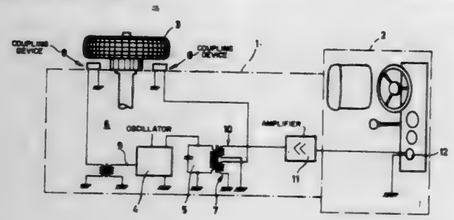
A pair of indicator lamps provide warnings for a vehicle operator signifying either that the vehicle lamps should be turned on when illumination is needed or turned off upon opening of the vehicle door. The warning system does not affect the usual vehicle lighting system and operates off the vehicle power supply.

3,662,335

DEVICE FOR ROAD VEHICLES FOR THE WIRELESS TRANSMISSION OF AT LEAST ONE MEASURED VALUE OF A ROTATING WHEEL TO AN INDICATING INSTRUMENT

Kurt Fritze, Hamburg, Germany

Continuation-in-part of application Ser. No. 610,598, Jan. 20, 1967, now abandoned. This application Oct. 8, 1969, Ser. No. 864,651
Int. Cl. B60c *23/02*
U.S. Cl. 340—58 **6 Claims**



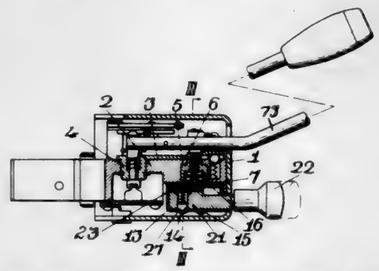
A device for road vehicle wheels for a wireless transmission of electrical signals corresponding with at least one measured value, such as pressure, temperature, imbalance, etc. from a coupling element of the respective wheel to a coupling means fixed to the vehicle frame in proximity to said wheel and being connected with an indicating instrument located in the driver's cab or compartment on the vehicle frame, with the coupling element of the wheel extending coaxially to the wheel hub, and the coupling element extending radially outside of the rim base of the wheel about the entire circumference of the wheel and being accommodated in the tire casing near an outer edge of the rim of the wheel.

3,662,336

COMBINATION TURN-SIGNAL AND HAZARD-WARNING SYSTEM

Masaru Suzuki; Masayoshi Hyodo, and Yoshiaki Kurihara, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Japan

Filed June 18, 1969, Ser. No. 834,269
Claims priority, application Japan, June 21, 1968, 43/43271; Nov. 8, 1968, 43/97704
Int. Cl. B60q *1/38*
U.S. Cl. 340—81 F **10 Claims**



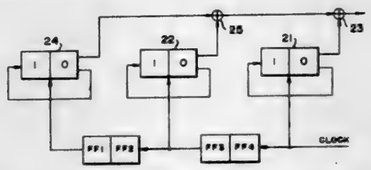
A combination turn-signal and hazard-warning system for operating the indicator lamps of a vehicle selectively or simultaneously, wherein fixed contacts for a hazard switch unit are mounted on the bottom side of an insulator plate and fixed contacts for a winker switch unit are mounted on the top side of the plate. A movable contact plate is disposed adjacent the bottom side of the insulator plate and is supported on a contact holder switch is movable between a turn-signal position and a hazard-warning position. When in the hazard-warning position, the movable contact plate causes energization of all indicator lamps irregardless of operation of the directional indicator switch. A further movable conductive member is disposed for engagement with the top-side contacts to permit selective energization of the lamps on one side of the vehicle.

3,662,337

MOD 2 SEQUENTIAL FUNCTION GENERATOR FOR MULTIBIT BINARY SEQUENCE

George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Tage. O. Anderson, 628 Fairview Ave., Arcadia, Calif.

Filed Oct. 1, 1970, Ser. No. 77,221
Int. Cl. G06f *1/02*
U.S. Cl. 340—146.1AL **9 Claims**



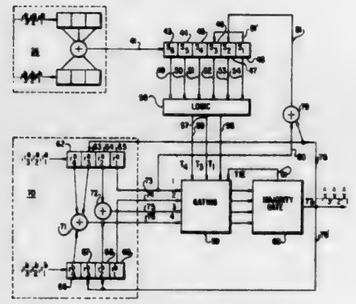
A MOD 2 sequential function generator for a *n*-bit binary sequence comprising a two-bit shift register for each pair of bits in the sequence. The false output of the register serves as the true input to the register. The input and output bits of each register are initially loaded to a 1 and 0 state, respectively. The true outputs of the registers are MOD 2 added to provide the generator's final output.

3,662,338

MODIFIED THRESHOLD DECODER FOR CONVOLUTIONAL CODES

Joseph Bibb Cain, III, Indialantic, Fla., assignor to Radiation Incorporated, Palm Bay, Fla.

Filed Feb. 1, 1970, Ser. No. 111,336
Int. Cl. G06f *11/12*; G08c *25/00*
U.S. Cl. 340—146.1 A **15 Claims**



A decoder for convolutional codes utilizes known threshold decoding techniques. The decoder is effective to resolve the dilemma encountered when no majority decision is available in the application of the conventional threshold decoding techniques because the estimates of the information bit to be decoded are equally divided in error and not in error. In those circumstances, the tie vote is broken by utilizing information contained in the received syndrome to specify one of the estimates of the information bit which is in error. By eliminating that estimate, a simple majority vote correctly determines the information bit since the previously encountered even split of the estimates no longer exists.

In an alternative decoded arrangement, a set of estimates for each error bit is derived and a threshold decision is made using these estimates, to remove the error bit from the estimate of the information bit. Here, again, ties are resolved by use of information contained in the syndrome of the error pattern.

3,662,339

LISTING VERIFICATION SYSTEM

Victor M. Tyler, II, Concord; Charles G. Beaudette, Sudbury, and Allan B. Chertok, Cambridge, all of Mass., assignors to EG&G, Inc., Bedford, Mass.

Filed July 25, 1969, Ser. No. 845,021
Int. Cl. G06f *7/06*
U.S. Cl. 340—146.2 **6 Claims**

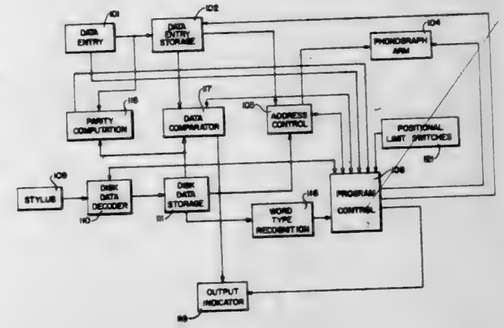
A random access comparator incorporating a phonographic recording system adapted to employ a phonographic disk on which a serial train of signals representing a list of numerical digital data entries such as derogatory credit card numbers is recorded in predetermined groups, with the numbers in each group arranged in natural order, a data entry means such as a keyboard on which a data entry can be registered, means responsive to the registration of a data entry on the keyboard for setting the arm of the phonograph to a position adjacent the vicinity on the record in which a corresponding data entry would be recorded, and apparatus for checking the recorded data in that vicinity to determine whether or not the registered entry is recorded on the record and to produce a corresponding indication.

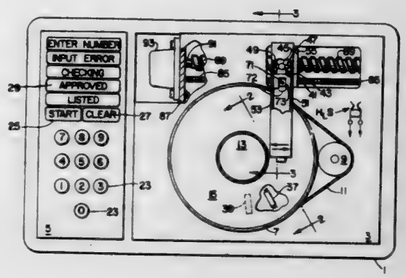
3,662,340

DATA COMPARISON SYSTEM FOR LISTING VERIFICATION OF MULTIPLE DIGIT DATA WORDS

David R. Spencer, Waltham, Mass., assignor to EG & G, Inc., Bedford, Mass.

Filed July 25, 1969, Ser. No. 844,973
Int. Cl. G06f *7/22*
U.S. Cl. 340—146.2 **19 Claims**



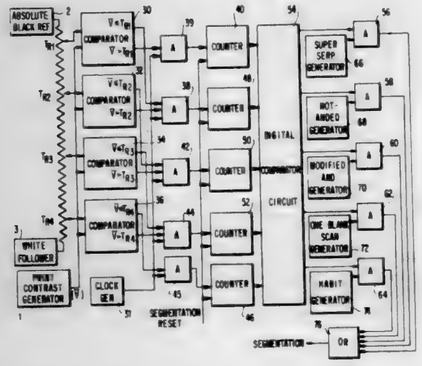


A data comparison system incorporating a phonographic recording system which includes a phonograph disk on which is recorded a train of signals representing a sequence of digital words. There is included a keyboard on which a data entry can be registered and the phonograph includes means for positioning the arm of the phonograph adjacent to that portion of the record disk in which a digital word corresponding to the data entry would be recorded. The digital words are recorded on the record in an order of 2^N groups of words, with the N least significant bits of each of the words in the group being identical and with a specific order within the group of the words. A circuitry is provided to check the entered word against the digital sequence produced from the group identified by the same N least significant bits, thereby enabling the system to provide an output indication as to whether the word is listed.

3,662,341
VIDEO-DERIVED SEGMENTATION-GATING APPARATUS FOR OPTICAL CHARACTER RECOGNITION

Richard J. Baumgartner, Rochester, Minn.; Jeffrey L. Lovgren, San Antonio, Tex., and John W. McCullough, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 25, 1970, Ser. No. 75,513
Int. Cl. G06k 9/04
U.S. Cl. 340—146.3SQ 10 Claims

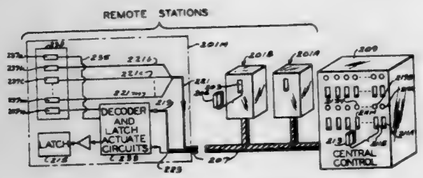


A method and apparatus for gating segmentation scheme generators in accordance with a detected video signal. A video operator signal derived from detected video signals is compared with a threshold signal. One of a plurality of segmentation scheme generators is gated on in accordance with the comparison of the video operator signal and the threshold signal.

3,662,342
KEY-CONTROLLED ELECTRONIC SECURITY SYSTEM

Robert A. Hedin, Yorba Linda, Calif., and Leo J. Pantas, Greenwich, Conn., assignors to R. B. Phinizy, Anaheim, Calif.

Continuation-in-part of application Ser. No. 889,666, Dec. 31, 1969, now abandoned. This application Feb. 16, 1971, Ser. No. 115,353
Int. Cl. G08b 13/08; H04q 9/00
U.S. Cl. 340—147 42 Claims



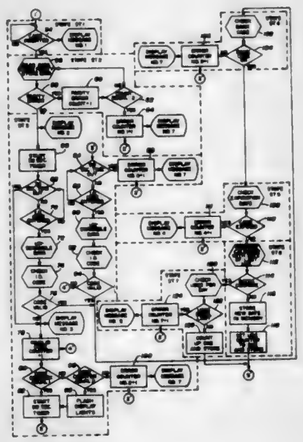
A key-actuated electronic security system having first and second keys each constituted by a plurality of circuit paths in a pattern of closed and open circuits. The system includes comparing means which electrically compares respective ones of the circuit paths of the keys and which delivers an output signal when there is a predetermined correspondence between respective ones of the circuit paths of the keys. In an embodiment employing a NAND gate, the correspondence is constituted by a complementary relationship and in an embodiment employing Exclusive-OR gates, the correspondence may be constituted by either a complementary or an identical relationship. The system includes means, e.g., a latch, responsive to the output signal for indicating the predetermined correspondence. One of the keys is readily changeable to modify its circuit pattern so that there will not be the predetermined correspondence whereby the changed key will be inoperative to cause the comparing means to deliver an output signal and thus requiring the use of a third key having circuit paths providing a predetermined correspondence with the circuit paths of the changed key in order to cause the comparing means to deliver an output signal.

Disclosed also is a key-actuated security system including a plurality of remote stations and a central control station. Each of the remote stations is adapted to provide electrical interconnection with one of the keys. The central station is adapted to receive a plurality of keys, each one of these keys corresponding to one of the remote stations. Key comparing means delivers an output signal when there is a predetermined correspondence between respective ones of the circuit paths of the key received at the remote station and of a particular one of the keys of the first set received at the central control, this output signal being transmitted to the remote station for operating a latch.

3,662,343
CREDIT CARD AUTOMATIC CURRENCY DISPENSER

Kenneth S. Goldstein, Dallas, and John D. White, Garland, both of Tex., assignors to Docutel Corporation, Dallas, Tex.

Filed July 29, 1970, Ser. No. 59,146
Int. Cl. G06f 7/00
U.S. Cl. 340—149 68 Claims

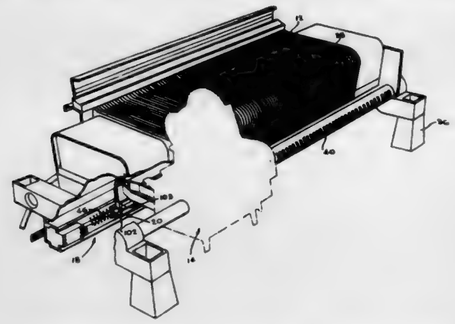


A currency dispenser automatically delivers a medium of exchange in packets in response to a coded credit card presented thereto. The coded credit card is presented to the currency dispenser and an initial check is made to determine if the card has the proper format. After checking the credit card format, coded information thereon is evaluated to check the user's indentity prior to authorizing him to receive cash from the machine. When each of several additional checks of the credit card code have been completed, the old code is removed and substituted with a new code. The new code contains the same information as the old but updated to reflect an additional currency dispensing transaction. Both the original code and the updated code are scrambled in accordance with a changing key. Scrambling the credit card code after each use thereof minimizes the chance of unauthorized use of the currency dispenser. When the checks of the credit card indicate the user is entitled to receive the amount of currency he has selected, a storage container for the packets of currency transports the required number of packets by a positive feed drive to a cash drawer. The cash drawer opens to a detent position which allows the customer to then move the drawer to a fully open position to remove his currency. Upon release of the cash drawer, it returns to a partially opened position from which it automatically closes after a preset time limit.

3,662,344
AUTOMATIC PHONOGRAPH WITH PIN MEMORY UNIT AND CAM READOUT UNIT

Wilhelm Menke, Bingen (Rhine), Germany, assignor to NSM Apparatebau GmbH, Bingen (Rhine), Germany

Filed Sept. 24, 1970, Ser. No. 75,162
Int. Cl. G11b 15/00; H04q 3/00
U.S. Cl. 340—162 13 Claims



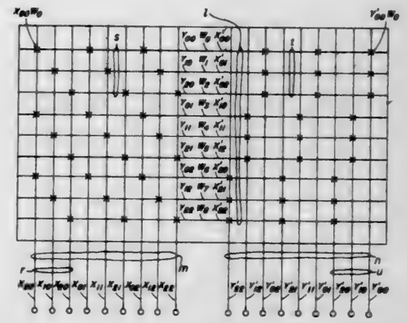
An automatic phonograph includes a record magazine and a carriage mounted for movement relative to the record magazine and having means for removing an individual record from the magazine, clamping the record to a turntable, playing the record, and returning the record to the magazine. Record selection means enable the operator to select sides of particular records for the playing thereof. To store and read out information concerning the selected records, there are provided a memory unit, a readout unit and a circuit actuable by the readout unit to align the carriage serially opposite selected records. The memory unit includes a plurality of pins corresponding to the sides of records and which are actuated in response to a signal from the record selection means and a cam track. The readout unit is mounted on the carriage and includes a cam follower adapted to ride on the cam track of the memory unit and a contact member on a sensing lever operatively associated with the cam follower. The contact member is adapted to engage an actuated pin to complete the circuit so that the carriage is aligned with the record corresponding to the pin in the actuated position.

3,662,345
MATRIX SIGNAL SWITCHING DEVICE

Takeo Shinohara; Yoshikazu Miyamoto; Atsushi Minato, and Chikahiko Maeda, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Nov. 20, 1970, Ser. No. 91,266
Claims priority, application Japan, Nov. 24, 1969, 44/94069
Int. Cl. H04q 9/00
U.S. Cl. 340—166 R 6 Claims

A signal transfer device including a first matrix having a plurality of first input signal lines spaced in mutually parallel relation in one plane and a plurality of first signal output lines spaced in mutually parallel relation to perpendicularly intersect the first input lines in the one plane, a second matrix having a plurality of second input lines spaced in mutually parallel relation in said one plane and a plurality of second signal output lines spaced in mutually parallel relation to perpendicularly intersect the second input signal lines in the one plane, the first and second matrices so mutually positioned that the first output signal lines and the second input signal lines are oppositely disposed, and a plurality of mutually parallel link lines, each connecting the opposing ends of one of the first signal output lines and one of the second signal input lines in the same plane, thereby obviating crossovers of the link lines.



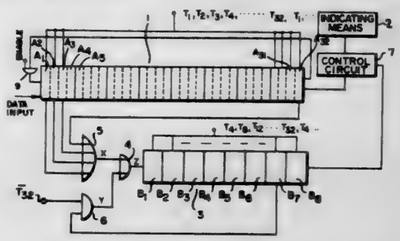
ERRATUM

For Class 340—167 R see:
Patent No. 3,662,316

3,662,346
INFORMATION OUTPUT SYSTEM

Kiyoyuki Tada, Kyoto-fu, Japan, assignor to Sanyo Electric Company Ltd., Osaka-fu, Japan

Filed Jan. 20, 1970, Ser. No. 4,344
Claims priority, application Japan, Feb. 15, 1969, 44/11309; Oct. 17, 1969, 44/83372
Int. Cl. G06f 3/14
U.S. Cl. 340—172.5 15 Claims



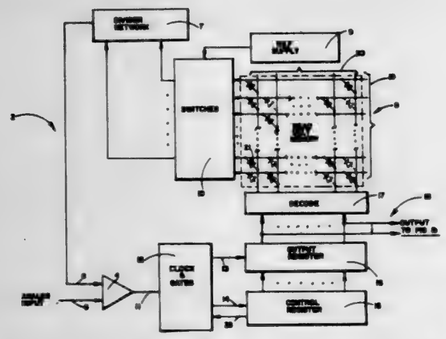
Numerical information, such as a decimal number, is registered in a main shift register for recirculation therethrough. The existence of non-zero decimal digits in a predetermined span of fixed digit positions within the main register is detected by logic means coupling the main register to an auxiliary shift register. The two registers are shifted in synchronism to the extent that a shift through one digit position in one of the registers is accompanied by a shift through one digit position in the other register; although a digit position in one register may be a decimal digit position occupied by several binary digit, or bit, positions, whereas a digit posi-

tion in the other may be a single bit position. During recirculation of the contents of the main register, a fixed pattern of information representative of the digit positions occupied in that register by the entire decimal number registered therein is ultimately generated in the auxiliary register by the logic means, as a function of the preliminary pattern generated in the auxiliary register during early circulation of the contents of the main register. This fixed pattern of information is utilized to suppress undesired "zeroes" in digit positions exceeding the most significant digit of the actual registered decimal number during visual readout of that number. An additional counter circuit coupled to this system allows suppression of the undesired zeroes while simultaneously indicating the location of the decimal point.

3,662,347
SIGNAL COMPRESSION AND EXPANSION SYSTEM USING A MEMORY

Duane C. Fox, Fullerton, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Mar. 11, 1970, Ser. No. 18,584
Int. Cl. G05b *11/26*; G05f *5/00*; H03k *13/17*
U.S. Cl. 340—172.5 10 Claims



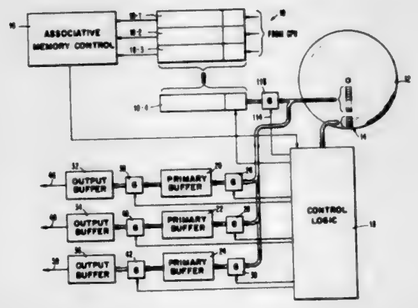
The compander system uses a register having a limited number of possible digital states, or counts, each weighted to represent a certain voltage. Each count is used to address a location in a memory which stores digital numbers having a different number of bit positions relative to the bit positions of the count in the register. Each number is weighted to represent a different voltage from the voltage value represented by the register count. An analog signal is generated in response to the stored digital number for comparison with the input signal even though the register count is changed as if the voltage represented by its count had been used for making the comparison. The process is continued until the signals are within the limits provided by the least significant digit of the stored number. The number in the register is then transmitted to the receiver where the digital signal is converted into an analog signal using an additional memory and register having a limited number of bit positions.

3,662,348
MESSAGE ASSEMBLY AND RESPONSE SYSTEM

Alfred Weiss, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1970, Ser. No. 51,235
Int. Cl. G06f *7/22*
U.S. Cl. 340—172.5 9 Claims

An information system which may be employed as a voice answer back system for assembling and transmitting separate messages on separate output lines. The basic components of the system are a rotating, fixed head sequential memory file, an associative memory, and a group of buffer storage units. Address keys for the words of the messages are obtained from a central processing unit. The rotating memory contains the entire file of message words stored in equal length segments of digital signals and each are identified by a key address. Message words may consist of a number of segments,

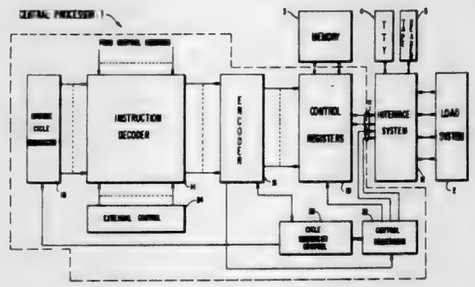


each having the same key address and further identified by consecutive segment numbers. As the sequential memory is rotated, the key addresses of the segments are compared with the key addresses in the associative memory; and when matches occur, the segments are retained in buffer storages. As each segment of a key address is obtained, the segment is transferred to the output of the system.

3,662,349
STORED PROGRAM SYSTEM

William F. Bartlett, East Rochester; John C. Gifford, Phelps; Pedro A. Lenk, Rochester; William A. Oswald, Rochester; Frank Y. Shaw, Rochester, all of N.Y.; Thomas D. Stuebe, Arvada, Colo., and Lloyd H. Yost, Honeoye Falls, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Nov. 26, 1969, Ser. No. 880,110
Int. Cl. G06f *1/04*, *9/06*
U.S. Cl. 340—172.5 82 Claims

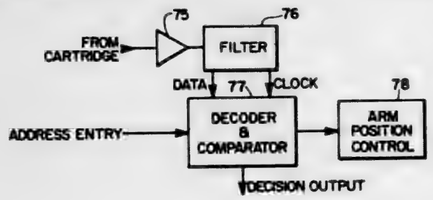


A stored program data processing system including a logic control arrangement including a particular arithmetic and logic unit controlled from instruction translating means responsive to instructions stored in a memory for effecting supervision and control over a telephone exchange in accordance with timed sequences provided by a cycle control arrangement.

3,662,350
RANDOM ACCESS MEMORY SYSTEM EMPLOYING A PHONOGRAPH DISK

Allan B. Chertok, Cambridge, Mass., assignor to EG&G, Inc., Bedford, Mass.

Filed Jan. 28, 1970, Ser. No. 6,484
Int. Cl. G11b *3/08*, *17/06*
U.S. Cl. 340—173 R 36 Claims

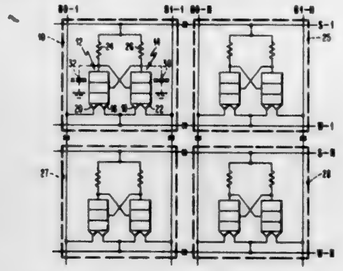


A memory system employing a phonograph disk with a multi-turn spiral groove carrying digital information distributed throughout it. The turns each contain two storage locations identified as addresses. When an address is entered, the stylus arm is moved radially across the record from a home position, impulses from the stylus resulting from traversal of the grooves being counted to determine when the stylus is at the addressed location.

3,662,351
ALTERABLE-LATENT IMAGE MONOLITHIC MEMORY

Irving T. Ho, Poughkeepsie; Gerald A. Maley, Fishkill, and Ronald Waxman, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1970, Ser. No. 23,609
Int. Cl. G11c *11/00*, *17/00*
U.S. Cl. 340—173 FF 7 Claims



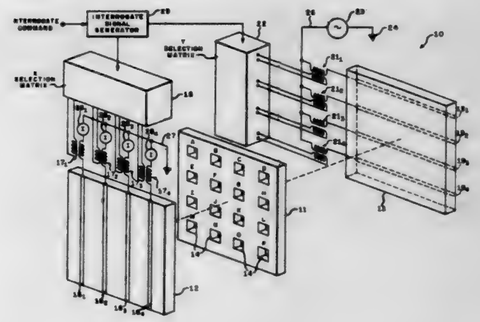
A monolithic latent image memory is one having a plurality of bistable memory cells. Selected bistable memory cells include AC impedance means which are responsive at the transition from non-sustaining voltage level to an operating level so as to set the selected memory cells to a first predetermined state and thus provide a monolithic memory which is capable of functioning in a read-only and a read-write mode. The read-only state is selectively alterable by employing an AC impedance means which is multi-valued.

3,662,352
A. C. PLASMA DISPLAY PANEL INTERROGATING APPARATUS

Dan J. Schott, Phoenix, Ariz., assignor to Sperry Rand Corporation

Filed May 25, 1970, Ser. No. 40,238
Int. Cl. G11c *11/28*, *11/32*, *7/00*
U.S. Cl. 340—173 PL 14 Claims

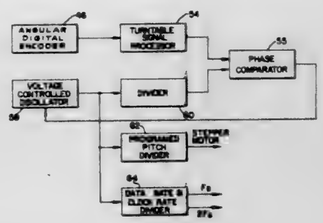
A.C. plasma display panel interrogating apparatus including coincident addressing means for applying an interrogation signal to selected rows and columns of the panel cells in combination with the sustaining signal which is normally applied thereto such that the resultant signal across the coincident cell remains at the sustaining level while at the non-coincident cells the signal strength decreases below the extinction value. This condition reduces the non-coincident cell outputs to zero with only the coincident cell providing a signal output indicative of its data storage state, thereby enabling readout to be performed with a respective current or photo sensor arranged to receive the signals from individual rows or columns of cells.



3,662,353
STORING DIGITAL DATA ON A RECORDING DISK WITH THE DATA TIME BASE PROPORTIONAL TO DISK ANGULAR VELOCITY

Allan B. Chertok, Bedford, Mass., assignor to EG&G, Inc., Bedford, Mass.

Filed June 1, 1970, Ser. No. 41,992
Int. Cl. G11b *3/36*, *27/12*; G11c *13/00*
U.S. Cl. 340—173 R 8 Claims

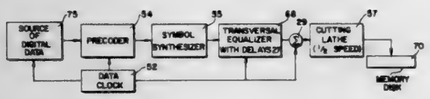


A method for inscribing a modulated spiral groove on a memory disk in which a turntable is rotated at a nominally constant rotational velocity and a digital angular encoder is fixed to the shaft of the turntable providing a stream of output pulses which varies proportionally to variations in the angular velocity. This stream of output pulses is compared in a phase comparator with a stream of pulses derived from a voltage controlled oscillator and the output from the phase comparator is applied as the control input to the voltage controlled oscillator, thereby forming a phase locked loop. The output from the voltage controlled oscillator is divided down by appropriate amounts to provide timing digital signals to control the period of the modulation waveforms applied to a cutting head, which is inscribing a spiral groove on the memory disk. The output from the voltage controlled oscillator may also be used to control the radial position of the cutting head, thereby controlling the pitch of the spiral.

3,662,354
INSCRIBING DIGITAL DATA ON A GROOVED RECORD BY PRE-DISTORTING THE WAVEFORMS

Allan B. Chertok, Bedford, Mass., assignor to EG & G Inc., Bedford, Mass.

Filed June 1, 1970, Ser. No. 42,149
Int. Cl. G11b 3/00; G11c 13/00
U.S. Cl. 340—173 R 7 Claims

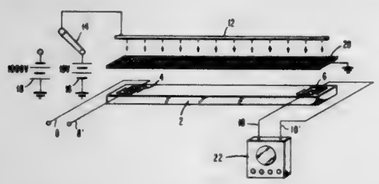


A method for inscribing waveforms representing digital data on a phonograph disk, introducing pre-distortion into the waveforms by passing them through a transversal equalizer before they are applied to the cutting lathe. The transversal equalizer is adjusted by inscribing test waveforms without equalization on a disk, regenerating the waveforms from the disk through a standardized play back system and passing the regenerated waveforms through the equalizer to a monitor. The equalizer is then adjusted to optimize patterns of the regenerated waveforms.

3,662,355
SURFACE WAVE SIGNAL STORAGE DEVICE

Benjamin Kazan, Briarcliff, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 3, 1970, Ser. No. 43,060
Int. Cl. G11c 27/00, 13/00
U.S. Cl. 340—173 R 9 Claims



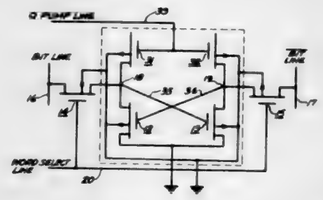
Surface acoustic waves are propagated along piezoelectric material, in response to an electrical signal applied to an input transducer. During propagation along the material, the propagation surface of the piezoelectric material is flooded with a short burst of electrons, causing the emission of low energy secondary electrons. These electrons are immediately attracted from the negative to the more positive adjacent regions of the surface, neutralizing any potential variations on the surface. After the acoustic waves thereon have subsided, electrons trapped on the surface are left behind in a frozen pattern corresponding to the pattern of the acoustic waves. The acoustic waves can be reformed by again flooding the surface with a short burst of electrons. Output transducer means act to transform the reformed waves into an electrical signal.

3,662,356
INTEGRATED CIRCUIT BISTABLE MEMORY CELL USING CHARGE-PUMPED DEVICES

Gerald J. Michon, Waterford, and Hubert K. Burke, Schenectady, both of N.Y., assignors to General Electric Company

Filed Aug. 28, 1970, Ser. No. 67,747
Int. Cl. G11c 11/24, 11/40
U.S. Cl. 340—173 FF 12 Claims

An integrated circuit of the bistable memory cell type utilizes two charge-transfer active elements to provide the load resistor function in a cross-coupled MOS transistor flip-flop arrangement of the memory cell. The charge-transfer element is a pulse-activated current generator formed from the substrate common to the memory cell circuit, an n- or p-type doped region diffused therein, an insulating gate layer, and a

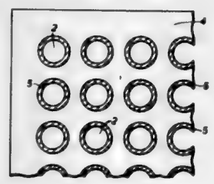


patterned conducting gate layer common to both elements. The series circuit connection of each active MOS transistor and its associated charge-transfer element is through the respective doped region which is common thereto.

3,662,357
METHODS OF MANUFACTURING ARRAYS OF THIN MAGNETIC ELEMENTS AND ARRAYS PRODUCED BY THE METHODS

Reginald David Enoch, Pinner, England, assignor to The Post Office, London, England

Filed Mar. 30, 1970, Ser. No. 23,718
Claims priority, application Great Britain, Apr. 9, 1969, 18,163/69
Int. Cl. G11b 5/00; H01f 7/06, 1/16
U.S. Cl. 340—174 TF 9 Claims



This specification describes a method of manufacturing an array of data storage elements from thin sheet material, each element having at least one perforation for data entry and read-out conductors, in which a sheet of the magnetic material with the perforations for the elements is annealed whilst a magnetic field is applied across the sheet thereby to form lines of easy magnetization around the perforations and material is then removed from the sheet to form the separate storage elements. Examples of suitable magnetic materials include binary and ternary alloys of iron, nickel and cobalt.

3,662,358
INTERSTITIAL CONDUCTORS BETWEEN PLATED MEMORY WIRES

Joseph M. Shaheen, La Habra, and John Simone, Garden Grove, both of Calif., assignors to North American Rockwell Corporation

Filed June 12, 1970, Ser. No. 45,678
Int. Cl. G11c 11/14, 11/04
U.S. Cl. 340—174 PW 5 Claims

Single copper layers on two double copper clad dielectric boards are etched into strips. The strips are used as masks for permitting channels to be etched in the exposed surfaces of the dielectric substrates. After the channels have been etched, the copper strips are re-etched into a preferred interstitial conductor width. The two boards are joined together with the copper strips and channels in registration

for forming tunnels for accommodating plated memory wires. The copper strips comprising the interstitial conductors

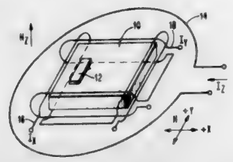


between the tunnels are connected together at a common point.

3,662,359
METHOD AND APPARATUS FOR CREATION OF CYLINDRICAL, SINGLE WALL DOMAINS

Eugene R. Genovese, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1970, Ser. No. 103,048
Int. Cl. G11c 11/14
U.S. Cl. 340—174 TF 19 Claims



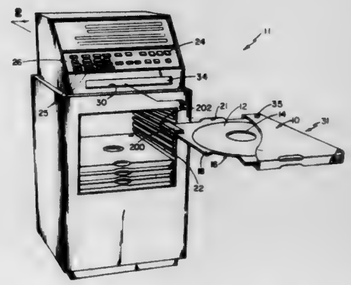
A method and apparatus for creation of cylindrical, single wall domains in selected locations in a magnetic sheet, such as orthoferrite or garnet films. A bias (stabilizing) magnetic field is applied normal to the magnetic sheet to saturate the sheet in one direction so that no reversely magnetized domains are present in the storage area. A localized magnetic field normal to the magnetic sheet but oppositely directed with respect to the bias field is then created. This localized field is produced by the action of an in-plane field and a bar of magnetic material on the sheet, or by a small current loop. The bias field is then reduced until a domain in nucleated at the site of the localized field. The domain will nucleate when the net reversely directed local field is greater than the nucleation field H_n at that location. The bias field is then increased to regulate the diameter of the domain produced. Means are provided to create a variable bias field normal to the sheet and to create an oppositely directed variable localized field at selected locations in the shett.

3,662,360
MAGNETIC INFORMATION DISK EQUIPMENT

Stephen Anthony Lambert, Berlin, Mass., assignor to Digital Information Storage Corporation, Berlin, Mass.

Filed June 23, 1970, Ser. No. 49,069
Int. Cl. G11b 17/04
U.S. Cl. 340—174.1 C 3 Claims

Information storage disk equipment for handling and storing interchangeable disks, including disk loading and rotating mechanism, a disk package and a transfer system. The loading and rotating mechanism has a disk chuck and is movable from a lowered disk release position to a raised position close to the sensing heads. The disk package is releasable and reversibly mounted in the equipment. It consists of an enclosure, an information storage disk having two flat magnetic or other recording surfaces and a disk transport with a central opening surrounding the disk providing free access to each face of the disk. The disk transport and the disk therewithin are slidably mounted within the enclosure for movement to and from it. The disk transfer system moves the disk transport with said disk between a position within the enclosure to the disk release position, with the disk transport remaining at the disk release position while the disk is moved to the raised disk position by the chuck, the disk enclosure remaining in

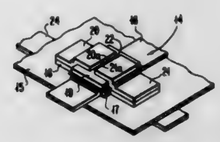


the equipment until the disk transport with said disk are returned by the transfer system. The equipment may also prevent "write" operation of a "read" condition disk, by the provision on the enclosure of a selective condition indicator for each side of the disk.

3,662,361
MAGNETIC HEAD WITH DEPOSITED CORE AND SIGNAL CONDUCTOR

C. Dennis Mee, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 13, 1968, Ser. No. 705,062
Int. Cl. G11b 5/20, 5/16
U.S. Cl. 340—174.1 F 12 Claims



A head for use in magnetic recording made up of a plurality of transducer elements with each element comprising a series of overlapping films forming magnetic transducers connected by conductors in a matrix configuration such that any one of the elements can be selected for use.

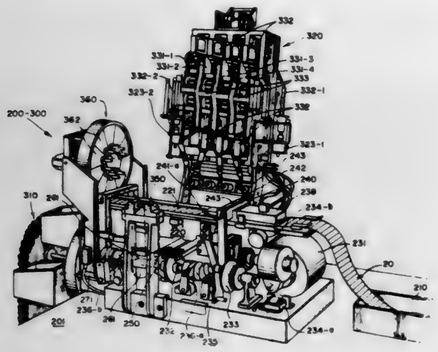
3,662,362
DEVICE FOR PRINTING AND CODING TICKETS

Genio R. Arciprete, Lexington; Adrian P. Brokow, Woburn; Richard L. Dumais, Ashland, and Richard F. Stucchi, Hudson, all of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Continuation of application Ser. No. 681,765, Nov. 9, 1967, now abandoned. This application Dec. 9, 1968, Ser. No. 786,813
Int. Cl. B41j 3/516
U.S. Cl. 340—174.1 R 20 Claims

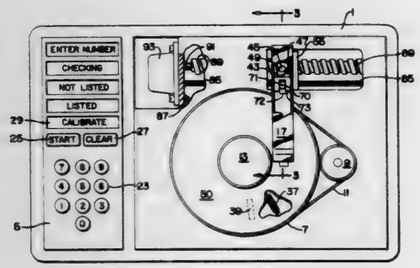
A ticket marking machine for printing information on a ticket and also writing information on a magnetic recording media carried by the ticket. The machine has a printing or marking station for printing price and inventory information and a magnetic recording or marking station for writing the same and/or different information on a portion of the ticket

carrying the magnetic recording media. The information magnetically recorded is accomplished in the preferred em-



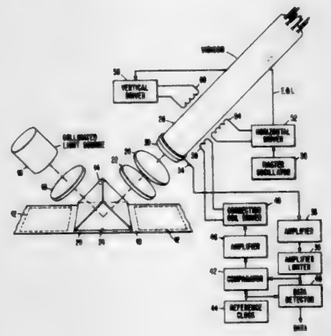
bodiment by a rotating magnetic head which writes the information on a concentric track.

3,662,363
MEMORY SYSTEM USING PHONOGRAPH-TYPE DISC
Allan B. Chertok, Cambridge, Mass., assignor to EG&G, Inc., Bedford, Mass.
Filed Apr. 17, 1969, Ser. No. 817,068
Int. Cl. G11b *3/06, 3/78, 13/02*
U.S. Cl. 340—174.1 C **29 Claims**



A random access memory system for the storage of digital data in which digital signals are inscribed in a spiral groove on a phonograph record with the specific sequence of signals indicative of a radial location bearing a fixed relation to the radial location where each sequence is inscribed. The disk is supported on a rotating turntable and the digital signals are sensed by a stylus carried on an arm which can be positioned at an appropriate radial position on the disk. Address entry signals corresponding to the digital sequences in the groove are entered into the machine and control the positioning of the arm. An output signal is generated when the digital sequence read by the sensing means corresponds to the entered address. Additional digital information may be stored at specific radial positions identified by the digital addresses and this information is read out by a sensing device, only when the machine has found a match between the entered address and the digital sequence identifying the particular radial position.

3,662,364
SCAN CONTROL FOR SYNCHRONIZING A DATA SIGNAL WITH A CLOCK SIGNAL
Arvindkumar M. Patel, Wappinger Falls, and Anton G. Wellbrock, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 22, 1969, Ser. No. 887,244
Int. Cl. G11c *13/04*; G11b *11/10*
U.S. Cl. 340—174.1 M **10 Claims**

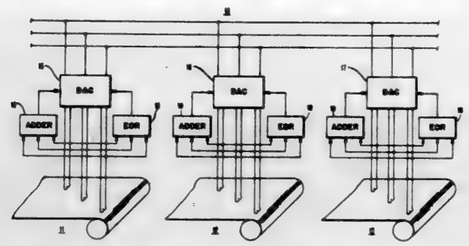


A magneto-optic transducing system is utilized to convert a magnetic recording into electrical signals. For purposes of decoding the electrical signals into data, it is necessary that the electrical signal transduced from a magnetic recording be synchronized with a reference clock signal. Synchronization is obtained herein by fixing the frequency of the reference clock signal and varying the frequency of the data signal as transduced from the magnetic recording. The frequency and phase of the data signal are varied by varying the scanning sweep speed used in a magneto-optic transducer. Two alternative embodiments are shown. In the first embodiment, the scanning is accomplished by a vidicon which scans the magneto-optic image of a large block of data. In an alternative embodiment, a cathode ray tube is used as the light source for the magneto-optic transducer so that each bit may be separately scanned by deflecting the beam in the cathode ray tube. Synchronization is obtained by comparing the frequency and phase of the data signal from the transducing system with the frequency and phase of the reference clock and feeding back an error signal to the deflection coils of the cathode ray tube or the vidicon. The correction signal increases or decreases the sweep speed as is necessary to synchronize the data with the clock.

3,662,365
DYNAMIC AMPLITUDE CONTROL FOR MAGNETIC TAPE SYSTEMS
Juan A. Rodriguez, Boulder, and Roger A. Monroe, Longmont, both of Colo., assignors to Storage Technology Corporation, Boulder, Colo.
Filed Mar. 23, 1970, Ser. No. 21,826
Int. Cl. G11b *5/02*; H03g *3/30*
U.S. Cl. 340—174.1 H **4 Claims**

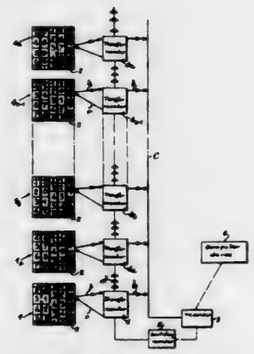
A magnetic tape system in which read heads sense signal fluctuations in the tracks in a moving magnetic tape includes dynamic amplitude control. The signals from a plurality of tracks are averaged and compared to predetermined levels. A digital counter is set in accordance with the level of the

average signal. The digital counter changes the gain of the signal produced by the magnetic head. Gain changes are



made only upon the occurrence of the end of the record being read.

3,662,366
PROCESS FOR THE REMOTE READING OF MEMBERS FOR DETECTING VARIOUS VARIABLES, PARTICULARLY OF METERS AND SIMILAR, AND DEVICE FOR OPERATING THE SAME
Claude Marie Daniel Neuville, Creteil; Georges Emile Quenouille, Vanves; Andre Squarcioni, Sceaux, and Jean-Joel Marcel Gustave Laurent, Paris, all of France, assignors to Compagnie Des Compteurs, Paris, France
Filed Oct. 2, 1969, Ser. No. 863,301
Claims priority, application France, Oct. 8, 1968, 169071
Int. Cl. G08c *15/06*
U.S. Cl. 340—183 **9 Claims**



The device for remote reading of successive data from a plurality of successive movable detecting members has measuring units with two distinguishable areas, a plurality of pickup elements for scanning said areas to produce a signal, transfer members connected to each pickup element, means for successively activating each transfer members in successive scanning cycles and a computer member connected to the pickup member for collating and analyzing the successive signals.

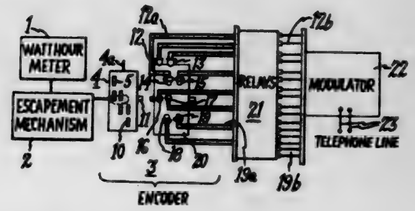
3,662,367
WATER ALARM AND FAULT-LOCATING FOR AIR CORE PLASTIC-INSULATED TELEPHONE CABLE
George Frank De Veau, Jr., Baltimore; Wendell Glenn Nutt, Phoenix, and George Harry Webster, Timonium, all of Md., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jan. 4, 1971, Ser. No. 103,501
Int. Cl. G08b *21/00*; H02g *15/28*; G01r *31/08*
U.S. Cl. 340—235 **15 Claims**

A broad design for remote electrical detection of relative humidity level and liquid water in a telephone cable, while avoiding false alarms due to high relative humidity. The alarm circuit relies on a plastic barrier between one pulp in-



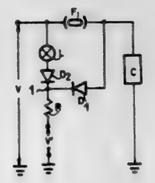
sulated conductor and a second conductor. The barrier is interrupted at separated intervals along the cable, for which points only the pulp insulation separates the two conductors.

3,662,368
TELEMETERING SYSTEM HAVING A CONTINUOUSLY MONITORING ENCODER
Richard G. Farnsworth, York, Maine, and James H. Keller, Jr., Rowley, Mass., assignors to General Electric Company
Filed Jan. 9, 1970, Ser. No. 1,609
Int. Cl. G08c *19/16*
U.S. Cl. 340—204 **9 Claims**



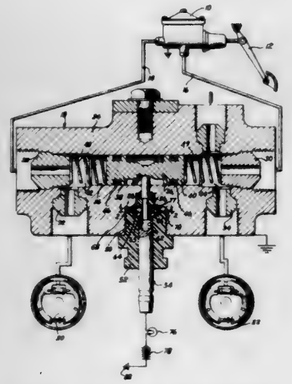
Apparatus for continuously monitoring a meter in a telemetering system and for encoding the information thus derived to adapt it for transmission in machine readable form to a location remote from the meter. The apparatus is characterized by incorporating transducer means that serve to transmit a code from the monitored meter to a telecommunications system through a non-mechanical connecting link.

3,662,369
CIRCUIT FOR SIGNALLING THE OPERATION OF A CIRCUIT PROTECTING DEVICE
Mario Vineani, Milan, and Celio Trinca, Bregnano, both of Italy, assignors to Honeywell Information Systems Italia S.P.A., Milan, Italy
Filed Feb. 5, 1970, Ser. No. 8,952
Claims priority, application Italy, Feb. 5, 1969, 12445 A/69
Int. Cl. G08b *21/00*
U.S. Cl. 340—250 **2 Claims**



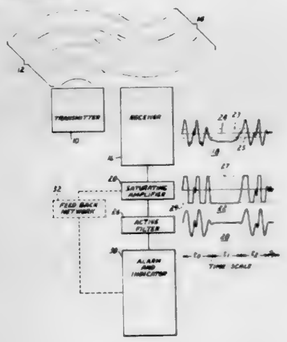
A circuit for indicating the operative state of a circuit breaker which protects a load from an alternating voltage source, wherein a lamp is coupled to said source to light when the breaker is open, but is prevented from lighting when the breaker is closed by a forward biased diode which limits the voltage across the lamp.

3,662,370
CONE DISC LOCK-ON SWITCH
Charles M. Barnes, St. Joseph, Mich., and Blair H. Schlender, Richardson, Tex., assignors to The Bendix Corporation
Filed June 15, 1970, Ser. No. 46,058
Int. Cl. G08b 21/00
U.S. Cl. 340—240 4 Claims



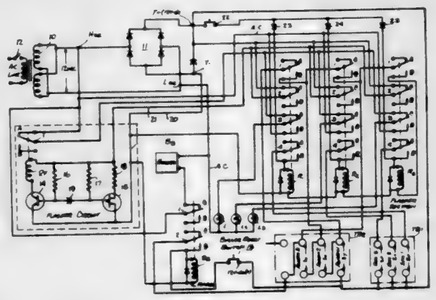
A warning switch is disclosed for indicating a pressure differential between front and rear braking systems which includes an electrical terminal connected in series with a warning device. A piston is shifted by a pressure differential between the front and rear systems to reciprocate a plunger which forces a resilient cone disc from a first position in which the disc is spaced from the terminal to a second position in which the disc completes an electrical circuit between the terminal and the grounded switch housing.

3,662,371
ULTRASONIC INTRUSION DETECTION SYSTEM SIGNAL PROCESSING CIRCUIT
John H. Lee, Township of Woodbury, Washington County, and Thomas E. Collins, East Oakdale, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Nov. 17, 1969, Ser. No. 877,173
Int. Cl. G08b 13/00
U.S. Cl. 340—258 R 8 Claims



An electronic device for processing the amplitude modulations of a received ultrasonic carrier wave to produce an alarm signal when the pattern of the amplitude modulations is characteristic of an alarm condition. The device produces an electrical signal which is representative of the amplitude modulations of a received wave. When the electrical signal has a frequency within a predetermined pass-band, is of at least a predetermined amplitude, and persists for a minimum time interval, an alarm signal is produced.

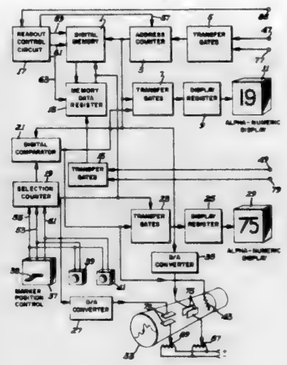
3,662,372
MONITORING SYSTEM FOR DOOR STATIONS
Marvin J. Levy, 2133 Kenwood Place, Bellmore, N.Y.
Filed Apr. 23, 1969, Ser. No. 818,677
Int. Cl. G08b 13/08
U.S. Cl. 340—274 7 Claims



A monitoring system for a plurality of remote door stations to indicate the status of each door. Each door operates in conjunction with two switches, both of which remain closed when the door is closed (Condition I). Only the first switch is opened when the door is legally opened (Condition II) whereas both switches are opened when the door is violated (Condition III). A central console is provided including relay-operated light indicators which are individually wired to the first switches located at the several stations and a relay-operated alarm device which is wired to the second switches in a series circuit. Also provided is a flasher unit coupled to the light indicators. The arrangement is such that when Condition I exists at any one station, the corresponding light indicator on the console gives steady illumination; when Condition II exists, the light indicator is caused by the flasher unit to operate periodically; and when Condition III exists, the alarm device is actuated and the light indicator is caused to operate periodically to call attention to a violation.

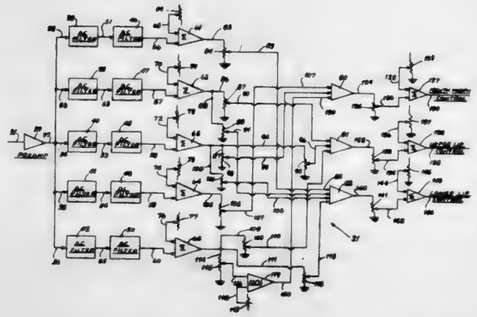
3,662,373
INFORMATION DISPLAY SYSTEM
Robert W. Schumann, Madison, Wis., assignor to Fabri-Tek Instruments, Inc., Madison, Wis.
Filed Feb. 26, 1970, Ser. No. 14,488
Int. Cl. G08b 5/22
U.S. Cl. 340—324 A 19 Claims

Apparatus for providing a numerical display of a selected point on an analog waveform displayed on an analog display device connected to and operated by a digital memory and its associated circuitry, the apparatus including marking circuitry for selectively marking a point on the analog waveform. The marking circuitry is connected to a digital comparator which is in turn connected to compare portions of the memory associated circuitry with a selection counter capable of counting either up or down. Manually operable apparatus is provided so that an operator may control the number of count pulses to the selection counter and the direction of count. As the count is the selection counter varies the marking circuitry provides a visual marking which varies along the analog waveform being displayed, while



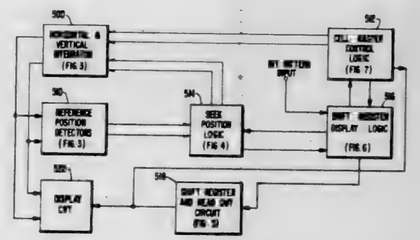
alpha-numeric readout equipment provides number values for the coordinates of the point being marked.

3,662,374
AUTOMATIC GENERATION OF A MOUTH DISPLAY AND ANIMATION OF THE MOUTH IN RESPONSE TO SOUND
Lee Harrison, III, Camarillo, Calif.; Francis J. Honey; Edwin J. Tajchman, both of Denver, Colo., and Lloyd W. Bowles, Lakewood, Colo., assignors to Computer Image Corporation, Denver, Colo.
Filed July 13, 1970, Ser. No. 54,305
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A 17 Claims



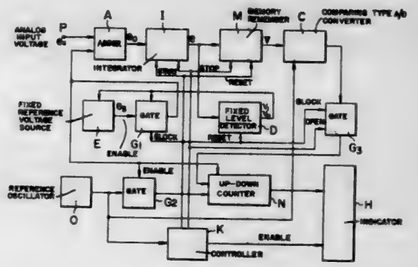
Automatic synchronization of movement of a computer generated mouth to movement of a real mouth uttering words. Establishing signals to define the basic form of the mouth generated by the computer for display on a display tube. Combining high frequency sine and cosine signals with the basic form signals to form the body of the mouth on the display tube with modulation of the high frequency signals for shaping the lips. Utilizing pattern recognition and filtering signals of different frequencies that correspond to different spoken sounds. Combining the filtered signals to create control voltages representative of the realistic or alternatively, intentionally impressionistic motions of the mouth corresponding to the spoken sound. Using the control voltages to control movement of the beam of the display tube to effect the amplitude of movement of the upper lip, the amplitude of movement of the lower lip, and the width of the mouth generated by the computer. Controlling the intensity of the beam as the mouth is drawn and animated.

3,662,375
SHIFT REGISTER DISPLAY
David L. Johnston, and Paul E. Nelson, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 10, 1969, Ser. No. 790,221
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A 4 Claims



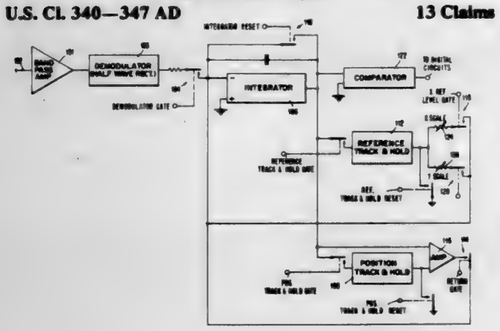
The contents of a matrix-type shift register used in an optical character reader is displayed on command on a cathode ray tube. Display is accomplished by generating a raster pattern scan for each storage position of the shift register, said raster pattern scans being at the same relative positions to one another as the storage positions in the shift register. Each raster pattern scan, referred to as a cell raster, is intensified if the corresponding shift register storage cell contains a video or "black bit." If the storage cell does not contain a black bit, the corresponding cell raster is not intensified. A partial outline of all cell rasters may be intensified to provide a visual indication of all cell positions. The resulting pattern displayed by the cathode ray tube is a configuration which corresponds to the configuration of black bits held in the shift register.

3,662,376
ANALOGUE-DIGITAL CONVERTING APPARATUS
Hikaru Furukawa, Tokyo, and Hiroshi Aihara, Gyoda, both of Japan, assignors to Takeda Riken Industry Company Limited, Tokyo, Japan
Filed Apr. 7, 1970, Ser. No. 26,212
Claims priority, application Japan, Feb. 24, 1970, 45/15184; Apr. 9, 1969, 44/26857
Int. Cl. H03r 13/17
U.S. Cl. 340—347 AD 3 Claims



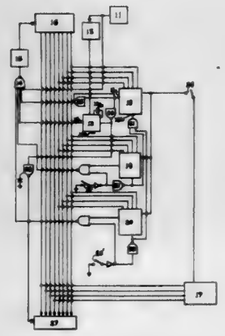
In the present invention, a quantity to be converted is integrated for a fixed time and, during the integrating period, whenever the output voltage of the integrator reached a reference level, a reference quantity having a polarity reverse to that of the quantity to be converted is added to the above mentioned integrator with the quantity to be converted.

3,662,377
TRIPLE-SAMPLE A/D CONVERTER
Herbert Dym; Robert V. Mazza, both of Mahopac, N.Y., and Lawrence P. Segar, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 30, 1970, Ser. No. 33,400
Int. Cl. G01r 17/06
U.S. Cl. 340—347 AD 13 Claims



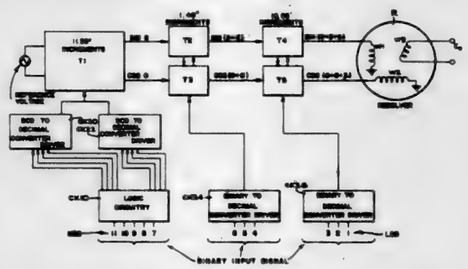
An analog-to-digital converter that eliminates dynamic coupling errors in a system where the measured signal and the reference signal are subject to such variations. This device sequentially samples an analog unknown voltage and a reference voltage and converts the sampled signals into digital information representative of the unknown voltage. Sampling and conversion is achieved in a three step process which alternates the reference and unknown signal inputs to an integrator and level holding circuits. The integrator output controls the duration of a digital counter which runs until the integrator output crosses a zero value. The result in the digital counter provides the binary value representative of the analog unknown signal. Dynamic coupling errors which occur during the reference and unknown signal sample times are eliminated by dividing the sample time of the unknown signal in two segments, a first sampling segment prior to sampling the reference signal, and a second sampling segment after the reference signal.

3,662,378
ELECTRONIC KEYBOARD INPUT CIRCUIT
Guy MacArthur, Highland Park, Ill., assignor to Cherry Electrical Products Corporation, Highland Park, Ill.
Filed June 1, 1970, Ser. No. 41,798
Int. Cl. G06f 3/02
U.S. Cl. 340—347 DD 3 Claims



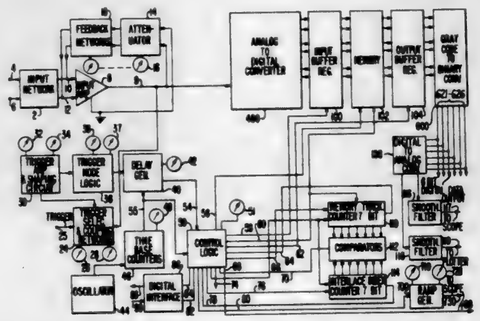
A continuously running astable multivibrator (clock) operates on electronic counter for 2^n counts, (n) being a variable dependent upon the number of bits in the code being provided. A key closure in a keyboard matrix provides a continuity path between a decoder circuit which senses the least significant bits of the counter, and a multiplexer or multiplexers which sense the most significant bits. The multiplexer provides an output which effectively stops the clock at the desired code, thereby locking the clock out as long as the key is depressed and effectively rejecting multiple key inputs.

3,662,379
DIGITAL-TO-RESOLVER CONVERTER
George W. Miller, Anoka; Charles J. Wacker, New Brighton, and James B. Dietel, Minneapolis, all of Minn., assignors to FMC Corporation, San Jose, Calif.
Filed Dec. 29, 1969, Ser. No. 888,688
Int. Cl. H03r 13/02
U.S. Cl. 340—347 DA 10 Claims



A converter accepts a digital signal comprising a binary representation of a given angle and provides an analog output for a resolver comprising a pair of voltages proportional to the sine and the cosine of that angle. The voltages are derived from a first transformer by taps in the circuits of a pair of secondaries of the transformer with such taps comprising transistor switching elements controlled by conventional binary-to-decimal decoder/drivers, and there are two additional multitapped transformers serially connected with each of said secondaries for adding in incremental voltages in order to obtain a high degree of resolution.

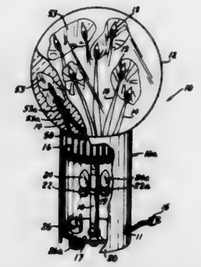
3,662,380
TRANSIENT RECORDER
William P. Cargile, La Honda, Calif., assignor to Biomation, Inc., Palo Alto, Calif.
Filed Mar. 2, 1970, Ser. No. 16,628
Int. Cl. H03r 13/02
U.S. Cl. 340—347 AD 19 Claims



An analog transient signal is converted to a Gray digital code and is read into a recirculating MOS storage device.

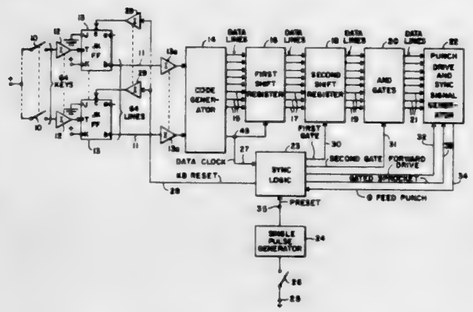
The memory is controlled by a triggering system so as to hold any desired portion of the transient signal. A slow readout from the memory is converted to a straight binary code that may be applied to a digital computer. The binary signal is further applied to a digital-to-analog converter for connection to an oscilloscope or mechanical plotter.

3,662,381
LIGHTING DEVICES
Eric Steffens, 11 Victoria Road, Ardsley, N.Y.
Filed June 8, 1970, Ser. No. 44,035
Int. Cl. G08b 5/00
U.S. Cl. 340—378 12 Claims



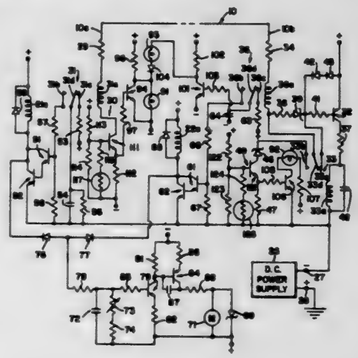
The present invention has generally reference to lighting devices and to objects derived therefrom.

3,662,382
KEYBOARD CONTROLLED ELECTRICAL CODE-SIGNAL GENERATOR SYSTEM
Irwin R. Janis, Howard Beach, N.Y., assignor to Fairchild Camera and Instrument Corporation
Filed Nov. 9, 1970, Ser. No. 87,987
Int. Cl. G08c 1/00
U.S. Cl. 340—365 5 Claims



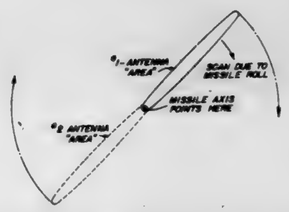
An electrical code-signal generator system for operation from a keyboard having a plurality of pulse generating keys comprises a plurality of input lines for individually receiving pulses from the keys, a normally enabled gate in each of the input lines, a code generator having a plurality of input circuits individually coupled to the gates and having a first plurality of data output lines on which appear character-representative encoded signal pulses. The generator system further comprises a first shift register coupled to the data output lines, a second shift register coupled to the first shift register and having a second plurality of data output lines and a plurality of AND gates individually included therein, and a punch and connected driving motor which develops a cyclical signal representative of and isochronous with its operating cycle. The generator system further includes an OR gate responsive to the first signal occuring on the first data output lines for developing a clock pulse commencing a predetermined interval thereafter and a circuit for applying the clock pulses to the first register for transferring data from the code generator to the output of the first register and thence to the input of the second register, a sync-logic unit jointly responsive to the clock pulses and to the cyclical signal for enabling the AND gates included in the second data lines for transferring data from the AND gates to the punch and for inhibiting all of the gates in the input lines for a minimum interval, of the order of 1 μsec, after actuation of a given key and until any data in the second shift register has been utilized by the punch.

3,662,383
SECURITY ALARM SYSTEM
Mohan Ajmani; Larry K. De Lowe, both of Dublin, and Thomas C. Hankins, Oakland, all of Calif., assignors to Systron-Donner Corporation, Concord, Calif.
Filed Aug. 7, 1970, Ser. No. 62,052
Int. Cl. G08b 19/00
U.S. Cl. 340—409 13 Claims



Security alarm system of the McCulloh loop type in which the polarity of the voltage applied to one end of the loop is automatically reversed when abnormal conditions exist in the loop, thus maintaining the loop in an operable condition despite the occurrence of openings and/or shorts to ground in the loop. The voltage is automatically restored to its normal polarity upon correction of the opening and/or grounding.

3,662,384
DOPPLER MAPPING RADAR
Joseph J. Albert, Timonium, Md., assignor to Martin-Marietta Corporation
Filed Mar. 13, 1957, Ser. No. 645,862
Int. Cl. G01s 9/44
U.S. Cl. 343—9 15 Claims



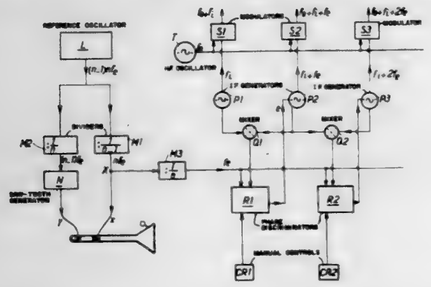
A system is disclosed for mapping terrain from a vehicle in which the area to be mapped is resolved into strips by rotat-

ing a narrow fan shaped beam with the velocity vector of the vehicle the approximate center of the scanning system. The reflected energy is multiplied by a reference signal to generate a doppler spectrum which is resolved into elements of area along the strip determined by the antenna pattern by applying the spectrum to a bank of graduated filters. The beam of an indicating device is swept along the radius of the device with the output of the filters used as an intensity control.

3,662,385
RAPID SCANNING ECHO DETECTOR

Michel Jacques Robert Nicolas, Paris, and Claude Marius Pirolli, Saint-Denis, both of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation, Paris, France

Filed Feb. 16, 1970, Ser. No. 11,693
Claims priority, application France, Feb. 19, 1969, 6904191
Int. Cl. G01s *9/04*
U.S. Cl. 343—10 **10 Claims**



A radar system or other echo detection system is disclosed in which a transmitting antenna array and a receiving antenna array are utilized, the transmitting array having a plurality p or antenna elements, or radiators, and the receiving array having a plurality n of antenna elements which may be different in number from the number of antenna elements in the transmitting array, and each array having respective signal channels. The transmitting and receiving arrays are rapidly and simultaneously scanned by an electronic scanning technique in which the reception range is scanned within the duration of the transmission pulse. According to the present disclosure, this is accomplished by the steps of feeding respective frequencies differing by a constant increment f_r to successive elemental antenna channels of the receiving array and feeding respective frequencies differing by another constant increment f_e to successive elemental antenna channels of the transmitting array, wherein the increment f_r between frequencies fed to the receiving antenna elements is greater than or equal to the product of the increment f_e between frequencies fed to the transmitting antenna elements and the number p of antenna elements in the transmitting array, i.e.,

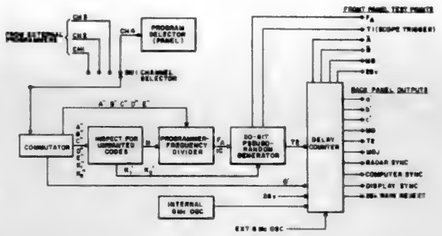
$$f_r \geq p \cdot f_e.$$

3,662,386
PROGRAMMABLE 20-BIT PSEUDORANDOM (PRF) GENERATOR

Kenneth O. Bryant, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 4, 1970, Ser. No. 34,225
Int. Cl. G01s *7/36, 7/30*
U.S. Cl. 343—17.1 PF **6 Claims**

A programmable pseudorandom PRF generator for generating allowable combinations of PRF and jitter percent comprising a program selector means for inspecting the output of the selector for unwanted codes and a 20-bit pseudorandom generator for generating an output pulse having an allowed combination of PRF and jitter percent such that the



output pulse, when jittered, has the same average frequency as the unjittered pulse.

3,662,387
FERRITE RADAR ABSORBING MATERIAL

Dale M. Grimes, Ann Arbor, Mich., assignor to The United States of America as represented by the Secretary of the Air Force

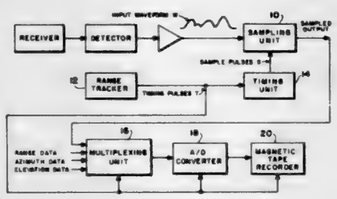
Filed Oct. 29, 1966, Ser. No. 591,064
Int. Cl. H01q *17/00*
U.S. Cl. 343—18 A **1 Claim**

A means for minimizing the reflections of electromagnetic radiations from metal surfaces in which the reflective metal surfaces is provided with a thin layer of a lithium-cadmium-ferrite material. The ferrite material acts as a protective shield by absorbing incident microwave radiations which are normally reflected from metal surfaces.

3,662,388
METHOD AND APPARATUS FOR RECORDING HIGH RANGE RESOLUTION RADAR DATA

Murray H. Mott; Donald R. Wehner, both of San Diego, and Albert T. Roome, Escondido, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed July 27, 1970, Ser. No. 58,384
Int. Cl. G01s *9/02*
U.S. Cl. 343—5 SA **3 Claims**



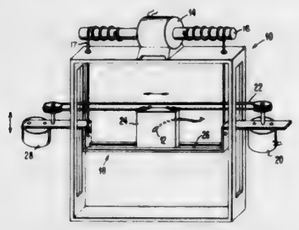
A method and apparatus for recording analog high-range resolution radar target signatures from single airborne targets encompassed within a moving range window on digital magnetic tape formatted for direct analysis by general purpose computers. Target echoes in the form of one-dimensional range profiles of radar backscatter along target length from each of a successive number of transmitted pulses are sampled and recorded at incrementally increasing range positions within a range window until the window has been completely sampled. The apparatus samples each signature at each occurrence of a sampling pulse from a timing unit controlled by a range tracker and holds the obtained sample until the next pulse is provided. Each time a complete range window is sampled, the moving sample-point sampling sequence is repeated and another signature is reconstructed. The sampled output is time-multiplexed with range, azimuth, and elevation

data and recorded in digital form on digital magnetic tape which can be utilized in general purpose computers to analyze signature variation with respect to target aspect variation.

3,662,389
DETERMINATION OF FAR FIELD ANTENNA PATTERNS USING FRESNEL PROBE MEASUREMENTS

Robert T. Coffin, Huntsville, Ala.; Raymond W. Grundmeyer, New Orleans, La.; William H. Hefner, and Ferd H. Mitchell, both of Huntsville, Ala., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 24, 1970, Ser. No. 31,478
Int. Cl. G01r *29/10*
U.S. Cl. 343—100 AP **2 Claims**

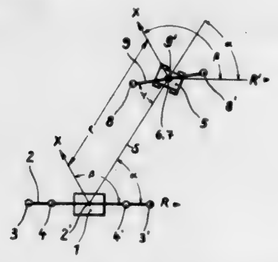


Apparatus and method for the design and measurement of microwave antenna wave patterns. The far-field radiation pattern of a space fed aperture antenna is determined as a function of the measured radiation characteristics at the antenna focus and the design or measured illumination characteristics of the feed radiator of the antenna.

3,662,390
METHOD OF AND DEVICE FOR AIMING BARRELS OF CANNONS INSTALLED IN TERRAIN FROM A REMOTE AIMING STATION

Josef Lerach, and Victor Denk, both of Dusseldorf, Germany, assignors to Firma Rheinmetall GmbH, Dusseldorf, Germany

Filed Nov. 25, 1969, Ser. No. 879,681
Claims priority, application Germany, Nov. 28, 1968, P 18 11 441.5
Int. Cl. G01s *1/08*
U.S. Cl. 343—102 **6 Claims**

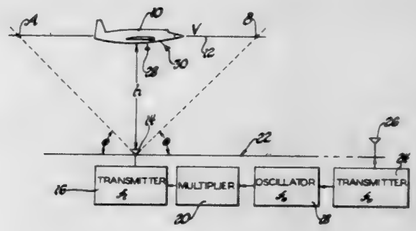


A method of and an apparatus for the training of pieces of artillery on to a target from a remote control station. At the control station is a transmitting antenna array for sending beat signals to a receiving antenna array at the piece of artillery to be trained. By measuring the phase shift of the signals received by the receiving array the angle between a base line at the control station and a reference line from the station to the artillery piece can be determined and from this a second base line at the artillery piece can be established for the purpose of laying the piece on to the target.

3,662,391
INSTRUMENT LANDING SYSTEM

William M. Brown, Ann Arbor, Mich., assignor to Chain Lakes Research Corporation, Detroit, Mich.

Filed Oct. 20, 1969, Ser. No. 867,822
Int. Cl. G01s *1/02*
U.S. Cl. 343—112 A **4 Claims**

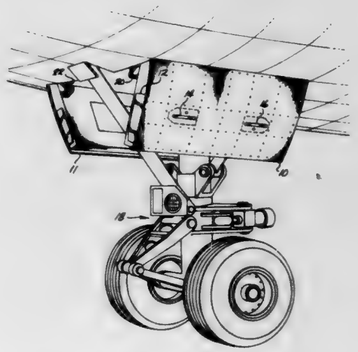


An instrument landing system for determining the altitude of an aircraft at a plurality of points along a glide path defined by a plurality of spaced transmitters located along a ground reference line and transmitting at a predetermined frequency, the aircraft receiver apparatus comprising means for producing a pulse pair for each transmitter point corresponding to a predetermined Doppler frequency shift which is realized first when converging on the transmitter point and second when diverging from the transmitter point and means for determining altitude as a function of velocity and the time elapsed between the pulses of the pair. Altitude deviation from the glide path is determined by a comparison of signals related to the distance between two succeeding transmitter points and the time spacing of a pulse pair.

3,662,392
GLIDE SLOPE ANTENNA SYSTEM

Brian P. Stapleton, and Robert W. Sutton, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 8, 1970, Ser. No. 96,034
Int. Cl. H01q *1/28*
U.S. Cl. 343—708 **10 Claims**

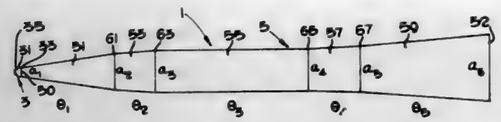


A switchless glide slope antenna system maintaining horizontal polarization during capture and track functions. The antenna system comprises a track antenna and a capture antenna arranged in an aircraft landing gear door so that switching from capture to track antenna occurs automatically upon gear extension by cross-polarization of the capture antenna.

3,662,393
MULTIMODE HORN ANTENNA

Seymour B. Cohn, Tarzana, Calif., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 20, 1970, Ser. No. 12,970
Int. Cl. H01q 13/00
U.S. Cl. 343—786 10 Claims

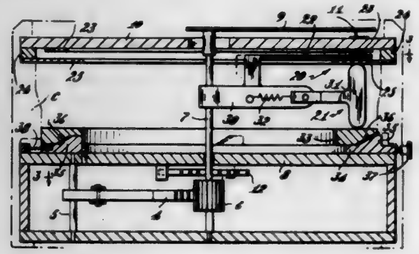


A conical or pyramidal horn-radiator having small flare angle changes within the horn at cross-section dimensions much larger than the input waveguide, to excite higher order modes which control the E-plane aperture distribution and produce a tapered aperture field in the E-plane. Equal E- and H-plane beamwidths are thereby obtained. The horn has particular use as a feed for a parabolic reflector, such as a Cassegrain antenna. The flare angle changes are used for pattern improvement in a first frequency band, and separate means are provided for pattern improvement in a second band.

3,662,394
RECORDING SPHYGMOMANOMETER

Hans A. Dudler, 36 School Street, Woburn, Mass.

Filed Apr. 13, 1970, Ser. No. 27,490
Int. Cl. G01d 9/40; A61b 5/02
U.S. Cl. 346—21 5 Claims



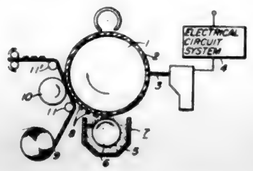
A sphygmomanometer of the aneroid gauge type having bellows connected through gears to rotate a shaft, and a pointer mounted on the shaft and movable over a dial to indicate pressure, includes recording means manually actuable to temporarily mark the systolic and diastolic pressures. The recording means has a two layer adhesion marking means attached to the dial and a stylus carried by the shaft in registry with the pointer, and movable to impress a mark upon the adhesion marking means. A separator is provided to detach the two layers to erase the earlier marks when the sphygmomanometer is again used.

3,662,395
IMAGE TRANSFER RECORDING APPARATUS

Tetsuo Doi, and Shoji Sagae, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 6, 1970, Ser. No. 9,176
Claims priority, application Japan, Feb. 7, 1969, 44/8738; Nov. 7, 1969, 44/88757
Int. Cl. G01d 15/06; B05b 5/02; G03g 5/02
U.S. Cl. 346—74 ES 9 Claims

An image transfer recording apparatus in which a recording drum on which an information signal is recorded by electrostatic recording means is provided with a surface layer of electrically insulating resin so that a powdery developer attaching to the electrostatic latent image formed on the surface of the recording drum can be completely transferred

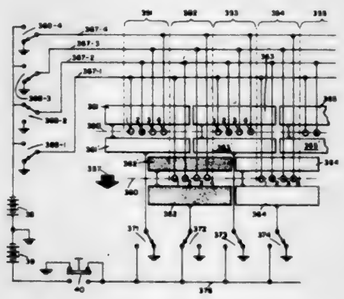


onto a recording sheet thereby to obtain a recorded image of good resolution.

3,662,396
ELECTROGRAPHIC RECORDING SYSTEM

Arling Dix Brown, Jr., Cleveland Heights, Ohio, assignor to Clevite Corporation

Continuation-in-part of application Ser. No. 868,394, Oct. 22, 1969. This application Apr. 15, 1970, Ser. No. 28,694
Int. Cl. G03g 15/00; H04n 1/24, 1/30
U.S. Cl. 346—74 ES 10 Claims



Recording electrodes of a coincidence voltage type electrographic recorder are divided into arrays. Like-numbered electrodes of different arrays are connected together. Complementary electrodes are disposed adjacent to the arrays. A latent image is formed at a selected recording electrode when suitable voltage is applied to that electrode, and in coincidence therewith, suitable voltage is applied to one or more complementary electrodes adjacent to the array containing the selected recording electrode. Uniform potential is obtained at the conductive layer along the full length of the array at which recording is taking place by having the complementary electrodes longer than the array and extending beyond both ends of the array. For this purpose, the complimentary electrodes may be longer than the array, or they may have a shorter length and be selectively connected in groups to act as long electrodes.

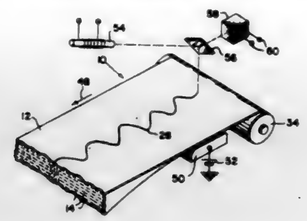
3,662,397
THERMAL SENSITIVE RECORDING MEDIUM RESPONSIVE TO FORCE FIELDS AND APPARATUS FOR USING SAME

Dale O. Ballinger, Denver, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 25, 1969, Ser. No. 860,962
Int. Cl. G03g 15/00, 19/00; G11b 11/14
U.S. Cl. 346—74 MP 6 Claims

A recording medium is shown which is responsive to a magnetic or an electrostatic field for recording an input signal thereon. The recording medium includes a continuous web formed from a thermal sensitive material in which highly

reflective flake-like particles are preoriented parallel to the plane thereof. These preoriented, reflective flake-like particles form a light background across the surface of the recording medium by reflecting ambient light therefrom. Exposure

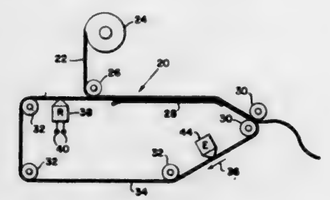


to a magnetic or an electrostatic field in response to an input signal reorients the reflective particles causing them to absorb ambient light for forming a recording trace thereon. Heat is utilized to permanently fix the recording trace upon the thermal sensitive recording medium.

3,662,398
MAGNETIC RECORDING APPARATUS

Dale O. Ballinger, Denver, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 25, 1969, Ser. No. 861,065
Int. Cl. G03g 19/00; G11b 5/86
U.S. Cl. 346—74 MP 3 Claims



A magnetic recording apparatus is shown including a magnetic transducer that records an input signal upon a thin magnetic film of material having a high remanence which is rotatively mounted upon a drum or belt. The magnetic film contacts a magnetic recording paper which responds to the recorded input signal thereon for displaying that signal as a recording upon the surface of the paper. The film is then erased and made ready for subsequent contact with the magnetic transducer.

ERRATUM

For Class 346—74 M see:
Patent No. 3,662,403

3,662,399
NOZZLE FOR INK JET AND METHOD FOR MANUFACTURING THE SAME

Takao Yanou, and Masaharu Urayama, both of Tokyo, Japan, assignors to Casio Computer Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1970, Ser. No. 36,790
Claims priority, application Japan, May 19, 1969, 44/45369
Int. Cl. G01d 15/18
U.S. Cl. 346—140 5 Claims

An ink jet recording device has a movable writing head which involves at least one ink nozzle for ejecting a stream of ink jet to synthesize characters on the recording medium by controlling the stream of ink jet. Such kind of nozzle comprises a capillary made of a hard glass. Over the outer surface of the capillary a coating is deposited. This coating is

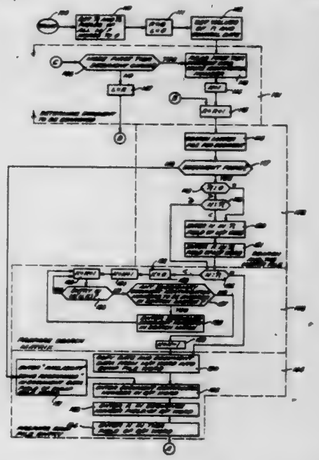


selected from materials, such as silicones, which have water-repellent characteristic and large angle of contact. After the coating is deposited, the coated capillary is cut into desired length to fabricate the nozzle.

3,662,400
SUBSIDIARY DOCUMENT IDENTIFICATION SYSTEM

John H. Gell, Wichita, Kans., assignor to Hinderstein & Silber, Fullerton, Calif. and International Systems, Inc., Wichita, Kans., part interest to each

Filed Apr. 28, 1970, Ser. No. 32,610
Int. Cl. G06f 9/12
U.S. Cl. 444—1 20 Claims



In a data processing system employing a computer and a random access storage device, a program method for compiling a tier-ordered subsidiary document tree. The program method comprises three loops. A first loop culls from the random access storage device a word associated with a known Nth-tier parent document identification number, and enters into a matrix portion of the computer memory the subsidiary document identification numbers included in the culled word. The second loop enters the tier value N, the parent document identification number and part of the culled word into a storage file. The third loop determines from the content of the computer memory matrix portion the identification number of the next higher tier document to be searched, and causes reentry of the first loop to initiate such search. When all document identification numbers have been searched, the storage file contains the desired tier-ordered subsidiary document tree.

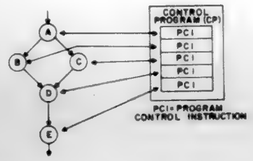
3,662,401
METHOD OF PROGRAM EXECUTION

Arthur A. Collins, and Wesley B. Henry, both of Richardson, Tex., assignors to Collins Radio Company, Dallas, Tex.

Filed Sept. 23, 1970, Ser. No. 74,723
Int. Cl. G06f 9/06
U.S. Cl. 444—1 10 Claims

A method of activity implementation through use of automatic computation means whereby simultaneous execution

of program tasks may be performed and maximum utilization of system facilities is realized. The overall activity is partitioned into separate tasks with input requirements, desired outputs, and execution priority specified for each task. As



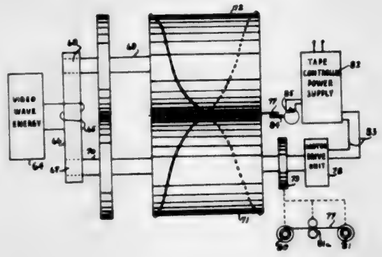
tasks receive ready status, they are assigned to appropriate system work stations for implementation. Each task is defined by a program control instruction and may include a plurality of sub-tasks which are performed within the system.

3,662,402
DATA SORT METHOD UTILIZING FINITE DIFFERENCE TABLES
Kenneth L. Bond, and James A. Schooley, both of Phoenix, Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.
Filed Dec. 4, 1970, Ser. No. 95,205
Int. Cl. G06f *7/24*, *7/04*
U.S. Cl. 444—1 **6 Claims**

Δ_k^m PROCESSED		Δ_1^6	Δ_2^5	Δ_3^4	Δ_4^3	Δ_5^2	Δ_6^1
(m+k, k)		(5,1)	(5,2)	(5,3)	(5,4)	(3,2)	(2,1)
ACTION TO BE TAKEN ON SEQUENCE		INTERCHANGE FIFTH AND FIRST ENTRIES	NONE	NONE	NONE	INTERCHANGE THIRD AND SECOND ENTRIES	NONE
RESULTING STATUS OF SEQUENCE	ORIGINAL SEQUENCE						
	9	2	2	2	2	2	2
	5	5	5	5	5	9	9
	3	3	3	3	3	5	5
	7	7	7	7	7	7	7
	2	9	9	9	9	9	9

A sequence of information items, each of which has or can be assigned a numerical value, is sorted to obtain a list arranged in order of ascending or descending magnitude. This is accomplished by generating a difference table for the sequence and then interchanging various items of the sequence depending on the entries of the difference table.

3,662,403
MAGNETIC, AND MAGNETIC REMOVAL RECORDING
R. Lee Hollingsworth, 110 Fox Boulevard, Massapequa, N.Y.
Continuation of application Ser. No. 145,805, Oct. 18, 1961. This application Nov. 14, 1966, Ser. No. 594,269
Int. Cl. G11b *5/02*; G01d *15/12*
U.S. Cl. 346—74 M **1 Claim**



The present invention is characterized as means to scan remove magnetic particles from a magnetic coated tape; from tape having a magnetic printed basic pattern thereon such as equidistant longitudinal lines; from tape having a magnetically printed halftone continuous pattern thereon, such magnetic removal accomplished by passing the tape through the pole faces of a magnetic recording head, or passing the tape in operative relation to a magnetic transducer means. At least one of the poles of the recording head is brought to a point substantially as sharp as a needle point. Relatively large power is required to produce satisfactory elemental of the magnetic particles according to modulated wave energy applied to the recording or transducer head. The invention can produce permanent magnetic recordings by the absence of the particles removed; printing stencils and printing plates; projectable pictures, data information, projectable news and pictorial presentations including advertising, and instantaneous substitute for microfilm records. There are other applications since the packing density measurements indicate that such pictures may have 18,000,000 bits per square inch of elemental detail, and perhaps considerably more.

DESIGNS

MAY 9, 1972

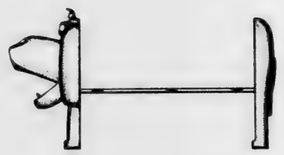
223,557
FOOTWEAR HEEL
James E. Dickerson, 2400 Delaware St., Gary, Ind. 46407
Filed June 3, 1970, Ser. No. 23,267
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—323



223,558
FOOTWEAR HEEL
James E. Dickerson, 2400 Delaware St., Gary, Ind. 46407
Filed June 3, 1970, Ser. No. 23,266
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—323



223,559
BEDSTEAD FOR CHILDREN
Ronald L. Magram, 9631 SW. 77th Ave., Apt. 208C, South Miami, Fla. 33156
Filed Oct. 5, 1970, Ser. No. 25,328
Term of patent 14 years
Int. Cl. D6—*01*; D21—*01*
U.S. Cl. D5—4



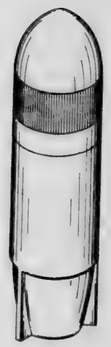
223,560
SCREW
Reiichiro Hirata, Kyoto-shi, Japan, assignor to Kabushiki Kaisha Yamashina Seikosho, Kyoto-shi, Japan
Filed Aug. 15, 1969, Ser. No. 18,698
Claims priority, application Japan June 17, 1969
Term of patent 14 years
Int. Cl. D8—*10*
U.S. Cl. D8—267



223,561
MULTIPURPOSE PLIERS
Alfred Z. Boyajian, Manhattan Beach, Calif., assignor to The Stanley Works, New Britain, Conn.
Filed Dec. 18, 1970, Ser. No. 26,570
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—58



223,562
CONTAINER FOR PAINT, APPLICATOR AND RUBBING COMPOUND
John W. Madeira, Akron, Ohio, assignor to Plasti-Kote Company, a division of Consolidated Foods, Inc., Medina, Ohio
Filed Dec. 10, 1970, Ser. No. 26,396
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—196



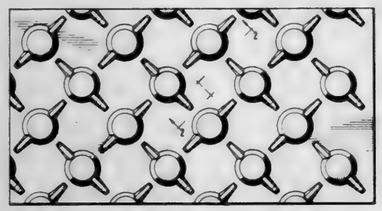
223,563
CONTAINER FOR OIL OR THE LIKE
Herbert Warnecke, Dampfmuhlgasse 5, A–1111 Vienna, Austria
Filed Apr. 17, 1970, Ser. No. 22,495
Term of patent 7 years
Int. Cl. D9—*02*
U.S. Cl. D9—170



223,564
CAR WASH BUILDING
James B. Otterpohl, 922 San Pedro Ave., San Antonio, Tex. 78212
Filed Oct. 13, 1970, Ser. No. 25,470
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



223,565
TREAD PLATE
William H. Rees, Dearborn, and Norman Solomon, Oak Park, Mich., assignors to National Steel Corporation
Filed Oct. 1, 1968, Ser. No. 13,803
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1



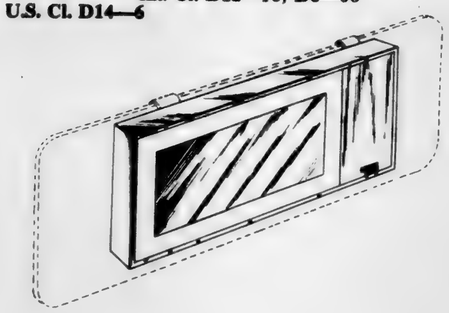
223,566
BUILDING
Victor J. Cassano, 3270 Governors Trail, Dayton, Ohio 45409
Filed Sept. 8, 1970, Ser. No. 24,887
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



223,567
BUILDING
Mark B. Folis, Memphis, Tenn., assignor to Educare Childcare Centers, Inc., Memphis, Tenn.
Filed Nov. 23, 1970, Ser. No. 26,133
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



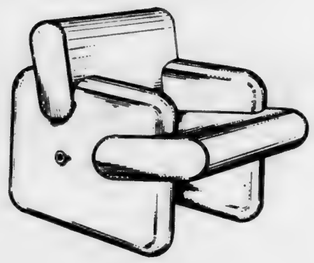
223,568
BATTERY POWERED ILLUMINATING MIRROR
Donald P. Stahl, North Bellmore, N.Y., assignor to Telecommunications Industries, Incorporated, Farmingdale, N.Y.
Filed May 25, 1970, Ser. No. 23,117
Term of patent 14 years
Int. Cl. D12—*16;* D6—*06*
U.S. Cl. D14—6



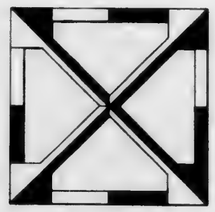
223,569
CHAIR
Raymond Grosfillex, Arbent, France, assignor to Societe Grosfillex Societe a Responsabilite Limitee, Arbent, France
Filed May 11, 1970, Ser. No. 22,909
Claims priority, application France Dec. 13, 1969
Term of patent 7 years
Int. Cl. D6—*02*
U.S. Cl. D15—1



223,570
FURNITURE SEAT
Donald T. Chadwick, 141 S. Barrington Ave., Los Angeles, Calif. 90044
Filed June 3, 1970, Ser. No. 23,277
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D15—1



223,571
BUILDING BLOCK
Conrad L. Pickel, 500 SW. 16th St., Boynton Beach, Fla. 33435
Filed Sept. 30, 1970, Ser. No. 25,268
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2



223,572
FISHING LURE
Walter J. Rogers, 417 McCourt St., Klamath Falls, Oreg. 97601
Filed Nov. 2, 1970, Ser. No. 25,759
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28

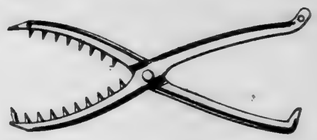


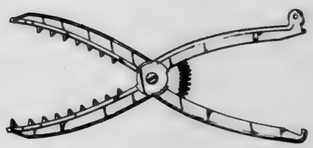


223,573
BOWSTRING RELEASE
David F. Kirkman, P.O. Box 72, Avoca, Ind. 47420, and George T. Miller, 1153 W. Main St., Mitchell, Ind. 47446
Filed July 2, 1970, Ser. No. 23,821
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—5

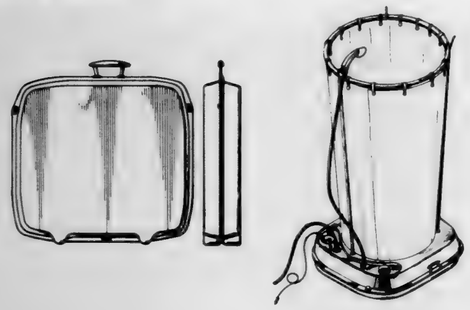


223,574
FISHERMAN'S TOOL
Harry Pittis, 3706 Harrison St. NW., Washington, D.C. 20015
Continuation-in-part of design application Ser. No. 14,596, Nov. 22, 1968. This application July 8, 1970, Ser. No. 21,109
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—31





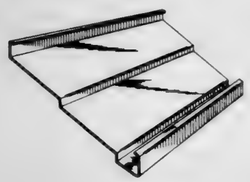
223,575
PORTABLE SHOWER
Robert D. Veech, 11 Yates Ave., Commack, N.Y. 11725
Filed May 1, 1970, Ser. No. 22,765
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—57



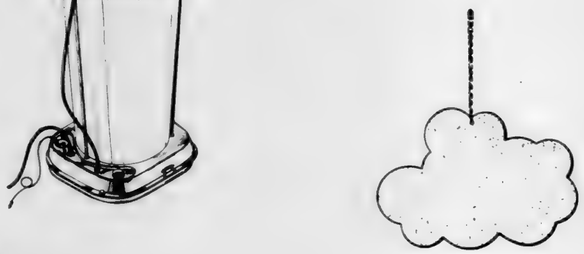
223,576
COMBINED WALL UNIT, SOAP HOLDER AND TRAY FOR A BATHTUB OR THE LIKE
Raymond Wallace Young, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.
Continuation-in-part of design application Ser. No. 18,377 July 24, 1969. This application July 15, 1970, Ser. No. 24,306
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—69



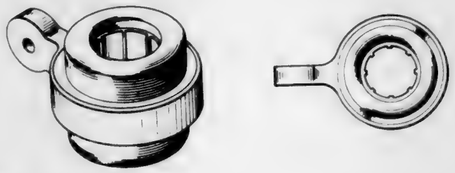
223,577
LOUVER BLADE
Joshua R. Dowdell, Jr., Dallas, and Paul H. Sanderson, Jr., Lake Dallas, Tex., assignors to Dowco Corporation, Dallas, Tex.
Filed June 17, 1970, Ser. No. 23,541
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—112



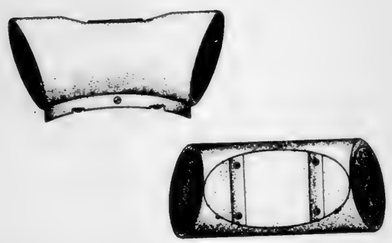
223,578
AIR FRESHENER
Andre G. Labrecque, 4946 Coolbrook Ave., Montreal 248, Quebec, Canada
Filed June 8, 1970, Ser. No. 23,380
Claims priority, application Canada Jan. 5, 1971
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—150



223,579
MICROPHONE SHOCK MOUNT
Gerald W. Plice, Morton Grove, Ill., assignor to Shure Brothers Incorporated
Filed Feb. 5, 1970, Ser. No. 21,277
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D26—14



223,580
OMNI-DIRECTIONAL LOUDSPEAKER ENCLOSURE
Paul E. Richards, Los Angeles, Calif., assignor to Promar International, Inc., Chatsworth, Calif.
Filed Dec. 2, 1970, Ser. No. 26,243
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14

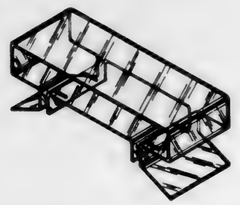


223,581
PLAQUE
Ruppert N. Kohlmaier, Jr., and Joy Wille Kohlmaier, both of 1020 W. William David Parkway, Metairie, La. 70005
Filed May 22, 1970, Ser. No. 23,098
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23



223,582
DESK
Douglas C. Ball, Senneville, Quebec, Canada, assignor to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada
Filed Apr. 24, 1970, Ser. No. 22,636
Claims priority, application Canada Nov. 14, 1969
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D33—7

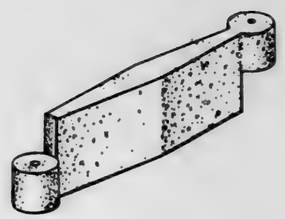
223,583
COFFEE TABLE
John A. Welck, 329 E. 17th St., New York, N.Y. 10003
Continuation-in-part of design application Ser. No. 20,031 Nov. 10, 1969. This application Feb. 10, 1970, Ser. No. 21,391
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D33—14

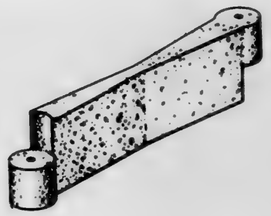


223,584
NOVELTY TYPE DOLL
Howard Nehmer, 3355 Vincent Ave. N., Minneapolis, Minn. 55412
Filed Sept. 16, 1970, Ser. No. 25,021
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—4



223,585
BLOCK FOR PLANTER AND WALL CONSTRUCTIONS
Philip Adelman, 5821 E. Wardlow Road, Long Beach, Calif. 90808
Filed Mar. 23, 1970, Ser. No. 22,021
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D35—1





223,586
CONTAINER FOR PACKAGED SUGAR
James M. Burden, 6256 N. Willard Ave., San Gabriel, Calif. 91775
Filed Sept. 3, 1970, Ser. No. 24,821
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15



223,587
CASSEROLE
David Douglas, 1119 Lincoln Blvd., Manitowoc, Wis. 54220
Filed Sept. 29, 1970, Ser. No. 25,257
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15



223,588
DESK LAMP
Ryuji Ohwa, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma City, Osaka, Japan
Filed Aug. 27, 1970, Ser. No. 24,729
Claims priority, application Japan Mar. 2, 1970
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20



223,589
COLUMN LAMP
Theodore Waddell, Via Rio Torto, Fiesole, Italy
Filed Nov. 9, 1970, Ser. No. 25,894
Claims priority, application Italy May 13, 1970
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20



223,590
LIGHTER
Dieter Rams, Konigstein, Taunus, Germany, assignor to Braun AG, Frankfurt am Main, Germany
Filed July 17, 1970, Ser. No. 23,998
Claims priority, application Germany Feb. 17, 1970
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27

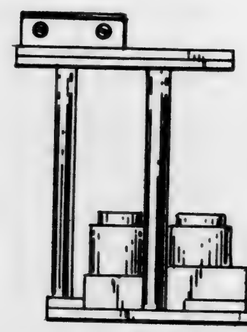
223,591
CIGARETTE LIGHTER OR SIMILAR ARTICLE
Sadao Yoshinaga, Tokyo, Japan, assignor to Yoshinaga Prince Co., Ltd., Tokyo, Japan
Filed Oct. 28, 1970, Ser. No. 25,696
Claims priority, application Japan June 4, 1970
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27



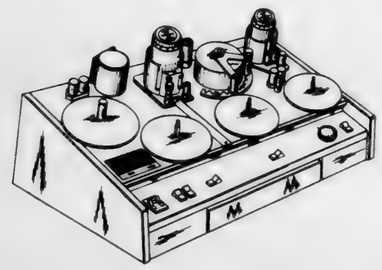
223,592
SPOON
Dyanne E. Durso, 2214 Verde Oak Drive, Hollywood, Calif. 90028
Filed July 6, 1970, Ser. No. 23,824
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



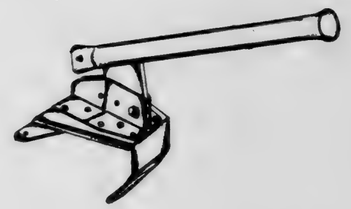
223,593
LENS CLUSTER UNIT FOR PHOTOPRINTING
Richard M. Artz, 3092 Silverton Road NE., Salem, Oreg. 97308
Filed May 28, 1970, Ser. No. 23,198
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1



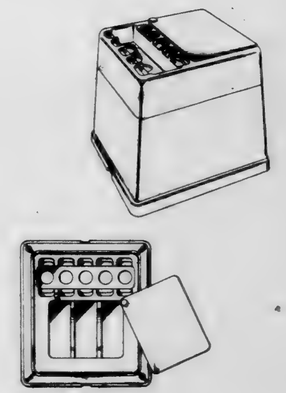
223,594
MICROFILM CONTACT PRINTER
Koji Kazuma and Kokiti Omi, Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 16, 1970, Ser. No. 25,027
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D61—1



223,595
PIVOTED HOUSING FOR AN ANCHOR
Laverne O. Persinger, Burbank, Calif., assignor of fractional part interest to Merle L. Persinger
Filed Nov. 28, 1969, Ser. No. 20,298
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D71—1



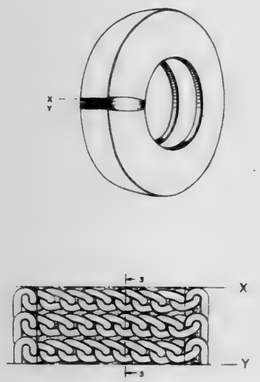
223,596
SYRINGE AND AMPULE WARMER
Charles J. Courtenay, P.O. Box 7182, Orlando, Fla. 32804
Filed Dec. 8, 1970, Ser. No. 25,578
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1



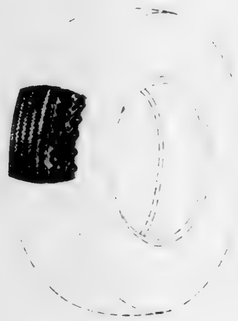
223,597
FABRIC BRUSH
Kurt Krusche, Frankfurt, and Hubert Zimmermann, Mannheim, Germany, assignors to ALLSTAR Verbrauchsguter GmbH & Co. KG (Allstar Consumer Products Co.), Frankfurt, Germany
Filed Nov. 10, 1969, Ser. No. 19,995
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D86—13



223,598
TIRE
Raymond R. Volpe, Elmsford, N.Y., assignor to Wedge House, Inc., Elmsford, N.Y.
Filed Feb. 18, 1970, Ser. No. 21,489
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



223,599
PNEUMATIC TIRE
Robert F. Busch, St. Clair Shores, and William K. Pope, Detroit, Mich., assignors to Uniroyal, Inc., New York, N.Y.
Continuation of design application Ser. No. 14,807, Dec. 5, 1968. This application Oct. 27, 1969, Ser. No. 23,097
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF MAY, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A & D Fabricating Company, Inc.: *See*—
Hussey, Norman R., 3,661,167.

Aarnio, Jaakko. Device for use in film development, fixing, and rinsing troughs with parallel drive rollers. 3,661,067, 5-9-72, Cl. 95-89.

Abbott, William H., to Battelle Memorial Institute. Low energy contacts. 3,661,569, 5-9-72, Cl. 75-165.

Abegg, Jean-Louis: *See*—
Kalopissis, Gregoire; De Beaulieu, Henri Philippe; Abegg, Jean-Louis; and Ghilardi, Giuliana,3,661,161.

Abel, Otto: *See*—
Peters, Werner; Luther, Horst; Langhoff, Josef; Abel, Otto; and Schmeling, Gerhard,3,661,722.

Abney, Thomas M. Arithmetic cards and game utilizing such. 3,661,392, 5-9-72, Cl. 273-152.1

Abramson, Nils: *See*—
Sandstrom, Unto; Abramson, Nils; Sjolin, Ulf; Murray, Henrik; and Colding, Bertil,3,662,279.

ACF Chemiefarma N.V.: *See*—
Van Der Meer, Samuel; Kruyt, Willem; and Pouwels, Hendrik, 3,662,035.

ACF Industries Incorporated: *See*—
Randolph, Robert W., 3,661,275.

Adams, John, Jr. Traction motor inspection cover. 3,662,198, 5-9-72, Cl. 310-89.

Adamson, Jordy Z.; and Palmer, Charles B. Liquid storage and dispensing device. 3,661,327, 5-9-72, Cl. 239-569.

Addressograph-Multigraph Corporation: *See*—
Murphy, William S., Jr.; and Bialczak, Edward, 3,661,590.

Adrian, Howard, to Itek Corporation. Photographic media. 3,661,587, 5-9-72, Cl. 96-76.000

Adwest Engineering Limited: *See*—
Jenvey, Leslie Richard, 3,661,032.

Aerojet-General Corporation: *See*—
Steele, Robert D.; and Farris, Richard J., 3,660,904.
Zimmerman, Harry M., 3,660,906.

AG fur industrielle Elektronik AGIE: *See*—
Ullmann, Werner; Derighetti, Renato; and Marazzi, Valentino, 3,662,182.

Agamennone, Marco: *See*—
Pregaglia, Gianfranco; Agamennone, Marco; and Cavilli, Luigi,3,661,932.

Agfa-Gevaert Aktiengesellschaft: *See*—
Noemer, Ewald Fred; Kau, Franz J.; and Ludemann, Heinz, 3,661,458.

Aignesberger, Alois, to Suddeutsche Kalkstickstoff-Werke AG. Surfactant composition. 3,661,794, 5-9-72, Cl. 252-354.000

Aignesberger, Alois; and Michaud, Horst, to Suddeutsche Kalkstickstoff-Werke AG. Aqueous sulfo modified melamine-formaldehyde resin composition containing multivalent oxides. 3,661,829, 5-9-72, Cl. 260-29.40r

Aihara, Hiroshi: *See*—
Furukawa, Hikaru; and Aihara, Hiroshi,3,662,376.

Aihara, Kenzo, to Ikegai Tekko Kabushiki Kaisha (Ikegai Iron Works, Ltd.). Hydrostatic bearing assembly. 3,661,432, 5-9-72, Cl. 308-9.

Airco, Inc.: *See*—
Bauer, Helmut, 3,661,173.

Airline Systems, Inc.: *See*—
Engel, Harry C.; and Ardolino, Edward J., 3,661,683.

Aishima, Itsuho; Sakurai, Hisaya; Takashi, Yukichi; Morita, Hideo; Hirotsu, Yoshiyuki; and Hamada, Tetsuo, to Asahi Chemical Industry Co., Ltd. Process for producing ethylene polymers and ethylene copolymers. 3,661,878, 5-9-72, Cl. 260-88.2

Aisin Seiki Kabushiki Kaisha: *See*—
Kito, Masahiro, 3,661,429.
Kondo, Toshio, 3,661,232.

Aison Kogyo Co., Ltd.: *See*—
Uozumi, Junzo; and Iwata, Junki, 3,661,129.

Ajem Associates, Inc.: *See*—
Leff, Millard; Malazinsky, Joseph Daniel; and Weigel, Earl Howard, 3,661,469.

Ajinomoto Co., Inc.: *See*—
Kubota, Koji; and Shiro, Teruo, 3,661,711.

Ajmani, Mohan; DeLowe, Larry K.; and Hankins, Thomas C., to Systron-Donner Corporation. Security alarm system. 3,662,383, 5-9-72, Cl. 340-409.

Akaishi, Takao: *See*—
Ohmae, Kenji; Hirano, Tomiyoshi; and Akaishi, Takao,3,662,208.

Akashi, Naotomo: *See*—
Ito, Kunihiko; Fujimoto, Yukiya; Ohsato, Nobuyoshi; and Akashi, Naotomo,3,661,548.

AKG Akustischue u. Kino-Gerate Gesellschaft m.b.H.: *See*—
Fidi, Werner; and Weingartner, Bernhard A., 3,662,292.

Akita, Eiichi: *See*—
Shomura, Takashi; Ezaki, Norio; Tsuruoka, Takashi; Niwa, Tomizo; Akita, Eiichi; and Niide, Taro,3,661,892.

Aktiebolaget Bofors: *See*—
Wiberger, Ingvar, 3,662,072.

Aktiebolaget Electrolux: *See*—
Schwartz, Osten, 3,660,864.

Aktiebolaget Elektrodius: *See*—
Wijard, Endel; and Odevall, Jan, 3,661,554.

Aktiengesellschaft Brown, Boveri & Cie: *See*—
Clerc, Denis; and Zahn, Dieter, 3,662,233.
Mottier, Francois, 3,661,437.

Aktieselskabet Laur. Knudsen, Nordisk Elektricitets Selskab: *See*—
Nielsen, Per Ostergaard, 3,662,310.

Al-Shaikh, Abdul-Rahman A., to Westvaco Corporation. Method and apparatus for controlling rush-drag in a paper machine. 3,661,701, 5-9-72, Cl. 162-198.

Albert, Joseph J., to Martin-Marietta Corporation. Doppler mapping radar. 3,662,384, 5-9-72, Cl. 343-9.

Albertini, Emanuele, to Societa Ceramica Italiana Richard-Ginori S.p.A. Method of making firing setters for tiles and other ceramic articles. 3,660,886, 5-9-72, Cl. 29-434.

Alden Self-Transit Systems Corporation: *See*—
Morley, Richard E.; and Greenberg, Michael P., 3,661,092.
Searle, Campbell L., 3,661,093.

Aldridge, David Cecil; Broadbent, Douglas; Hemming, Harold George; Turner, William Brian; and Bent, Keith Joseph, to Imperial Chemical Industries Limited. Antifungal benzopyran-5-one derivative. 3,661,935, 5-9-72, Cl. 260-343.2

Aletti, Renato. Continuous mixer. 3,661,363, 5-9-72, Cl. 259-7.

Alexander, Dave W.: *See*—
Jacobs, Richard M.; Alexander, Dave W.; and Gronroos, Charles M.,3,661,107.

Alexander, Taufkirchen: *See*—
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Capper, Harry Milton; Woolley, Harold Oakley, Jr.; Lemons, Clifton Eugene; and Wagner, Richard Maxwell, to AMP Incorporated. Belt plating apparatus. 3,661,752, 5-9-72, Cl. 204-206.

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Caputi, Roger W.; and Crawford, Wayne T., to General Electric Company. Track-registration process. 3,662,178, 5-9-72, Cl. 250-83.

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Cellerini, Albert R., to Westinghouse Electric Corporation. Circuit breaker with improved current path and contact means. 3,662,134, 5-9-72, Cl. 200-146.

Centolella, Albert Peter; and Razor, Billy Gene, to Miles Laboratories, Inc. Polyesters of citric acid and sorbitol. 3,661,955, 5-9-72, Cl. 260-404.

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Cheh, Ernest L.; Bowden, Wade R., Jr.; and Anderson, James D., to Burndy Corporation. Crimping machine. 3,661,029, 5-9-72, Cl. 72-419.

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Clark, James M., to International Telephone and Telegraph Corporation. Frame synchronization system. 3,662,114, 5-9-72, Cl. 179-15.

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Clark, Stephen C., Jr., to Ingersoll Milling Machine Company, The. Method and apparatus for finding the lengthwise center of a workpiece. 3,660,948, 5-9-72, Cl. 51-165.

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Clayton, David W.; and Sakai, Asahi, to Pulp and Paper Research Institute of Canada. Production of pulp by a multi-stage ammonium polysulphide pulping process. 3,661,698, 5-9-72, Cl. 162-19.

Cleaveland, Charles M., to Westinghouse Electric Corporation. Switchgear having heat pipes incorporated in the disconnecting structures and power conductors. 3,662,137, 5-9-72, Cl. 200-166.

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Collins, John J.; Conviser, Stephen A.; Anderson, Richard A.; and Manchanda, Krishan D., to Union Carbide Corporation. Purification of fluid streams by selective adsorption. 3,660,967, 5-9-72, Cl. 55-73.

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Cooke, John, to Gullick Dobson Limited. Control systems for self-advancing mine roof supports. 3,661,056, 5-9-72, Cl. 91-413.000

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Croft, Brian Hugh, to Brico Engineering Limited. Speed controls. 3,661,131, 5-9-72, Cl. 123-140.

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Current, James H.; and Kilgore, Marion D., to Camco, Incorporated. Sliding sleeve assembly for a hydraulically set well packer. 3,661,207, 5-9-72, Cl. 166-120.000

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Bard, C. R., Inc.: *See*—
Ilg, John. Re. 27,359.

Bradley, Theodore. Disposable office gown. Re. 27,348, 5-9-72, Cl. 2—114.

Burr-Brown Research Corp.: *See*—
McGraw, Donald R., and Graeme. Re. 27,351.

Chapman, Roger S., Jr., and P. Pilletere, Jr. Platform attachment for cranes. Re. 27,349, 5-9-72, Cl. 212—1.

Dennis Manufacturing Co.: *See*—
Merser, Francis G. Re. 27,357.

Doorley, Richard B.: *See*—
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Farrand Optical Co., Inc.: *See*—
La Russa, Joseph. Re. 27,356.

General Electric Co.: *See*—
Stern, Hansjoerg. Re. 27,352.

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Ilg, John, to C. R. Bard, Inc. Method and apparatus for treating blood. Re. 27,359, 5-9-72. Cl. 424—101.

Jaeger, Joseph M., to Jemco Seals, Inc. Leakage-limiting devices for rotative machinery application. Re. 27,350, 5-9-72, Cl. 277—26.

Jemco Seals, Inc.: *See*—
Jaeger, Joseph M. Re. 27,350.

La Russa, Joseph, to Farrand Optical Co., Inc. Infinite optical image-forming apparatus. Re. 27,356, 5-9-72. Cl. 350—157.

McGraw, Donald R., and J. G. Graeme, to Burr-Brown Research Corp. Differential DC amplifier. Re. 27,351, 5-9-72, Cl. 330—30.

Merser, Francis G., to Dennis Manufacturing Co. Tag attaching or bundle fastening device. Re. 27,357, 5-9-72. Cl. 24—16

Miller, Harmon B. Reclosable package. Re. 27,361, 5-9-72, Cl. 229—43.

Nelson, Donald R., to Goddard Industries, Inc. Top entry valve. Re. 27,358, 5-9-72. Cl. 251—327.

Olivier, Kenneth L., to Union Oil Co. of California. Preparation of beta-acyloxy-carboxylic acids and alpha, beta-unsaturated carboxylic acids by oxidative carbonylation. Re. 27,360, 5-9-72. Cl. 260—497.

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Shettel, Ralph E. Irrigation control. Re. 27,353, 5-9-72. Cl. 251—147.

Skoggard, Bruno B., and W. C. Post, to American Cyanamid Co. Apparatus for forming tubular reinforced plastic members. Re. 27,355, 5-9-72. Cl. 156—432.

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Wiebe, Donald, and R. B. Doorley, to William S. Hansen, d.b.a. A. Stucki Co. Combined rate of flow, pressure and temperature gage. Re. 27,354, 5-9-72. Cl. 73—198.

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Garabedian, John M. Plum tree. 3,164, 5-9-72, Cl. 38.

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Folis, Mark B., to Educare Childcare Centers, Inc. Building. 223,567, 5-9-72, Cl. D13—1.

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Waddell, Theodore. Column lamp. 223,589, 5-9-72, Cl. D48—20.

Warnecke, Herbert. Conainer for oil or the like. 223,563, 5-9-72, Cl. D9—170.

Wedge House, Inc.: *See*—
Volpe, Raymond R. 223,598.

Weick, John A. Coffee table. 223,583, 5-9-72, Cl. D33—14.

Yoshinaga Prince Co., Ltd.: *See*—
Yoshinaga, Sadho. 223,591.

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Zimmermann, Hubert: *See*—
Krusche, Kurt, and Zimmermann. 223,597.

CLASSIFICATION OF PATENTS

ISSUED MAY 9, 1972

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
2 3,660,850
2.1 3,660,849
3,660,851
12 3,660,852
114 Re.27,348

CLASS 4
172.19 3,660,853

CLASS 5
267 3,660,854

CLASS 8
10 3,661,500
115.5 3,661,501
3,661,502
116P 3,661,503
168 3,661,504

CLASS 9
8P 3,660,856
8R 3,660,855

CLASS 12
127 3,660,857

CLASS 13
13 3,662,075

CLASS 15
1 3,660,858
93 3,660,859
94 3,660,860
209R 3,660,861
250.23 3,660,862
256.51 3,660,863
319 3,660,864
415 3,660,865

CLASS 18
1 3,661,482
4 3,661,489
3,661,491
5 3,661,483
16 3,661,485
19 3,661,486
30 3,661,487
929 3,661,490

CLASS 19
81 3,660,866
163 3,660,867
3,660,868

CLASS 21
56 3,661,505
58 3,661,506

CLASS 23
2R 3,661,507
2S 3,661,509
15W 3,661,508
60 3,661,510
88 3,661,511
102 3,661,512
107 3,661,513
3,661,514
110R 3,661,515
114 3,661,516
125 3,661,517
137 3,661,518
182V 3,661,519
186 3,661,520
191 3,661,521
202V 3,661,522
208A 3,661,523
3,661,524
209 3,661,525
209.1 3,661,526
224 3,661,530
230PC 3,661,527
230R 3,661,531
253TP 3,661,532
254R 3,661,528
3,661,533
262 3,661,534
277C 3,661,529
306 3,661,535

CLASS 24
16PB Re.27,357
3,660,869
67R 3,660,870
73R 3,660,871
75PF 3,660,872
81CR 3,660,873
162 3,660,874
201 3,660,875

CLASS 29
91 3,660,876
95 3,660,877
98 3,660,878
105 3,660,879
148.4B 3,660,880
149.5NM 3,660,881
156.8B 3,660,882
182 3,661,536
191 3,661,537
195 3,661,538
203DT 3,660,883
237 3,660,884
243.53 3,660,885
270 3,661,539
434 3,660,886
460 3,660,887
471.3 3,660,888
475 3,660,889
477 3,660,890
494 3,660,891
603 3,660,892

CLASS 30
50 3,660,893
74 3,660,894
162 3,660,895
3,660,896
184 3,660,897
185 3,660,898

CLASS 32
5 3,660,899
14A 3,660,900
40 3,660,901
58 3,660,902

CLASS 33
64D 3,660,903
147D 3,660,904
148R 3,660,905
174L 3,660,906
222 3,660,907

CLASS 34
8 3,660,908
45 3,660,909
60 3,660,910
160 3,660,911

CLASS 35
9A 3,660,912
3,662,078
17 3,662,076
30 3,660,913
37 3,662,077

CLASS 37
129 3,660,914

CLASS 39
105 3,660,879

CLASS 40
10R 3,660,915
21C 3,660,916
33 3,660,917
64 3,660,918
78.03 3,660,919
129 3,660,920

CLASS 43
15 3,660,921
3,660,922
17 3,660,923
54.5A 3,660,924
55 3,660,925

CLASS 44
2 3,661,540
62 3,661,541

CLASS 46
1F 3,660,926
17 3,660,927
25 3,660,928
47 3,660,929
117 3,660,930
120 3,660,931
235 3,660,932

CLASS 47
1.2 3,660,933
34.11 3,660,934

CLASS 48
191 3,661,542
206 3,661,543

CLASS 49
35 3,660,935
192 3,660,937
209 3,660,936
220 3,660,938
263 3,660,939
366 3,660,940
397 3,660,941

CLASS 51
3 3,660,942
9 3,660,943
49 3,660,944
73R 3,660,945
103WH 3,660,946
165TP 3,660,947
3,660,948
216R 3,660,949
295 3,661,544
328 3,660,950

CLASS 52
2 3,660,951
81 3,660,952
82 3,660,953
309 3,660,954
420 3,660,955
669 3,660,956
742 3,660,957

CLASS 53
3 3,660,958
14 3,660,959
3,660,960
26 3,660,961
30 3,660,962
42 3,660,963
125 3,660,964
329 3,660,965

CLASS 55
67 3,660,966
73 3,660,967
130 3,660,968
385 3,660,969

CLASS 56
98 3,660,970
291 3,660,971

CLASS 57
34R 3,660,972
139 3,660,973
153 3,660,974

CLASS 60
19 3,660,975
39.016 3,660,976
39.28 3,660,977
39.61 3,660,978
525 3,660,979
95R 3,660,980
226R 3,660,981
230 3,660,982

CLASS 61
1 3,660,983
36R 3,660,984

CLASS 62
10 3,660,985
3,660,986
230 3,660,987
306 3,660,988

CLASS 64
17 3,660,989
23 3,660,990

CLASS 65
30 3,661,545
33 3,661,546
67 3,661,547
182R 3,661,548

CLASS 66
50A 3,660,991
86 3,660,992
202 3,660,993

CLASS 68
205R 3,660,994

CLASS 69
939.16 3,660,976

CLASS 70
187 3,660,995
209 3,660,996
240 3,660,997
269 3,660,998
276 3,660,999
388 3,661,000
3,661,001

CLASS 71
1 3,661,549
27 3,661,550
34 3,661,551
118 3,661,552

CLASS 72
21 3,661,002
32 3,661,003
56 3,661,004
206 3,661,005
227 3,661,006
419 3,661,029
421 3,661,007
451 3,661,008

CLASS 73
23 3,661,009
61 3,661,010
64.3 3,661,011
99 3,661,012
141 3,661,013
146 3,661,014
198 Re.27,354
437 3,661,015
462 3,661,016

CLASS 74
18.1 3,661,017
22 3,661,018
58 3,661,019
192 3,661,020
217 3,661,021
230.17 3,661,022
3,661,023
230.23 3,661,024
245 3,661,025
385 3,661,026
411 3,661,027
415 3,661,028
459 3,661,030
462 3,661,031
498 3,661,032
562.5 3,661,033
752 3,661,034
763 3,661,035
800 3,661,036

CLASS 75
.5AA 3,661,556
.5BB 3,661,557
3 3,661,553
3,661,554
3,661,555
9 3,661,558
45 3,661,559
60 3,661,560
68R 3,661,561
3,661,562
101R 3,661,563
3,661,564
125 3,661,565
130R 3,661,566
134M 3,661,567
157.5 3,661,568
165 3,661,569
201 3,661,571
206 3,661,570

CLASS 76
58 3,661,037
72 3,661,038

CLASS 79
5 3,661,039

CLASS 81
52.5 3,661,040
98 3,661,041

CLASS 82
3 3,661,042
101 3,661,043

CLASS 83
100 3,661,044
676 3,661,045

CLASS 84
471 3,662,079
477B 3,662,080
3,662,081

CLASS 85
7 3,661,048
46 3,661,046

CLASS 86
1 3,661,047

CLASS 89
189 3,661,049

CLASS 90
21 3,661,050

CLASS 91
3 Re.27,352
35 3,661,051
173 3,661,052
275 3,661,053
369B 3,661,054
413 3,661,056
482 3,661,057
486 3,661,055
488 3,661,058
499 3,661,059

CLASS 92
102 3,661,060

CLASS 95
1.1 3,661,061
10CE 3,661,062
11.5 3,661,063
44C 3,661,064
44R 3,661,065
60 3,661,066
89A 3,661,067
94R 3,661,068

CLASS 96
1.7 3,661,572
3 3,661,585
29 3,661,578
33 3,661,573
35 3,661,574
35.1 3,661,575
3,661,576
36 3,661,577
3,661,579
36.1 3,661,580
3,661,581
36.2 3,661,582
48 3,661,583
3,661,586
49 3,661,590
67 3,661,584
76 3,661,587
86P 3,661,588
91 3,661,589
3,661,591
94 3,661,592

CLASS 98
2.05 3,661,069
68 3,661,070

CLASS 99
17 3,661,593
116 3,661,594
238R 3,661,071
256 3,661,072
257 3,661,073

CLASS 100
37 3,661,082
215 3,661,074

CLASS 101
40 3,661,075
93C 3,661,076
93R 3,661,077
125 3,661,078
142 3,661,079
269 3,661,080
426 3,661,081

CLASS 102
6 3,661,083
24HC 3,661,084
28 3,661,085
56 3,661,086
70R 3,661,087
70.2R 3,661,088

CLASS 104
88 3,661,089
114 3,661,090
130 3,661,091
148R 3,661,092
3,661,093
172B 3,661,094
3,661,095

CLASS 105
117 3,661,096
199R 3,661,097
368R 3,661,098
368 3,661,090

CLASS 106
1 3,661,595
3,661,596
3,661,597
2 3,661,598
43 3,661,599
47Q 3,661,600
54 3,661,601
3,661,602
3,661,603
91 3,661,604
178 3,661,606
244 3,661,605
272 3,661,607
286 3,661,608
291 3,661,609
306 3,661,610
308Q 3,661,611

CLASS 108
51 3,661,099
132 3,661,100

CLASS 111
89 3,661,101

CLASS 112
67 3,661,102
134 3,661,103
178 3,661,104
210 3,661,105
262 3,661,106

CLASS 114
16R 3,661,107
61 3,661,108
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66.5R 3,661,109
67A 3,661,111
200 3,661,112
206R 3,661,113

CLASS 115
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CLASS 116
33 3,661,115

CLASS 117
22 3,661,612
37R 3,661,613
38 3,661,614
46CA 3,661,615
46CB 3,661,616
54 3,661,617
62 3,661,618
62.2 3,661,619
3,661,620
68 3,661,621
75 3,661,622
76T 3,661,623
94 3,661,624
111H 3,661,626
118 3,661,627
126GS 3,661,628
138.8D 3,661,630
138.8F 3,661,629
142 3,661,631
143A 3,661,632
148 3,661,633
161UA 3,661,634
201 3,661,636
3,661,637
212 3,661,635
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213 3,661,639

CLASS 118
6 3,661,116
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CLASS 119
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14.49 3,661,120

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34 3,661,123
392 3,661,124
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32ST 3,661,125
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119 3,661,129
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140J 3,661,131
140E 3,661,132
180R 3,661,133
193P 3,661,134
193 3,661,135
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CLASS 125
21 3,661,137
CLASS 126
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110R 3,661,140
343.5A 3,661,141
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2H 3,661,142
2R 3,661,145
2 3,661,143
2.05F 3,661,146
2.05P 3,661,148
2.05T 3,661,147
25R 3,661,149
85 3,661,150
87R 3,661,151
235 3,661,152
275 3,661,153
284 3,661,154
295 3,661,155
3,661,156
419P 3,661,157
3,661,158
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266 3,661,160
CLASS 132
7 3,661,161
CLASS 134
6 3,661,641
28 3,661,642
34 3,661,643
CLASS 135
20 3,661,162
CLASS 136
6 3,661,644
20 3,661,645
79 3,661,646
83R 3,661,647
120R 3,661,648
132 3,661,649
133 3,661,650
170 3,661,651
182 3,661,652
212 3,661,653
CLASS 137
81.5 3,661,163
85 3,661,164
100 3,661,165
269 3,661,166
269.5 3,661,167
270 3,661,168
318 3,661,169
351 3,661,170
375 3,661,171
434 3,661,172
462 3,661,173
512.3 3,661,174
517 3,661,175
560 3,661,176
574 3,661,177
595 3,661,178
596.12 3,661,179
625.17 3,661,180
3,661,181
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1 3,661,189
11 3,661,190
41 3,661,191
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176 3,661,192
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55 3,661,193
CLASS 148
9 3,661,654
12 3,661,655
12.1 3,661,656
32 3,661,657
127 3,661,658
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19 3,661,659
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22 3,661,194
CLASS 156
14 3,661,660
62.2 3,661,662
62.4 3,661,663
63 3,661,664
65 3,661,665
69 3,661,666
73 3,661,667
78 3,661,671
133 3,661,668
157 3,661,669
172 3,661,670
220 3,661,672
279 3,661,673
280 3,661,674
285 3,661,675
304 3,661,676
315 3,661,677
322 3,661,678
356 3,661,679
432 Re.27,355
467 3,661,680
546 3,661,681
548 3,661,682
580 3,661,661
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2 3,661,686
21 3,661,687
37 3,661,688
3,661,689
39 3,661,690
67 3,661,691
89 3,661,692
101 3,661,693
109 3,661,625
133 3,661,694
151 3,661,695
204 3,661,696
250 3,661,697
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65 3,661,699
103 3,661,700
198 3,661,701
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271 3,661,703
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343 3,661,705
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228 3,661,197
246 3,661,198
274 3,661,199
CLASS 165
42 3,661,200
60 3,661,201
105 3,661,202
167 3,661,203
CLASS 166
.5 3,661,204
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804 3,661,215
CLASS 173
17 3,661,216
93.5 3,661,217
CLASS 174
4C 3,662,083
18 3,662,082
42 3,662,084
48 3,662,085
65R 3,662,087
72B 3,662,088
84C 3,662,089
107 3,662,090
110P 3,662,091
120FP 3,662,092
128 3,662,093
138F 3,662,094
525 3,662,086
CLASS 175
107 3,661,218
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28 3,661,708
67 3,661,709
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136 3,661,220
137 3,661,221
178 3,661,222
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3 3,662,095
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6.6 3,662,100
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17E 3,662,116
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3,662,122
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175.2R 3,662,125
175.3 3,662,126
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.5AP 3,661,224
33R 3,661,225
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72.4 3,661,231
73.4 3,661,232
106A 3,661,233
170 3,661,234
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315 3,661,236
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113A 3,661,238
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66 3,661,716
103.5R 3,661,717
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33R 3,661,240
34 3,661,242
3,661,243
184 3,661,244
193 3,661,245
202 3,661,246
218 3,661,247
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34 3,662,127
48 3,662,128
61.88 3,662,129
67G 3,662,130
67 3,662,132
84R 3,662,131
144R 3,662,133
146R 3,662,134
148R 3,662,135
157 3,662,136
160 3,662,138
166K 3,662,137
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17 3,661,719
CLASS 202
99 3,661,722
139 3,661,720
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8 3,661,723
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1T 3,661,724
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10 3,661,726
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35N 3,661,729
43 3,661,730
49 3,661,731
51 3,661,732
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52Y 3,661,734
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67 3,661,736
70 3,661,737
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147 3,661,742
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159.14 3,661,744
162HE 3,661,745
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195 3,661,748
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212 3,661,753
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271 3,661,755
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62R 3,661,252
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20 3,661,315
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44 3,661,320
51SC 3,661,321
55 3,661,322
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92PC 3,662,158
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150.53 3,662,160
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88	3,661,449		51	3,661,462		CLASS 415	57	3,662,060	274	3,662,070	307	3,661,492
92	3,661,450		106	3,661,463	143	3,661,474	64	3,662,061	275	3,662,071		CLASS 431
117	3,661,451			3,661,464		CLASS 416	85	3,662,062	299.004	3,661,424	4	3,661,493
	CLASS 355		162	3,661,465	219	3,661,475	101	Re.27,359		CLASS 425		3,661,494
3	3,661,452		217	3,661,466		CLASS 417	145	3,662,064	62	3,661,481	7	3,661,495
	3,661,453			CLASS 401	341	3,661,476	181	3,662,063	66	3,661,482		3,661,496
	3,661,454		138	3,661,467	373	3,661,477	198	3,662,065	72	3,661,483		3,661,497
14	3,661,455		206	3,661,468	437	3,661,479	204	3,662,066	109	3,661,484	275	3,661,498
37	3,661,461			CLASS 408	555	3,661,478	230	3,662,072	162	3,661,485	328	3,661,499
66	3,661,456		72	3,661,469		CLASS 418	245	3,662,067	174	3,661,486		CLASS 444
78	3,661,457		137	3,661,470	179	3,661,480	250	3,662,073	191	3,661,487	1	3,662,400
88	3,661,458		220	3,661,471		CLASS 434	253	3,662,068	196	3,661,488		3,662,401
	CLASS 356		231	3,661,472			265	3,662,074	233	3,661,489		3,662,402
4	3,661,459								243	3,661,490		

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	323	223,558			223,566		28	223,572			223,580			223,587		223,594
D 5—	4	223,559			223,567		31	223,574	D29—	23	223,581	D48—	20	223,588	D71—	223,595
D 8—	58	223,561	D14—	6	223,568	D23—	57	223,575	D33—	7	223,582			223,589	D83—	223,596
	267	223,560	D15—	1	223,569		69	223,576		14	223,583		27	223,590	D86—	13 223,597
D 9—	170	223,563			223,570		112	223,577	D34—	4	223,584			223,591	D90—	20 223,598
	196	223,562	D18—	2	223,571		150	223,578	D35—	1	223,585	D54—	12	223,592		223,599
D13—	1	223,564														

CLASSIFICATION OF PLANTS

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P. —	14	3,167	P. —	24	3,166	P. —	37	3,157	P. —	41	3,165	P. —	57	3,155	P. —	88 3,156
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1	3,662,389		3,661,255		3,661,803	8	3,661,006		3,661,971		3,661,016
2	3,661,263		3,661,268		3,661,826		3,661,309		3,662,069		3,661,018
	3,661,264		3,661,284		3,661,840		3,661,391		3,662,071		3,661,023
4	Re.27,351		3,661,286		3,661,882		3,661,595	11	3,662,337		3,661,036
	3,660,934		3,661,288		3,661,890		3,661,718	12	3,660,991		3,661,039
	3,661,049		3,661,305		3,661,914		3,661,857		3,661,070		3,661,042
	3,661,740		3,661,308		3,661,941		3,662,077		3,661,360		3,661,046
	3,662,162		3,661,315		3,661,943		3,662,365		3,661,405		3,661,050
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	3,662,402		3,661,347		3,661,998		3,662,397		3,661,834		3,661,073
5	3,660,910		3,661,356		3,662,031		3,662,398		3,661,933		3,661,078
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PATENT OFFICE NOTICES

New Sole-Joint Declaration Form

The sole declaration form, PO–1147, announced by the notice of May 28, 1971 (887 O.G. 1840) has been revised to permit its use in either sole or joint inventor applications. The revised form comprises two pages to provide space for the additional information. In most applications, only page 1 will be necessary, in which case only that page need be signed and submitted. Page 2 would be used only where insufficient space is available on page 1 to fully furnish the required information. If page 2 is used, page 1 need not be signed, and *all* signatures should appear on page 2.

Where appropriate, the present "sole" declaration form may be used.

Specific instructions appear on the form.

Single copies of the new form are available without charge for direct use or for reproduction purposes and may be picked up from the receptionist in Building No. 3 of the Patent Office at Crystal Plaza. Written requests for the form will be filled only if directed to the Commissioner of Patents, Office of Information Services, Washington, D.C., 20231. A stamped, self-addressed envelope must be enclosed.

RICHARD A. WAHL,
Assistant Commissioner.

Apr. 17, 1972.

Notice to Official Gazette Subscribers

It has come to the attention of the Patent Office that some subcribers to the OFFICIAL GAZETTE have not been receiving all of their copies of the patent and/or trademark sections of the OFFICIAL GAZETTE. Several of the incidents brought to our attention involved situations where subscribers had recently renewed their subscriptions.

This matter was brought to the attention of the Superintendent of Documents who advised us that subscribers to the OFFICIAL GAZETTE are notified approximately 3 months in advance that their subscriptions are about to expire. It was indicated that if these notices are promptly utilized to renew subscriptions, no difficulties will arise.

However, in order to facilitate the resolution of any problems which may arise concerning subscriptions to the OFFICIAL GAZETTE, an official liaison has been established between the Patent Office and the Superintendent of Documents. Under this arrangement, any person experiencing difficulties in obtaining copies of the OFFICIAL GAZETTE should contact Robert Rish, Director, Office of Public Services, U.S. Patent Office, Washington, D.C., 20231. All such inquiries will be given prompt attention.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Apr. 18, 1972.

TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

Chapter I—Patent Office, Department of Commerce

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Trademark Inter Partes Procedure

A proposal was published at 36 F.R. 18002 to revise, amend, redesignate, or revoke §§ 2.99, 2.104, 2.112, 2.117, 2.119, 2.120, 2.122–2.125, and 2.127–2.129 of the Rules of Practice in Trademark Cases. Pursuant to the notice, written comments have been received and a public hearing was held October 22, 1971. Full consideration has been given to all matter presented and changes in the text of the original proposal have been made in view thereof.

Amendments to the present text of the rules are described below. In cases where the amendment differs from that set forth in the notice of proposed rule making, that change is also described below.

Sections 2.104 and 2.112 are being revised by adopting langage from the Federal rules requiring a short and plain statement showing how the party would be damaged. The proposal required a statement "tending to show why" the party would be damaged.

Section 2.117 is being redesignated as § 2.116 and is being revised to clarify the applicability of the Federal Rules of Civil Procedure to Patent Office proceedings.

A new § 2.117 authorizing suspension of proceedings by the Trademark Trial and Appeal Board when the parties are engaged in civil litigation which may be dispositive of the case, has been added. The new rule gives the Board discretion in matters of suspension whereas the proposed rule required a mandatory suspension.

Section 2.119 is being amended by incorporating the substance of § 1.248 in a new paragraph.

Section 2.120 is being revised to adopt the Federal Rules of Civil Procedure insofar as they are applicable to Patent Office proceedings. The numbers of the applicable Federal rules are not listed since they are incorporated by reference in § 2.120. For example, § 2.120(a)(3) as adopted does not refer to Federal Rule 32 which governs use of discovery depositions.

Section 2.120(a) sets forth restrictions on deposition procedures, discovery of a foreign party and use of discovery depositions.

Existing § 2.120(b) is being deleted and the proposed paragraph is not being adopted. Rule 36 of the Federal Rules of Civil Procedure will govern requests for admissions. A new paragraph (b) governing use of admissions and answers to interrogatories is being adopted.

Existing § 2.120 paragraphs (c) through (e) are being deleted.

Section 2.120(f) is also deleted and proposed § 2.120(c) is not being adopted. Rule 33 of the Federal Rules of Civil Procedure will govern the interrogatory practice. It is believed that the Federal rule will provide uniformity in practice and a body of law which will serve as a guideline to both attorneys and the Board. Some comments were received, however, which expressed a preference for limited interrogatories. In view of such comments, the Office plans to evaluate on a continuing basis the effectiveness and utilization of Federal Rule 33. If instances arise in which Rule 33 does not appear to be fully satisfactory, it may be that consideration will be given to a more limited practice.

A new § 2.120(c) entitled "Failure to Make Discovery: Sanctions" has been added.

Section 2,122(b) is being revised to state that before a pleaded registration will be received in evidence, two copies of the registration showing its status and title or an order for such copies must accompany the opposition or petition to cancel.

Section 2.123(c) relating to printed publications and official records, is being redesignated as § 2.122(c) and revised to incorporate § 1.282 (Patent Rule 282).

A new § 2.122(d) is being added and incorporates the substance of § 1.283 (Patent Rule 283).

Section 2.123 has been completely revised to incorporate the provisions of §§ 1.273–1.281, 1.285, and 1.286 (Patent Rules 273–281, 285, and 286). Portions of the Patent Rules which are not applicable to trademark practice have been omitted and in some instances the Federal Rules of Civil Procedure apply. A few changes have been made in this section as originally propsed; they are as follows:

The title of § 2.123 is being amended by inserting the word "trial" before "testimony."

Proposed § 2.123(e)(5) is being revised to permit a witness to sign a deposition before any officer authorized to administer oaths.

Proposed § 2.123(f)(5) is being deleted and § 2.123(f)(6) is being redesignated as § 2.123(f)(5).

Section 2.124(b) is being amended to require testimony by written questions to be prepared with each answer preceded by its corresponding question.

Section 2.124a is being revoked. Testimony in foreign countries will be covered in § 2.124(d) which provides that such testimony will be taken by depositions upon written questions.

Reference numbers in § 2.125 have been changed and the reference to "the original transcript" in the second sentence

of paragraph (a) is being changed to read "the certified transcript."

Section 2.127(a) provides that the Trademark Trial and Appeal Board may treat a motion as conceded when a party fails to file a brief in opposition to the motion. Sections 2.127 (b) and 2.129(c) are amended by adding a sentence requiring briefs in opposition to petitions for reconsideration to be filed within 15 days.

Section 2.128(b) includes certain changes with respect to the form required for briefs.

In consideration of the comments and pursuant to the authority contained in section 41 of the Act of July 5, 1946 (60 Stat. 440; 15 U.S.C. 1123) and section 6 of the Act of July 19, 1952 (66 Stat. 793, 35 U.S.C. 6), Part 2 of Chapter I of Title 37 of the Code of Federal Regulations is hereby amended as follows:

1. In § 2.99, a new paragraph (d) is added and reads as follows:

§ 2.99 *Application to register as concurrent user.*

* * * * *

(d) When concurrent registration is sought on the basis of a court determination of the rights of the parties to use the marks in commerce, the application shall be examined by the Examiner of Trademarks. If the applicant is entitled to registration subject only to the concurrent lawful use of a party to the court proceeding, the Examiner of Trademarks may publish or allow the application, provided the court decree specifies the rights of the parties.

2. Section 2.104 is revised to read as follows:

§ 2.104 *Contents of opposition.*

The opposition must set forth a short and plain statement showing how the opposer would be damaged by the registration of the opposed mark and state the grounds for opposition. A duplicate copy of the opposition including exhibits shall be filed.

3. Section 2.112 is revised to read as follows:

§ 2.112 *Petition for cancellation.*

The petition to cancel, which must be verified, or include a declaration in accordance with § 2.20, must set forth a short and plain statement showing how the petitioner is or will be damaged by the registration, state the grounds for cancellation, and indicate the respondent party to whom notice shall be sent. A duplicate copy of the petition, including exhibits, shall be filed with the petition. Applications to cancel different registrations owned by the same party may be joined in one petition when appropriate, but the fee for each application to cancel a registration must accompany the petition.

4. Section 2.117 is redesignated as § 2.116 and paragraph (a) is revised as amended, § 2.116 reads as follows:

§ 2.116 *Federal Rules of Civil Procedure.*

(a) Except as otherwise provided, and wherever applicable and appropriate, procedure and practice in inter partes proceedings shall be governed by the Federal Rules of Civil Procedure.

* * * * *

5. A new § 2.117 is added and reads as follows:

§ 2.117 *Suspension of proceedings.*

Whenever it shall come to the attention of the Trademark Trial and Appeal Board that parties to a pending case are engaged in a civil action which may be dispositive of the case, proceedings before the Board may be suspended until termination of the civil action.

6. Section 2.119 is amended as follows: Paragraph (a) is revised, paragraph (b) is redesignated as paragraph (c), and a new paragraph (b) is added. As amended, § 2.119 reads as follows:

§ 2.119 *Service of papers.*

(a) Every paper filed in the Patent Office in inter partes cases, including notice of appeal, must be served upon the other parties except the notice of interference (§ 2.93), the notice of opposition (§ 2.105), the petition for cancellation (§ 2.113), and the notice of a concurrent use proceeding (§ 2.99), which are mailed by the Patent Office. Proof of such service must be made before the paper will be considered by the Office. A statement signed by the attorney or agent, attached to or appearing on the original paper when filed, clearly stating the date and manner in which service was made will be accepted as prima facie proof of service.

(b) Service of papers must be on the attorney or agent of the party if there be such or on the party if there is no attorney or agent, and may be made in either of the following ways: (1) by delivering a copy of the paper to the person served; (2) by leaving a copy at the usual place of business of the person served, with someone in his employment; (3) when the person served has no usual place of business, by leaving a copy at his residence, with a member of his family over 14 years of age and of discretion; (4) transmission by first-class mail, which may also be certified or registered. Whenever it shall be satisfactorily shown to the Commissioner that none of the above modes of obtaining service or serving the paper is practicable, service may be by notice published in the OFFICIAL GAZETTE.

(c) When service is made by mail, the date of mailing will be considered the date of service. Whenever a party is required to take some action within a prescribed period after the service of a paper upon him by another party and the paper is served by mail, 5 days shall be added to the prescribed period.

7. Section 2.120 is revised to read as follows:

§ 2.120 *Discovery procedure.*

The provisions of the Federal Rules of Civil Procedure relating to discovery shall apply in inter partes trademark cases except as otherwise provided in this section. The Trademark Trial and Appeal Board will specify the closing date for the taking of discovery.

(a) *Depositions for discovery*—(1) *Procedure.* The deposition of a person shall be taken in the Federal judicial district where he resides or is regularly employed. The responsibility for securing the attendance of a propose deponent, other than a party or anyone who at the time set for the taking of the deposition was an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or 31(a) of the Federal Rules of Civil Procedure to testify on behalf of a party, rests wholly with the interested party. See 35 U.S.C. 24.

(2) *Discovery of foreign party.* The discovery deposition of a party or an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or 31(a) of the Federal Rules of Procedure to testify on behalf of a party, domiciled in a foreign country may be taken in the manner prescribed by § 2.124.

(3) *Use of discovery depositions.* A discovery deposition shall not be considered as part of the record in the case unless the party offering the deposition, or any part thereof, files the same before the close of his testimony period (testimony-in-chief or rebuttal as appropriate) and also files a notice of reliance thereon. A discovery deposition should not be filed in the Patent Office in the absence of a notice of reliance. Objections, including any made during the examination, will be considered only if made or renewed at the hearing.

(b) *Use of admission or answer to interrogatory.* No admission or answer to an interrogatory shall be considered as part of the record in the case unless the party propounding the request for admission or interrogatory files, before the close of his testimony period (testimony-in-chief or rebuttal, as appropriate), a copy of the admission and the request therefor and/or a copy of the interrogatory and its answer and also files a notice of reliance thereon.

(c) *Failure to make discovery: Sanctions.* If any party fails or refuses to answer any proper question in taking discovery depositions or fails or refuses to answer any proper question propounded by interrogatories or fails or refuses to comply with a request to produce and permit the inspection and copying of designated things, the party seeking discovery may apply to the Trademark Trial and Appeal Board for an order compelling discovery. If a party or an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or 31(a) of the Federal Rules of Civil Procedure to testify on behalf of a party, fails to obey an order to provide or permit discovery, the Trademark Trial and Appeal Board may strike out all or any part of any pleading of that party, dismiss the action or proceeding, or deny any part thereof,

enter judgment as by default against that party or take any such other action as may be deemed appropriate.

8. In § 2.122, paragraph (b) is revised and new paragraphs (c) and (d) are added. As amended, those paragraphs of § 2.122 read as follows:

§ 2.122 *Matters in evidence.*

* * * * *

(b) A registration of the opposer or petitioner pleaded in an opposition or petition to cancel will be received in evidence and made part of the record if two copies showing status and title of the printed registration or an order for such copies accompany the opposition or petition.

(c) Printed publications, such as books and periodicals, available to the general public in libraries or of general circulation, and official records, if competent evidence and pertinent to the issue, may be introduced in evidence by filing in the Patent Office a notice to that effect during the period for the taking of the testimony of the party (during the period for taking of testimony-in-chief if such matters are not in rebuttal), specifying the record or the printed publication, the page or pages to be used, indicating generally its relevance, and accompanied by the record or authenticated copy or the printed publication or a copy. When a copy of an official record of the Patent Office is filed, it need not be a certified copy. The notice and copy of the record or publication must be served on each of the other parties.

(d) Upon motion duly made and granted, testimony taken in another proceeding, or testimony taken in a suit between the same parties or those in interest, may be used in a proceeding, so far as relevant and material, subject, however, to the right of any contesting party to recall or demand the recall of witnesses whose testimony has been taken, and to take other testimony in rebuttal of the testimony.

§ 2.123 *Trial testimony in inter partes cases.*

(a) Manner of taking testimony: Testimony of witnesses in inter partes cases may be taken (1) by depositions upon oral examination as provided by this section, or (2) by depositions upon written questions in accordance with the requirements of this section and § 2.124.

(b) Stipulations: If the parties so stipulate in writing, depositions may be taken before any person authorized to administer oaths, at any place, upon any notice, and in any manner and when so taken may be used like other depositions. By agreement of the parties, the testimony of any witness or witnesses of any party, may be submitted in the form of an affidavit by such witness or witnesses. The parties may stipulate what a particular witness would testify to if called, or the facts in the case of any party may be stipulated.

(c) Notice of examination of witnesses: Before the depositions of witnesses shall be taken by a party, due notice in writing shall be given to the opposing party or parties, as provided in § 2.119(b), of the time when and place where the depositions will be taken, of the cause or matter in which they are to be used, and the name and address of each witness to be examined; if the name of a witness is not known, a general description sufficient to identify him or the particular class or group to which he belongs, together with a satisfactory explanation, may be given instead. Neither party shall take depositions in more than one place at the same time, nor so nearly at the same time that reasonable opportunity for travel from one place of examination to the other is not available.

(d) Persons before whom depositions may be taken: Depositions may be taken before persons designated by Rule 28 of the Federal Rules of Civil Procedure.

(e) Examination of witnesses:

(1) Each witness before testifying shall be duly sworn according to law by the officer before whom his deposition is to be taken.

(2) The deposition shall be taken in answer to questions, with the questions and answers recorded in their regular order by the officer, or by some other person (who shall be subject to the provisions of Rule 28 of the Federal Rules of Civil Procedure) in the presence of the officer except when his presence is waived on the record by agreement of the parties. The Testimony shall be taken stenographically and transcribed, unless the parties present agree otherwise. In the absence of all opposing parties and their attorneys or agents, depositions may be taken in longhand, typewriting, or stenographically.

(3) The opposing party shall have full opportunity to cross-examine the witnesses. If the opposing party shall attend the examination of witnesses not named in the notice, and shall either cross-examine such witnesses or fail to object to their examination, he shall be deemed to have waived his right to object to such examination for want of notice.

(4) All objections made at the time of the examination to the qualifications of the officer taking the deposition, or to the manner of taking it, or to the evidence presented, or to the conduct of any party, and any other objection to the proceedings, shall be noted by the officer upon the deposition. Evidence objected to shall be taken subject to the objections.

(5) When the deposition has been transcribed, the deposition shall be carefully read over by the witness or by the officer to him, and shall then be signed by the witness in the presence of any officer authorized to administer oaths unless the reading and the signature be waived on the record by agreement of all parties.

(f) Certification and filing by officer. The officer shall annex to the deposition his certificate showing:

(1) Due administration of the oath by the officer to the witness before the commencement of his deposition;

(2) The name of the person by whom the deposition was taken down, and whether, if not taken down by the officer, it was taken down in his presence;

(3) The presence or absence of the adverse party;

(4) The place, day, and hour of commencing and taking the deposition;

(5) The fact that the officer was not disqualified as specified in Rule 28 of the Federal Rules of Civil Procedure.

If any of the foregoing requirements are waived, the certificate shall so state. The officer shall sign the certificate and affix thereto his seal of office, if he has such a seal. Unless waived on the record by agreement, he shall then, without delay, securely seal in an envelope all the evidence, notices, and paper exhibits, inscribed upon the envelope a certificate giving the number and title of the case, the name of each witness, and the date of sealing, address the package, and forward the same to the Commissioner of Patents. If the weight or bulk of an exhibit shall exclude it from the envelope, it shall, unless waived on the record by agreement of all parties, be authenticated by the officer and transmitted in a separate package marked and addressed as provided in this section.

(g) Form of deposition:

(1) The pages of each deposition must be numbered consecutively, and the name of the witness plainly and conspicuously written at the top of each page. The deposition may be written on legal-size or letter-size paper, with a wide margin on the left hand side of the page, and with the writing on one side only of the sheet. The questions propounded to each witness must be consecutively numbered and each question must be followed by its answer.

(2) Exhibits must be numbered or lettered consecutively and each must be marked with the number and title of the case and the name of the party offering the exhibit. Entry and consideration may be refused to improperly marked exhibits.

(h) Depositions must be filed. All depositions which are taken must be duly filed in the Patent Office. On refusal to file, the Office at its discretion will not further hear or consider the contestant with whom the refusal lies; and the Office may, at its discretion, receive and consider a copy of the withheld deposition, attested by such evidence as is procurable.

(i) Inspection of depositions: After the depositions are filed in the Office, they may be inspected by any party to the case, but they cannot be withdrawn for the purpose of printing. They may be printed by someone specially designated by the Office for that purpose, under proper restrictions.

(j) Effect of errors and irregularities in depositions: Notice will not be taken of merely formal or technical objections which shall not appear to have wrought a substantial injury to the party raising them; and in the case of such injury it must be made to appear that, as soon as the party became aware of the ground of objection, he gave notice thereof. Rule 32(d)(1), (2), and (3)(a) and (b) of the Federal Rules of Civil Procedure shall apply to errors and irregularities in depositions.

(k) Objections to admissibility: Subject to the provisions of paragraph (j) of this section, objection may be made to receiving in evidence any deposition or part thereof, or any other evidence, for any reason which would require the exclusion of the evidence according to the established rules of evidence, which will be applied strictly by the Office.

(l) Evidence not considered: Evidence not obtained and filed in compliance with these sections will not be considered

10. In § 2.124, paragraphs (a) and (b) are revised and a new paragraph (d) is added. As amended, § 2.124 reads as follows:

§ 2.124 *Testimony by depositions upon written questions.*

(a) A party may take the testimony of a witness by written questions to be propounded by an officer before whom depositions may be taken. See Rule 28 of the Federal Rules of Civil Procedure. The questions shall be served upon the other party within 10 days after the opening date set for taking the testimony of the party submitting the questions, together with a notice stating the name and address of the person who is to answer them and the name or descriptive title and address of the officer before whom the deposition is to be taken. Within 10 days thereafter, a party so served may serve cross questions upon the party proposing to take the deposition. Within 5 days thereafter, the latter may serve redirect questions upon a party who has served cross questions. Within 3 days after being served with redirect questions a party may serve recross questions upon the party proposing to take the depositions. Written objections to questions may be served on the party propounding the questions, and in response thereto substitute questions may be served, within 3 days.

(b) A copy of the notice and copies of all questions served shall be delivered by the party taking the testimony to the officer designated in the notice, who shall proceed to take the testimony of the witness in response to the questions and to prepare each answer immediately preceded by its corresponding question, then certify, and file the deposition, attaching thereto the copy of the notice and the questions received by him. Such depositions are subject to the same rulings for filing and serving copies as other depositions.

* * * * *

(d) Testimony in foreign countries shall be taken only by depositions upon written questions unless the parties stipulate otherwise in writing. Rule 28(b) of the Federal Rules of Civil Procedure shall apply to the taking of testimony in foreign countries.

§ 2.124a [*Revoked*]

11. Section 2.124a is revoked.

12. Section 2.125 is revised to read as follows:

§ 2.125 *Copies of testimony.*

(a) One copy of the transcript of testimony (taken in accordance with § 2.123(e) through (h) or § 2.124), together with copies of documentary exhibits, shall be served on each adverse party within 30 days after completion of the taking of such testimony. The certified transcript and exhibits and one copy of the transcript shall be filed in the Patent Office as promptly as possible.

(b) Each transcript and the copies thereof shall comply with § 2.123(g) as to arrangement, indexing and form.

13. In § 2.127, paragraphs (a) and (b) are revised. As amended, § 2.127 reads as follows:

§ 2.127 *Motions.*

(a) Motions shall be made in writing and shall contain a full statement of the grounds therefor. Any brief or memorandum in support of a motion shall accompany or be embodied in the motion. Briefs in opposition to a motion shall be filed within 15 days from the date of service of the motion unless another time is specified by the Trademark Trial and Appeal Board or the time is extended on request. Where a party fails to file a brief in opposition to a motion, the Trademark Trial and Appeal Board may treat the motion as conceded. Oral hearings will not be held on motions except on order of the Trademark Trial and Appeal Board.

(b) Any petition for reconsideration or modification of a decision, if it is not appealable, must be filed within 10 days after the decision or, if the decision is appealable, within the time specified in § 2.129(c). Any brief in opposition shall be filed within 15 days after service of the petition.

* * * * *

14. In § 2.128, paragraph (b) is revised. As amended, § 2.128 reads as follows:

§ 2.128 *Final hearings and briefs.*

(b) Briefs shall be submitted in typewritten or printed form, double spaced on letter or legal size paper. Without leave of the Trademark Trial and Appeal Board, no brief shall contain more than 50 pages of argument and, in case of the reply brief, the entire brief shall not exceed 25 pages. Each brief shall contain an alphabetical index of cases therein.

* * * * *

15. In § 2.129, paragraph (c) is revised. As amended, § 2.129 reads as follows:

§ 2.129 *Oral argument.*

* * * * *

(c) Any petition for rehearing, reconsideration, or modification of a decision must be filed within 30 days from the date thereof. Any brief in opposition shall be filed within 15 days after service of the petition.

Effective date. This revision shall be applicable to all proceedings instituted on or after July 1, 1972.

Date: April 5, 1972.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Approved: April 11, 1972.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 72-5830; Filed 4-17-72; 8:52 am]

Published in 37 F.R. 7605; Apr. 18, 1972

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,106,137, I. Basgan, ROTARY WELL DRILLING APPARATUS; **3,507,341**, same, PROCESS AND SYSTEM FOR ROTARY DRILLING WITH DRILLING FLUID IMPOSED SONIC VIBRATIONS, filed Sept. 23, 1971, D.C., S.D.N.Y., Doc. 71-C-4199, *Ion Basgan* v. *Standard Oil Company of New Jersey et al.*

2,504,256, C. E. Compton, MINING MACHINE HEAD, filed Dec. 21, 1964, U.S. Ct. of App., 4th Cir., W. Va. (Fairmont), Doc. 803-F, *Charles E. Compton, Joy Manufacturing Company and Polan Industries, Inc.* v. *Metal Products, Inc.* The decision of the District Court sustaining the validity of the patent will be reversed, Nov. 15, 1971.

2,701,235, O. M. King, OPERATING SYSTEM FOR SWIMMING-POOL, filed Dec. 14, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-2933-LTL, *Oswald M. King* v. *A. J. Industries, Pacific Fabrication Co. and Wilmot M. Yeths.*

2,719,768. (See 2,784,955.)

2,760,255, C. E. Compton, SCREW CONVEYOR AND MANUFACTURE THEREOF, filed Nov. 2, 1970, U.S. Ct. of App., 4th Cir., W. Va. (Fairmont), Doc. 15,248, *Charles E. Compton, Joy Manufacturing Company and Polan Industries, Inc.* v. *Metal Products, Inc.* The decision of the District Court sustaining the validity of the patent will be reversed, decided Sept. 16, 1971.

2,784,955, C. E. Compton, ROTARY MINING MACHINE CUTTER HEAD WITH REAR HELICALLY EXTENDING TRANSVERSE OPENING; **2,719,768**, same, PAN GUIDEWAY FOR ROTARY MINING HEAD, filed May 17, 1971, D.C., N.D. W. Va. (Fairmont), Doc. C-71-11-F, *Republic Corporation and Advanced Mining Equipment & Services Co.* v. *Fair-Quip Corp., John Delli-Gatti and Harold F. Sargeant.*

2,807,213, S. Rosen, FILLING MACHINE; **2,267,614**, same, PRECISION PUMP; **3,237,661**, same, CONTAINER FILLING SYSTEM, filed Nov. 10, 1971, D.C.N.J. (Newark), Doc. C-1663-71, *Sidney Rosen and National Instrument Co., Inc.* v. *Harry G. Kalish, and H.G. Kalish Co., Ltd.*

2,807,614. (See 2,807,213.)

3,688,554, F. L. Johnson, PROTECTIVE DEVICES FOR DOGS, filed Nov. 16, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-2748-HP, *BVSCO Pharmaceutical Corp.* v. *North American Products Company.*

3,054,594, V. Hecht, CARBURETOR VALVE ASSEMBLY, filed Aug. 26, 1971, D.C. Kans. (Wichita), Doc. W–3222, *ACF Industries, Incorporated* v. *Victor Hecht and The Hecht Valve Company, Inc.* Injunction, defendants enjoined, Nov. 18, 1971.

3,069,201, S. J. Przekop, LAWN MOWER HANDLE SUPPORT, filed Nov. 17, 1971, D.C., E.D. Mich. (Detroit), Doc. 37428, *Fairway Construction Co.* v. *Allstate Modernization Inc.* Same, filed Sept. 10, 1971, D.C., E.D. Mich. (Detroit), Doc. 35342, *Fairway Construction Company* v. *City of Warren.* Consent decree of dismissal, Nov. 12, 1971. Same, filed Feb. 25, 1970, D.C., E.D. Mich. (Detroit), Doc. 34524, *Fairway Construction Company* v. *Woodfield Construction Co.* Judgment for permanent injunction, Nov. 22, 1971.

3,173,990, R. P. Lamons, FOAM-DIELECTRIC COAXIAL CABLE WITH TEMPERATURE INDEPENDENT RELATIVE CONDUCTOR LENGTH; **3,461,409,** R. F. Miller, GAS-SEALING ELECTRICAL FITTING FOR NON-CIRCULAR TUBULAR CONDUCTORS, filed Dec. 17, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c3021, *Andrew Corp.* v. *Justice Associates, Inc.*

3,216,513. (See 3,220,494.)

3,217,600. (See 3,342,111.)

3,220,494, Cannon, Winberg, McCurdy and Robbins, RAISE DRILLING METHOD AND MECHANISM; **3,454,114,** L. B. Poage, DRILLING MACHINE; **3,216,513,** Robbins and Winberg, CUTTER ASSEMBLIES FOR ROCK DRILLING; **3,463,247,** H. T. Klein, DRILL STEM BREAKOUT APPARATUS; **3,554,298,** same, BREAKOUT APPARATUS FOR A SECTIONAL DRILL STEM, filed Nov. 5, 1971, D.C., N.D. Tex. (Dallas), Doc. CA–3–5256–D, *The Robbins Company* v. *Dresser Industries, Inc.*

3,237,661. (See 2,807,213.)

3,321,081, A. H. Willinger, AQUARIUM FILTER APPARATUS; **3,392,836,** same, AQUARIUM WATER CONDITIONING APPARATUS, filed Dec. 13, 1971, D.C.N.J. (Newark), Doc. C–1857–71, *Metaframe Corporation* v. *Plast-O-Pak, Inc. and Alfred Weaver.*

3,342,111, R. H. Royster, FLUID PRESSURE ACTUATOR AND LOCKING MEANS; **3,217,600,** Same, filed Dec. 21, 1971, D.C. Md. (Baltimore), Doc. 71–1394–B, *Robert H. Royster* v. *United Airlines, Inc.*

3,392,836. (See 3,321,081.)

3,454,114. (See 3,220,494.)

3,461,409. (See 3,173,990.)

3,463,247. (See 3,220,494.)

3,474,553, G. E. Moore, FABRIC SPREADING AND FEEDING MACHINE, filed Nov. 6, 1969, D.C., S.D. Fla. (Miami), Doc. 69–1293–C–JLK, *A. L. Sjostrom Company* v. *Foldamatic Systems, Div. of First Research Corporation and John Dolan.* Dismissed for failure to comply with the court's pre-trial order, Nov. 17, 1971.

3,481,462, A. M. Chapel, DISPOSABLE SURGICAL HOLDER AND COUNTER, filed June 30, 1971, D.C., W.D. Mich. (Grand Rapids), Doc. 1408, *Yale Medical Supply Company et al.* v. *Windsor Nuclear, Inc. et al.*

3,496,635, McLean and Chatfield and Turner, REMOVABLE HAND LEVER AND WEAR COMPENSATING CAN OPENER CONSTRUCTION; **3,520,056,** R. J. Scott, REMOVABLE HAND LEVER CONSTRUCTION, filed Nov. 30, 1971, D.C., W.D. Mo. (Kansas City). Doc. 19903–4, *General Electric Company* v. *Rival Manufacturing Company.*

3,507,341. (See 2,103,137.)

3,520,056. (See 3,496,635.)

3,546,921. (See Re. 26,409.)

3,554,298. (See 3,220,494.)

3,585,456, L. Phillips, Jr., ELECTRIC SERVICE CENTER FOR MOBILE HOMES AND THE LIKE, filed Aug. 3, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–1802–R, *Unicorn Industries* v. *Las Palmas Estates Corp.* Same, filed Aug. 3, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–1806–IH, *Unicorn Industries* v. *Ralph Zora, doing business as Blue Fountain Park.* Same, filed Aug. 3, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–1809–R, *Unicorn Industries* v. *Benjamin and Genevieve Fleming.* Same, filed Aug. 3, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–1812–HP, *Unicorn Industries* v. *Myers Electric Products, Inc.* Same, filed Aug. 3, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–1814–R, *Unicorn Industries* v. *Joseph Cepe.* Same, filed Aug. 4, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–1820–IH, *Unicorn Industries* v. *Americana Land Corporation.* Same, filed Aug. 11, 1971, D.C. Idaho (Boise), Doc. C–1–71–71, *Unicorn Industries* v. *Idaho Power Company.* Notice of dismissal, Oct. 15, 1971. Same, filed Aug. 12, 1971, D.C., S.D. Calif. (San Diego), Doc. 71–302–CW, *Unicorn Industries* v. *Henry J. Goldy & Associates.* Case dismissed voluntarily by plaintiff, Sept. 3, 1971. Same, filed Aug. 12, 1971, D.C., S.D. Calif. (San Diego), Doc. 71–303–GT, *Unicorn Industries* v. *Trico Enterprises.* Same, filed Aug. 12, 1971, D.C., S.D. Calif. (San Diego), Doc. 71–304–N, *Unicorn Industries* v. *Lee J. McClellan, doing business as Trailer Village.* Case voluntarily dismissed by plaintiff, Oct. 4, 1971. Same, filed Aug. 12, 1971, D.C., S.D. Calif. (San Diego), Doc. 71–305–N, *Unicorn Industries* v. *Terry Hendsley, doing business as Rancho Vista Mobile Home Estates.* Case voluntarily dismissed by plaintiff, Oct. 14, 1971. Same, filed Aug. 12, 1971, D.C., S.D. Calif. (San Diego), Doc. 71–306–CW, *Unicorn Industries* v. *Paul Pearson, Jr., doing business as Rancho Jamacha Mobile Home Park.* Case voluntarily dismissed by plaintiff, Oct. 14, 1971. Same, filed Aug. 12, 1971, D.C., S.D. Calif. (San Diego), Doc. 71–307–T, *Unicorn Industries* v. *Maxine Fredericks and Coast Investment Properties.* Case voluntarily dismissed by plaintiff, Oct. 14, 1971. Same, filed Aug. 12, 1971, D.C., S.D. Calif. (San Diego), Doc. 71–308–GT, *Unicorn Industries* v. *Agnes McDonald, doing business as Cypress Hills Mobile Home Park.* Same, filed Aug. 12, 1971, D.C., S.D. Calif. (San Diego), Doc. 71–309–T, *Unicorn Industries* v. *Margaret J. Levins, doing business as Circle R. Mobile Rancho.* Case voluntarily dismissed by plaintiff, Sept. 8, 1971. Same, filed Aug. 12, 1971, D.C., S.D. Calif. (San Diego), Doc. 71–310–GT, *Unicorn Industries* v. *Paul Heironimus, doing business as Care-Free Mobile Home Park.* Case voluntarily dismissed by plaintiff, Sept. 3, 1971. Same, filed Aug. 12, 1971, D.C., S.D. Calif. (San Diego), Doc. 71–312–T, *Unicorn Industries* v. *Mobile Parks West.* Case voluntarily dismissed by plaintiff, Sept. 3, 1971. Same, filed Aug. 12, 1971, D.C., S.D. Calif. (San Diego), Doc. 71–311–N, *Unicorn Industries* v. *Rodney W. Helland, doing business as Alta Vista Mobile Home Park.* Case voluntarily dismissed by plaintiff, Oct. 14, 1971. Same, filed Aug. 12, 1971, D.C., S.D. Calif. (San Diego), Doc. 71–313–N, *Unicorn Industries* v. *Francis Cohen, Norman Tolstad, doing business as West Winds Mobile Lodge.* Case voluntarily dismissed by plaintiff, Sept. 3, 1971. Same, filed Sept, 3, 1971, D.C., N.D. Calif. (San Francisco), Doc. C–71–1711, *Unicorn Industries* v. *Gordon J. Olsen, doing business as Sunny Acres Mobile Home Park.* Same, filed Sept. 3, 1971, D.C., N.D. Calif. (San Francisco), Doc. C–71–1712, *Unicorn Industries* v. *Morris Haas, doing business as Windsor Mobile Country Club.* Same, filed Sept. 17, 1971, D.C., N.D. Calif. (San Francisco), Doc. 71–1804, *Unicorn Industries* v. *Paul Sade, doing business as The Tropics Mobile Home Park.* Same, filed Sept. 30, 1971, D.C., N.D. Calif. (San Francisco), Doc. C–71–1892, *Unicorn Industries* v. *Mobile Parks West.* Same, filed Sept. 30, 1971, D.C., N.D. Calif. (San Francisco), Doc. C–71–1893, *Unicorn Industries* v. *Harold Pike, doing business as Lemon Tree Mobile Home Park.* Same, filed Sept. 30, 1971, D.C., N.D. Calif. (San Francisco), Doc. 71–1894, *Unicorn Industries* v. *Hofman Co.* Same, filed Oct. 4, 1971, D.C., S.D. Calif. (San Diego), Doc. 71–381–CW, *Unicorn Industries* v. *Henry J. Goldy & Associates.* Case dismissed by plaintiff, Nov. 10, 1971. Same, filed Oct. 4, 1971, D.C., S.D. Calif. (San Diego), Doc. 71–382–T, *Unicorn Industries* v. *Francis Cohen and Norman Tolstad, doing business as West Winds Mobile Lodge.*

Re. 25,614, L. A. Turzillo, MEANS OF GROUTING AND CONCRETING, filed Dec. 16, 1971, D.C., E.D. Pa. (Philadelphia), Doc. 71–3013, *Lee Turzillo Contracting Co., Inc.* v. *Eastern Gunite Company.*

Re. 26,409, R. J. Hance, EXPANDABLE PHASE CHANGE DETECTOR DEVICE; **3,546,921,** Bourke, Harris and Muff, METHOD OF PRODUCING AN INITIAL THERMAL ARREST IN THE COOLING CURVE OF HYPEREUTECTIC CAST IRON, filed Dec. 23, 1971, D.C., E.D. Pa. (Philadelphia), Doc. 71–3056, *Leeds & Northrup Company and Foundry Engineers, Inc.* v. *Electro-Nite Co.*

Re. 27,111, R. E. Wilson, PITCH-BONDED REFRACTORY COMPOSITION, filed Dec. 3, 1971, D.C., W.D. Pa. (Pittsburgh), Doc. 71–1136, *Dresser Industries, Incorporated* v. *Basic, Incorporated.*

D. 221,718, P. Kates, UMBRELLA, filed Nov. 24, 1971, D.C., S.D.N.Y., Doc. 71–C–5146, *Giant Umbrella Company, Inc.* v. *Associated Dry Goods Corp.* Same, filed Nov. 24, 1971, D.C., S.D.N.Y., Doc. 71–C–5147, *Giant Umbrella Company, Inc.* v. *R. H. Macy & Company, Inc.* Same, filed Nov. 24, 1971, D.C., S.D.N.Y., Doc. 71–C–5148, *Giant Umbrella Company, Inc.* v. *Lane Bryant, Inc.* Same, filed Nov. 24, 1971, D.C., S.D.N.Y., Doc. 71–C–5149, *Giant Umbrella Company, Inc.* v. *Bergdorf & Goodman Company, Inc.* Same, filed Nov. 24, 1971, D.C., S.D.N.Y., Doc. 71–C–5150, *Giant Umbrella Company, Inc.* v. *B. Altman & Company, Inc.*

Certificates of Correction for the Week of May 16, 1972

P.P. 8,024	3,565,928	3,586,704	3,598,250	3,611,271	3,616,158	3,619,444	3,624,243
D. 220,281	3,565,936	3,587,347	3,598,351	3,611,301	3,616,209	3,619,550	3,624,278
D. 221,587	3,567,511	3,587,381	3,599,406	3,611,351	3,616,282	3,619,694	3,624,821
Re. 27,152	3,569,701	3,587,796	3,599,820	3,612,011	3,616,309	3,619,803	3,624,989
Re. 27,252	3,574,189	3,588,196	3,600,216	3,612,534	3,616,310	3,619,808	3,625,203
3,404,864	3,575,000	3,588,441	3,601,266	3,612,607	3,616,314	3,621,917	3,625,881
3,431,275	3,575,076	3,588,732	3,601,564	3,612,948	3,616,362	3,622,041	3,625,887
3,475,864	3,577,102	3,589,489	3,602,556	3,613,007	3,616,782	3,622,346	3,626,059
3,486,560	3,578,278	3,589,793	3,603,205	3,613,296	3,616,855	3,622,359	3,626,279
3,493,359	3,578,337	3,590,744	3,603,416	3,613,668	3,616,953	3,622,360	3,626,657
3,503,781	3,578,457	3,590,760	3,604,804	3,613,853	3,616,954	3,622,401	3,626,682
3,509,188	3,579,166	3,590,853	3,606,284	3,614,167	3,616,979	3,622,404	3,626,879
3,522,195	3,579,307	3,590,982	3,607,082	3,614,378	3,617,402	3,622,440	3,627,297
3,522,232	3,579,974	3,591,210	3,607,288	3,614,383	3,617,420	3,622,471	3,627,807
3,530,211	3,580,366	3,592,396	3,607,348	3,614,397	3,617,494	3,622,492	3,628,429
3,534,843	3,581,014	3,592,623	3,607,700	3,614,447	3,617,616	3,622,533	3,628,977
3,543,098	3,581,091	3,593,852	3,607,875	3,614,472	3,617,621	3,622,564	3,630,554
3,544,865	3,581,553	3,594,175	3,608,063	3,614,706	3,617,866	3,622,583	3,630,584
3,545,129	3,582,186	3,594,652	3,608,529	3,614,737	3,617,868	3,622,643	3,630,890
3,545,748	3,582,314	3,594,706	3,608,764	3,615,120	3,618,035	3,622,645	3,631,359
3,551,108	3,582,398	3,595,123	3,609,341	3,615,168	3,618,088	3,622,805	3,631,762
3,553,246	3,582,895	3,595,794	3,609,378	3,615,293	3,618,449	3,622,825	3,631,867
3,553,374	3,583,146	3,596,776	3,609,380	3,615,352	3,618,638	3,622,856	3,632,118
3,553,845	3,583,634	3,596,786	3,609,404	3,615,427	3,618,724	3,622,868	3,633,309
3,554,562	3,584,027	3,597,201	3,609,497	3,615,475	3,618,748	3,623,024	3,633,856
3,556,419	3,584,185	3,597,378	3,610,388	3,615,520	3,618,774	3,623,155	3,635,618
3,558,540	3,585,218	3,597,463	3,610,495	3,615,668	3,619,058	3,623,498	3,636,283
3,558,620	3,585,613	3,597,485	3,610,805	3,615,705	3,619,222	3,623,980	
3,560,343	3,585,701	3,597,790	3,610,919	3,615,769	3,619,243	3,623,984	
3,560,489	3,585,886	3,598,755	3,610,971	3,615,816	3,619,261	3,624,133	
3,560,784	3,585,888	3,598,110	3,611,001	3,615,834	3,619,381	3,624,150	
3,561,751	3,586,000	3,598,170	3,611,180	3,615,972	3,619,420	3,624,182	

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 2, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-01-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	3-01-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	3-01-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-06-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	9-07-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signaling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	2-11-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-04-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	4-15-71
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	2-26-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	1-18-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	3-11-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	2-02-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	2-03-71
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	4-21-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	3-15-71

Expiration of patents: The patents within the range of numbers indicated below expire during May 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,707,277 to 2,709,807, inclusive
Plant Patents..... Numbers 1,389 to 1,395, inclusive

REISSUES

MAY 16, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

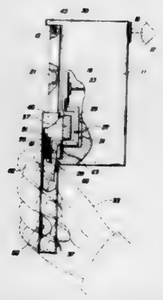
27,362
CAMERA WITH RETRACTABLE HAND GRIP

Richard J. Olson, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Original No. 3,380,366, dated Apr. 30, 1968, Ser. No. 484,640, Sept. 2, 1965. Application for reissue Mar. 4, 1969, Ser. No. 827,435

Int. Cl. G03b 17/04

U.S. Cl. 95—86 17 Claims



An improved handle member for a camera having an optical system and a trigger element. The handle member is mounted on the camera for movement between a first position, wherein said member covers the optical system and trigger element and a second position wherein said member uncovers the optical system and trigger element and provides a handle for supporting the camera while taking pictures.

27,363
INTERMEDIATE FREQUENCY TRANSFORMER

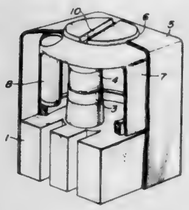
Kazutomo Iwata and Tatsuo Maeoka, Osaka, Japan, by Matsushita Electric Industrial Co. Ltd., assignee

Original No. 3,521,210, dated July 21, 1970, Ser. No. 728,558, May 13, 1968. Application for reissue Jan. 28, 1971, Ser. No. 110,729

Claims priority, application Japan, May 25, 1967, 42/33,547; June 2, 1967, 42/47,394; June 6, 1967, 42/48,877; Jan. 18, 1968, 43/3,484; Jan. 26, 1968, 43/5,097

Int. Cl. H01f 21/06

U.S. Cl. 336—87 6 Claims



Intermediate frequency transformers wherein a core having a coil wound thereon is fixed to a terminal board, a movable core associated with said core is provided in the outer peripheral portion of a support member having an adjusting portion exposed from the top surface of a shield casing, said movable core is adapted for two-dimensional movement, said support member is mounted in such a manner that the axis of rotation thereof is deviated from the center axis of said coil, and the distance between the movable core and the coil is changed through the rotation of the support member so that the inductance of the coil is varied accordingly.

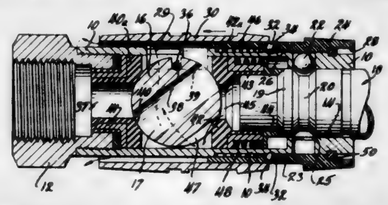
27,364
VALVED [SAFETY] SPEED COUPLER

Dale F. German, Bryan, Ohio, assignor to The Aro Corporation

Original No. 3,423,063, dated Jan. 21, 1969, Ser. No. 587,768, Oct. 19, 1966. Application for reissue July 24, 1970, Ser. No. 58,211

Int. Cl. F16l 29/00, 37/28

U.S. Cl. 251—149.6 12 Claims



A valved speed coupler includes a rotatable valve element and an arrangement of first radially movable locking elements operable by a first sleeve slidable on the body of the coupler, a second sleeve being also slidable on the body of the coupler and operable to rotate the valve element on an axis normal to the axis of movement of the second sleeve to open and close the valve element, and means for coaction of the sleeves to actuate the locking elements when the sleeves are in a valve open position and release them when the sleeves are in a valve closed position.

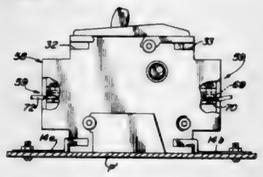
27,365
MOLDED CASE CIRCUIT BREAKER AND MOUNTING MEANS THEREFOR

Edward P. Dessert, Cedar Rapids, Iowa, assignor to Square D Company, Park Ridge, Ill.

Original No. 3,398,249, dated Aug. 20, 1968, Ser. No. 615,435, Feb. 13, 1967. Application for reissue Feb. 26, 1970, Ser. No. 14,412

Int. Cl. H01h 9/02

U.S. Cl. 200—168 C 1 Claim



A pair of mounting brackets are removably secured selectively at either the top or bottom of a molded case circuit breaker. When the brackets are at the bottom, the circuit breaker may be mounted with its bottom surface against the outer surface of a panel. When the brackets are at the top, the circuit breaker may be mounted against the inner surface of a panel with an upper portion protruding through an opening in the panel. Screw-type wire connectors at opposite ends of the circuit breaker are reversible so that the wire-clamping screws can be made accessible to a conventional screwdriver irrespective of the mounted position of the circuit breaker.

27,366
PROCESS OF MAKING SOLID FOAMS FROM POLYMER EMULSIONS

Edwin R. Dunn, Fremont, Ohio, assignor to Crown Rubber Company, Fremont, Ohio

No Drawing. Original No. 3,491,033, dated Jan. 20, 1970, Ser. No. 707,965, Feb. 26, 1968, which is a continuation-in-part of Ser. No. 447,890, Apr. 13, 1965. Application for reissue July 13, 1970, Ser. No. 54,671

Int. Cl. C08j 1/16

U.S. Cl. 260—2.5 L 8 Claims

A process of making a solid foam which is applicable to any polymer that is available in the form of an aqueous emulsion and is film forming at a temperature below 300° F., in which an aqueous dispersion of the polymer is converted into a wet foam, and the wet foam is then converted into a solid foam. The process is carried out by incorporating in the aqueous dispersion which is converted to a wet foam, a foaming agent that is incapable of gelling the wet foam, the aqueous dispersion being free of other agents capable of gelling the wet foam and containing not more than 45 weight percent of volatiles, and then subjecting the wet foam to a drying operation *by heating it* without gelling the wet foam, the amount of foaming agent present being sufficient to maintain a foam structure during the drying operation until a solid cellular material is obtained. [Finally] *As the volatiles evaporate during the drying operation,* the solid cellular material is heated to *a temperature that is at least as high as* the film-forming temperature of the polymer to cure *or fuse* the polymer.

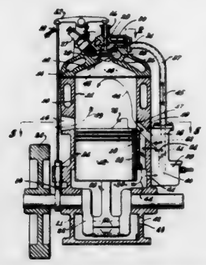
27,367
FULL PRESSURE CYCLE ENGINE WITH EXCESS AIR

Ernest A. von Seggern, 1051 E. Angeleno, Burbank, Calif. 91501, and Henry E. von Seggern, Rte. 2, Escondido, Calif. 92025

Original No. 3,363,611, dated Jan. 16, 1968, Ser. No. 451,720, Apr. 29, 1965. Application for reissue Jan. 9, 1970, Ser. No. 885,747

Int. Cl. F02b 1/08, 33/04, 39/04

U.S. Cl. 123—65 8 Claims



1. In [a two cycle] *an* internal combustion engine, of the spark ignition type, the combination of:

a combustion chamber in communication with said cylinder;

an ignition chamber substantially in the form of a spheroid, which is a figure of revolution about its minor axis;

a passage substantially coaxial with the minor axis of said spheroid joining said ignition chamber to said combustion chamber;

fuel air mixture supply means for said ignition chamber;

separate fuel air mixture supply means for said combustion chamber; and

spark ignition means in said ignition chamber *in which the point of ignition of said ignition means in said ignition chamber is located substantially on the circular axis of the toroidal cavity formed by the spheroidal ignition chamber.*

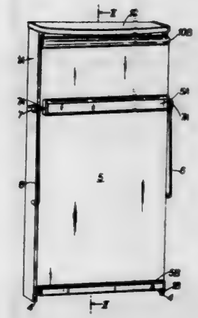
27,368
TROUSERS PRESS

Peter John Siddons Corby, Windsor, England, assignor to Rondel Limited, Hamilton, Bermuda

Original No. 3,477,154, dated Nov. 11, 1969, Ser. No. 768,450, Oct. 17, 1968. Application for reissue Feb. 19, 1971, Ser. No. 117,169

Int. Cl. A47j 51/00

U.S. Cl. 38—71 5 Claims



A trousers press has two flat members between which trousers are pressed. Each of two stretcher bars is movably mounted on a respective one of the two flat members, for gripping the upper part of the trousers between the stretcher bars during closing of the press and while the press is closed.

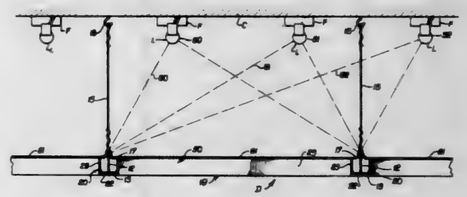
27,369
CEILING LIGHT DIFFUSER SYSTEM

Leonard F. Milner, Los Angeles, Calif., assignor to Integrated Ceilings Inc., Los Angeles, Calif.

Original No. 3,336,471, dated Aug. 15, 1967, Ser. No. 447,121, Apr. 12, 1965. Application for reissue Oct. 20, 1969, Ser. No. 869,975

Int. Cl. F21s

U.S. Cl. 240—9 R 15 Claims



A light diffuser system suspended from a ceiling below a light source and having a framework of inverted T-bars defining rectangular openings, channel-shaped members or a frame structure supporting light diffusers across the openings such that the diffusers lie in a plane contiguous the plane of the upper ends of the vertical T-bar flanges to substantially entirely eliminate T-bar shadow cast by the light source on the diffusers.

27,370
AUTOMATIC SHAPE CONTROL SYSTEM FOR BAR MILL
John R. McNaugher, 39 Birchwood Drive, Holden, Mass. 01520
Original No. 3,526,113, dated Sept. 1, 1970, Ser. No. 720,892, Apr. 12, 1968. Application for reissue Nov. 16, 1970, Ser. No. 90,165
Int. Cl. B21b *37/00*
U.S. Cl. 72—8 19 Claims

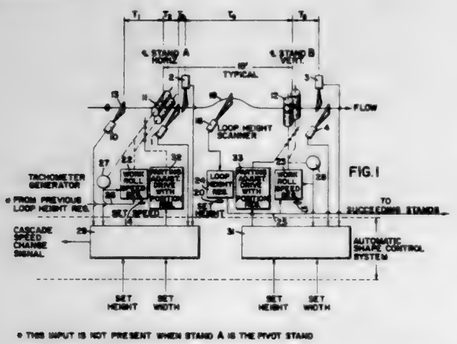
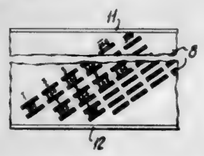


FIG. 1

* THIS INPUT IS NOT PRESENT WHEN STAND A IS THE PIVOT STAND

A rolling mill for rods, bars and various shaped cross-sections has finishing stands with roll axes oriented ninety degrees (90°) relative to adjacent stands and automatic control of the rolling parameters to obtain precise transverse dimensions. Two transverse dimensions and the loop size between stands are sensed and use to control stand speed and roll separation in a feedback control loop while variables relating to stand loading and product characteristics are used to make supplementary or compensating adjustment. Further control signals are derived relating to mass flow to provide compatible adjustment of rolling parameters throughout the mill.

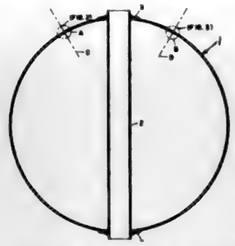
27,371
RECORDING SYSTEM WITH PROVISION FOR FAST OR SLOW REPRODUCTION
Shiro Okamura, Tokyo, Japan, by Nippon Electric Company, Limited, Tokyo, Japan, assignee
Original No. 3,170,031, dated Feb. 16, 1965, Ser. No. 338,277, Dec. 27, 1963, which is a continuation of Ser. No. 66,770, Nov. 2, 1960. Application for reissue Mar. 22, 1971, Ser. No. 126,569
Int. Cl. G11b *5/48*; H04n *5/78, 7/12*
U.S. Cl. 178—6.6 A 17 Claims



Apparatus for magnetically recording adjacent periods of a periodic signal in closely adjacent laterally aligned parallel tracks on a record medium.

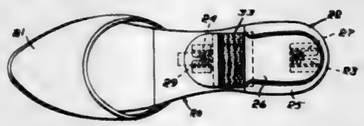
27,372
BUOYANT DEVICE
Charles Garland, Newport News, Va., assignor to Sun Shipbuilding & Dry Dock Company, Chester, Pa.
Original No. 3,407,417, dated Oct. 29, 1968, Ser. No. 563,193, July 6, 1966. Application for reissue Dec. 18, 1969, Ser. No. 888,177
Int. Cl. B63b *21/52*
U.S. Cl. 9—8 R 3 Claims

A buoyant hollow sphere, designed for deep submergence, is internally pressurized with inert gas to enable reduction in its wall thickness and, hence, its weight. A diametrically-extending sleeve is welded through the wall



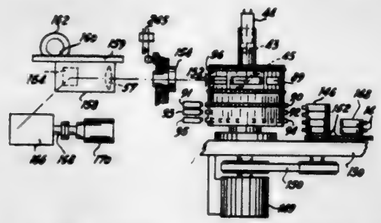
of the sphere, to enable the sphere to be slid over a pipe which is to be buoyed up.

27,373
FOOTWEAR
Maxwell Sachs, 887 W. Roxbury Parkway, Brookline, Mass. 02162
Original No. 3,436,846, dated Apr. 8, 1969, Ser. No. 758,179, Aug. 12, 1968, which is a continuation-in-part of Ser. No. 600,872, Dec. 12, 1966. Application for reissue Apr. 2, 1970, Ser. No. 25,595
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 W 36 Claims



Footwear is disclosed that has a socket in the heel area and a heel section detachably attached to the socket and including an upper part.

27,374
TYPE COMPOSING APPARATUS
Louis M. Moyroud, Delray Beach, Fla., and Rene A. Higonnet, Vaud, Switzerland (both % Photon, Inc., 355 Middlesex Ave., Wilmington, Mass. 01887)
Original No. 3,422,736, dated Jan. 21, 1969, Ser. No. 441,738, Mar. 22, 1965, which is a continuation-in-part of Ser. No. 338,810, Jan. 21, 1964. Application for reissue June 5, 1970, Ser. No. 43,987
Int. Cl. B41b *19/06, 21/26*
U.S. Cl. 95—4.5 20 Claims



This invention relates to a phototypesetter which is used in the graphic arts to produce on photographic film or paper areas of typographic composition. The apparatus described herein comprises a constantly rotating character carrying drum wherein characters are selectively illuminated by a high speed flash tube, an optical projection system a portion of which is adapted for periodic translation in relation to the film and an electronic control circuit which accepts input data, performs a justification calculation and controls the character selection and projection apparatus.

PLANT PATENTS

GRANTED MAY 16, 1972

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,168
HOLLY BUSH
Rowell B. Taylor, Jr., Greer, S.C., assignor to Monrovia Nursery Company, Azusa, Calif.
Filed Mar. 20, 1970, Ser. No. 21,556
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—65 1 Claim

1. A new and distinct variety of *Ilex cornuta* plant substantially as shown and described, characterized by its dwarf size, its slow growth habit, its arching spreading branches with the absence of any central leader or trunk forming a tightly compact bush.

3,169
CRAPE MYRTLE
Otto F. Spring, Okmulgee, Okla., assignor to Monrovia Nursery Company, Azusa, Calif.
Filed May 20, 1970, Ser. No. 39,184
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—54 1 Claim

A new and distinct variety of the Lagerstroemia genus characterized as to novelty by its compact, upright habit of growth and by flower clusters recognizably different from other Lagerstroemia, particularly by the red petals with white borders creating a picotee effect.

3,170
CAMELLIA HYBRID
J Howard Asper, Escondido, Calif., assignor to Monrovia Nursery Company, Azusa, Calif.
Filed June 5, 1970, Ser. No. 43,986
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—62 1 Claim

A new and distinct variety of camellia, originating as a seedling from a crossing of *Camellia reticulata* "Crimson Robe" (the seed parent) and *Camellia japonica* "Lotus" (the pollen parent). The new camellia is characterized as to novelty by its exceptionally large flower and its large coriaceous leaves.

3,171
AZALEA PLANT
Walter W. Knicely, Barberton, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed July 20, 1970, Ser. No. 56,759
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—56 1 Claim

1. A new and distinct variety of azalea characterized particularly as to novelty by its rapid growth and good size increase, its uniform and easy budding, its earliness in natural season flowering programs, its rose-pink color, its long-lastingness and its adaptibility to year round flowering programs under wide and varied conditions.

3,172
AZALEA PLANT
Henry W. Motzkau, Whitewater, Wis., assignor to Yoder Brothers, Inc., Barberton, Ohio
Filed July 20, 1970, Ser. No. 56,760
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—56 1 Claim

1. A new and distinct variety of azalea characterized particularly as to novelty by its evergreen type foliage, its rapid growth, its ease of budding under variable conditions, its lavender pink color, its long-lastingness, its early profuse flowering, and its adaptability to year round flowering programs.

3,173
GERANIUM PLANT
Walter W. Knicely, Barberton, and William E. Duffett, Akron, Ohio, assignor to Yoder Brothers, Inc., Barberton, Ohio
Filed Aug. 26, 1970, Ser. No. 67,300
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of geranium, characterized particularly by its early response and superior flower production in 4" pots in a spring pot program, superior flower production in an outdoor flowering program, a clear white color with no tendencies towards heavy watering conditions, and superior durability to outdoor conditions.

3,174
GERANIUM PLANT
Walter W. Knicely, Barberton, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed Aug. 26, 1970, Ser. No. 67,301
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of geranium characterized particularly by an early response and superior flower production in 4" spring pot program, resistance to shatter, durable foliage and flowers to outdoor conditions, resistance to botrytis, and a Cherry Blossom-pink color with attractive white eye.

3,175
KENTUCKY BLUEGRASS (*POA PRATENSIS*)
William H. Daniel, West Lafayette, Ind., assignor to Purdue Research Foundation
Filed July 7, 1969, Ser. No. 839,731
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—88 1 Claim

1. A new and distinct variety of bluegrass plant, substantially as described and illustrated.

3,176
KENTUCKY BLUEGRASS (*POA PRATENSIS*)
William H. Daniel, West Lafayette, Ind., assignor to Purdue Research Foundation
Filed July 7, 1969, Ser. No. 839,733
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—88 1 Claim

1. A new and distinct variety of bluegrass plant, substantially as described and illustrated.

3,177
KENTUCKY BLUEGRASS (*POA PRATENSIS*)
William H. Daniel, West Lafayette, Ind., assignor to Purdue Research Foundation
Filed July 7, 1969, Ser. No. 839,734
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—88 1 Claim

1. A new and distinct variety of bluegrass plant, substantially as described and illustrated and particularly

characterized by excellent stem rust resistance, in addition to low and slow growth habit and dark green color.

3,178
STRAWBERRY PLANT
Royce S. Bringhurst, Davis, and Victor Voth, Santa Ana, Calif., assignors to The Regents of the University of California, Berkeley, Calif.
Filed July 25, 1969, Ser. No. 845,103
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—48 1 Claim

1. A new and distinct strawberry variety described and illustrated, and characterized particularly by its low chilling requirement, ability to grow at relatively low temperature and great flexibility under the winter planting system; its exceptionally large fruit size of long conic shape, excellent dessert quality and high productivity under the winter planting system in coastal California.

3,179
PEACH TREE
Ronald Paul, 5485 E. Heaton Ave., Fresno, Calif. 93727
Filed Nov. 12, 1969, Ser. No. 876,148
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—43 1 Claim

1. A new and distinct variety of peach substantially as illustrated and described, which is characterized by its early maturity, approximately two weeks earlier than the unpatented Redhaven and by fruit having the same general characteristics as the Redhaven but deep yellow skin color along the suture a more pronounced cling stone and a more pronounced mucronate apex.

3,180
EA 673—ST. AUGUSTINEGRASS
Jake T. Gruis, Apopka, Fla., and Eugene W. Mayer and John A. Long, Marysville, Ohio, assignors to O. M. Scott & Sons Company, Marysville, Ohio
Filed Dec. 2, 1969, Ser. No. 881,640
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—88 1 Claim

A perennial hybrid St. Augustinegrass having a moderate olive green color, very good gray leafspot resistance and excellent resistance to insects including sod webworms and chinchbugs. This hybrid possesses vigorous growth and is easily propagated.

3,181
DISTINCT VARIETY OF MANGO
David Sturrock, 1020 Camellia Road, West Palm Beach, Fla. 33480
Filed Dec. 18, 1969, Ser. No. 886,431
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—33 1 Claim

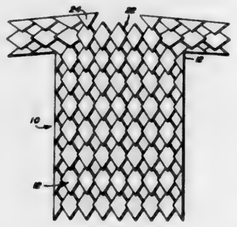
1. The variety of mango as described and shown herein.

PATENTS

GRANTED MAY 16, 1972

GENERAL AND MECHANICAL

3,662,404
CLOTHING CONSTRUCTION
Bettie Jane Schinker, 1632 East Cedar Street, Tempe, Ariz.
Filed June 22, 1970, Ser. No. 47,979
Int. Cl. A41d *1/04*
U.S. Cl. 2—243 R 9 Claims



A hemless and seamless garment constructed from a plurality of interconnected components of material to enable various garments to be constructed by obtaining precut components or cutting such components from garment material or the like and connecting them together in a manner to form various garments.

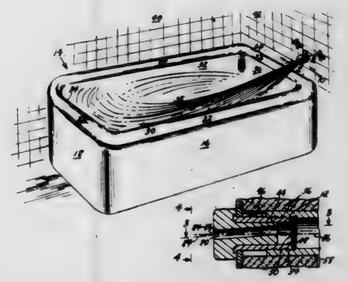
The present invention generally relates to the construction of articles of clothing and more particularly the arrangement of component parts in a particular manner to form garments which are hemless and seamless and yet are quite attractive in appearance, fashionable and utilitarian.

3,662,405
REINFORCED POROUS CERAMIC BONE PROSTHESIS
Seymour A. Bortz, Highland Park; Harold L. Rechter, Chicago; William E. Reynolds, Western Springs, and Seymour Bazell, Chicago, all of Ill., assignors to IIT Research Institute, Chicago, Ill.
Filed Mar. 12, 1969, Ser. No. 806,578
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 3 Claims



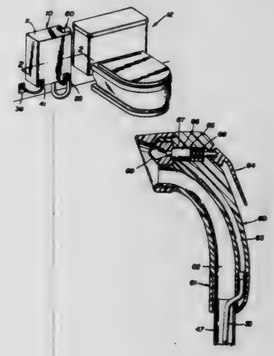
A structural member having a core of porous material permitting fluid flow and an outer layer of composite material having rigid matrix with reinforcing material embedded therein. The member finds its primary use in prosthetics.

3,662,406
ADJUSTABLE FLUID INLET SPOUT
Gino Giglio, 105 West 13th Street, New York, N.Y.
Filed June 15, 1970, Ser. No. 46,184
Int. Cl. A47k *17/00, 3/00*
U.S. Cl. 4—1 5 Claims



An adjustable fluid inlet spout for introducing fluids into a receptacle, such as a tub, sink, or tank. The spout contains a through passage which is angularly disposed to the central axis of the spout. The spout is adjustable, allowing the fluid moving through the passage to be directed as desired, in a generally horizontal direction, making contact with the sides of the receptacle. The spout may be placed eccentrically of the central longitudinal axis of the tub.

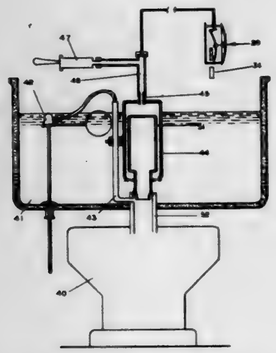
3,662,407
PERSONAL HYGIENE DEVICE
Donald E. Colucci, 2335 Aurora Street, Hudson, Ohio
Filed May 25, 1970, Ser. No. 40,321
Int. Cl. A47k *3/22, 11/08*
U.S. Cl. 4—7 8 Claims



A personal hygiene device has a housing to which a length of flexible air hose is attached. The housing has a switch controlled wiring system connected to an electrical supply and a valve controlled conduit system connected to a water supply. An electric heating element and fan in the housing when ac-

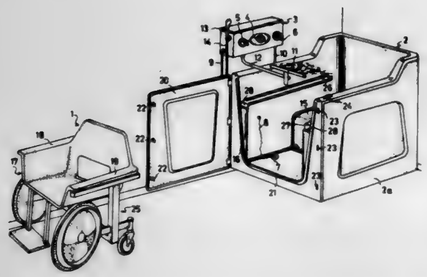
tivated by the switch supplies warm filtered air to the air hose whereas a housing valve controls the passage of water to a flexible line. The flexible line and the air hose both are connected to a manually operated applicator which selectively discharges water and air for the purpose of personal hygiene.

3,662,408
VALVE OPERATOR EMBODYING TIME-DELAYED CLOSING MEANS
Vernon E. Knudtson, 5318 Camden Road, Madison, Wis.
Filed Sept. 16, 1970, Ser. No. 73,044
Int. Cl. E03d *1/34, 5/02*
U.S. Cl. 4—67 **7 Claims**



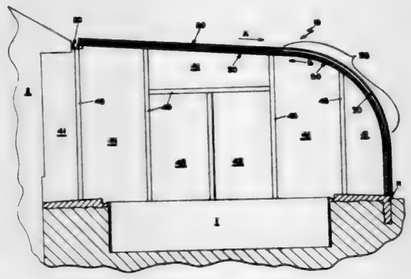
A flush tank valve operator comprising an open-bottomed vessel buoyantly responsive to differential pressure of fluid media caused by the water level rising in the flush tank and provided with valve means for releasing super-atmospheric air within said vessel to atmosphere directly or through delayed response means comprising a resiliently expandable chamber provided with a bleed port.

3,662,409
BATH SYSTEM, PARTICULARLY FOR WHEEL-CHAIR CONSTRAINED DISABLED PERSONS
Hans Arne Johansson, Treharadsvagen 40, Eslov, Sweden
Filed Dec. 21, 1970, Ser. No. 99,743
Int. Cl. A47k *3/022*
U.S. Cl. 4—145 **10 Claims**



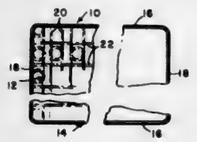
A bath system is provided for domestic bathrooms especially designed for wheel-chair constrained disabled persons whereby the wheel-chair seat can be moved into a sit-down type bath tube and removed thereby by controls on a tub-side panel. Means are provided for filling and emptying the tub and generally for enabling a disabled person to bathe without aid.

3,662,410
ENCLOSURES FOR POOLS AND THE LIKE
Jay A. Lankheet, Holland, Mich., assignor to Glamour Pools Company, Holland, Mich.
Filed Sept. 22, 1970, Ser. No. 74,400
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.12 **20 Claims**



A plurality of support members for the pool enclosure extend upwardly from a foundation and then curve out over the pool and are fastened at their opposite ends to a steel gutter which in turn is secured to the eave of a house. Each support member, except the end two, includes a pair of tracks on either side such that a flexible, insulated panel can be slidably supported between a pair of adjacent support members in one of said tracks, while a second flexible, insulated panel can be supported between adjacent support members and the second track. Each end support member includes a pair of tracks only on one side, pointing inwardly.

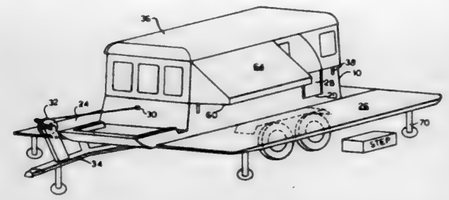
3,662,411
SPRING ASSEMBLY
Harry A. Garceau, Charlton City, Mass., assignor to Webster Spring Co., Inc., Oxford, Mass.
Filed Dec. 14, 1970, Ser. No. 97,733
Int. Cl. A47c *23/02, 23/04*
U.S. Cl. 5—266 **13 Claims**



A coiled spring structure comprising a wire frame to which there are attached spaced pairs of longitudinally and transversely extending wires providing at their intersections end supports for the ends of coiled springs and coiled springs having end loops provided with diametrically disposed, reversely bent segments adapted to be sprung into engagement with the wires at the seats.

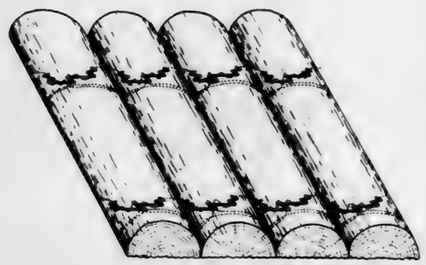
3,662,412
HULL DESIGN USEFUL WITH HOUSEBOATS
Robert D. Hawkins, 115 Stony Hollow Rd., Greenlawn, N.Y.
Filed Jan. 5, 9170, Ser. No. 523
Int. Cl. B63b *35/00*
U.S. Cl. 9—1 R **7 Claims**

A hull design, especially useful for houseboats, has hinged side decks. The hull combines with a trailer to provide a land camping vehicle; and a lowerable roof for such hull, together with the hinged side decks, cooperates to enclose the hull for



protection thereof and to shorten the dimensions of the vehicle for purposes of transportation.

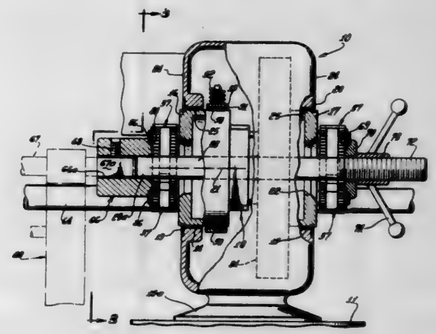
3,662,413
METAL RING FOR FASTENING PARTS BY MEANS OF OCEAN WAVE FORCE
Toshiro Andoh, and Hachiro Andoh, both of No. 1-2 chome, Inori-cho, Minato-ku, Nagoya, Japan
Filed Apr. 13, 1970, Ser. No. 10,354
Int. Cl. B63b *35/00*
U.S. Cl. 9—16 **2 Claims**



A wire holder made of a flexible metallic bar and having a center loop, an end loop formed at each end thereof and a substantially straight or arm portion extending between said center loop and each of said end loops, and a method of assembling loose logs into a raft by using said wire holders. When the logs constituting a raft assembled according to the present invention are exposed to ocean waves and the wires fastening those logs are stretched, the wire holders according to the present invention adapt themselves to the wires engaged therewith and hold the wires and the logs firmly together.

3,662,414
THREADER DRIVE APPARATUS
Howard N. Behnke, San Gabriel, Calif., assignor to Collins Machinery Corporation, Monterey Park, Calif.
Filed Aug. 11, 1970, Ser. No. 62,807
Int. Cl. B23g *1/44, 1/52*
U.S. Cl. 10—89 **8 Claims**

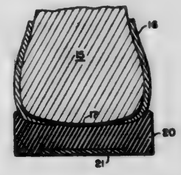
Coupler mechanism including a drive shaft adapted for coupling a drive apparatus with a driven apparatus, the drive apparatus including actuator means rotatable in opposite directions and a series of jaws carried to be pivoted into engagement with the coupler drive shaft and to rotate the shaft forwardly in response to actuator means rotation in a forward rotation, the driven apparatus including an input member rotatable in opposite directions and structure responsive to



member rotation in a forward direction to effect threading of a pipe, said mechanism comprising

a. a connector to couple said drive shaft to said member, and
b. retention means for blocking reverse pivoting of the jaws out of engagement with the drive shaft in response to actuator means rotation in a reverse direction.

3,662,415
METHOD OF MAKING FOOTWEAR HAVING INSOLE AND INTERMEDIATE SOLE OF THREE-DIMENSIONAL SHAPE
Ernest E. Deane, 129 Highfield Rd., Abington, Mass.
Continuation of application Ser. No. 822,826, Apr. 8, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 478,923, Aug. 11, 1965, now abandoned. This application June 12, 1970, Ser. No. 48,858
Int. Cl. A43d *21/00*
U.S. Cl. 12—145 **2 Claims**

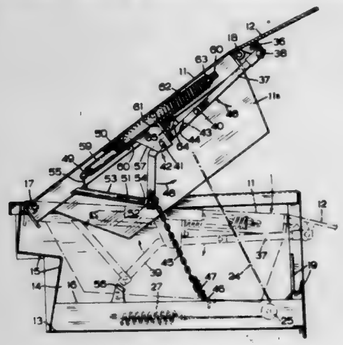


The process of shoemaking by which the steps of molding a flat mulled insole by direct contact to the contoured bottom of a wooden last and at the same time completing the shoe by forming an outsole and bonding it to the molded insole.

3,662,416
DOCKBOARDS
David Brooks, Stoney Creek, and Arthur L. Reteff, Hamilton, both of Ontario, Canada, assignors to Serco Engineering Limited, Hamilton, Ontario, Canada
Filed Dec. 29, 1970, Ser. No. 102,442
Int. Cl. B65g *11/00*
U.S. Cl. 14—71 **8 Claims**

A dockboard comprises a main plate hinged at its rear edge to a frame and having a lip plate hinged at its front edge. Upwardly acting springs beneath the main plate are sufficiently strong to move the board upwards in the absence

of a weight thereon. A cable is connected between the frame and the board, one end of the cable being wound around a ratchet-controlled reel which holds the board in any position to which it is set; a manually controlled release is provided for the ratchet. The lip plate is automatically elevated as the



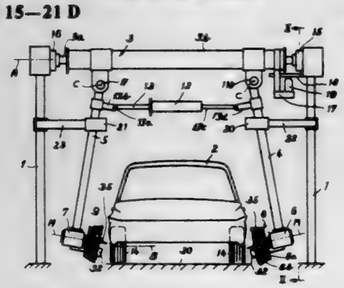
main plate rises by a snatch chain acting on one end of an articulated linkage which just reaches top dead center as the lip plate reaches the elevated position and locks it in that position. The linkage is mounted to move backward and thereby trip the latch upon an impact applied to the elevated lip, for example by a transport backing into the lip.

3,662,417

APPARATUS FOR THE CLEANING OF VEHICLE WHEELS

Heinrich Fuhring, Augsburg, and Richard Fleschhut, Goeggingen, both of Germany, assignors to BOWE, Bohler & Weber KG Maschinenfabrik, Augsburg, Germany

Filed July 15, 1970, Ser. No. 55,093
Claims priority, application Germany, July 19, 1969, P 19 36 906.3
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 D **15 Claims**



An apparatus for the cleaning of vehicle wheels, e.g. in conjunction with a vehicle-washing installation, comprises at least one pair of rotatable brushes which can be pressed against the wheels and, for at least a limited portion of the longitudinal displacement of the vehicle, can move therewith while maintaining their rotary cleaning action.

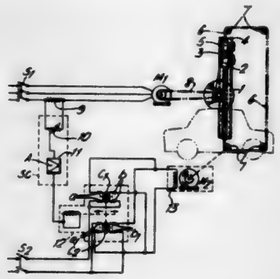
3,662,418

VEHICLE WASHING APPARATUS

Nobuyoshi Kamiya, Takarazukashi, Japan, assignor to Toyo Enterprises KK, Osaka, Japan

Filed July 16, 1970, Ser. No. 55,344
Claims priority, application Japan, July 17, 1969, 44/68400
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 E **8 Claims**

A vehicle washing apparatus including frame-mounted overhead rotary brush assembly which can scrub the vehicle surface with a continuously applied optimum amount of scrubbing pressure, and which is caused to ascend and descend in increments as small or as large as required while



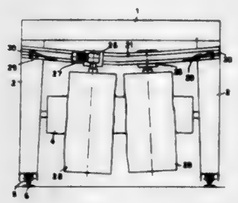
the frame travels horizontally on its track, so that a vehicle can be automatically washed from front to back via the hood, roof and trunk portions.

3,662,419

CAR WASHING APPARATUS

Franco Dini, via Don G. Franchini, Formigine, Modena, Italy

Filed Oct. 20, 1969, Ser. No. 867,645
Claims priority, application Italy, Mar. 7, 1969, 33534 A/69; 33535 A/69; 33536 A/69; July 1, 1969, 33598 A/69
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 E **11 Claims**



Car washing apparatus comprising an arch mounted for movement longitudinally of the car, and generally vertical brushes movable transversely across the arch from each side and supported from rails which are inclined downwardly toward the center of the arch. A brush which rotates about a horizontal axis is supported for vertical movement by the side posts of the arch.

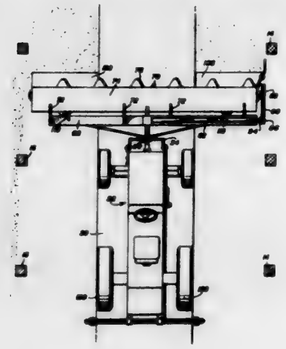
3,662,420

MACHINE FOR REMOVING CHICKEN WASTE

Tommy V. Jordan, Jr., Route 3, P.O. Box 261-F, Dade City, Fla.

Filed Oct. 20, 1969, Ser. No. 867,601
Int. Cl. A01k *31/04*
U.S. Cl. 15—93 B **7 Claims**

An attachment for a prime mover to be moved along a path paralleling a row of elevated chicken cages beneath which chicken droppings fall to the ground. The attachment includes an elongated driven auger conveyor open along one side and supported from the prime mover in horizontal transversely extending position with its open side facing forwardly in the intended direction of movement of the prime mover. One end of the conveyor projects outwardly from the corresponding side of the prime mover for passing beneath the cages and includes a forwardly and downwardly inclined chute for engagement with the ground beneath the cages and



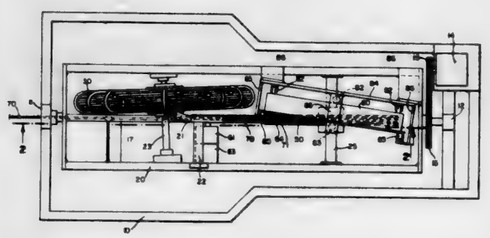
directing chicken droppings upwardly toward the conveyor as the prime mover is advanced forwardly.

3,662,421

DRIVE FOR RODDING MACHINE

Charles B. Caperton, Montgomery Court Apts., Narberth, Pa.

Continuation-in-part of application Ser. No. 41,201, May 28, 1970, now abandoned , which is a continuation-in-part of application Ser. No. 835,278, Apr. 4, 1969, now Patent No. 3,561,034, which is a division of application Ser. No. 613,703, Dec. 30, 1966, now Patent No. 3,469,273. This application Sept. 25, 1970, Ser. No. 75,568
Int. Cl. B08b *1/04*
U.S. Cl. 15—104.3 SN **11 Claims**



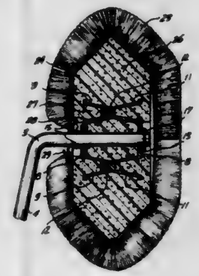
A drive for a sewer rodding machine is disclosed which includes twist barrier means in the form of a circular arcuate surface, such as the periphery of an idler wheel, around which the rod is looped to prevent the twist of the twisting rod from getting back into the storage reel. The storage reel and torsion-taking wheel are supported for rotation in the rotatable carriage on axes which are generally normal to the axis of rotation of the carriage. In one form, the axis of rotation of the carriage is inclined relative to ground. The periphery of the torsion wheel is flanged to provide a channel, and trained about the wheel in this channel, under the rod, is a drive chain having dogs thereon at spaced intervals for driving the coupled rod. An annular freely rotatable confining band surrounds the periphery of the wheel and confines the rod in the channel against radially outward movement. The confining band is canted slightly, relative to the wheel, to allow for entry and exit of the rod.

3,662,422

CORNER PAINT ROLLER

Robert S. Christensen, Mountlake Terrace, and Richard D. Johnson, Seattle, both of Wash., assignors to Richard D. Johnson, Seattle, Wash., by said Robert S. Christensen

Filed July 22, 1970, Ser. No. 57,274
Int. Cl. B44d *3/28*
U.S. Cl. 15—230.11 **1 Claim**



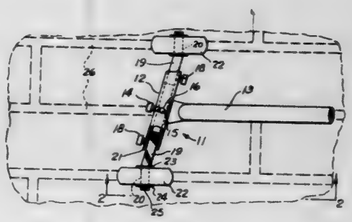
A paint roller head is composed of a rigid skeletal core embedded in a resilient molded plastic body having an annularly ridged periphery and a pile cover fitting snugly over and substantially completely enclosing the head. Such head is demountably carried on a cantilever axle integral with the shank of a handle having one portion which extends substantially centrally radially of the head and a dogleg portion connecting such radial portion and the axle root.

3,662,423

ROCK FACE BRICK CLEANING RAKE

Lloyd P. Miller, 201 Pleasant Street, Middlebury, Ind.

Filed Oct. 9, 1970, Ser. No. 79,443
Int. Cl. E04f *21/17*
U.S. Cl. 15—235.3 **9 Claims**



A rake for cleaning brick joints consisting of a tubular crossbar attached to a handle nonperpendicularly thereto so that the ends of the crossbar are offset relative to each other. Rollers are journaled to the ends of the crossbar at a spacing equal to twice the distance between brick joints, the rollers being parallel to the handle. A depending raking member is adjustably clamped to the midportion of the crossbar so as to engage in a brick joint while the rollers ride in the two outwardly adjacent parallel brick joints.

3,662,424

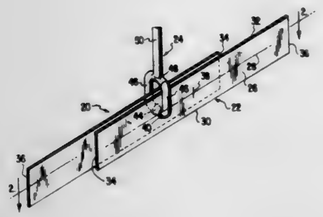
SCRAPING DEVICE

Jack W. Whitsett, 936 Castile Avenue, Coral Gables, Fla.

Filed Aug. 3, 1970, Ser. No. 60,434
Int. Cl. A47l *13/02*; **E04f** *21/10*
U.S. Cl. 15—236 **6 Claims**

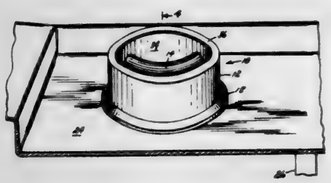
A scraping device includes at least two elongated scraping members and mounting means for connecting the members to a rotating drive means, such as an electric drill, which rotates the members to accomplish scraping. The members

are each provided with an off center hole and the holes of the various members are aligned with one another and a portion of the mounting means projects therethrough. Each



member has a long section to one side of the hole and a short section to the other side thereof. The members are disposed with the long section of one member opposite the short section of the next adjacent member, and vice versa.

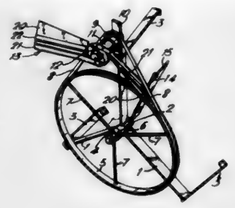
3,662,425
SCRAP BLOCK
Hyman J. Klein, Closter, N.J., and Bennett W. Trupin, Brooklyn, N.Y., assignors to Instrument Systems Corporation, Jericho, N.Y.
Filed June 22, 1970, Ser. No. 47,940
Int. Cl. A22c *25/06*
U.S. Cl. 15—245 **12 Claims**



An improved scrap block for use with commercial food service equipment. An upstanding lip extends inwardly along a portion of the upper edge of the block to allow rapid removal of jelled liquids and food particles from dishware. The lower engagement wall has a circular bead detent around its outer surface to insure that the block will not be knocked out of position. The block has an annular skirt covering the receiving hole, preventing drippings getting therein.

3,662,426
MEANS FOR CLEANING MOTOR ROAD VEHICLE HEAD LAMPS
William Wharton, Piccotts End House, Hemel Hempstead, England
Filed Apr. 16, 1970, Ser. No. 29,050
Claims priority, application Great Britain, Apr. 21, 1969, 20,246/69
Int. Cl. B60s *1/44*
U.S. Cl. 15—250.22 **7 Claims**

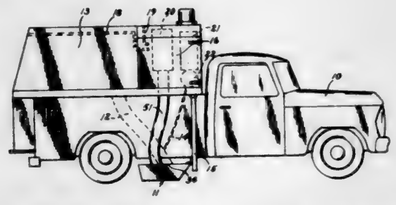
Wiper means for a motor road vehicle headlamp comprising at least one wiper blade rotatable about a bearing adapted to be arranged centrally of the front glass of the headlamp, so that the wiper blade automatically keeps such



front glass clean as the road vehicle on which the headlamp is mounted is driven along

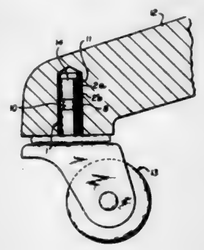
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3,662,427
VACUUM-PRESSURE APPARATUS FOR SWEEPING EXTERIOR AREAS
Bruce Hanna, Littleton, Colo., assignor to American Coleman Company, Littleton, Colo.
Filed July 1, 1970, Ser. No. 51,518
Int. Cl. A47l *5/14*
U.S. Cl. 15—346 **8 Claims**



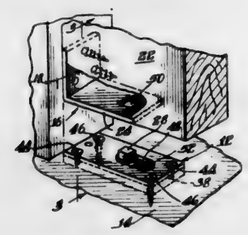
An apparatus using a high-pressure air stream in an open-ended chamber to dislodge dust, pebbles and other debris from large planar surfaces such as parking lots, roads, streets, alleys, etc., and the "swept" material is collected by vacuum and carried to a collector compartment where the swept material settles out of the air and a portion of the air is recycled.

3,662,428
FASTENING PINS
Hans H. Koehl, Brooklyn, Conn., assignor to C. E. M. Company, Inc., Danielson, Conn.
Filed Aug. 13, 1969, Ser. No. 849,768
Int. Cl. B60b *33/00*; A47b *91/00*; F16m *11/20*
U.S. Cl. 16—43 **11 Claims**



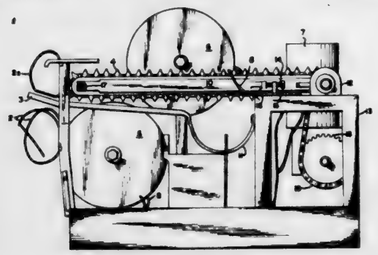
A fastening pin, comprising a coil wound sheet material providing an external resilience and having an inner end portion on the inner surface thereof terminating in an edge extending along its length, the end portion including the edge at least in part spaced from the sheet material wound thereunder constituting an interior inwardly, radially directed bump formation providing an independent interior resilience. The spirally wound sheet material has a diametric thickness through the bump formation smaller than the diametric thickness through the rest of the coil wound sheet material.

3,662,429
DOOR PIVOT ASSEMBLY
Larry K. Johnson, Lyndon, and Delmar D. McNinch, Rock Falls, both of Ill., assignors to Lawrence Brothers, Inc., Sterling, Ill.
Filed Sept. 23, 1970, Ser. No. 74,712
Int. Cl. E05d *7/08*
U.S. Cl. 16—151 **9 Claims**



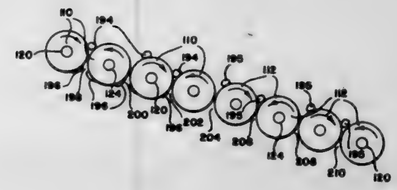
The present invention relates generally to pivot assemblies for swinging doors, and more particularly to improvements in pivot assemblies for use with door members, the pivoted vertical edge of which, when the door is in closed position, is in substantial abutting relation with a vertical door frame. An embodiment of the invention disclosed herein includes a crank arm, a link member having one end pivotally connected with the crank arm, mounting means for supporting the crank arm and link member upon a horizontal door frame member. Fixed pivot means is associated with the mounting means and is connected with the opposite extremity of the link. Crank actuating means attachable to the corner of the door member is coupled with the crank member whereby when the door member swings about the crank axis in a given direction the vertical door edge will move away from the door frame.

3,662,430
SPLITTING MACHINE FOR CHICKEN
E. J. Lloyd, and Rex E. Childs, both of Athens, Ga., assignors to The United States of America as represented by the Secretary of Agriculture
Filed Feb. 3, 1970, Ser. No. 8,214
Int. Cl. A22c *21/00*
U.S. Cl. 17—11 **2 Claims**



An apparatus and process are disclosed wherein the assembled components position, secure, and convey eviscerated carcasses of chicken and the like fowl past rotary knives to split the said carcasses into two parts (halves) efficiently and safely.

3,662,431
SCALLOP PROCESSING
Elmer Dryden Willis, Williston, N.C.
Original application May 27, 1968, Ser. No. 732,247, now Patent No. 3,562,855, dated Feb. 16, 1971. Divided and this application Mar. 11, 1970, Ser. No. 23,528
Int. Cl. A22c *29/00*
U.S. Cl. 17—48 **4 Claims**

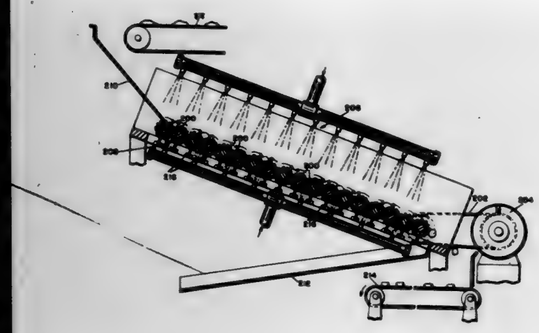


A method and apparatus are provided for extracting the adductor muscle from scallops. Scallops are subjected to a heat shock and are then mechanically agitated to disengage the muscle and attached viscera from the shell. The muscle and viscera are removed from the shells and separated from unfragmented portions of the shells on a vibrating screen and are then contacted with water before being separated from small shell fragments by flotation in a brine solution. Viscera is removed from the muscles by pulling on the viscera while restraining movement of the muscles. The invention also includes a method and apparatus for removing viscera from the adductor muscle of shucked scallops. Scallop muscles and attached viscera are placed on the upper surface of an inclined path formed by a plurality of rollers. Viscera is pulled from the scallop muscle and through the nip formed by adjacent rollers by rotating the upper portion of adjacent rollers towards each other. Detached viscera is cleaned from the rolls below the inclined path. Advance of scallop muscles down the path is controlled by intermittently rotating the upper portion of adjacent rollers away from each other to permit the lower of the adjacent rollers to advance the muscle down the path and by spraying a flow of fluid on at least some of the muscles on the path to effect their rate of movement down the path.

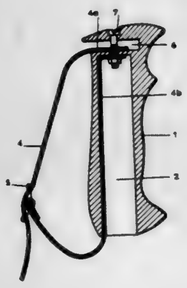
3,662,432
APPARATUS FOR EVISCERATING SCALLOPS
Richard T. Wenstrom, Hampton, Va., and Thomas S. Gorton, Jr., Cambridge, Mass., assignors to Slade Gorton & Co., Inc., Boston, Mass.
Original application July 17, 1967, Ser. No. 659,274, now abandoned. Divided and this application Sept. 14, 1970, Ser. No. 71,730
Int. Cl. A22c *29/00*
U.S. Cl. 17—53 **2 Claims**

A method and apparatus for shucking raw uncooked unfrozen shellfish of the bivalve type which includes the method of opening the shells by shocking the shellfish, clean-

ing the viscera from the edible muscle of the shellfish and the apparatus for opening and cleaning the same.



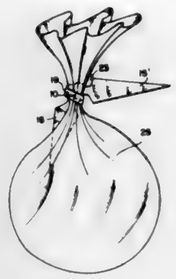
3,662,433
GRIP FOR SKI-STICKS AND THE LIKE
James Couttet, Les Tines Par Chamonix, France, assignor to Societe Anonyme de Recherches de Mechanique, Saint-Vallier sur Rhone (Drome), France
Filed Dec. 22, 1970, Ser. No. 100,726
Claims priority, application France, Jan. 12, 1970, 7000868
Int. Cl. A63c 11/22
U.S. Cl. 24—68 AS 2 Claims



A grip which allows the skier to hold said grip directly so that he may release the latter in the case of an emergency, for instance if he drops off a ski lift and the ski-stick is entangled with the latter. To this end, the grip carries a tassel the outer ends of which are secured respectively to the upper and lower ends of the actual grip. Thus the skier passes four fingers through the gap left between the tassel and the grip so as to grasp the grip with said fingers, his thumb remaining outside said grip.

3,662,434
PLASTIC LOOP TIE CLOSURE FOR BAGS
William J. Clayton, Fairport, N.Y., assignor to Mobil Oil Corporation
Filed May 25, 1970, Ser. No. 40,031
Int. Cl. B65d 77/10
U.S. Cl. 24—30.5 P 2 Claims

A plastic tie device for easily, quickly, and securely loop closing the gathered folds of a flexible bag opening is provided. The tie device comprises a flexible elongated strap having a center portion narrower than the end portions such that an interlacing of the strap around said gathered folds of said flexible bag opening forms a secure knot.



3,662,435
RATCHETING BUCKLE FOR SKI BOOTS AND THE LIKE
Ivor J. Allsop, P.O. Box 23, Bellingham, Wash.
Filed Aug. 6, 1970, Ser. No. 61,733
Int. Cl. A43c 11/00
U.S. Cl. 24—70 SK 11 Claims



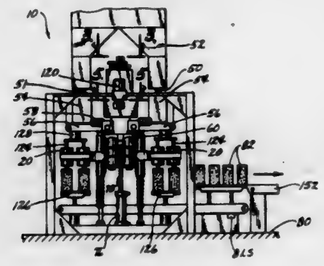
A ratcheting buckle for ski boots that includes a manually operated means or member for adjusting the device, and wherein the ratcheting buckle will remain in its desired adjusted position, and wherein buckling and unbuckling of the ski boot by the skier will be facilitated.

3,662,436
SCREW ANCHOR
Kenneth Ralph Roza, Chicago, Ill., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.
Filed Dec. 28, 1970, Ser. No. 101,624
Int. Cl. E02d 5/74
U.S. Cl. 24—115 B 6 Claims



A screw anchor used in securing a guy wire to the ground includes at least one helical cutting blade attached to a generally square-shaped shaft, one end of which is pointed to facilitate the insertion of the screw anchor into the ground. Located near the other end of the shaft is a generally circular cross-sectional groove which forms an installation hub out of the other end of the shaft, and which is designed so that the torsional ultimate strength of the shaft at the groove is less than the torsional yield strength of the full square-shaped shaft. Extension rods are connectable to the end portion of the shaft forming the installation hub for increasing the length of and securing the guy wire to the screw anchor.

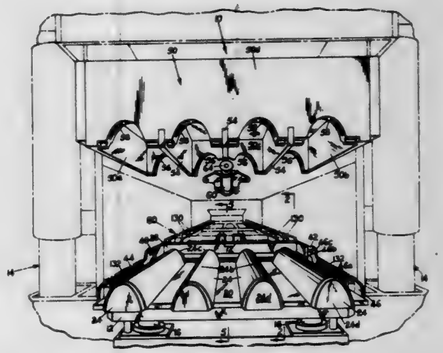
3,662,437
APPARATUS FOR MAKING HOLLOW CONCRETE ARTICLES
Virgil L. Long, Sr, Jefferson, Iowa, assignor to Mid-Iowa Concrete Products Co., Jefferson, Iowa
Filed May 14, 1970, Ser. No. 37,122
Int. Cl. B28b 21/12
U.S. Cl. 425—147 9 Claims



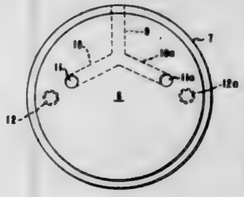
A machine having a rotatable and vertically movable table which includes four tile molds of four tiles each ninety degrees apart around the periphery of the table. A concrete source is provided at molding stations 180° apart while ejecting means are provided at oppositely disposed stations 180° apart. The table is rotated back and forth between the molding and ejecting stations. While two sets of tile, four each, are being formed two sets of tile, four each, are being ejected. The forming of the tile and the ejecting occur simultaneously as the table is raised and lowered relative to vertically stationary packer heads at the molding station and vertically stationary ejecting means at the ejecting station. A moisture sensitive probe automatically controls the concrete supply to provide the desired quantity of concrete at the molding stations.

3,662,438
APPARATUS FOR PRODUCING A MOLDED ARTICLE WITH A RECESS THEREIN
Magame Koyama, Yokohama, Japan, assignor to Columbia Machine, Inc., Vancouver, Wales
Filed Feb. 20, 1970, Ser. No. 12,915
Int. Cl. B28b 7/18, 3/00
U.S. Cl. 425—186 7 Claims

Apparatus for producing a molded article with a recess therein including an elongated tapered core which is mounted for limited axial shifting relative to parts which form sides of a mold. The core is adapted to be shifted between one position which it occupies during molding of an article, and another (partially retracted) position wherein it is free from an article in the mold. Movement of a pallet to a position forming one of the sides of the mold shifts the core toward the first position mentioned. A ram carrying an element which is releasably engageable from the core may be operated to shift the core toward the other position.



3,662,439
STUFFER BOX CRIMPER LUBRICATING SYSTEM
J. A. G. Baken, Lwyndrecht, Netherlands, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.
Filed Aug. 18, 1970, Ser. No. 64,737
Int. Cl. D02g 1/12
U.S. Cl. 28—1.6 1 Claim

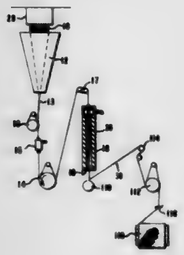


In a stuffer-box crimper for textile fibers having cooperating crimper rolls, a stuffer box associated with said crimper rolls to accommodate the entry of said fibers and an assembly of crimper disc and crimper disc holder positioned on each side of the nip of said crimper rolls in such manner that said crimper discs are maintained in contact with the edges of said crimper rolls, the improvement wherein said crimper disc and said crimper discs holder have conduits therein which are aligned such that lubricant can be passed through said conduits to the areas of said contact.

3,662,440
PROCESS FOR CONTROLLING YARN TENSION AND THREADLINE STABILITY DURING HIGH SPEED HEAT TREATING OF THE YARN
William Green Hill, and Whorley William Maxey, both of Bassett, Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Aug. 17, 1970, Ser. No. 64,219
Int. Cl. D01d 5/22; B29c 25/00
U.S. Cl. 28—72.17 9 Claims

A process for heat treating yarn that includes the steps of feeding the yarn into a stream of heated gas, causing the gas to convey the yarn in a first path while heating it, and subsequently changing the direction of advance of the yarn from said first path to a second path that intersects said first path, is modified to improve threadline stability without increasing

tension in the zone where the yarn path changes direction. The modification includes the steps of: interposing a surface in the first path and withdrawing the yarn from the proximity



of the surface in the direction of said second path at a rate to provide a single sharp change in direction at said surface toward said second path.

3,662,441

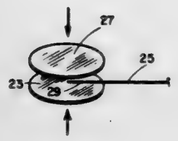
METHOD OF MAKING DRY ELECTRODES

George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Frank B. Ramme, 1403 West Kerrick, Lancaster, Calif.

Original application Aug., 1968, Ser. No. 760,389, now Patent No. 3,547,105, dated Dec., 1970. Divided and this application Oct. 7, 1970, Ser. No. 78,704

Int. Cl. H01j 9/00

U.S. Cl. 29—25.14 5 Claims



Dry electrodes useful for attachment to individuals made by mixing silver powder with a cement, diluting the mixture with a suitable solvent for the cement and applying it in a thin layer to a surface from which it can be removed as a film when dry; cutting or shaping the dried film to form the size electrodes desired; placing a wire lead on the cut film piece; applying a small amount of solvent to the film surface having the wire thereon; and pressing a second piece of the dried film thereto to form the electrode of the invention.

3,662,442

VERTICAL TURRET MACHINE TOOL

Fritz Noa, Rheydt-Odenkirchen, Germany, assignor to Maschinenfabrik Froriep GmbH, Rheydt/Rheinland, Germany

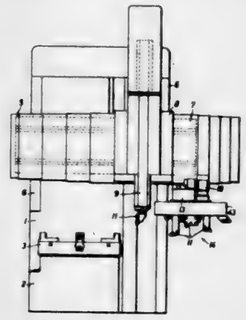
Filed July 1, 1969, Ser. No. 838,236

Claims priority, application Germany, July 2, 1968, P 17 52 681.7

Int. Cl. B23q 3/155

U.S. Cl. 29—26 14 Claims

A vertical turret machine tool having an indexable tool holder store capable of carrying a number of tool holders whereby by suitable indexing of the store, any selected tool



holder can be transferred between the store and a movable tool holder mount.

3,662,443

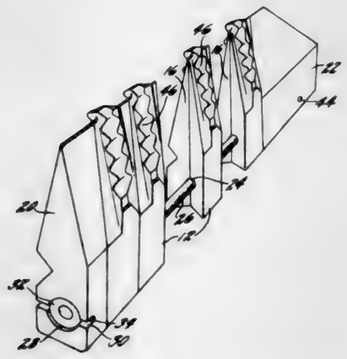
INDIVIDUAL TOOTH ELEMENT FOR BROACH

Frederick W. Schmidt, 19 Windmill Hill Road, Branford, Conn.

Continuation of application Ser. No. 716,919, Mar. 28, 1968. This application Feb. 2, 1970, Ser. No. 7,960

Int. Cl. B26d 1/04

U.S. Cl. 29—95.1 9 Claims



The present invention presents individual interlocking cutting elements which are adapted to be combined in an interdependent relationship to create a form broach. Each individual cutting element is adapted to interlock with a neighboring cutting element by a male and female V-groove interlock structure which forms a part of each tooth.

3,662,444

INDEXABLE CUTTING INSERT AND HOLDER THEREFOR

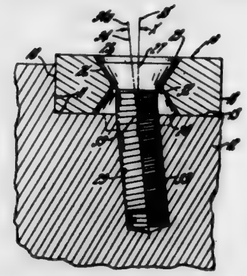
Donald S. Erkfritz, Rockford, Ill., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.

Filed Mar. 9, 1970, Ser. No. 17,605

Int. Cl. B26d 1/00, 1/12

U.S. Cl. 29—96 7 Claims

A flat and centrally apertured wafer-like insert of cutting material provides a plurality of angularly spaced available cutting tips and is located edgewise against angularly related abutments upstanding from the inner edge of a supporting surface or platform against which the insert is clamped in the final seating in a conical end of the insert aperture of the mating conical head of a screw extending through the insert aperture and threading into a hole in the platform. The insert aperture is larger than the screw shank, and the outer end of the screw hole axis is inclined relative to the axis of the insert



cone at a small angle and toward the abutment corner. As a result and in the final tightening of the screw after edgewise camming of the insert against said abutments, the screw shank bends laterally to allow seating of the coned screw head in the insert recess around substantially the full peripheries of the mating cones.

3,662,445

LATHE TOOLS

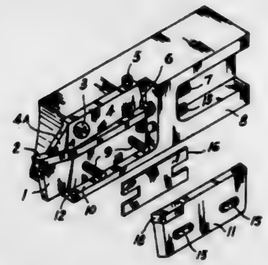
Derek Whitaker, 6/60 George Street, Marrickville, New South Wales, 2204, Australia

Filed Sept. 15, 1970, Ser. No. 72,337

Claims priority, application Australia, Oct. 20, 1969, 62578/69

Int. Cl. B26d 1/00

U.S. Cl. 29—97 3 Claims



A parting off tool has a cutting tip which is clamped between a lower blade member and the front of an upper clamping member. The clamping is effected by rotating the clamping member about a pivot point using a screw adjustment made on the rearward part of the clamping member, the blade member being held stationary. The cutting tip is adjustable using a pusher rod bearing against the rear face of the tip. A chamfer cutting blade can be mounted alongside the blade member so that the same tool can be used both for parting off and also for putting a chamfer on the workpiece left in a lathe. The combined operation can be performed simultaneously in some instances.

3,662,446

LIGHTWEIGHT ROLL CONSTRUCTION

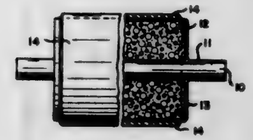
Harold D. Wells, White Twsp. Cty. of Ind., Pa., assignor to McCreary Industrial Products Co., Indiana, Pa.

Filed Feb. 25, 1971, Ser. No. 118,907

Int. Cl. B21b 31/08

U.S. Cl. 29—130 10 Claims

The specification discloses a lightweight construction for rolls of the composite type employed in corrosive environments and other environments in which minimal weight or low inertia is a favorable factor. Various constructions are disclosed comprising a central core or shaft of fiber glass reinforced plastic or of steel having a protective coating or layer of fiber glass reinforced plastic, and a body of syntactic foam molded into a cylindrical form coaxial to the shaft and bonded thereto. A layer of fiber glass reinforced plastic surrounds the outer cylindrical surface of the body of foam and protects the annular ends of the roll. An outer abrasion protecting layer of elastomer material is bonded or otherwise secured to the outer cylindrical surface of the fiber glass



plastic layer. The syntactic foam comprises nodules or spheres of glass, epoxy or phenolic material suspended in a matrix of thermosetting resin, in various degrees of density. One arrangement employs a matrix consisting of thermosetting resin and microspheres of glass, epoxy, phenolic or other material. Another arrangement employs a matrix of thermosetting resin with other reinforcing agents such as fibers of glass, boron, graphite, steel or asbestos. A further variation employs a matrix in which a blowing agent, such as azodicarbonomide is introduced into a thermosetting resin with an activator such as oxalic or acetic acid.

3,662,447

METHOD FOR PRODUCING A NOZZLE-LOAD FOR A WATER COOLED BLOWING LANCE

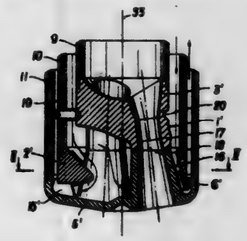
Otto Schweng; Hellmuth Smejkal, Hans Vereb, and Karl Eicher, all of Linz, Austria, assignors to Vereinigte Oesterreichische Eisen- und Stahlwerke Aktiengesellscaft, Linz, Austria

Filed Aug. 5, 1970, Ser. No. 61,090

Claims priority, application Austria, Aug. 14, 1969, A 7830/69

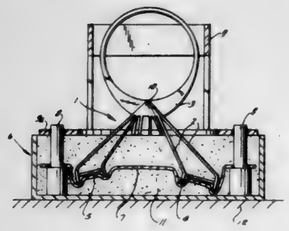
Int. Cl. B21d 53/00; B21k 29/00; B23p 15/26

U.S. Cl. 29—157 C 7 Claims



The disclosure relates to a nozzle-head for a water-cooled blowing lance comprising at least one outlet opening for a gaseous refining agent and, if desired, fine-grained fluxes, an inlet piece, at least one nozzle tube leading through a water-cooled space and a front plate to which the at least one nozzle tube is connected, in which the improvement resides in that both the inlet piece and the front plate are provided with tubular projections which are connected with each other to form said nozzle tubes, the connection plane lying perpendicularly to the nozzle-head axis at a distance from the front plate amounting to about one-fourth to two-thirds of the height of the nozzle-head. The number of connecting seams corresponds to the number of nozzle tubes; the seams are far away from the front plate and thus sheltered from any danger to damage.

3,662,448
PROCESS OF MANUFACTURING ORNAMENTS
Reinhold Heckel, Strietweg 15, Pforzheim, Germany
Filed May 15, 1970, Ser. No. 37,798
Claims priority, application Germany, June 4, 1969, P 19 28 535.9
Int. Cl. B21f *43/00*; B23p *13/00*
U.S. Cl. 29—160.6 8 Claims

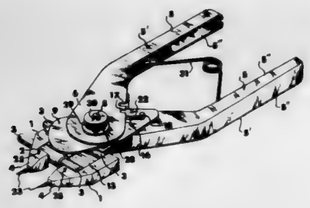


An ornament is manufactured with the aid of an element composed of horizontal wires which form a stone mount, and vertical wires which cross and are joined to the horizontal wires to form upstanding tips and depending legs. The element is placed onto a die with the legs extending upwardly, a base thermally bonded to the legs, and a stone is engaged with and fixed by the tips.

ERRATUM

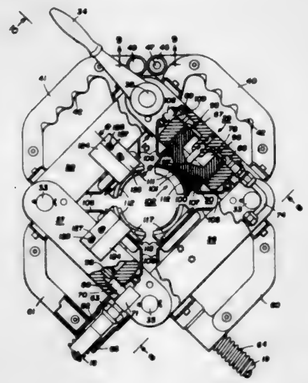
For Class 29—207.5 SL see:
Patent No. 3,663,000

3,662,449
PLIERS
Seiichi Hashimoto, 4-21 Honmachi, Higashiosaka-shi, Osaka, Japan
Filed Mar. 30, 1970, Ser. No. 23,581
Claims priority, application Japan, Dec. 1, 1969, 44/97024
Int. Cl. B25b *27/20*
U.S. Cl. 29—229 3 Claims



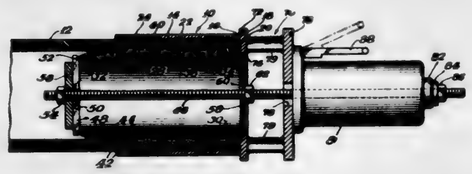
Pliers for contracting or expanding snap rings include pivotally connected handles spring biased apart. The handles are coupled to movable jaws by pivotable cam plates. The jaws are guided to move linearly toward and away from each other by parallel slide members. The cam plates carry slidable pins engaging first notches in the handles for moving the jaws apart when the handles are brought together. The pins can engage second notches in the handles for moving the jaws together when the handles are brought together. Other pins having stepped stem portions for engaging holes in ends of snap rings are carried by the jaws.

3,662,450
HAND-PORTABLE PRESS FOR SWAGABLE PIPE COUPLING
George D. Kish, Derrick City; Robert P. Montesi, and Gerald B. Smith, both of Bradford, all of Pa., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed Apr. 24, 1970, Ser. No. 31,711
Int. Cl. B23p *19/04*
U.S. Cl. 29—237 11 Claims



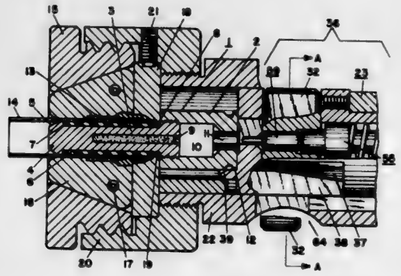
A hand-portable press having hydraulically extendable shoe forming dies for swaging a pipe coupling into pipe joint formation with a contained pipe section. Each die is separately mounted for articulated movement on the inward end of a hydraulically moveable piston and is arcuate on its innermost face with which swaging is effected. Application of hydraulic pressure, by means of a portable hand pump, forces each piston and shoe die thereon inwardly until concentrically uniform swaging of a coupling into a pressure tight pipe joint with contained pipe is effected.

3,662,451
HYDRAULIC PULLER APPARATUS FOR ATTACHING A COUPLING TO A HOSE
John B. Wagner, Racine, Wis., assignor to Webster Electric Company, Inc., Racine, Wis.
Filed July 30, 1970, Ser. No. 59,461
Int. Cl. B23p *19/04*
U.S. Cl. 29—237 9 Claims



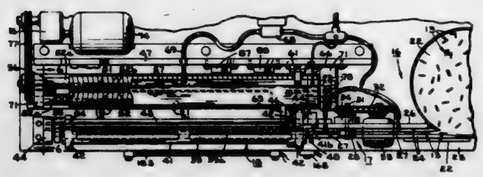
A coupling or fitting is attached to one end of a hose by means of a novel attachment mechanism. Attachment is accomplished by placing a fitting over the end of the hose and by pulling on an internal portion of the fitting. The novel attachment mechanism uses a hydraulic puller to pull on the internal portion of the fitting. A pull cap and a pull shaft are used to connect the internal portion of the fitting to the hydraulic puller and the pulling is quickly carried out hydraulically. When the pull shaft is then pushed back into the hose, the pull cap automatically disengages and the entire attachment mechanism is removed through the fitting.

3,662,452
PORTABLE SWAGING GUN
Donald M. Stonestrom, West Chester, Pa., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.
Filed Mar. 20, 1970, Ser. No. 21,296
Int. Cl. B21d *26/08*
U.S. Cl. 29—282 8 Claims



A gun for holding a sleeve on a tube and for firing an explosive cartridge placed within the tube. The gun has a collet for gripping the sleeve, a firing pin positioned to fire the cartridge, and a sudden-release cam which cocks and releases the firing pin. A safety device is also provided to prevent accidental firings.

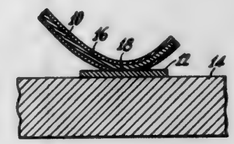
3,662,453
METHOD OF AND APPARATUS FOR STRIPPING HEAT SHRINKABLE MATERIAL FROM A RELATIVELY RIGID ARTICLE
John R. Meal, Naperville, and Gregory H. Smith, Wheaton, both of Ill., assignors to Western Electric Company Incorporated, New York, N.Y.
Filed Apr. 21, 1970, Ser. No. 30,474
Int. Cl. B23p *19/02*
U.S. Cl. 29—427 6 Claims



In stripping heat shrinkable sheathing material from an elongated metallic article, the material is scored along the length of the article. The article next is positioned in a nest defined by a pair of juxtaposed rollers and the material is heated so that it shrinks and separates along its scored portion. The rollers then are rotated to strip the material from the article and to discharge the material from the nest through the rollers, after which the stripped article is removed from the nest.

3,662,454
METHOD OF BONDING METALS TOGETHER
Anthony Zbigniew Miller, Flemington, N.J., assignor to RCA Corporation
Filed Mar. 18, 1970, Ser. No. 20,538
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 3 Claims

A body of a soft metal, such as gold, silver, or copper, is ultrasonically bonded to another metal body by providing a thin layer of a harder material, such as nickel, iron, cobalt, magnesium, aluminum, palladium, germanium, or silicon, between the surface of the soft metal body and the other metal body. The layer of the harder material is thin enough

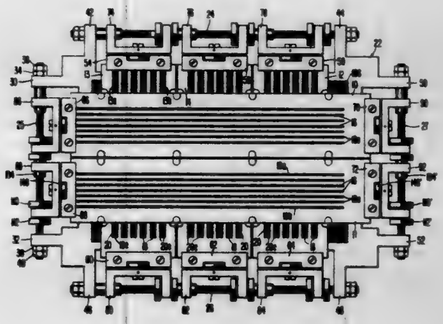


that it is worn away during the application of the ultrasonic energy so as to provide the bond directly between the soft metal body and the other body.

3,662,455
METHOD FOR PREPARING AN ANTI-OXIDIZING, ACTIVE ALLOY BRAZING COMPOSITION
Glenn A. Anderson, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.
No Drawing. Filed Dec. 10, 1970, Ser. No. 97,019
Int. Cl. B23k *31/02*
U.S. Cl. 29—473.1 16 Claims

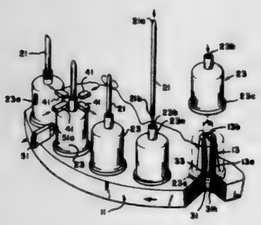
There is herein disclosed a nickel-titanium-niobium alloy for effecting improved high temperature metal-to-ceramic and ceramicgto-ceramic braze bonds which are resistant to hot alkali metal vapor and which also provide an oxidation resistant coating.

3,662,456
FLEXIBLE CIRCUIT ALIGNING FIXTURE
Allan F. Walter, Exton, Pa., assignor to Burroughs Corporation, Detroit, Mich.
Filed May 27, 1970, Ser. No. 40,821
Int. Cl. H05k *13/04*, *3/32*
U.S. Cl. 29—203 J 10 Claims



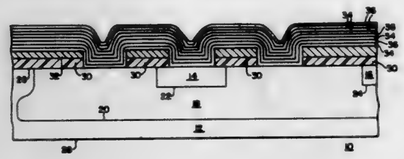
A fixture for aligning elongate flexible tapes containing electrical conductors. The tapes are accurately adjusted longitudinally and transversely, and are arranged in a lattice which later is to become part of a thin film magnetic memory apparatus. The tapes are held securely in the lattice so that undesirable shifting of the tapes is eliminated or substantially reduced.

3,662,457
METHOD OF FORMING BEVEL ORIENTED NEEDLE ARRANGEMENT
Kenneth W. Gores, Bellevue, Wash., assignor to MPL, Inc., Chicago, Ill.
Filed Oct. 10, 1969, Ser. No. 865,237
Int. Cl. B21d 39/00; B23p 11/02
U.S. Cl. 29—508 8 Claims



A needle and hub unit having a beveled needle or canula point for insertion into a patient, the unit having indicia thereon indicating the orientation of the beveled insertion point; and a method and apparatus of orienting the marketing such beveled needle units by combined vibrational and camming of the canula and thereupon marking the assembled unit.

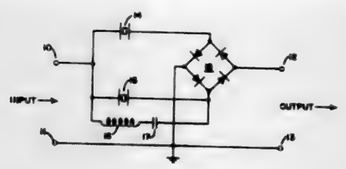
3,662,458
ELECTRICAL CONTACT FOR SILICON CARBIDE MEMBERS
Napolean P. Formigoni, Pittsburgh, and John S. Roberts, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 20, 1969, Ser. No. 835,017
Int. Cl. B01j 17/00; H01j 1/14, 5/02
U.S. Cl. 29—591 7 Claims



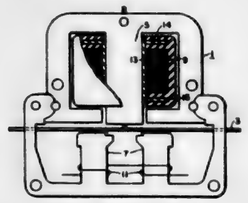
Tantalum and gold alloy electrical contacts are applied to selected areas of a body of silicon carbide. An oxidized surface is first produced on the silicon carbide body and removed from those portions of the surface to which the alloy contact of the body is to be applied. A thin layer of aluminum is deposited on only the oxidized surface. Thin films of tantalum and gold are alternately deposited on the exposed surface of the silicon carbide. Any tantalum and gold deposited on the aluminum forms an alloy which is readily removed by an etchant which attacks tantalum-gold-aluminum intermetallics but will not attack the tantalum-gold alloy electrical contact of the body.

3,662,459
METHOD FOR TUNING DISCRIMINATORS
Frederick E. Spangler, and Daniel L. Wetherell, both of Lynchburg, Va., assignors to General Electric Company
Filed Apr. 1, 1970, Ser. No. 24,723
Int. Cl. H03j 3/12
U.S. Cl. 29—593 5 Claims

In a discriminator that utilizes one or more piezoelectric crystals, the crystals are tuned to resonate at a desired frequency after being connected in the discriminator, since the capacity of the discriminator components is not determinable prior to being used. The tuning includes frequency modulating a carrier signal of the desired frequency with a selected sinusoidal signal, and applying this frequency-modulated signal to the discriminator. Each crystal is then respectively tuned (such as by plating) to resonate at the desired frequency. Resonance is indicated when the discriminator output signal is approximately twice the sinusoidal modulating frequency.



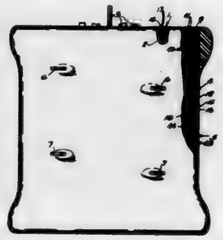
3,662,460
METHOD OF MAKING A RANDOM WOUND ENCAPSULATED COIL
Thomas J. Daley, Raleigh, N.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Original application Aug. 8, 1967, Ser. No. 659,216, now Patent No. 3,559,134. Divided and this application Oct. 20, 1970, Ser. No. 82,444
Int. Cl. H01f 7/06
U.S. Cl. 29—605 8 Claims



A random winding is located on a spool having a central support and having end flanges provided with ribs or perforations. An insulating material in fluid form such as an epoxy resin is applied under pressure to the winding and spool to flow between the ribs or through the perforations to compact the winding. This provides a continuous layer of the insulant in contact with end windings and assures good resistance to electric breakdown. Insulant may be introduced in a similar way between the central spool support and the winding.

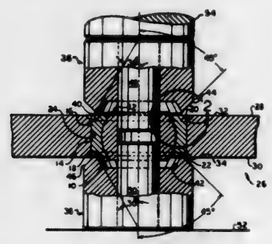
3,662,461
METHOD OF MAKING DRY INSULATED INDUCTIVE COIL
Glen W. Lake, Greensboro, N.C., and Myron D. Coerper, Charlottesville, Va., assignors to Chemetron Corporation, Chicago, Ill.
Original application Dec. 2, 1968, Ser. No. 780,355. Divided and this application May 4, 1970, Ser. No. 34,110
Int. Cl. H01f 7/06
U.S. Cl. 29—605 10 Claims

A high voltage dry-insulated transformer includes a primary coil having a multiple turn, multiple layer winding constructed by alternately winding a coil layer and then insulation sheets or tape on a winding form. The insulation sheet is a non-woven glass filament cloth which is impregnated with a semi-cured epoxy resin. A plurality of insulating cloth layers are wrapped about the primary coil to define the necessary intercoil insulation. The secondary coil is then similarly formed. The interlayer and intercoil insulating cloth extends beyond the axial end faces of the coils and the space is filled by wrapping of a corresponding tape between the two extended layers. The cloth is applied under tension and heat



and the exterior of each layer is rolled to exclude air and cause the resin to flow into the voids and crevices. After the formation of each coil or coils, the assembly is cured by heating under pressure and vacuum. The exterior is wrapped with a shrink type Mylar and the ends of the assembly are capped to confine the insulating resin during the curing and processing cycle.

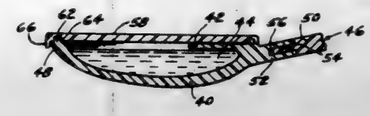
3,662,462
METHOD OF SECURING A BEARING RACE WITHIN A BORE IN A HOUSING
Robert H. Shiflet, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.
Filed Feb. 9, 1970, Ser. No. 9,689
Int. Cl. B21d 53/10; B23p 11/00
U.S. Cl. 29—149.5 B 6 Claims



An annular shoulder which retains a bearing race in a bore is deformed in two steps in each of which the annular, beveled edge of a staking anvil is pressed into a groove which defines one side of said shoulder. In the first deforming step the staking side of the beveled edge of the staking anvil is disposed at an angle of 45° relative to the axis of the aforesaid bore. In the second deforming step the staking side of the beveled edge of the staking anvil is disposed at an angle of 60° relative to said bore axis, and greater pressure is exerted against the shoulder.

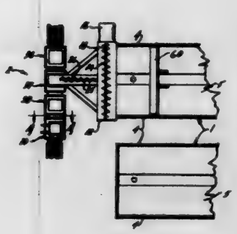
3,662,463
SPOON
Meyer Ushkow, and David Elliot Ushkow, both of 75-04 196th Place, Flushing, N.Y.
Continuation-in-part of application Ser. No. 793,522, Jan. 23, 1969, now abandoned. This application Aug. 22, 1969, Ser. No. 852,287
Int. Cl. A47j 43/28
U.S. Cl. 30—326 8 Claims

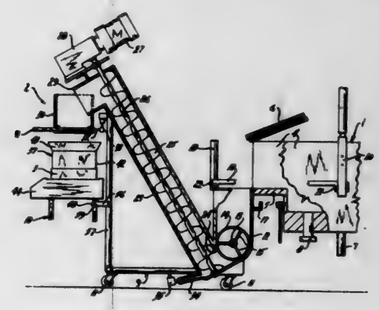
This invention provides a spoon for the marketing of material contained therein, the bowl thereof being incompletely enclosed by a partial wall member, said bowl



being fully closed by a detachable cover-piece removably affixed to the bowl.

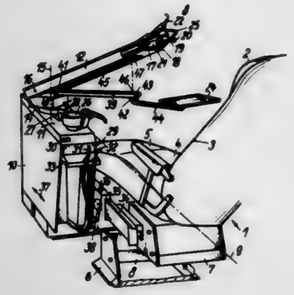
3,662,464
VAT UNLOADING AND HOOP FILLING APPARATUS FOR CHEESE CURD
Norman J. Peters, Fond du Lac, Wis., assignor to DEC International, Inc., Madison, Wis.
Filed Oct. 13, 1970, Ser. No. 80,291
Int. Cl. A01j 25/13
U.S. Cl. 31—46 9 Claims





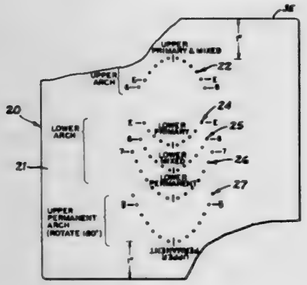
A device for unloading cheese curd from a vat, weighing out a predetermined quantity of the curd and pre-pressing the curd within a hoop. The device includes a movable frame having a hopper adapted to be positioned adjacent the open end of the vat, and the curd is pushed out of the open end of the vat by a blade mechanism into the hopper. An upwardly inclined auger conveys the curd from the hopper and discharges the curd into a hoop located at a weighing station on the frame. After the desired weight of curd has been discharged into the hoop at the weighing station, the hoop is moved across a conveyor on the frame to a pre-pressing station where a platen acts to compress the curd within the hoop.

3,662,465
DENTAL TREATMENT ASSEMBLIES
Erich Heubeck, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany
Filed Oct. 20, 1969, Ser. No. 867,512
Claims priority, application Germany, Oct. 26, 1968, P 18 05 515.7
Int. Cl. A61c 19/02
U.S. Cl. 32—22 7 Claims



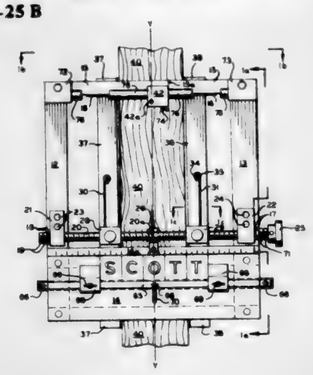
A dental treatment assembly comprises a patient's chair and a dental treatment unit supported by the chair which is mounted on a base for adjustment in a generally vertical direction relatively to the base. The dental treatment unit includes a housing, a dental hand appliance support arm pivotally connected to the upper surface of the housing and a dental spittoon unit mounted on the upper surface of the housing.

3,662,466
DENTAL DAM
Richard S. McConville, 2525 Bailey Avenue, San Jose, Calif.
Filed Apr. 5, 1971, Ser. No. 131,251
Int. Cl. A61c 5/12
U.S. Cl. 32—34 18 Claims



Premarked dental dams and devices for marking dental dams, are mechanisms that are employed for locating holes to be selectively pierced by the dentist in the dental dam through which teeth protrude. The markings follow the average alignment of teeth as they appear in the dental arch. The patterns of the markings of the teeth of the lower arch are located on the dental dam with respect to the superior edge of the dental dam. One group of patterns represents the primary, mixed and permanent dentition for a 5-inch × 5-inch dental dam. Another group of patterns represents the primary, mixed and permanent dentition for a 6-inch × 6-inch dental dam. The pattern of the group selected for a particular arch is dependent on the tooth of that particular arch to be clamped.

3,662,467
ENGRAVING APPARATUS
Richard W. Schmutzler; Merton E. Scott; Kenneth J. Page, and Edgar S. Van Buren, all of Walton, N.Y., assignors to Scott Machine Development Corporation, Walton, N.Y.
Filed Oct. 30, 1970, Ser. No. 85,666
Int. Cl. B43l 13/10
U.S. Cl. 33—25 B 8 Claims



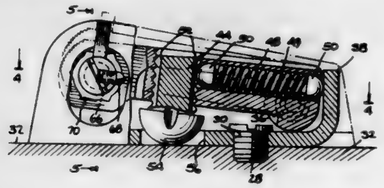
A pantograph engraver workpiece clamp having a pair of clamping arms each pivotally mounted on respective traveling nuts carried on oppositely threaded portions of a clamping screw, with springs biasing the clamp arms toward a reference direction and the arms extending past scale markings, so that a tapered workpiece may be easily clamped with its centerline aligned relative to an engraving tool reference position and relative to a line of engraving type.

3,662,468
PRECISION COMPASSES OR DIVIDERS
Karl Kolb, and Klaus Glombitza, both of Nurnberg, Germany, assignors to J. S. Staedtler, Nurnberg, Germany
Filed Mar. 31, 1970, Ser. No. 24,286
Int. Cl. B43l 9/00
U.S. Cl. 33—27 B 18 Claims



Compasses or dividers having legs connected by a rod which engages the legs with right-handed and left-handed threads respectively and carries a knurled, central adjusting wheel are equipped with a brake for impeding rotation of the rod. The threads on the latter have a pitch sufficient to permit the legs to be moved freely toward and away from each other for coarse adjustment and thereby to rotate the rod when released by the brake. When the latter is applied, the rod can be turned only by means of the adjusting wheel for a fine adjustment which cannot be disturbed by forces acting on the legs. Numerous brake mechanisms are disclosed.

3,662,469
GUN SIGHT
Dwayne W. Charron, Chicopee, Mass., assignor to Bangor Punta Operations, Inc., Greenville, Conn.
Filed Apr. 9, 1970, Ser. No. 26,871
Int. Cl. F41g 1/16, 1/44
U.S. Cl. 33—47 10 Claims



A gun sight is disclosed having means for vertical and horizontal adjustment of a sighting notch mounted on the gun sight.

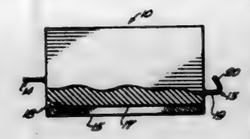
3,662,470
DIPSTICK ASSEMBLY
Peter J. Saagen, Forest Park, Ill., assignor to Power Parts Company
Filed Sept. 2, 1970, Ser. No. 68,880
Int. Cl. G01f 23/04
U.S. Cl. 33—126.7 4 Claims



An oil level dipstick assembly provides a check valve that effects an air seal when the dipstick is removed, but which valve is open when the dipstick is in place to permit the stick to reliably measure the oil level in an oil reservoir for an apparatus having moving parts therein, even when the apparatus is in operation.

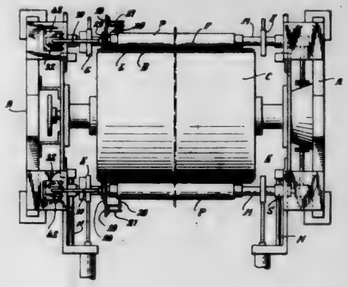
3,662,471
MEASURING TAPE AND CHALK LINE HOLDING TOOL
Michael W. Lynde, 13830 N.W. 5th Avenue, North Miami, Fla.
Filed Mar. 17, 1970, Ser. No. 20,344
Int. Cl. G01b 3/10
U.S. Cl. 33—137 3 Claims

A rectangular block weight such as a heavy metal is provided with hooks at each end for selectively attaching one end of a measuring tape or chalk line. The underside of the block weight has a friction-grip surface to minimize slippage. The over all length of the block weight tool is such that accurate measurement can be made from a vertical surface and along a horizontal surface by abutting one end of the tool against the vertical surface and adding a whole number of



inches to the measurement taken, said whole number being representative of the measured distance occupied by the device.

3,662,472
TEMPLET FOR USE IN PLACING A SET OF PRINT ROLLS IN FIT
James Reid Johnson, Stonington, Conn., assignor to The Johnson Fast Print Corporation, Brooklandville, Md.
Filed Feb. 3, 1969, Ser. No. 795,941
Int. Cl. B41b 1/00
U.S. Cl. 33—184.5 10 Claims

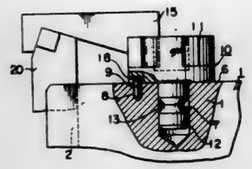


For successively placing the print rolls of a set in a cloth printing machine comprising a number of print rolls spaced at even distances around a backing cylinder a templet is provided which has means at one end for attachment to the machine frame at positions spaced apart similarly to the spacing of the print rolls. At its other end the templet has an offset arm carrying a pointer with which to align a pitch mark on a roll being set in a fit. The pointer is mounted on a ring segment coaxially disposed with two coactive calibrated ring segments by the manipulation of which the correct rotary angle of the pointer for setting the print rolls successively at the correct rotary angles is indicated.

3,662,473
METHOD OF AND A DEVICE FOR POSITIONING A CUTTING TOOL ON A TOOL REST OF A MACHINE TOOL
Kazuo Ito, and Hiroyuki Yotsubayashi, both of Kawasaki, Japan, assignors to Ikegai Tekko Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 4, 1969, Ser. No. 882,193
Int. Cl. B27g 23/00; G01b 5/20
U.S. Cl. 33—185 2 Claims

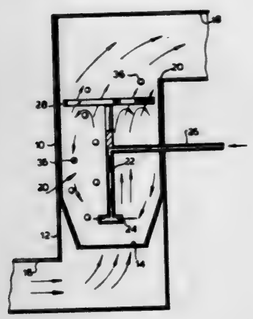
A gauge plate carrier having a number of slots on one of its end surfaces is detachably secured to a tool holder at a predetermined position. A gauge plate having a gauge surface suitably shaped so as to conform to the tip of a cutting tool to be set is put on the tip of the cutting tool previously and precisely set on the tool holder so that a portion thereof

lies in the slot of the gauge plate carrier and is rigidly secured to the carrier. When the setting of a cutting tool on the tool



holder is required, it is carried out on the basis of the gauge plate which is firmly held on the tool holder by securing the gauge plate carrier to it.

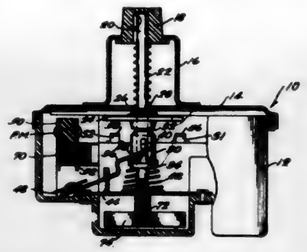
3,662,474
DRYERS AND METHOD OF OPERATION
John Alan Huthwaite, Stoke-On-Trent, England, assignor to Calsaic Engineering Company Limited, Crewe, Cheshire, England
Filed Aug. 24, 1970, Ser. No. 66,339
Claims priority, application Great Britain, Aug. 27, 1969, 42,662/69
Int. Cl. F26b *3/00*
U.S. Cl. 34—9 16 Claims



There is disclosed a method and apparatus for drying materials such as pastes and slurries in which the material is coated onto discrete bodies which are fluidized by an upward stream of gaseous drying agent, the dried material being continuously removed from the fluidized bodies by impacts arising from the motion of the fluidized bodies.

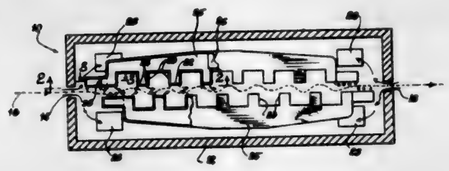
3,662,475
MAGNETICALLY LATCHED SWITCH AND CIRCUIT THEREFOR
Wilbert E. Beller, Park Ridge, and Abed G. Kahale, Roselle, both of Ill., assignors to Controls Company of America, Melrose Park, Ill.
Filed Feb. 21, 1967, Ser. No. 617,630
Int. Cl. F26b *19/00*; H01h *9/20*
U.S. Cl. 34—45 1 Claim

The switch-selector shaft is depressed to move latch plate against core magnetized by permanent magnet. This actuates various switches depending upon rotary position of the shaft. The termination pulse from the moisture sensing control passes through a coil to set up a counter magnetic field to



allow a spring to move the latch and shaft to inactive position restoring switches to their normal positions.

3,662,476
AIR FLOW CONTROL STRUCTURE FOR WEB DRIERS
Victor T. Capizzi, Chicago, Ill., assignor to B. Offen & Co., Inc., Chicago, Ill.
Filed Dec. 30, 1970, Ser. No. 102,760
Int. Cl. F26b *13/00*
U.S. Cl. 34—156 7 Claims

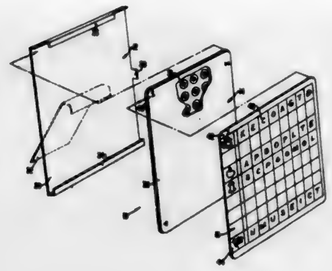


A web drier construction comprising a housing having inlet and outlet openings and means for teansporting a web through the housing between said openings. Air nozzles are positioned for applying air to the web so that ink or other material on the web will be dried during movement of the web through the housing. A conduit structure feeds air to the nozzles, and an exhaust means is connected to the housing for withdrawing air from within the housing. The nozzles which are positioned adjacent the inlet and outlet openings carry extensions having air discharge openings which operate to produce air flow transversely relative to the web movement. This air flow operates to disrupt the longitudinal air streams which flow from the nozzles toward the inlet and outlet openings. The extensions, therefore, assist in eliminating the discharge of air from the housing into the atmosphere surrounding the housing.

3,662,477
EDUCATIONAL AID
Harold Weinstein, 1820 Avenue V, Brooklyn, N.Y.
Filed Jan. 4, 1971, Ser. No. 103,594
Int. Cl. G09b *1/08*
U.S. Cl. 35—9 R 12 Claims

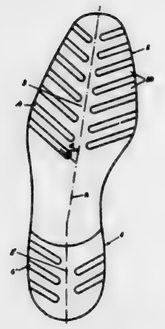
An educational aid including a coded card and a problem card containing a plurality of educational problems and the answers thereto superimposed and aligned on an easel. The coded card includes a plurality of magnetic and non-magnetic portions. The magnetic portions are arranged so as to lie in back of individual indicum on the problem card which if selected by a student as an answer to an educational problem will provide a composite answer. The student selects the individual indicum by placing a magnet on the problem card covering the selected indicum. Should the indicum

selected be correct, the magnet will adhere to the problem card. Otherwise, it will slide from the card indicating immediately to the student that the particular indicum selected



is incorrect. The coded card is rectangular in shape and therefore can be rotated through 90° intervals to present a different relative orientation of the magnetic and non-magnetic portions for use with a plurality of problem cards.

3,662,478
SOLE AND HEEL OF RUBBER OR PLASTIC
Johann Schwab, Vienna, Austria, assignor to Semperit Oesterreichisch-Amerikanische Gummiwerke Aktiengesellschaft, Vienna, Austria
Filed Jan. 28, 1970, Ser. No. 6,348
Claims priority, application Austria, Jan. 28, 1969, A 863/69
Int. Cl. A43b *13/18*
U.S. Cl. 36—59 C 8 Claims



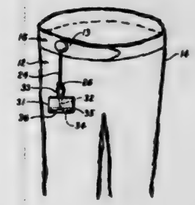
The invention concerns a rubbery or plastic sole having a tread profile with at least one essentially longitudinal rib at a distance from the sole edge, and is characterized by transverse and/or inclined ribs that branch off said longitudinal rib and/or the central line of the sole, towards the tip of the shoe or form an angle α of not more than 90° wherein said transverse and/or inclined ribs embrace grooves not communicating with each other. These grooves may be bent, have varying depth and/or width over their length, and have arcuate or semicircular cross section; transverse and/or inclined ribs may ramify; longitudinal ribs may be provided at the edge of the sole.

3,662,479
FIBER SURFACED GARMENT AND FABRIC PRESSING DEVICE
Joseph Airdo, Skokie, Ill., assignor to Bishop Freeman Company, Evanston, Ill.
Filed Apr. 15, 1970, Ser. No. 28,586
Int. Cl. D06f *71/36*
U.S. Cl. 38—66 7 Claims



A pressing member for pressing machines and the like having an expansive pressing surface. The member presents to a garment to be pressed a fiber pressing surface constituted by a large number of short individual fibers per square inch bonded to the member by an intermediate layer of heat and moisture resistant adhesive. The pressing member may be a press plate, and may be perforated to pass steam.

3,662,480
SKI TICKET HOLDER
Ronald J. Gibson, Jr., and Goldie M. Gibson, both of 7017 Raintree Drive, Citrus Heights, Calif.
Filed July 22, 1970, Ser. No. 57,236
Int. Cl. G09f *3/08*
U.S. Cl. 40—20 R 1 Claim

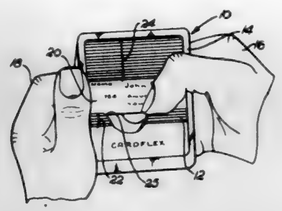


Depending from a pad permanently secured to the waistband of a pair of ski pants is a pig tail having a loop on the bottom end to receive the bail of a typical wire wicket to which a ski ticket is affixed. The pig tail is long enough so that the ski ticket hangs below the bottom of a ski jacket far enough to be readily seen by the ski lift attendant without the skier's having to lift up the bottom of the jacket to show the ticket.

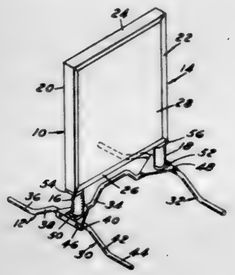
3,662,481
CARD FILE
Robert B. Lewis, Jr., 3222 Military Avenue, West Los Angeles, Calif.
Filed July 10, 1970, Ser. No. 53,757
Int. Cl. G09f *11/30*
U.S. Cl. 40—65 2 Claims

A compact, personal size file in which a plurality of miniature file cards are aligned in almost total overlap in an open frame. The frame includes a pair of channeled members

receiving the ends of the file cards on opposite sides of a generally rectangular opening. The cards can be inserted, manipulated and withdrawn through either side of the file.



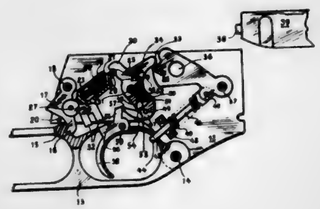
3,662,482
POSTER DISPLAY DEVICE
Robert Sarkisian, 8644 Woodside Park Drive, Oak Park, Mich.
Continuation-in-part of application Ser. No. 670,511, Sept. 11, 1967. This application July 30, 1970, Ser. No. 19,213
Int. Cl. G09f 7/22
U.S. Cl. 40—125 H **3 Claims**



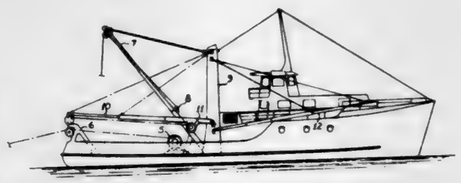
The poster display device includes a base upon which is mounted a poster frame for receiving posters and like advertising media. The means for mounting the poster frame onto the base comprise a spring structure interconnecting the lower portion of the poster frame to the base at at least two points. The poster frame normally extends vertically upwardly from the base. The surface area of the frame is relatively large. The spring structure upon which the frame is mounted permits the frame to deflect downwardly upon the application of a force thereto, as for example, the wind when the structure is located out-of-doors. The frame may deflect in either direction without danger of tipping the base. The stronger the applied force, the more the frame will deflect downwardly thus reducing the component of any force tending to topple the display device. Further, the frame size, center of gravity and base size are so dimensioned as to prevent tipping as a result of gravity leverage after the frame has been deflected by the wind.

3,662,483
FIREARM FIRING MECHANISM WITH A DISCONNECTOR PIVOTABLY MOUNTED ON THE GEAR
Louis W. Seecamp, 561 Whitney Avenue, New Haven, Conn.
Filed Oct. 29, 1970, Ser. No. 84,956
Int. Cl. F41c 19/00
U.S. Cl. 42—69 B **7 Claims**

A firing mechanism for firearms in which the sear spring is mounted so that its point of engagement with the sear can be switched farther from, or nearer to, the pivotal axis of the sear in order to increase or decrease the trigger pull. The sear spring is also mounted so that when the firing mechanism is used in a lever action, the sear spring also urges the latch for the finger lever into latching position. A disconnector is pivoted on the sear for rotation in one direction only with respect thereto, so that when the trigger engages the engagement surface on the disconnector, the firing mechanism is operable. After the gun is fired and while the trigger is pulled, the actuating lug on the trigger engages a convex surface on the underside of the disconnector pivoting it on the sear out of its operative position with respect thereto.



3,662,484
METHOD AND APPARATUS FOR FISHING
Johannes Karel Dres, Beaconsfield, Quebec, Canada, assignor to Canadian Vickers Limited, Montreal, Quebec, Canada
Filed May 18, 1970, Ser. No. 38,399
Claims priority, application Canada, Mar. 10, 1970, 077,020
Int. Cl. A01k 73/02
U.S. Cl. 43—4.5 **12 Claims**

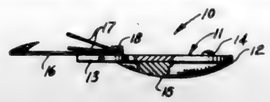


A method of fishing from boats and apparatus therefor in which one or more nets are trawled astern of the boat and trawl booms are maneuvered in a horizontal arc to bring the nets close along side the boat to enable the cod ends of the nets to be lifted inboard for unloading on the deck.

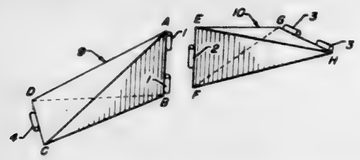
3,662,485
FISH LURE
Philip J. Klemkowski, Jr., 1146 Hull Street, Baltimore, Md.
Filed Nov. 12, 1969, Ser. No. 875,979
Int. Cl. A01k 85/04
U.S. Cl. 43—42.34 **1 Claim**

A lure device for the various thermal layers of water to the moderate layers of water. The device is of such construction so as to wobble and lurch over the uneven bottom and is colored to resemble the normal food of the species being sought.

The device consists of a flat body having a rounded sinker portion attached thereto and is equipped with a double weed guard and a single fish hook.

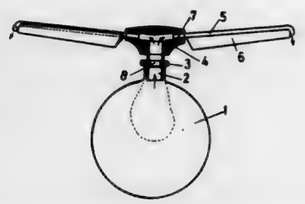


3,662,486
POLYHEDRAL AMUSEMENT AND EDUCATIONAL DEVICE
Edward J. Freedman, 532 Madison Avenue, Glencoe, Ill.
Filed Feb. 4, 1970, Ser. No. 8,510
Int. Cl. A63h 33/00
U.S. Cl. 46—1 R **6 Claims**



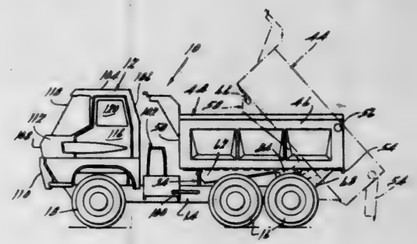
A series of polyhedrons are removably and rotatably connected to each other to form a series. Each polyhedron has an edge which lies in a plane perpendicular to a plane containing either an opposite edge, as in the case of a tetrahedron, of a point, as in the case of a trihedron. The opposite edges, or edge and opposite point are adapted to contain hinge elements which may be removably and rotatably connected. When in the form of a closed loop, containing at least four connected polyhedrons, the device is capable of being continuously turned up to 360° inside itself to form a multitude of geometrical shapes and configurations. For any given closed loop, the geometric form of the configurations is dependent upon the number and type of polyhedrons employed.

3,662,487
BALLOON-TYPE AIRCRAFT TOY
Uwe C. Seefluth, Selstrasse, 2409 Klingberg, Germany
Filed Oct. 9, 1969, Ser. No. 865,144
Claims priority, application Germany, Oct. 12, 1968, P 18 02 813.2
Int. Cl. A63h 29/16
U.S. Cl. 46—44 **13 Claims**



The balloon-type aircraft toy according to the invention includes an inflatable balloon adapted to be filled with compressed gas having its interior communicating via ducts with the outer ends of rotor blades releasably secured to a rotor hub in such a manner that the pitch angle of the blades may be adjusted. At the ends of the blades the compressed gas is deflected and discharged out of nozzles thereby forming a reaction-type drive for rotating the blades. The rotor blades are made of a plurality of self-supporting interconnected light weight bodies, such as molded bodies of foamed synthetic resin or hollow bodies made of bent foils of plastic material.

3,662,488
TOY VEHICLE
Robert Stanley Linstead, Rockford, Ill., assignor to King-Seeley Thermos Co., Ann Arbor, Mich.
Continuation-in-part of application Ser. No. 782,113, Dec. 9, 1968, now Patent No. 3,605,331. This application May 19, 1970, Ser. No. 38,758
Int. Cl. A63h 17/05
U.S. Cl. 46—201 **32 Claims**

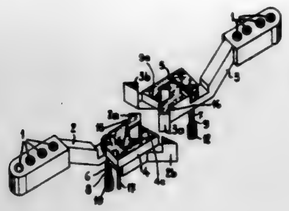


A toy vehicle comprising a chassis portion, a body portion and at least two steerable wheels; the chassis portion being provided with a steering mechanism including a tie rod extending generally laterally thereof, means supporting the tie rod for lateral sliding movement, a pair of kingpins disposed adjacent the opposite ends of the tie rod, means supporting the kingpins for pivotal movements about generally vertical axes, means rotatably supporting the steerable wheels on the kingpins, and pivot arm means pivotably connecting the laterally outer ends of the tie rod with the kingpins; the body portion being supported on the chassis portion for relative tilting movement about an axis extending generally longitudinally of the chassis portion, whereupon tilting of the body portion relative to the chassis portion effects lateral sliding movement of the tie rod, with the further result that the kingpins will be pivoted in a manner so as to effect steering movement of the vehicle wheels; the vehicle having the chassis and body portions initially, substantially preassembled and adapted to be operatively connected by merely snappingly engaging a pair of resilient bearing members provided on the body portion into engagement with a longitudinally extending pivot member or shaft provided on the chassis portion.

3,662,489
AUTOMATIC COUPLING FOR ROLLING STOCK OF MINIATURE RAILWAYS
Pierre Terrier, 6 rue Thiers, 38 Grenoble, France
Filed Feb. 23, 1971, Ser. No. 118,113
Int. Cl. A63h 19/00
U.S. Cl. 46—216 **4 Claims**

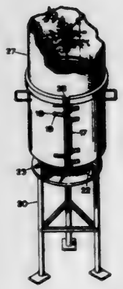
In a coupling of the so-called "jaw" type for miniature railway rolling-stock the two shafts to be mutually coupled are pivoted to the ends of cars or trucks, and each is provided with a male portion and a substantially V-shaped female portion, and with a hook adapted to pivot in a horizontal plane and urged towards the relevant shaft for engagement behind a lateral projection carried by the companion shaft; said hook further being mounted for axial sliding movement in relation to its shaft on a rod carrying a coil spring having the dual function of urging said hook towards its shaft and

downwards, to ensure the automatic coupling, so that when said rod is pushed upwards by suitable uncoupling means



provided on the track the two cars involved are uncoupled in the traction direction but still capable of being pushed on the track.

3,662,490
METHOD AND APPARATUS FOR PACKAGING TREES FOR TRANSPLANTING
Robert S. Childs, 1818 Star Dunston Drive, Madison, Wis.
Filed Sept. 25, 1970, Ser. No. 75,367
Int. Cl. A01g *9/08*
U.S. Cl. 47—1 4 Claims



A pair of semi-cylindrical shells hingedly secured at one edge and releasably secured at the other edge to form a digging cylinder about the trunk of a tree. The cylinder is driven into the ground and removed with the soil and roots of the tree therein. A bottom packaging disc is placed on a packing stand and the loaded digging cylinder is placed on radially protruding retractable support pins on the stand. A tubular packaging sleeve is attached to the top flange of the digging cylinder. When the support pins are retracted and the digging cylinder is pushed downward about the legs of the packing stand the packaging sleeve is drawn downwardly about the soil and roots of the tree and onto the bottom disc. The bottom disc is wired to the packaging sleeve to complete the packaging of the tree.

3,662,491
SAFETY DEVICE FOR ELECTRICAL WINDOW REGULATORS
Paul Boyriven, Paris, France, assignor to Compagnie Industrielle de Mecanismes, Courbevoie, France
Filed Jan. 8, 1970, Ser. No. 1,468
Claims priority, application France, Jan. 14, 1969, 6900405
Int. Cl. E05f *15/08*
U.S. Cl. 49—28 3 Claims

A safety device for a motor-operated window regulator used for raising and lowering the window of a vehicle including an elongated sheath which is elastically deformable located outside the plane of the window for detecting the presence of an obstacle hindering the closure of the window. Electric conductors are positioned within such sheath and such conductors are slightly separated and adapted to contact each other upon a light deformation of the sheath by such obstacle. A device is responsive to the contact of the conductors for reversing the operation of the motor thereby preventing any risk of accidental closure of the window.

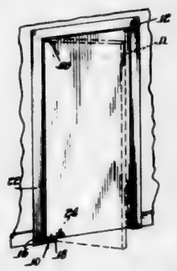


3,662,492
INSULATED DOOR WITH REVERSIBLE COVER
Thomas W. Bradley, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 17, 1970, Ser. No. 64,396
Int. Cl. E06b *3/30*
U.S. Cl. 49—501 6 Claims



An insulated refrigerator door is made from a rectangular metal sheet having wide flanges on four sides to which is connected a plastic inner door pan. The space in between is filled with polyurethane foam insulation. A molded flanged rectangular plastic member fits over the metal sheet and its flanges in two alternate positions located 180° apart. The metal sheet is fitted for hinging on either side. The plastic member is provided with an integral door handle adjacent one side usable in the proper position with either hinging of the door.

3,662,493
DOOR PIVOT DEVICE
Robert E. Foltz, Sterling, Ill., assignor to Lawrence Brothers, Inc., Sterling, Ill.
Filed July 7, 1970, Ser. No. 52,854
Int. Cl. E05d *7/08*
U.S. Cl. 49—388 5 Claims



The present invention relates generally to double acting pivot devices for doors mounted between top and bottom pivots aNd more particularly to improvements in vertically adjustable bottom pivot devices. One embodiment of the invention disclosed herein comprises a bracket member having a vertical section for the attachment to a door jamb, and a lateral or horizontal section for supporting the weight of a door member. A second bracket means is adapted for attachment to the bottom edge of a door in superimposed relation with respect to the horizontal section of the first bracket member. Interposed between these superimposed bracket sections is an antifriction bearing device of improved practical construction which may be vertically adjusted without the necessity of first separating the door member from its supporting pivot.

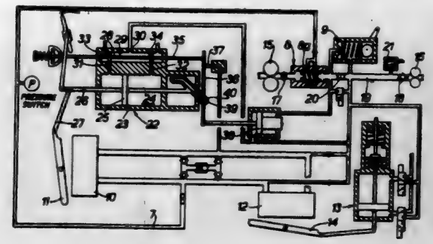
3,662,494
PLASTIC SHEATHED WINDOW FRAME
Charles K. Sitterly, Dubuque, Iowa, assignor to Scovill Manufacturing Company
Filed May 27, 1970, Ser. No. 40,849
Int. Cl. E06b *1/04*
U.S. Cl. 49—504 1 Claim



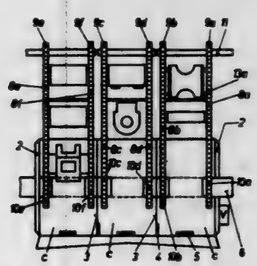
A protected edge structure device for a wall opening such as a window opening comprising a window frame extending around the opening and attached to the window at the opening edge and comprising a sill, opposite side jambs and a head and a resilient plastic sheath having an inner surface closely embracing the frame at the outer and upper sides of the sill, side jambs and head and including members for retaining the sheath in position including integral barbs on the sheath engaging kerfs in the frame.

3,662,495
HYDROSTATIC TRANSMISSION SYSTEMS
Anthony Eugene Joseph Martin, Birmingham; Robert Thomas John Skinner, Kenilworth, and Bernard James Baker, Wilnecote, Near Tamworth, all of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Sept. 17, 1970, Ser. No. 73,066
Int. Cl. F02b *41/00*
U.S. Cl. 60—19 9 Claims

A hydrostatic transmission in which a pump displacement varying unit controlled by a servo valve is in turn controlled by a lever movable in one direction by a pump output pressure sensing device and in the other direction by a motor speed sensing device. The unit has a feedback connection to the lever which varies the position of the fulcrum of the lever relative to the above mentioned devices.



3,662,496
APPARATUS FOR THE VIBRATORY FINISHING OF WORKPIECES
Georg Altenstaedter, Griefstedt, Germany, assignor to Terry Lewis, Berlin, Germany, a part interest
Filed Mar. 24, 1970, Ser. No. 22,268
Claims priority, application Germany, May 27, 1969, P 19 26 920.6
Int. Cl. B24b *19/00, 1/00*
U.S. Cl. 51—7 13 Claims

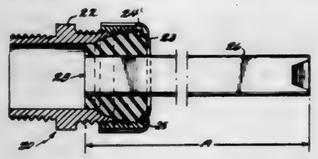


A work container is filled with a polishing or grinding medium and workpieces are mounted to an auxiliary device which transports the workpieces into, through and out of the medium. A vibrator is mounted to the container for vibrating the polishing medium and circulating it in a predetermined direction through the container. The auxiliary device can be moved by the circulating medium or by independent drive means. A secondary work container can be mounted to the interior of the main container and a mixture of small workpieces and polishing medium can be fed through the secondary container while large pieces are carried through the main container by the auxiliary device.

3,662,497
ABRASIVE MOTOR SLOT CLEANING NOZZLE
Thomas L. Thompson, 1138 Niskey Lake Rd., S.W., Atlanta, Ga.
Filed Nov. 2, 1970, Ser. No. 86,265
Int. Cl. B24c *3/06*
U.S. Cl. 51—11 3 Claims

A nozzle for removing material such as burned shellac, paper residue, insulation, dirt, grease, etc. from stator slots of electric motors preparatory to rewinding and a method of removing such material with such a nozzle. In the embodiment described below, the nozzle includes an oblong hollow ceramic member which is force fitted at one end into a rubber stopper and has its other end beveled for fitting into

the slots and a metal coupler for connecting the member to a suitable sand blasting source. The beveled end and oblong shape permit the nozzle to be easily inserted in the stator slots and to effectively remove the material in a short period



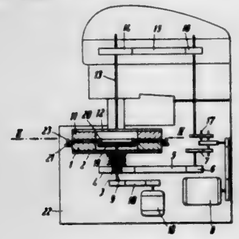
of time without damage to the exterior of the slots in contrast to a nozzle having other shapes. Broken or worn ceramic members can be easily and quickly replaced by removal from the stopper and force fitting a new ceramic member in place.

3,662,498

REDRESSING OF LAPS IN LAPPING OR HONING MACHINES

Willi Caspers, Mettmann, Germany, assignor to Peter Wolters Kratzenfabrik und Maschinenfabrik, Mettmann am Rhineland, Germany

Filed Aug. 26, 1969, Ser. No. 853,143
Claims priority, application Germany, Aug. 29, 1968, P 17 97 055.7
Int. Cl. B24b *5/00, 53/02*
U.S. Cl. 51—118 **3 Claims**



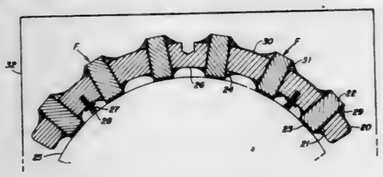
The annular working surfaces of cast-iron laps in a two-lap lapping or honing machine are redressed by three or more redressing units each having an abrading ring surrounded by and secured to a gear which constitutes the planet pinion of a planetary transmission. The redressing units can be used interchangeably with gear-shaped workholders and their rings remove material from the working surfaces when the gears are rotated about their respective axes while the laps rotate in opposite directions.

3,662,499

ADJUSTABLE LAP

Ronald Aspden, Bedford, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Dec. 18, 1969, Ser. No. 886,235
Int. Cl. B24d *3/00*
U.S. Cl. 51—204 **18 Claims**



An adjustable lap for the fine grinding of optical and other surfaces. A plate with a plurality of holes therein supports a like plurality of rods positioned within said holes. Each rod has a grinding pellet mounted on one end thereof, which end extends a predetermined distance outwardly of the holes. An adhesive is provided to mount the rods to the plate such that the extended portion of each rod will be maintained at the predetermined distance to permit accurate grinding of the surface.

3,662,500

METHOD FOR POLISHING MAGNETIC OXIDE MATERIALS

Eric Mendel, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 28, 1971, Ser. No. 110,779
Int. Cl. B24b *1/00*
U.S. Cl. 51—281 SF **10 Claims**

This invention relates to a method of polishing magnetic oxides or bubble crystal surfaces to a featureless and strain-free condition. The method comprises pre-polishing or lapping with a suspension of polycrystalline garnets to a conchoidal condition followed by final polishing with a silicon dioxide alkaline slurry under polishing pressure not in excess of about 20 psi.

3,662,501

METHOD FOR POLISHING MAGNETIC OXIDE MATERIALS

Eric Mendel, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 28, 1971, Ser. No. 110,780
Int. Cl. B24b *1/00*
U.S. Cl. 51—281 SF **9 Claims**

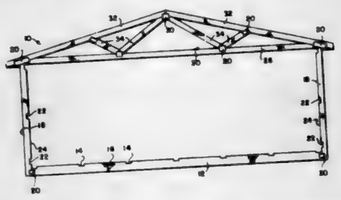
This invention relates to a method of polishing magnetic oxides or bubble crystal surfaces to a featureless and strain-free condition. The method comprises pre-polishing or lapping with a suspension of polycrystalline garnets to a conchoidal condition followed by final polishing with a zirconium oxide slurry under polishing pressure between 2 and 40 psi.

3,662,502

BUILDING FRAME AND METHOD OF ERECTING A BUILDING

Jay D. Wright, Indianapolis, Ind., assignor to Truss Manufacturing Co., Inc., Westfield, Ind.

Filed May 28, 1970, Ser. No. 41,442
Int. Cl. E04b *7/12*
U.S. Cl. 52—93 **5 Claims**



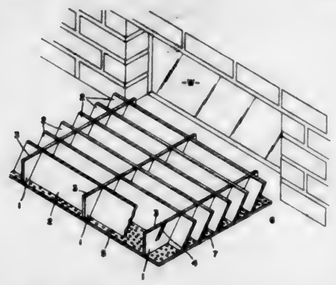
An assembled frame for a building and a method of erecting a building therewith. A pre-assembled frame includes a floor joist, wall studs, ceiling chord, and the frame for the upper floor also has roof chords. The floor joist and wall studs have notches formed in their inwardly presented surfaces which are adapted to interfit with stringer members. The frames are adapted to interfit with notched mud sills. The pre-formed and pre-notched parts may be readily and unerringly assembled at the construction site by fitting a frame into the notches at one end of the mud sills and temporarily supporting it, then adding an adjacent second frame and placing a stringer member therebetween. Successive frames are added in like manner until the structure is completed.

3,662,503

DEVICE FOR PREVENTING MUD OR DIRT SPLATTER AGAINST WINDOWS AND SIDES OF A BUILDING

Ladd C. Prahler, 3121 Hamilton Road, Rt. 6, Medina, Ohio

Filed Apr. 13, 1970, Ser. No. 27,922
Int. Cl. E02d *31/00, 31/06*
U.S. Cl. 52—97 **5 Claims**



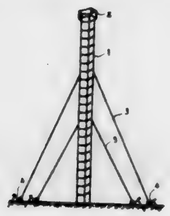
A device, in the form of a grill, is provided for preventing mud or dirt splatter against the windows and sides of a building during a rainfall. The device is made of interlocked strips, with one set of strips slanted or inclined downwardly and away from the window or building to direct the rainfall away from the window or building. A modification includes placement of a perforated plate or sheet under the device to inhibit the growth of weeds into the spaces formed by the grill.

3,662,504

PYLONS

Michel M. F. Gueguen, La Tullerie, St-Nom-la-Breteche, France

Filed Mar. 10, 1970, Ser. No. 18,040
Claims priority, application Japan, Nov. 10, 1969, 44/89333; June 2, 1970, 45/46897; June 17, 1970, 45/59477
Int. Cl. E04d *15/00*
U.S. Cl. 52—123 **3 Claims**



A process of erection of a temporary pylon and a carriage used for such erection is disclosed.

Erection of a temporary pylon is obtained by stacking and joining sections which are in the form of straight prisms having a polygonal base.

The invention is characterized by a support for guiding the mast which serves the purpose of putting the prismatic sections into place by a vertical climbing movement over the whole height of the pylon, so as to bring the structural sections successively to the top of the pylon.

3,662,505

GROUND ANCHOR

Hikoitsu Watanabe, and Sanji Genma, both of 1-chome, Ehara-cho, Nakano-ku, Tokyo, Japan

Filed Nov. 4, 1970, Ser. No. 86,814
Claims priority, application Japan, Nov. 10, 1969, 44/89333; June 2, 1970, 45/46897; June 17, 1970, 45/59477
Int. Cl. E02d *5/80*
U.S. Cl. 52—164 **8 Claims**

A ground anchor comprises a resistance plate consisting of some bendable sections driven slantly to a direction from a predetermined depth by the coaction of driving force and soil resistance applied thereto during driving operation so that they are set in such a manner that their maximum effective resisting surfaces may be easily directed at a right angle with the direction of the tension force imparted thereto. These



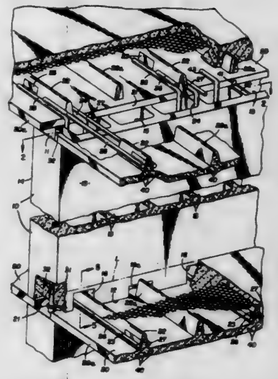
bendable sections are kept straight by means of a regulating rod so as to be driven straightly inward until they reach the predetermined setting depth, and start bending at the predetermined depth, when the control of the regulating rod is released from outside at any time, so as to be inclined and driven inward to any required direction.

3,662,506

UNITIZED BUILDING STRUCTURE UTILIZING PRECASE COMPONENTS

Thomas J. Dillon, 692 Woodbrook Rd., Cuyahoga Falls, Ohio

Filed Jan. 12, 1970, Ser. No. 2,177
Int. Cl. E04b *1/16, 5/16*
U.S. Cl. 52—251 **3 Claims**



A unitized building and a method of mass-producing the same that features the use of percast wall and floor components with the wall components being provided with vertical voids that are in registry with the spacing between adjacent horizontal floor sections which are, in turn, supported on said wall sections in spanning relationship thereto. The floor components are precast prior to delivery to the site so that upon in situ pouring of the floor slabs to proper thickness, the cement being used is forced into the voids of the wall panels to effectuate a concrete fusion between wall and floor components.

3,662,507

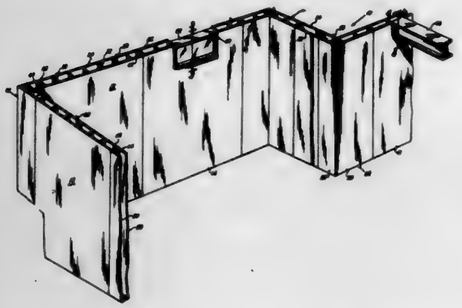
PREFORMED BUILDING WALL CONSTRUCTION

Arthur J. Espeland, Jewell, Iowa

Filed Mar. 11, 1970, Ser. No. 18,493
Int. Cl. E04b *2/32*
U.S. Cl. 52—270 **6 Claims**

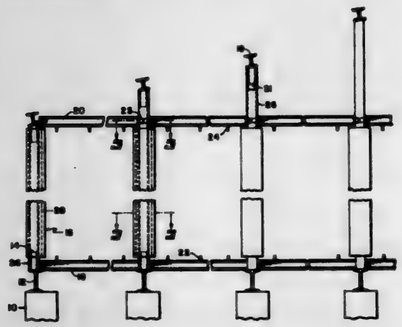
A building wall construction having preformed panels preferably of plastic material for use particularly as basement

walls and also as room walls above the basement level. The panels are keyed to each other and to supporting structures and secured by a suitable bonding agent. There are special panel sections with preformed window units and also



preformed support areas for heavy beams. There is a selection of preformed corners to accommodate varying situations. The panels include preset bolts for the base plates and in one embodiment are provided on their exterior side with preformed brick ledges to support brick facing.

3,662,508
MODULAR BUILDING
James D. Slayden, Nashville, Tenn., assignor to Avco Corporation, Nashville, Tenn.
Filed Oct. 5, 1970, Ser. No. 77,904
Int. Cl. E04b *1/54*
U.S. Cl. 52—393 13 Claims



A modular building is constructed of premanufactured panels interlocked by means of integral latching devices on a system of specially constructed columns and beams. The modular building is fireproof and rigid. A minimum number of non-integral fastening devices is needed.

3,662,509
INSULATED ROOF STRUCTURE
James D. Studzinski, Dayton, Ohio, assignor to Illini Building Systems, Inc., Dayton, Ohio
Original application Feb. 3, 1969, Ser. No. 796,038, now abandoned. Divided and this application Mar. 23, 1970, Ser. No. 21,781
Int. Cl. E04b *1/74*; E04f *15/18*
U.S. Cl. 52—404 1 Claim

A roof structure includes a plurality of parallel spaced elongated purlins, and metal roof panels are secured to the upper surfaces of the purlins. Elastically flexible insulation panels are installed after the roof panels are secured to the purlins and are supported adjacent the underneath surfaces of the roof panels by longitudinally extending cap members mounted on the purlins. The insulation panels may also be



supported by insulation strips positioned adjacent the sides of the purlins.

3,662,510
METHOD AND ARTICLE FOR INSTALLING ALUMINUM SIDING
Robert Leddy, 389 Mayer Court, Ridgefield, N.J.
Continuation-in-part of application Ser. No. 875,031, Nov. 10, 1969, now abandoned. This application Aug. 28, 1970, Ser. No. 67,929
Int. Cl. E04f *13/12*
U.S. Cl. 52—748 2 Claims

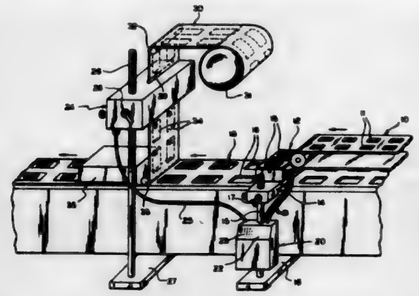


This disclosure relates to a method and article for installing exterior siding on an existing structure in a manner ensuring a substantially perfectly aligned siding job regardless of the lack of true levelness of the existing sheathing on the structure. The method is predicated on the use of a starter strip having a body portion greater than three inches and up to about 6 inches in width with a flange at the lower end thereof extending perpendicularly a distance of about three-eighths inch from the body. The flange terminates in a lock portion for receiving siding panels.

3,662,511
DATA PROCESSING DEVICE FOR A PACKAGING MACHINE
Joseph Eliasberg, The Hague, Netherlands, assignor to Maatschappy Van Berkel's Patent N.V., Rotterdam, Netherlands
Filed Nov. 4, 1970, Ser. No. 86,852
Claims priority, application Germany, Nov. 18, 1969, P 19 57 899.5
Int. Cl. B65b *61/00*, *65/00*
U.S. Cl. 53—14 6 Claims

A data processing device for use with a packaging machine, wherein goods are packaged in trays or the like with a cover material having data applied thereto in accordance with weight and price information relating to the goods. The device includes a weighing device onto which goods are placed from a conveyer, a calculator having programmed price information, and the weight information of the goods from the weighing device, and a print-out unit receiving data from the computer and applying it to the cover material so that that part of the cover material with the

data for the tray having goods weighed which produces the data will have the cover applied to the corresponding tray of goods. A tray conveyer is provided for advancing trays in



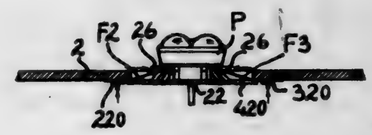
equally spaced relation along a horizontal path, while a web of material in which the covers for the trays are produced is fed to the trays on a tray conveyer.

3,662,512
METHOD AND APPARATUS FOR SHRINK-FILM WRAPPING A PALLET LOAD
Seymour Zelnick, Orange, N.J., assignor to Weldotron Corporation, Newark, N.J.
Filed Jan. 24, 1968, Ser. No. 700,116
Int. Cl. B65b *53/06*, *61/10*
U.S. Cl. 53—30 7 Claims

A pallet-load of product is secured onto a pallet by forming a sleeve of heat shrinkable film around the pallet-load with its open top extending above the pallet-load and its open bottom extending below the pallet. The bottom and the top portions of the sleeve are initially shrunk to lock the sleeve onto the pallet-load and the pallet, and subsequently the intermediate portion of the sleeve is shrunk to unitize the assembly.

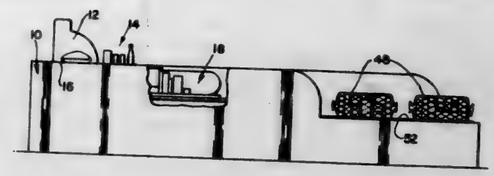
3,662,513
METHOD AND APPARATUS FOR WRAPPING ARTICLES IN STRETCHABLE SHEET MATERIAL
Ermanno Fabbri, Vignola, Italy, assignor to Waldyssa S.A., Lugano, Switzerland
Filed May 13, 1970, Ser. No. 36,730
Claims priority, application Italy, May 20, 1969, 7045 A/69; 12560 A/70
Int. Cl. B65b *11/54*, *41/12*, *49/08*
U.S. Cl. 53—33 22 Claims

A packaging machine for packaging items in stretchable foils of soft plastic material comprises a horizontal plate having an opening through which the items may pass, a mechanism for severing required lengths from a continuous foil web and placing a foil length below the said opening, a gripping device for holding opposed edges of the foil in a final position, a lifting table for pushing an item to be



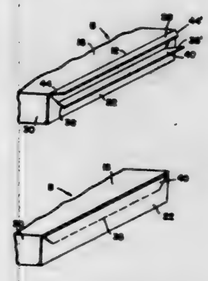
packaged upwards through the opening, a folding mechanism above the plate for folding the foil sheet edges under the item and a conveying device above the plate for pushing the packaged item off the plate.

3,662,514
PACKAGING SYSTEM
Donald D. Goss, Marblehead, Mass., assignor to Ideation, Inc., Marblehead, Mass.
Filed Sept. 15, 1969, Ser. No. 857,721
Int. Cl. B65b *5/06*, *9/10*
U.S. Cl. 53—37 11 Claims



An improved checkout system for articles is provided, e.g. at a supermarket wherein the cashier directs the checked articles to a shuttle, which when filled conveys the articles to a packaging stage, e.g. a tubular net which is sealed at one or both ends forming a package.

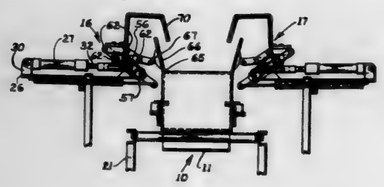
3,662,515
PROCESS FOR SEALING A TOP-OPENING CARTON
Robert O. Stuberg, 101 Bella Vista Drive, Hillsborough, Calif.
Filed May 13, 1970, Ser. No. 36,735
Int. Cl. B65b *7/22*
U.S. Cl. 53—39 9 Claims



A process for closing a top-opening carton by providing flaps corresponding in shape to a movable segment of the wall panel to which it is to be attached. Each such flap is tucked inside the corresponding movable segment of the wall panel and caused to adhere to the inside of the movable wall segment by the use of hot or cold adhesive or by heat sealing (softening and mating of thermoplastic coatings on the surface of the paperboard). The resiliency of paperboard proxi-

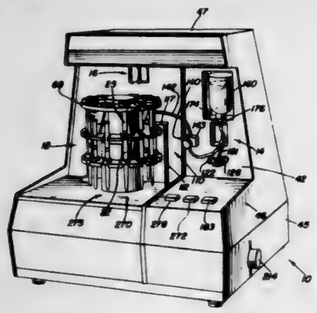
mate to score lines and its tendency, when bent along a score line, to return to its original flap plane, provides sufficient back pressure in the flap to force it into intimate contact with the inner face of the movable segment of the wall panel resulting in effective bonding of the flap to the segment along its entire length.

3,662,516
BOX FLAP OPENER
John A. Wiseman, Anderson, Ind., assignor to Shuttleworth Machinery Corporation, Huntington, Ind.
Filed Mar. 17, 1970, Ser. No. 20,270
Int. Cl. B65b *43/39*
U.S. Cl. 53—76 **10 Claims**



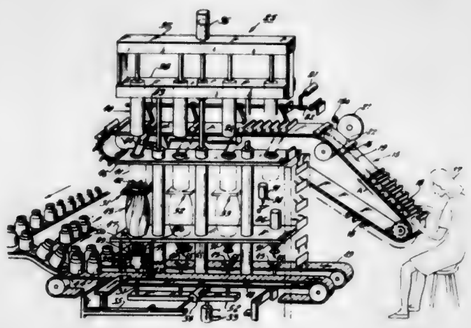
A flap opener for a box including suction cups mounted on levers each arranged to pivot around the axis of the score line of the flap which is to be lifted by the respective lever and the respective suction cup. One alternative form of flap opener uses a parallelogram linkage to mount the lever so that the lever swings about the flap score line while at the same time being radially positioned relative to the box. The other alternative form of flap opener includes a lever which is positioned on one side of the box and, after the flap is opened, the box is pushed away from the lever by a hydraulic cylinder. Both alternative forms include means for holding the flap open after it has been opened.

3,662,517
SYRINGE FILLING APPARATUS
Edward R. Tascher, Manchester, and Elmer A. Koenig, Kirkwood, both of Mo., assignors to Sherwood Medical Industries Inc.
Filed Apr. 8, 1970, Ser. No. 26,683
Int. Cl. B65b *7/28, 3/04, 23/22*
U.S. Cl. 53—282 **9 Claims**



A syringe filling apparatus for automatically filling a plurality of syringes serially including an indexable turret having a lower support for holding a plurality of open syringe barrels and an upper support for holding a corresponding plurality of syringe plungers in aligned position with respect to the cylinder barrels, the turret assembly indexing each syringe to a filling station where medicament is dispensed into an open cylinder barrel and the medicament level in the barrel is sensed by a photo-sensitive circuit and medicament flow controlled in response thereto, the turret assembly indexing each syringe to a second station where a vertically reciprocable tool head pushes the syringe plunger from the upper turret support, and thereafter releasing it in the aligned cylinder barrel where the tool head exerts a pressure on the outer ring of the syringe plunger in a manner to captivate the plunger piston and thus vent the entrapped air, the turret assembly indexing each syringe to a third station where each syringe plunger, which includes a plunger piston retainer sleeve for releasing the piston, has its piston releasing sleeve cammed upwardly in a manner to release the plunger piston within the associated syringe barrel sealing medicament therein, there being also provided a mechanism for vertically adjusting the turret assembly with respect to the photo-sensitive medicament level detecting means to vary the level of medicament in the barrels as desired.

3,662,518
SPEAR PACKING APPARATUS
Bernard C. Eisenberg, Rockaway, N.J., assignor to Solbern Corp., Fairfield, N.J.
Filed Oct. 26, 1970, Ser. No. 83,868
Int. Cl. B65b *63/00*
U.S. Cl. 53—123 **10 Claims**

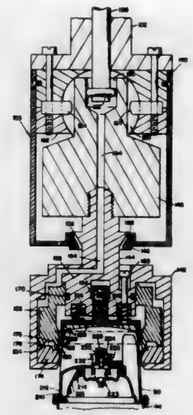


Apparatus for longitudinally segmentizing cucumbers and packing the segments in a jar with the seeded surfaces of the segments facing outward is constructed with means for receiving a whole cucumber and cutting same to predetermined length. The predetermined length of cucumber is slit longitudinally into spears of segmental cross section that are fed through individual twisted chutes and exit therefrom into a jar with the seeded surfaces of the segments facing outward. Guide means at the exit ends of the twisted chutes directs the segments outward toward the jar wall. Thereafter the guide means and the jar are angularly stepped so that additional spear segments entering the jar are directed between those segments previously placed in the jar.

In one embodiment of this invention, after the jar wall is lined with spear segments the guide means is withdrawn from the jar and additional spears are placed in the central region of the jar by hand.

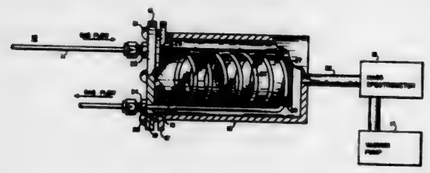
In another embodiment of this invention, the guide means is selectively operated to a collapsed and an expanded condition. The jar wall is lined with spears while the guide means is expanded, and after the jar wall is lined with spear segments the guide means is collapsed and additional spear segments entering the jar remain at the central region to fill the jar without interfering with the spear segments lining the jar wall.

3,662,519
APPARATUS FOR MOUNTING CAPS
Edward J. Adams, St. Paul, Minn., assignor to The Gillette Company, Boston, Mass.
Filed Sept. 2, 1970, Ser. No. 68,825
Int. Cl. B65b *7/28*
U.S. Cl. 53—329 **7 Claims**



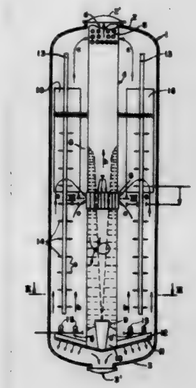
A cap is mounted on a dispensing container having an upwardly extending valve actuator, the cap having an aperture through which the actuator is arranged to extend, the actuator and the cap opening having mating configurations fixing the relative rotational positions of the cap and actuator about a vertical axis; the mounting procedure including positioning the cap over the container with the actuator opposing the opening, pressing the cap and the actuator gently together and simultaneously rotating one with respect to the other to mate the actuator with the opening and to cause one to enter the other, the pressure being insufficient to actuate the valve, and then increasing the pressure to seat the cap on the container.

3,662,520
SYSTEM FOR GAS ANALYSIS AND MOLECULAR GAS SEPARATOR
Raymond A. Saunders, Hyattsville, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Oct. 24, 1969, Ser. No. 869,128
Int. Cl. B01d *15/08*
U.S. Cl. 55—158 **5 Claims**



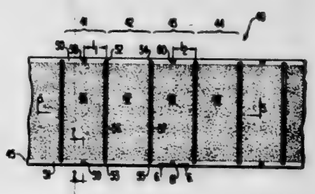
A system for gas analysis including an open tubular gas chromatographic column coupled to a gas analyzer through a diffusion type molecular gas separator and gas flow channeling which extends from the exit of the chromatographic column through the molecular gas separator and has the same or nearly the same cross section for gas flow as the chromatographic column. In this system, carrier gas is separated from the organic components to give component-enriched gas samples for delivery to the gas analyzer and without loss of the fine separation of the organic components effected in the chromatographic column.

3,662,521
DEVICE FOR REACTION BETWEEN LIQUID PHASE AND GASEOUS PHASE
Meyer Behar, Lyon; Jean-Pierre Dal Pont, Decines, and Jerome Moutet, Seuils, all of France, assignors to Progil, Paris, France
Filed Mar. 27, 1970, Ser. No. 23,238
Claims priority, application France, Mar. 27, 1969, 6908385
Int. Cl. B01f *3/04*
U.S. Cl. 55—237 **5 Claims**



A reactor for reaction between liquid phase and gaseous phase reactants which contains a coaxial chimney within the reactor which has a distributor located intermediate its length and has a quieting device attached to its lower end.

3,662,522
GETTER PUMP CARTRIDGE
Paolo Della Porta, and Bruno Ferrario, both of Milan, Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy
Filed July 15, 1970, Ser. No. 55,029
Claims priority, application Italy, July 24, 1969, 869075
Int. Cl. B01d *53/04*; **F04b** *37/02*
U.S. Cl. 55—387 **5 Claims**

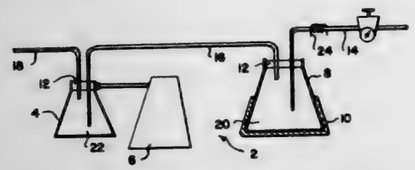


A cartridge for a getter pump having a pleated strip comprising a substrate having a non-evaporable getter metal thereon. Adjacent surfaces of the pleated strip are held at a predetermined angle by a spacer between the adjacent surfaces. Getter pumps employing such cartridges exhibit maximum pumping rates. Strips suitable to be pleated are also described.

3,662,523
ADSORBENTS FOR REMOVAL OF MERCURY VAPOR FROM AIR OR GAS

William H. Revoir, West Hartford, Conn., and John A. Jones, Springfield, Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Dec. 15, 1970, Ser. No. 98,318
Int. Cl. B01d 53/04; B01j 11/78
U.S. Cl. 55—387 2 Claims

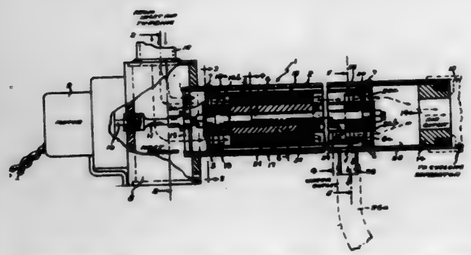


Adsorbents for removal of mercury vapor from air or gas including activated carbon granules impregnated with interhalogen compounds, particularly iodine monochloride and iodine trichloride.

3,662,524
CENTRIFUGE AGGLOMERATOR - SEPARATOR

Adi R. Guzdar, Sudbury; Alve J. Erickson, Cambridge, and Andrew C. Harvey, Boston, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force

Filed Apr. 21, 1970, Ser. No. 30,425
Int. Cl. B01d 45/00, 46/18, 46/30
U.S. Cl. 55—400 3 Claims



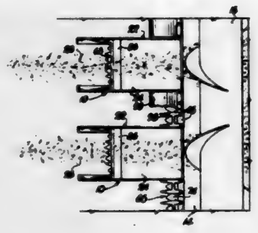
A centrifuge agglomerator water particle separator which comprises a motor driven elongated multicellular rotary agglomerator in which each cell acts to convert relatively small water droplets in air passing through the cells in the agglomerator into relatively large water droplets in the downstream end of the rotary agglomerator by centrifugal action, which are discharged through holes, that are provided in the aft end of the agglomerator, into a water bleed line, while the air from which the water droplets are removed is separately discharged through an air outlet located concentrically beyond the downstream end of the multicellular rotary agglomerator.

3,662,525
SOYBEAN HARVESTING APPARATUS

Allen A. White, Peabody, Kans., assignor to Hesston Corporation, Hesston, Kans.

Filed May 4, 1970, Ser. No. 34,297
Int. Cl. A01d 41/00
U.S. Cl. 56—2 12 Claims

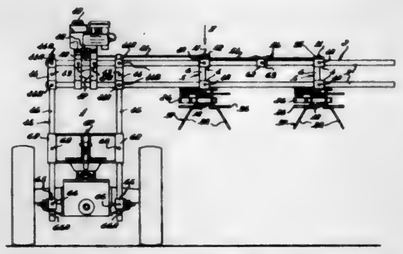
A soybean harvesting unit, adapted for attachment to the cutter bar of a combine header forwardly of its pan and beneath its reel, includes a forwardly and downwardly inclined, open-top trough pivotally supported for vertical flotation, an oscillatory cutter at the crop-receiving inlet of the trough, and a double joint coupling between the cutter and the knife sections of the reciprocable combine sickle to drive the cutter up and down during movement of the trough. As the plants enter the inlet and are severed, the reel sweeps the severed plants through the trough into the pan while the sidewalls of the trough slidably support and guide overhanging branches of the plants to prevent the latter from falling to the ground.



3,662,526
DEVICES FOR TOPPING TOBACCO PLANTS

Elwood Lee Smith, Elm City, N.C., assignor to The Lely Corporation, Elm City, N.C.

Filed Apr. 14, 1970, Ser. No. 28,407
Int. Cl. A01d 45/02
U.S. Cl. 56—63 14 Claims



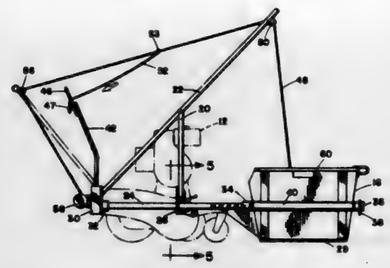
A transportable device for topping plants includes a frame with at least one cutter on a support mounted laterally of the frame. The frame has portions for adjusting the height of the cutter and the cutter support can be moved along the frame to horizontally adjust the position of the cutter. An endless feeding member for each cutter is moved to bring the tops of plants in the path of the cutter and the feeding member, as well as the cutter, is moved by belt transmission. The device can be an attachment that is coupled to the conventional three point lift of a tractor with vertical beams connected to the three point lift and horizontal beams connected to the vertical beams laterally of the tractor. Guides adjacent the endless member and plates adjacent the cutter act to guide the plants and their cuttings as the device is moved along rows of plants.

3,662,527
GRASS CATCHER

Wilbur T. Breckenridge, Jr., 2677 Brookmead Lane, La Jolla, Calif.

Filed June 11, 1970, Ser. No. 45,479
Int. Cl. A01d 53/06
U.S. Cl. 56—200 11 Claims

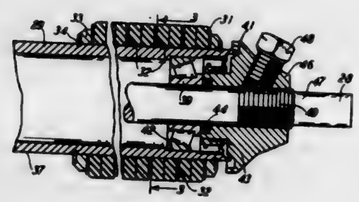
A grass catcher that is supported on the front of a lawn mower, such as a reel type lawn mower, for upward pivotal movement in a direction normal to the path of movement of the mower, and a lifting arrangement operable from a position spaced from the grass catcher for lifting and pivoting the grass catcher to dump accumulated grass cuttings to the side of the mower and out of the path of movement of the mower.



3,662,528
ROLLER FOR REEL TYPE LAWN MOWERS

Sahag C. Akgulian, and Donald G. Haffner, both of Racine, Wis., assignors to Jacobsen Manufacturing Company, Racine, Wis.

Filed June 10, 1970, Ser. No. 44,919
Int. Cl. A01d 55/20
U.S. Cl. 56—249 7 Claims



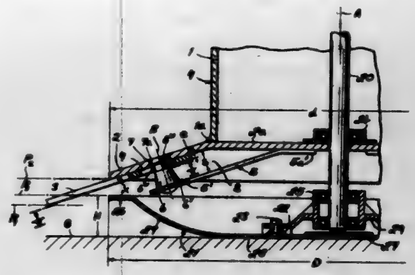
A roller for a lawn mower of the reel type, and with the roller extending for the length of the reel and across the width of the mower. The roller is rotatably mounted, and it has large diameter portions on opposite ends, and it has a small diameter portion in the middle of the length of the roller. The end large portions engage the ground and support the mower at the spaced-apart locations of the large portions, and the smaller diameter middle portion of the roller presents an anti-scalping member for the mower. The roller includes a base tube or cylinder, and rotation bearings fit within the ends of the tube for rotatably supporting the roller on the mower. The large diameter portion is shown to be a plurality of rubber rings which are pressed onto the ends of the tube and which therefore rotate with the tube, as one rotatable roller.

3,662,529
SWINGING BLADE ARRANGEMENT FOR MOWER ASSEMBLY

Josef Glunk, and Heinz Gnadler, both of Gottmadingen, Germany, assignors to Maschinenfabrik Fahr AG, Gottmadingen, Germany

Filed Oct. 30, 1970, Ser. No. 85,504
Int. Cl. A01d 55/18
U.S. Cl. 56—295 10 Claims

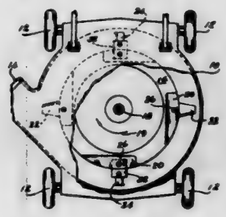
A mower assembly of the type in which a cylindrical mower body is rotated about a vertical axis and has a downwardly and outwardly divergent frustoconical apron or plate. The plate is provided with leaf-spring mounts for the blades whereby relative movement of the blades and the support plate is permitted.



3,662,530
RAKING AND MULCHING MEANS FOR ROTARY MOWERS

Harold C. Hearliksen, 1133 Oregon St., Racine, Wis.

Filed Dec. 15, 1970, Ser. No. 98,424
Int. Cl. A01d 55/18
U.S. Cl. 56—295 4 Claims

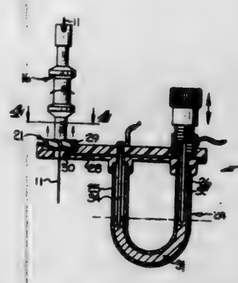


A raking and mulching means to be combined with the rotating member of a rotary mower so as to permit raking and mulching of leaves and other matter while also cutting the grass. If desired, this means can be substituted for all of the cutting blades when merely mulching or pulverizing. (Mulching is to be interpreted as being the reducing of leaves grass and such matter to small particles).

3,662,531
METHOD AND APPARATUS FOR PROTECTING PRODUCTION OF TEXTURED TEXTILE YARN

Patrick P. Carroll, Shannon, Ireland, assignor to Jonathan Logan, Inc., Spartanburg, S.C.

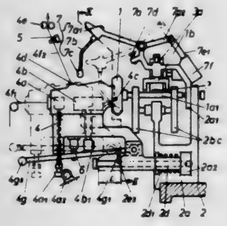
Filed Apr. 21, 1970, Ser. No. 30,382
Int. Cl. D02g 1/02; D01h 1/26, 7/92
U.S. Cl. 57—34 HS 22 Claims



Continued production of improperly processed textile yarn otherwise resulting from rotation of a spindle at an improper

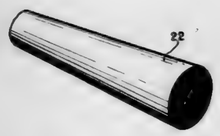
speed is protected against by a method and apparatus in which the rotational speed of the spindle is continually monitored and rotation thereof at an excessive differential in speed from a predetermined standard speed initiates a warning that improperly processed yarn is being produced.

3,662,532
SPINNING DEVICE FOR SPINNING THREADS BY THE OPEN-END METHOD
Fritz Stahlecker, Bad Uberkingen, Germany, assignor to Wilhelm Stahlecker GmbH, Reichenbach, Germany
Filed July 2, 1970, Ser. No. 51,910
Claims priority, application Germany, July 4, 1969, P 19 33 930.1
Int. Cl. D01h *1/12, 13/14, 7/00*
U.S. Cl. 57—58.89 **22 Claims**



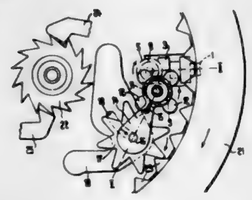
A spinning apparatus for spinning threads by the open-end method having a spinning turbine and guiding elements for the fiber material which are movable in relation to the spinning turbine and render its open side accessible from the outside. Release means and control members are provided so that the relative movements between the spinning turbine and the guiding elements take place automatically. The release means is actuated to open the spinning turbine by thread break detectors or thread sensing devices.

3,662,533
GLASS FIBER CABLE
Donald L. Snellman, and Willard G. Hudson, both of Seattle, Wash., assignors to Norfin, Inc., Seattle, Wash.
Filed Jan. 5, 1970, Ser. No. 718
Int. Cl. D07b *1/16, 1/00, 3/02*
U.S. Cl. 57—140 G **4 Claims**



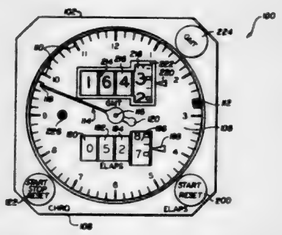
A coreless glass fiber cable is made of a plurality of individual substantially untwisted glass fiber rovings twisted together. Prior to twisting but during the twisting operation certain of the rovings are impregnated with one component of an elastomeric resin with the remainder of the rovings impregnated with the second component of the elastomeric resin. The impregnated rovings are spirally twisted together in the same direction at substantially the same helical angle, the two components of the elastomeric resin impregnating the rovings mixing with each other at the junction of the intertwining of the rovings to form a cured elastomer spacing the glass fiber rovings and filaments making up the rovings from each other. The layed up glass fiber cable is fed back on itself and subsequent layers of impregnated rovings plied together over the initial layers. The subsequently applied layers are applied at the same helical angle as the initial layer. The cable, although useful for other purposes, is particularly useful in the manufacture of endless track for track vehicles, the endless track comprising a plurality of individual track sections strung along a cable of the type mentioned.

3,662,534
CORRECTOR MECHANISM FOR DAY AND DATE WATCH
Marc Colomb, Peseux, Switzerland, assignor to OMEGA Louis Brandt & Frere S.A., Berne, Switzerland
Filed Apr. 21, 1971, Ser. No. 132,973
Claims priority, application Switzerland, May 1, 1970, 6585/70
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 **6 Claims**



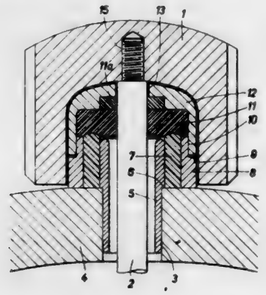
This invention relates to a corrector mechanism for day and date watches. This mechanism, object of the present invention, consists in particular in a sliding lever, on which pivots freely a corrector star which is in mesh with a corrector, whereby the latter is located coaxially to the aforesaid sliding lever. Another particularity of this mechanism is, that the corrector is susceptible of being operated from the outside of the watch and that the whole mechanism is disposed in a manner that the corrector moves the sliding lever in the one or the other direction, according to the direction of rotation of the winding-shaft, to bring the corrector star in gear either with the date indicator or the day indicator.

3,662,535
AIRCRAFT TIME INDICATOR
Geoffrey S. Hedrick, Bedford Hills, N.Y.; Frank H. Hawkins, Bennebroek, and William Van Os, Badhoevedorp, both of Netherlands, assignors to Lear Siegler, Inc., Armonk, N.Y.
Filed July 10, 1969, Ser. No. 840,729
Int. Cl. G04f *3/06*
U.S. Cl. 58—39.5 **5 Claims**



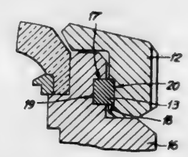
A clock and two elapsed time meters are incorporated in the same instrument and driven from a common electronic time base oscillator. The time of day is indicated by a set of digital read-out drums located above the center of a circular dial, while long term cumulative elapsed time is indicated by another digital drum read-out located below the center of the dial. At the periphery of the dial is a circular scale representing short term cumulative elapsed time, which is swept by a peripheral minute indicator as well as a sweep second hand, both of which are designed not to interfere with the digital displays.

3,662,536
DEVICE FOR HERMETICALLY SEALING THE OPENING FOR THE WINDING STEM IN A WATCH DOME
Walter Stebler, Konzumweg 10, Preterlen, Conton of Bern, Switzerland
Filed Dec. 21, 1970, Ser. No. 99,992
Claims priority, application Switzerland, Dec. 23, 1969, 19120/69
Int. Cl. G04b *37/10*
U.S. Cl. 58—90 B **3 Claims**



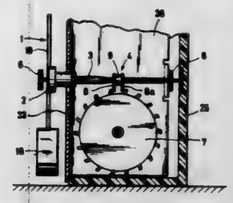
A device for hermetically sealing the opening in a watch dome for a winding stem characterized by a hollow crown provided at one end of the winding stem, this crown having a circularly-shaped wall extending around a fixed projecting part of the device, wherein the fixed part comprises at least one sealing ring, a support element and a cap which overlaps the ring, the cap being supported on a fixed base with a press fit so that the sealing ring is pressed against the support element in an axial direction.

3,662,537
CONSTRUCTION OF ROTATING BEZEL SECTION FOR WATCH CASES
Yoshiaki Fujimori, Suwa-shi, Japan, assignor to Kabushiki Kaisha Suwa Sukosha
Filed Dec. 8, 1969, Ser. No. 883,049
Claims priority, application Japan, Dec. 10, 1968, 43/90069
Int. Cl. G04b *39/00*
U.S. Cl. 58—91 **3 Claims**



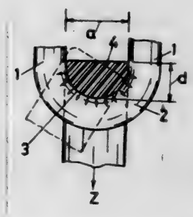
A bezel is sealed to a watch-case by the use of packing seated in annular grooves in the case band and in the bezel. The depths of the grooves and pressures against the packing are such that accidental disengagement of the bezel from the watch case is prevented and a water-tight seal is provided, although the bezel can rotate smoothly around the case band. The depth of the case band groove is greater than that of the bezel groove so that the packing is retained in the case band during intentional removal of the bezel.

3,662,538
DEVICE FOR MEASURING REPETITIVE IDENTICAL TIME INTERVALS
Rudolf Wittner, Johnstrasse 6, Isny, Allgau, Germany
Filed Feb. 17, 1971, Ser. No. 115,988
Claims priority, application Germany, Feb. 19, 1970, P 20 07 680.6
Int. Cl. G04f *11/02*
U.S. Cl. 58—130 R **35 Claims**



A shaft is journalled in a housing for turning movement about an axis; the shaft has a first portion and a second portion. A pendulum is fast with the first portion elongated radially of the axis for swinging movement about the same and a pair of anchor plates are mounted on the second portion axially spaced in parallel planes. The blades each have a first surface both of which face in one axial direction and a second surface which both face in the opposite axial direction. Each of the first surfaces is inclined to and has an edge portion which extends at least substantially radially of the axis and is convexly curved on a small radius in direction axially of the shaft towards the respectively associated second surface. A circumferentially toothed wheel is mounted and biased for rotation in a plane at least substantially normal to the planes of the anchor plates and parallels the axis so that consecutive teeth of the wheel engage first one of the first surfaces to slide along the same to and over the edge portion past the associated second surface while concomitantly imparting to the plates and thereby to the pendulum a swinging pulse and to subsequently abut against the other of the first surfaces where it again slides past the edge portion and second surface while the next-following tooth engages the first-mentioned first surface.

3,662,539
INJECTION MOULDED CHAIN, ESPECIALLY PLASTIC CHAIN
Peter Florjancic, St. Mortinstrobe 12, 81 Garmisch-Partenkirchen, Germany
Filed Oct. 14, 1969, Ser. No. 866,186
Claims priority, application Australia, Oct. 16, 1968, A 10093/68
Int. Cl. F16g *13/06*
U.S. Cl. 59—80 **6 Claims**



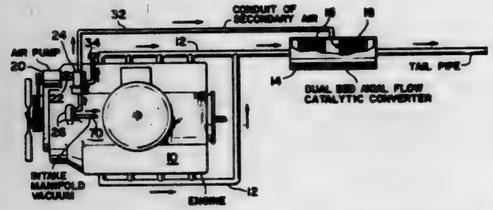
A chain or the like is formed by injection moulding of a first link into a second link, one of the links having a non-circular cross-section, which cross-section is preferably substan-

tially defined by a semi-circle and a straight line or a polygon, and has an extent perpendicular to the plane of the link which is at least approximately equal to the spacing between the side portions of the other link and a smaller extent in the plane of the link.

ERRATUM

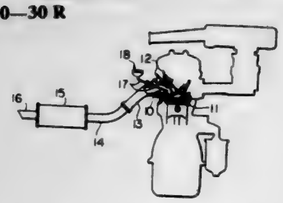
For Class 60—19 see:
Patent No. 3,662,495

3,662,540
SECONDARY AIR CONTROL IN CATALYTIC VEHICLE EXHAUST PURIFICATION SYSTEM
Richard C. Murphey, Woodbury, N.J., assignor to Mobil Oil Corporation
Filed Dec. 30, 1970, Ser. No. 102,591
Int. Cl. F02b 75/10; F01n 3/14, 3/16
U.S. Cl. 60—30 R **15 Claims**



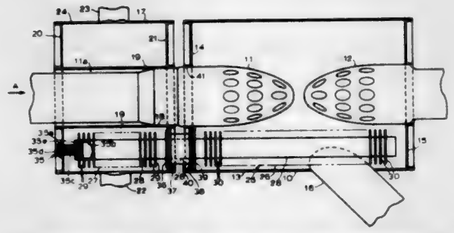
Control of secondary air flow to a dual bed catalytic converter is provided by sensing engine temperature at a location remote from the converter and applying a control function in response thereto to switch air flow between the first and second catalytic beds of the converter. During warm-up secondary air input is directed to the first catalyst bed, but is switched to the second catalyst bed when the temperature in the flow path between the beds reaches about 1,000° F. Engine temperature at a point remote from the beds, e.g. engine coolant temperature, is correlated to the temperature at the outlet of the first catalyst bed thereby enabling sensing of a significantly lower temperature level to control switching of air input to the catalyst beds. A secondary air control valve is operated by application thereto of the engine intake manifold pressure in response to sensed coolant temperature to switch secondary air input between the beds.

3,662,541
ENGINE EXHAUST GAS OXIDIZING SYSTEM
Hiraki Sawada, No. 2068-112, 3 chome, Tujimi-cho, Higashimuayama, Tokyo, and Kenji Masaki, No. 640, 4-chome, Sekimachi, Nerima-ku, Tokyo, both of Japan
Continuation of application Ser. No. 823,553, May 12, 1969, now abandoned. This application Mar. 15, 1971, Ser. No. 124,466
Claims priority, application Japan, July 10, 1968, 43/48243
Int. Cl. F02b 75/10; F01n 3/10
U.S. Cl. 60—30 R **9 Claims**



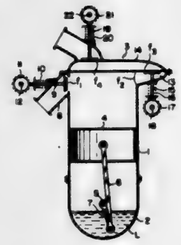
A system for converting the unburned or partially burned toxic compounds of the exhaust emission from an automotive gasoline-powered engine into harmless gases through re-oxidization of the emission in the exhaust system. An appropriate amount of fresh air is delivered to the exhaust system in close response to the pulsation of the exhaust pressure so that the mixture of the exhaust emission and air is after-burned satisfactorily under the varying conditions of the engine operation.

3,662,542
ENGINE EXHAUST GAS HEATER
Alan J. Streb, Baltimore, Md., assignor to Dynatherm Corporation, Cockeysville, Md.
Filed Sept. 3, 1969, Ser. No. 854,923
Int. Cl. B60h 1/20
U.S. Cl. 60—31 **8 Claims**



An improved engine exhaust gas heater based on the heat pipe principle is provided which is suitable for many applications, including aircraft to supply warm air for cabin conditioning, and also automobiles, trucks, and other vehicles. The heater is preferably associated with the engine exhaust gas muffler, and the resulting combination comprises a device or system of greater safety and of increased effectiveness regarding heat transfer and noise reduction capability.

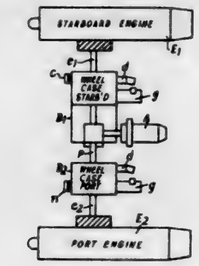
3,662,543
HEAT ENGINE AND A METHOD OF PUTTING THIS ENGINE INTO ACTION
Milorad Milisavljevic, Promenade des Anglois 181, F-06-Nice, France
Filed Dec. 14, 1970, Ser. No. 97,515
Claims priority, application Switzerland, Dec. 17, 1969, 018913/69
Int. Cl. F02c 5/00
U.S. Cl. 60—39.6 **2 Claims**



In an otherwise conventionally designed piston and cylinder internal combustion engine, is provided an additional, fixed volume, combustion chamber, which can communicate with the variable volume enclosure provided by the piston and cylinder. The engine operates on a six-stroke cycle. During the first stroke, air is drawn into the enclosure; during the second, the air is compressed and introduced into the chamber; during the third, the chamber is sealed off, more air is drawn into the enclosure, fuel is injected into the chamber and the resultant mixture in the chamber is ignited; during the fourth, the air in the enclosure is compressed

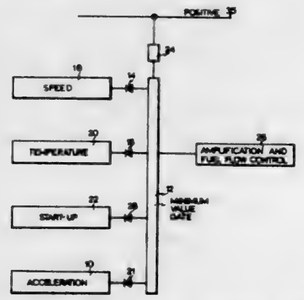
while combustion still carries on in the chamber; during the fifth, the chamber is made to communicate with the enclosure to bring the burning mixture into contact with the compressed air thereby to complete combustion and to drive the piston; and during the sixth, the burnt gases are exhausted. The working stroke is thus the fifth.

3,662,544
COMBINED AUXILIARY POWER AND ENGINE STARTER SYSTEMS
Peter Barno Kahn, and Norman Frederick North, both of Fareham, England, assignors to The Plessey Company Limited, Essex, England
Filed May 15, 1970, Ser. No. 37,687
Claims priority, application Great Britain, May 19, 1969, 25,490/69
Int. Cl. F02c 7/26
U.S. Cl. 60—39.14 **4 Claims**



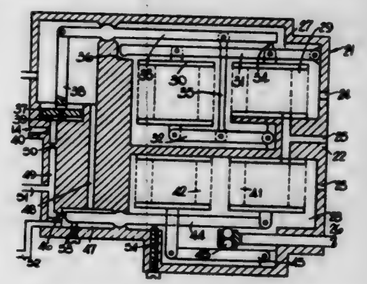
To permit an auxiliary power unit to start an engine without drastic temporary reduction of the running speed of that unit, the engine is coupled to the auxiliary power unit by a differential gear drive whose third element drives a gear pump having in that outlet which is the delivery outlet when the auxiliary power unit drives the engine, a normally unloaded pressure retaining valve which, to produce starting torque for the engine, can be loaded to build-up a preset delivery pressure. A pre-loaded pressure-retaining valve may be provided in the other pump outlet in order to permit transmission of torque from the main engine to the auxiliary power unit, both valves being by-passed in the respectively reverse direction by non-return valves.

3,662,545
ACCELERATION CONTROL CIRCUIT FOR A GAS TURBINE
Richard K. Davis, Roanoke, Va., assignor to General Electric Company
Filed Aug. 24, 1970, Ser. No. 66,268
Int. Cl. F02c 9/08
U.S. Cl. 60—39.28 **8 Claims**



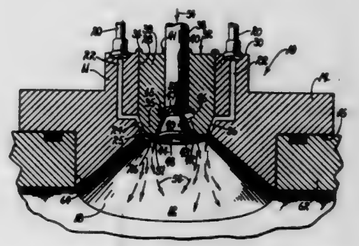
An electrical control circuit for adjusting the fuel input to rotating machinery such as a gas turbine during acceleration, includes a positive speed feedback signal in opposition to a reference signal representing maximum allowable acceleration. A third input signal, applied to the input of the control circuit in equal opposition to the speed reference signal when the acceleration of the turbine is zero, prevents a time delay from occurring in control reaction to changes in speed of the turbine.

3,662,546
FLUID PRESSURE ACTUATED DEVICE AND A GAS TURBINE FUEL CONTROL SYSTEM INCORPORATING SUCH DEVICE
Richard Joseph Ifield, New South Wales, Australia, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Aug. 19, 1970, Ser. No. 65,008
Int. Cl. F02c 9/08
U.S. Cl. 60—39.28 **12 Claims**



A fuel control system for a gas turbine engine has a metering valve positioned by a control fluid pressure from a device actuated by fuel pressure in response to air pressure signals obtained from the engine compressor. These pressure signals are applied to bellows units which operate through linkages to vary the effective areas of flow restrictions and thereby to provide variations in the control pressure.

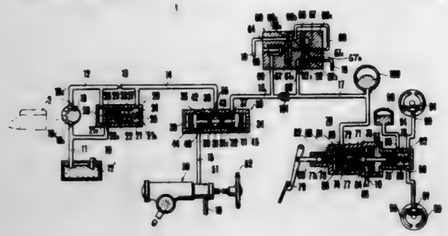
3,662,547
COAXIAL INJECTOR FOR REACTION MOTORS
T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to, and Larry L. Larson, 11010 Irma Avenue, Tujunga, Calif.
Filed Mar. 16, 1970, Ser. No. 19,585
Int. Cl. F02k 9/02; B05b 7/00
U.S. Cl. 60—39.74 A **4 Claims**



A coaxial injector particularly suited for use in mixing liquid propellants within combustion chambers of reaction motors, characterized by a first annular orifice, of a fixed dimension, adapted to deliver liquid oxidizer in an outwardly diverging conical sheet circumscribed by a second annular orifice, also of a fixed dimension, adapted to deliver an outwardly converging conical sheet of liquid fuel, whereby the sheets are caused to experience momentum exchange at an annular intersection for thereby developing a homogeneous

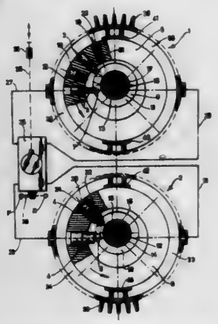
mixture sheathed within a layer of a fuel-rich mixture for cooling the walls of the associated combustion chamber, a feature of the injector being an integration of injector components into an all-welded, unitary structure having empirically established propellant mixing characteristics.

3,662,548
FLUID CONTROL SYSTEM FOR VEHICLES
Akira Suzuki, and Tadataka Naruml, both of Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Aichi-Ken, Japan
Filed June 1, 1970, Ser. No. 42,120
Claims priority, application Japan, June 5, 1969, 44/44189
Int. Cl. F15b *1/02*
U.S. Cl. 60—51 **3 Claims**



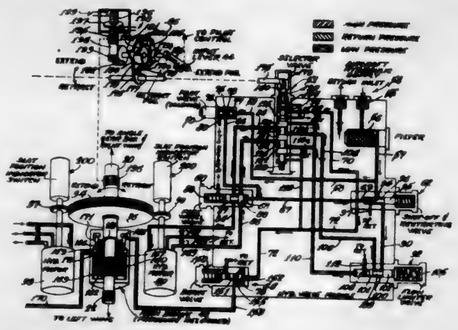
In a vehicle engine driven pump the output flow of the pump is increased in proportion to an increase in the engine speed. The increased output flow of the pump is regulated by a metering orifice and a control valve for bypassing a surplus quantity of the pump output flow to maintain the fluid volume downstream of the metering orifice at a predetermined constant volume. The constant volume downstream of the metering orifice is divided into two portions by means of a proportional distributing valve, one portion being supplied to a first pressure fluid actuated device through a check valve and the other portion to a second pressure fluid actuated device. An unloading valve and an accumulator are connected to the first pressure fluid actuated device to assure supply of the pressurized fluid under a constant pressure.

3,662,549
POSITIVE DISPLACEMENT MACHINE WITH A CONTINUOUSLY VARIABLE ADJUSTMENT FOR A HYDROSTATIC GEAR
Joachim Wurzer, Theodor Storm Strasse 47, 28 Bremen, Germany
Filed June 22, 1970, Ser. No. 48,006
Int. Cl. F16d *31/02*
U.S. Cl. 60—53 B **5 Claims**



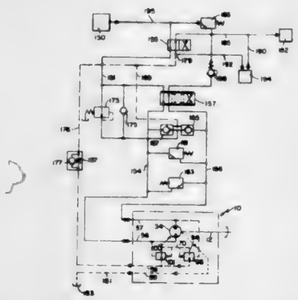
Stepless variable hydrostatic gear comprising a positive displacement pump and motor, at least one of which has means for the adjustment of the displacement volume, causing an alteration in the gear ratio; said means being constituted by wall parts which are movable under hydraulic pressure.

3,662,550
ACTUATOR SYSTEM
Gerhardt E. Lichtfuss, Rockford, Ill., assignor to Sundstrand Corporation
Filed Jan. 11, 1971, Ser. No. 105,272
Int. Cl. F16d *33/00*
U.S. Cl. 60—53 R **17 Claims**



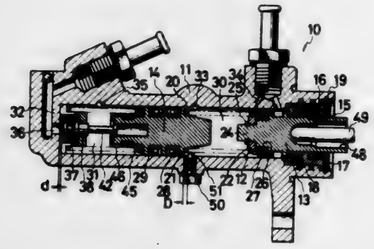
An actuator system for air foil surfaces such as leading edge slats in an aircraft wing, including a drive shaft for actuating the slats, a pair of hydraulic motors for driving the shaft, separate control circuits for the motors supplied from separate sources of pressure fluid, manually operable valve means for simultaneously energizing both control systems to operate both motors to drive the shaft, free wheeling valve means in each circuit enabling either motor to be driven by the shaft in event of pressure failure in its circuit, brake means for the drive shaft, separate brake release devices controlled separately by the two circuits such that either is capable of releasing the brake when the shaft is put in operation, and feedback means driven by the shaft for neutralizing the manual valve means and stopping the drive motors when the required slat adjustment is completed.

3,662,551
FLUID PRESSURE CONTROLLING
James M. Denker, Scituate, Mass., assignor to Nutron Corporation, Hingham, Mass.
Filed Aug. 19, 1970, Ser. No. 65,102
Int. Cl. F16d *31/06*; **F04b** *9/08*
U.S. Cl. 60—53 A **42 Claims**



In a rotary fluid device of the type comprising two elements, one of which is capable of operation as a pump and the other of which is capable of operation as a motor and which are coupled to a common shaft, the motor element having the inlet thereof adapted for communication with the main inlet of the device and the outlet thereof adapted for communication with an intermediate conduit, the pump element having the inlet thereof adapted for communication with the intermediate conduit and the outlet thereof adapted for communication with the main outlet of the device, in a first aspect that improvement comprising ducting extending from the intermediate conduit to a fluid drain and valving within the ducting and responsive to fluid pressure in either the main inlet or the main outlet for maintaining the fluid in the intermediate conduit at a pressure bearing a predetermined relationship to the pressure of fluid in the main inlet or main outlet. In a second aspect, a device having valving and ducting as above described and in which elements are pistons carried by a rotor mounted within a housing and the intermediate conduit is an annular chamber defined by the rotor and housing within which pistons are located during rotation of the rotor. In a third aspect, in which a second chamber surrounds the shaft on which the rotor is mounted, that improvement wherein the annular chamber is maintained at one pressure level and fluid in the second chamber is maintained at a second, significantly lower pressure level.

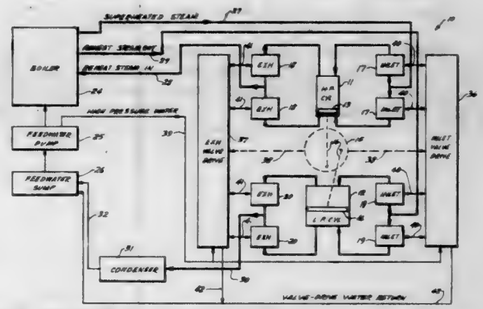
3,662,552
MASTER CYLINDER FOR HYDRAULIC BRAKING SYSTEM
Chiaki Ochiai, Kariya City, and Takashi Fujl, Toyota City, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya City, Oichi Pref., Japan
Filed Oct. 12, 1970, Ser. No. 79,757
Claims priority, application Japan, Oct. 18, 1969, 44/83507
Int. Cl. F15b *7/00*
U.S. Cl. 60—54.6 E **2 Claims**



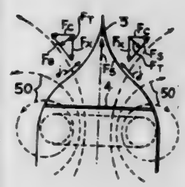
A master cylinder for hydraulic braking system of an automotive vehicle comprising a hydraulic piston slidably fitted in the cylinder bore, a valve member operatively connected to the piston and normally spaced from a reservoir inlet of the master cylinder for controlling fluid communication therethrough, a stopper bolt normally spaced from the piston for limiting the most retracted position thereof. When residual hydraulic pressure remains within the master cylinder after the brake has been released, the piston is immediately shifted to its most retracted position due to residual pressure whereby any residual hydraulic pressure is released to the reservoir.

3,662,553
VALVE ACTUATION SYSTEM FOR STEAM ENGINE
Robert Hodgkinson, San Diego, Calif., assignor to Steam Power Systems, Inc., San Diego, Calif.
Filed Dec. 31, 1970, Ser. No. 103,269
Int. Cl. F01k *13/00*
U.S. Cl. 60—105 **16 Claims**

A steam engine having steam inlet and exhaust poppet valves which are hydraulically actuated by water under pressure. Engine-driven rotary distributors couple a boiler feedwater pump or other source of high-pressure water to the valves, and the distributors deliver gated water pulses to actuate the valves in timed sequence. The inlet-valve distributor is adjustable to provide a variable-admission adjustable-cutoff inlet system for steam supplied to the engine cylinders.



3,662,554
ELECTROMAGNETIC PROPULSION DEVICE FOR USE IN THE FORWARD PART OF A MOVING BODY
Axel De Broqueville, Translaan 478, Sterrebeek, Belgium
Filed Apr. 27, 1970, Ser. No. 32,066
Claims priority, application Belgium, Feb. 19, 1970, 85.403
Int. Cl. F03h *1/00, 5/00*; **H05h** *1/00*
U.S. Cl. 60—202 **9 Claims**

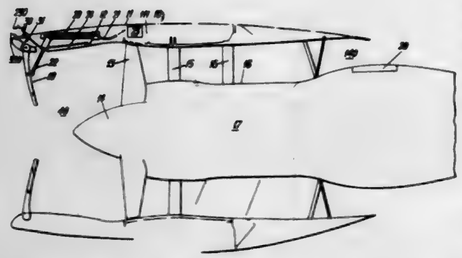


At least two parallel annular electrodes are disposed on the outside dielectric surface of the body starting from the forward edge thereof, perpendicularly to the direction of the symmetry axis of a magnetic field around the body. A propulsion electromagnetic force field is produced around the body such as to substantially decrease the overpressure in front of said moving body while accelerating the surrounding fluid backward and aside from said body, thereby to reduce the shock wave due to said overpressure.

3,662,555
METHOD FOR OPERATING A HYBRID ROCKET ENGINE
Orval E. Ayers, and Niles C. White, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army
Filed Dec. 11, 1963, Ser. No. 329,928
Int. Cl. C06d *5/10*
U.S. Cl. 60—220 **10 Claims**

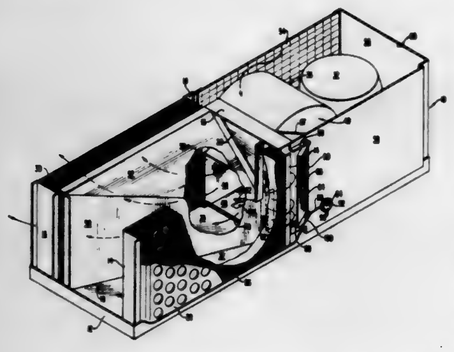
In the method of operating hybrid-propellant rocket engines wherein a fluid oxidizer is introduced into the combustion chamber of said engine to support the combustion of a solid fuel disposed in said chamber thereby generating thrust, the improvement which comprises first introducing into said chamber as a first oxidizer a member selected from the group consisting of hydrogen peroxide and water-hydrogen peroxide mixtures rich in hydrogen peroxide to support combustion upon ignition and thereafter introducing water to support continued combustion of said solid fuel while ceasing the introduction of said first oxidizer.

3,662,556
GAS TURBINE ENGINE
Michael Poucher, Duffield; Leslie John Brooks, Aston-On-Trent, and Geoffrey William Morris, Breaston, all of England, assignors to Rolls-Royce Limited, Derby, England
Filed Jan. 12, 1971, Ser. No. 105,808
Claims priority, application Great Britain, Jan. 14, 1970, 1,842/70
Int. Cl. F02k 3/04, 11/00
U.S. Cl. 60—226 R 15 Claims



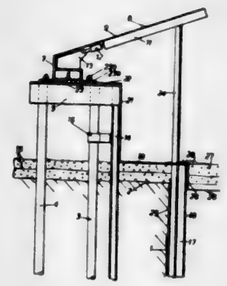
A gas turbine power plant includes an outer casing having an upstream end and a downstream end, a main air intake adjacent the upstream end and a gas outlet at the downstream end of said outer casing, first obturating means movable between an inoperative position wherein it is fully retracted so as not to interfere with a flow of air through said main air intake and an operative position wherein it extends partially to obturate the said main air intake, an auxiliary air intake defined in said outer casing, second obturating means movable between an operative and an inoperative position respectively to permit and to prevent ingress of air into said auxiliary air intake, and powered means for moving said first and second obturating means so that they are both in their respective operative positions substantially at the same time and in their respective inoperative positions substantially at the same time, and when in their operative positions increase the average velocity of the ingested air but to below Mach 1 under standard take-off and landing engine speeds.

3,662,557
ASPIRATOR DISPOSAL SYSTEM FOR AIR CONDITIONER EVAPORATOR CONDENSATE
David E. Morgan, Harrisonburg, Va., assignor to Dunham-Bush, Inc., Harrisonburg, Va.
Filed Oct. 5, 1970, Ser. No. 77,931
Int. Cl. F25b 47/00
U.S. Cl. 62—279 11 Claims



The scroll housing for a centrifugal blower is provided with a narrow elongated slot completely across the width of the housing and along the bottom of the same upstream of the scroll outlet which intersects the condensate drain pan. A plurality of laterally spaced, liquid smashing fingers extend upwardly at approximately 45° to the direction of flow, downstream of the aspirator slot, with the fingers struck out from the scroll bottom to define secondary aspirator slots downstream of the fingers. The bottom edge of the scroll housing, at its outlet is also upwardly inclined in the direction of flow to direct the condensing air carrying the atomized condensate against the full surface of the condenser coil positioned in the path thereof, for evaporation by thermal exchange. A rectangular opening leads from the condenser chamber downstream of the scroll housing and an adjustable door covered opening associated with the room sidewall of the unit and aligned therewith allows fresh makeup air to join the recirculated room air passing through the filter and the evaporator coil and separated from the condensing air by an appropriate bulkhead.

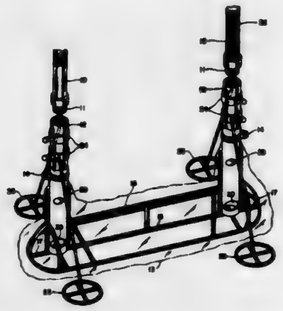
3,662,558
IN-GROUND STORAGE ARRANGEMENT FOR LIQUEFIED GASES
Robert G. Jackson, Hornchurch, England, assignor to Conch International Methane, Nassau, Bahamas
Filed Sept. 28, 1970, Ser. No. 76,045
Claims priority, application Great Britain, Nov. 3, 1969, 53,755/69
Int. Cl. B65g 5/00
U.S. Cl. 61—0.5 10 Claims

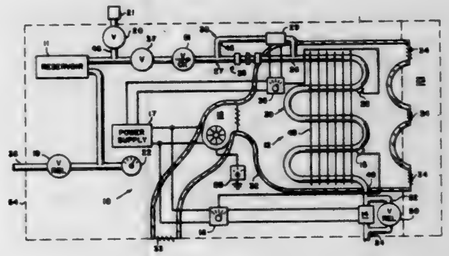


A large-scale in-ground storage facility for liquefied gas at cryogenic temperatures consists of an open cavity in the ground covered by an impervious roof sealed at its periphery to a ring-beam extending around the rim of the cavity, which is also sealed to the upper rim of the wall of the cavity. The ring-beam rests on a support structure which extends around the mouth of the cavity, and the ring-beam is mounted on the support structure by thermal expansion means which permit limited relative movement between the ring-beam and its support structure to accommodate thermal expansion and contraction.

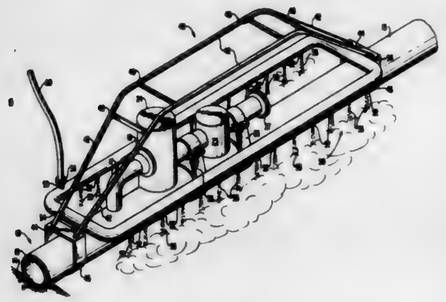
3,662,559
ANCHORAGE FOR BOAT DOCKS
Wesley K. Swift, 3434 19th Ave., Moline, Ill.
Filed Nov. 24, 1969, Ser. No. 879,383
Int. Cl. E02b 3/23; E02d 27/42
U.S. Cl. 61—46 6 Claims

This disclosure relates to an anchorage for boat docks (piers, wharves and the like) for small boats and pleasure water craft, which anchorage can be positioned and retained in position without consideration of the nature of the surface of the water bed. Further, the anchorage can be placed into position with the use of the small boat, a wrench, and a level only. This method of positioning an anchorage can be utilized to stabilize a plurality of piers and then as the base for the attachment of prefabricated members to form any desired form or design of dock or wharf. The installation of the anchorage does not require any type of pile driving to securely fasten the anchorage to the surface of the water bed.





3,662,560
VALVE GUARD AND BURYING METHOD AND APPARATUS
Anthony H. Veazey, Belle Chasse, La., assignor to Brown & Root, Inc., Houston, Tex.
Filed Apr. 3, 1970, Ser. No. 25,367
Int. Cl. F16l 1/00; E02f 5/02
U.S. Cl. 61—72.4 8 Claims



A method and apparatus for burying an underwater pipeline section and a generally perpendicularly disposed tap-off valve into the bed of the body of water. A tubular bridge member is constructed over the tap-off valve and the valve is surrounded with a generally rectangular high pressure fluid manifold having a plurality of downwardly disposed nozzles positioned along the lateral sides thereof. The burying operation is accomplished by connecting a high pressure fluid line to the manifold and jetting away the bed surrounding the pipeline section and valve to enable the structure to descent within the waterbed.

3,662,561
COOLING APPARATUS
Michael J. Schroeder, Carrollton, Tex., assignor to Vought, Inc., Garland, Tex.
Filed July 30, 1970, Ser. No. 59,643
Int. Cl. F25d 15/00
U.S. Cl. 62—119 10 Claims

Apparatus for use in a cryogenic gas cooling system for conditioning liquid cryogenic gas prior to introducing the same to an evaporator where the conditioned gas is vaporized, and an improved cryogenic gas cooling system utilizing the conditioning apparatus to provide a more efficient cooling system and to provide improved temperature control of a space to be cooled.

3,662,562
APPARATUS FOR THE FORMATION AND SEPARATION OF SOLID MATERIALS FROM A LIQUID
Herbert Frederick Wiegandt, Ithaca, N.Y., and Regis Lafay, Suresnes (Hauts de Seine), France
Original application Oct. 7, 1966, Ser. No. 585,126, now Patent No. 3,541,804. Divided and this application Mar. 25, 1970, Ser. No. 25,614
Claims priority, application France, Oct. 8, 1965, 34363
Int. Cl. B01d 9/04
U.S. Cl. 62—123 1 Claim

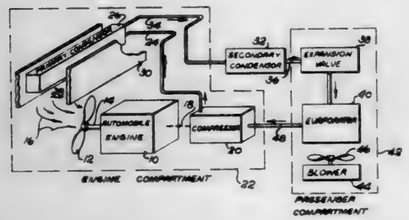


An apparatus for selective crystallization and separation of crystals from a liquid mixture whereby an immiscible refrigerant contacts the liquid mixture in a vertical cylindrical crystallizer thereby separating the solid particles from the mixture and entraining said particles en route to a vertical truncated separator.

3,662,563
AUTOMOTIVE AIR CONDITIONING SYSTEM UTILIZING SEPARATE CONDENSERS
Gustav H. Sudmeier, 2708 Torrance Blvd., Torrance, Calif.
Filed July 1, 1970, Ser. No. 51,584
Int. Cl. B60h 3/04
U.S. Cl. 62—243 2 Claims

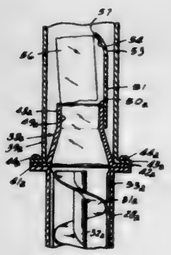
An air-conditioning system for automobiles is disclosed, in which a fluid refrigerant is cycled from a compressor, first through primary and secondary condensers, then through an

expansion valve and an evaporator, to cool the interior of the automobile. The primary condenser is positioned in the engine compartment and is radially displaced from the engine



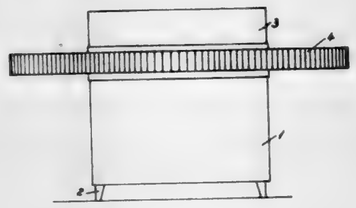
fan while the secondary condenser is located outside the automobile, e.g. affixed to the undercarriage of the automobile. The compressor is also located in the engine compartment and the evaporator is fixed in the passenger compartment.

3,662,564
ICE MAKER CONSTRUCTION
Jack F. Clearman, Stevensville, Mich.; Leonard W. Ohlsson, St. Paul, Minn., and Michael H. Mackin, Kankakee, Ill., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Oct. 17, 1969, Ser. No. 867,222
Int. Cl. F25c *1/14*
U.S. Cl. 62—320 **8 Claims**



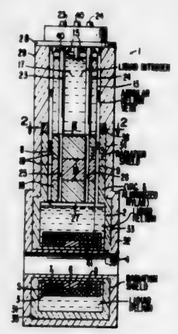
An ice maker of the type employing a refrigerated chamber and a harvesting auger positioned with its flights in scraping relation to inner walls of the refrigerated chamber for continuously scraping ice particles from the walls. A screw shaft co-rotatable with the harvesting auger drives the ice product harvested by the auger in the form of a confined columnar path through a discharge conduit and forces the ice product through a compression means similar to an extrusion member which may be of any one of a number of configurations to produce variously configured ice products, such as "ice cubes", ice chips, ice flakes or cracked ice, depending upon the particular requirements of the user. The machine is further characterized by releasable attachment means removably securing one of the extrusion members at an outermost end of the screw shaft, thereby to facilitate interchanging one extrusion member for another of a different configuration to adapt the machine for producing differently configured ice products.

3,662,565
FREEZING APPARATUS HAVING A ROTATABLE HORIZONTAL FREEZING STRUCTURE
Hans Gram, Vojens, Denmark, assignor to Brodrene Gram A/S, Vojens, Denmark
Filed Feb. 26, 1970, Ser. No. 14,589
Claims priority, application Denmark, Feb. 27, 1969, 1099/69
Int. Cl. F25c *1/10*
U.S. Cl. 62—345 **2 Claims**



A freezing apparatus comprises a multitude of horizontally disposed arms extending radially from a rotatable housing in which means are provided for circulating a freezing medium through each of said arms.

3,662,566
CRYOSTAT HAVING HEAT EXCHANGING MEANS IN A VENT TUBE
William J. Brand, Palo Alto, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed Feb. 9, 1970, Ser. No. 9,811
Int. Cl. F25b *19/00*
U.S. Cl. 62—514 **8 Claims**

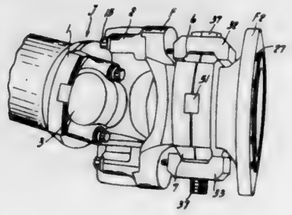


A cryostat is disclosed which includes a liquid helium chamber for cooling an object such as a superconducting solenoid to cryogenic temperatures. A vent tube is connected in gas communication with the liquid helium chamber and extends outwardly therefrom for venting vaporized helium. An elongated plug partially closes off the vent tube and defines an annular gas passageway in the space between the plug and the inside wall of the vent through which the evolved gaseous helium is vented for cooling the inside wall of the vent tube. The plug includes a liquid nitrogen chamber and thermal insulation is interposed in the plug between the liquid nitrogen and liquid helium chambers to provide a thermal barrier therebetween. The use of liquid nitrogen in the plug improves the thermal isolation of the liquid helium

chamber from the surrounds and reduces the liquid helium consumption.

ERRATUM
For Class 62—279 see:
Patent No. 3,662,557

3,662,567
QUICK DISCONNECT COUPLING
William T. Condon, and Joseph P. Meli, both of Rockford, Ill., assignors to Twin Disc, Incorporated, Racine, Wis.
Filed Jan. 13, 1971, Ser. No. 106,103
Int. Cl. F16d *3/16*
U.S. Cl. 64—6 **9 Claims**



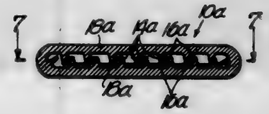
A quick disconnect coupling for a power transmission or the like and including a pair of separable flanges each having tapered opposed surfaces, clamps provided for said opposed surfaces to thereby releasably clamp said flanges together, quick releasable means for holding said clamps against said tapered surfaces of said flanges, and resilient means for urging said clamps off of the tapered surfaces of the flanges when the coupling is to be released. The coupling includes means between the flanges for transmitting torque therebetween and thereby drivingly connecting them together when the clamps are acting to rigidly hold the flanges together. Piloting means are also provided in one of the flanges for piloting the other flange thereon to thereby facilitate assembly of the unit. The coupling finds particularly utility in connection with a universal joint and one of the flanges of the coupling is rigidly secured to the yoke of of such a universal joint.

3,662,568
FLEXIBLE COUPLING
Takeshiro Kashima, Kanagawaken, and Isamu Onaya, Chibaken, both of Japan, assignors to Pacific Metals Co. Ltd., Tokyo, Japan
Filed Feb. 16, 1971, Ser. No. 115,602
Int. Cl. F16d *3/78*
U.S. Cl. 64—13 **3 Claims**



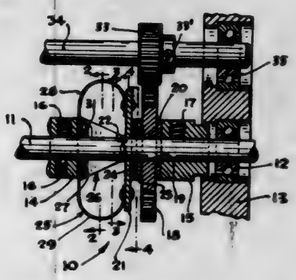
In a flexible coupling composed of two coupling halves and an intermediate elastic ring inserted between the two coupling halves, the improvements that each of said two coupling halves has on its inside surface claws of height equivalent to half of the thickness of said intermediate ring and that said intermediate ring is provided with plurality of openings of same shape as the cross section of said claws.

3,662,569
UNIVERSAL JOINTS
Ralph Williams, Coventry, England, assignor to The Torrington Company Limited, Coventry, England
Filed June 30, 1970, Ser. No. 51,102
Claims priority, application Great Britain, July 4, 1969, 33,807/69
Int. Cl. F16d *3/32*
U.S. Cl. 64—17 A **5 Claims**



A universal joint is disclosed which is made primarily of plastic. A center cube of the joint has two pairs of opposed rod ends. The arms of bifurcate members may be molded directly about the rod ends, or on a bearing mounted about the rod ends. The bifurcate members may be all plastic or plastic-covered steel. The center cube and rod ends may be molded as one integral plastic unit or, if desired, the rods may be made of steel with the center cube made of plastic and molded about the rods.

3,662,570
TORQUE LIMITING CLUTCH
Joseph F. Chinlund, deceased, 1224 Glenoak Lane, late of Northbrook, Ill. (Carol B. Chinlund, executrix)
Filed Mar. 19, 1970, Ser. No. 20,956
Int. Cl. F16d *7/02*
U.S. Cl. 64—30 C **9 Claims**
This application filed under Rule 47.

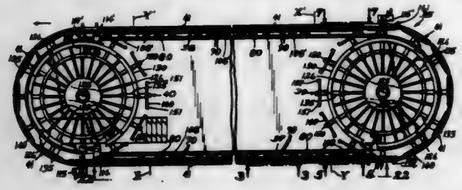


There is disclosed a torque limiting clutch having a pair of cooperable torque transmitting members coupled by a pair of clutch members. Torque is transmitted via leaf spring means secured to one torque transmitting member and one clutch member. The leaf spring means is bowed and urges the clutch members together. The amount of torque which the clutch can transmit before slippage occurs between the clutch members is adjustable by changing the amount of bowing in the leaf spring means.

3,662,571
KNITTING MACHINE
Rienk J. Muller, Minneapolis, Minn., assignor to Munsingwear, Inc., Minneapolis, Minn.
Filed Oct. 5, 1970, Ser. No. 77,869
Int. Cl. D04b *29/00*
U.S. Cl. 66—7 **14 Claims**

A knitting machine designed to produce a continuous length of knitted fabric in a course-wise direction wherein knitting needles are mounted for reciprocating knitting

movements in needle-carrying sections linked together to form a continuous oval unit. The needle-carrying sections are rotated relative to a plurality of threads and to preset cams which reciprocate the needles in knitting movements. A plurality of hooks are fixed for movement in a continuous oval



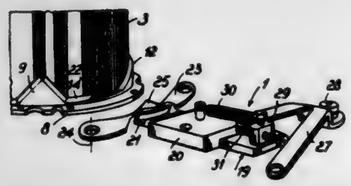
path with a straight portion thereof extending adjacent a straight portion of the needle-carrying sections, with the hooks cammed to engage the knitted fabric as it comes from the needles to provide a wale-wise bias on the fabric as it is knitted.

3,662,572

JACK SELECTION DEVICE FOR CIRCULAR KNITTING MACHINES

Francesco Lonati, Via S. Polo 11-Brescia, Milan, Italy

Filed Apr. 23, 1970, Ser. No. 31,294
Claims priority, application Italy, Apr. 30, 1969, 16.251A/69
Int. Cl. D04b *15/68, 15/32*
U.S. Cl. 66—50 R 1 Claim



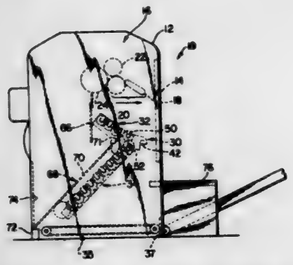
A device arranged adjacent a cam ring at jack level in a circular knitting machine. The device includes a movable cam insertable in a notch in the cam ring to maintain the continuity of the upper surface of the cam ring for action upon lower jack butts. When the cam is moved out of the notch a lever is activated to selectively act on jack butts to force the lower butts of selected jacks off the cam ring.

3,662,573

LEATHER SHAVING MACHINE

Lando J. Schwaller, and Albert J. Razal, both of Sheboygan, Wis., assignors to Akzona Incorporated, Asheville, N.C.

Filed May 15, 1970, Ser. No. 37,732
Int. Cl. C14b *17/00*
U.S. Cl. 69—42 5 Claims



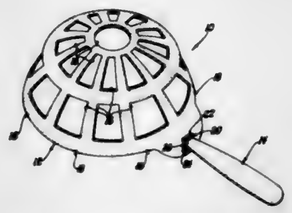
A leather hide shaving machine including laterally extending leather shaving means and laterally extending conveyor means subjacent the shaving means substantially coextensive therewith for conveying hides away from the shaving means to a point remote from the hide feed point for subsequent transport to other types of leather processing machines. To circumvent contamination of a shaved hide by shaving debris precipitated during the shaving operation and accumulated on the conveyor means, a conveyor according to the present invention comprises a plurality of shafts each fixedly supporting a plurality of laterally spaced discs the peripheries of which support the hide during transport away from the shaving means but permit leather debris from the shaving means to fall through the lateral spaces between the discs.

3,662,574

WIG WASHER AND SETTER

Shirley A. Groat, 1205 Genessee, Royal Oak, Mich.

Filed Sept. 18, 1969, Ser. No. 859,011
Int. Cl. B05c *11/14*
U.S. Cl. 68—213 7 Claims



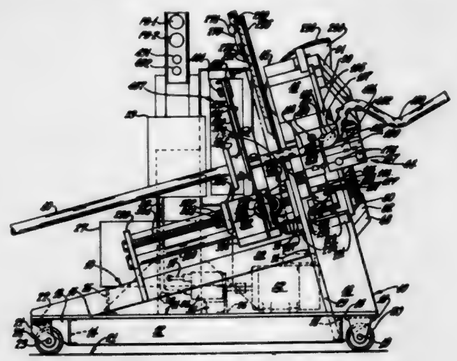
A bulbous means having a convex exterior for supporting a wig and a concave interior with openings therethrough and a removable handle extending from the exterior thereof. Also included is a skull shaped support having a chamber on the interior and passages communicating between the chamber and the skull portion and an inlet passage for communicating gases to the chamber whereby the bulbous means may be disposed over the skull shaped support with a wig thereon for drying of the wig.

3,662,575

METHOD AND APPARATUS FOR BENDING TUBING

Daniel A. Zmuda, Toledo, Ohio, assignor to Oldberg Manufacturing Company, Grand Haven, Mich.

Filed Feb. 26, 1970, Ser. No. 14,441
Int. Cl. B21b *37/08*; B21d *11/02*
U.S. Cl. 72—21 20 Claims



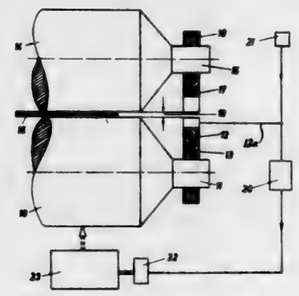
The disclosure embraces a method of and apparatus for forming or impressing successive bends in tubing, such as exhaust pipes and tail pipes particularly for replacement purposes in internal combustion engine exhaust systems of automotive vehicles, the method and apparatus providing for forming successive bends of various depths and angularities and especially involved and improved method and means for indexing the tubing for spacing the bends and indexing the depth and angularity for each bend while maintaining positive control of the tubing during the successive operations to assure the desired orientation of the bends in the tubing.

3,662,576

CONTROL FOR ROLL GAP OF A ROLLING MILL

Siegfried Girlatschek, Bremen, Germany, assignor to Vereinigte Flugtechnische Werke Fokker GmbH, Bremen, Germany

Filed Apr. 13, 1970, Ser. No. 28,351
Claims priority, application Germany, June 21, 1969, P 19 31 654.2
Int. Cl. B21b *37/08*
U.S. Cl. 72—21 10 Claims



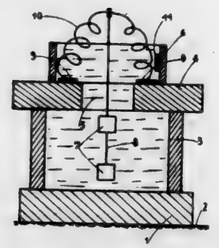
A feedback control system for a gap between rolls in a mill includes a variable inductance with a core on one roll and an armature on the other roll. This inductance, as well as a reference inductance and two auxiliary inductances, are interconnected to establish AC biased bridge. The relative phase of the bridge diagonal voltage is used to control the gap width. The pick up inductance and one of the auxiliary inductance are mounted in physical proximity to each other.

3,662,577

APPARATUS FOR SHAPING METALLIC PIECES BY SHOCK WAVES

Gerard Nicot, Pamiers, France, assignor to Creusot-Loire, Paris, France

Filed July 23, 1970, Ser. No. 57,733
Int. Cl. B21d *26/08*
U.S. Cl. 72—56 8 Claims



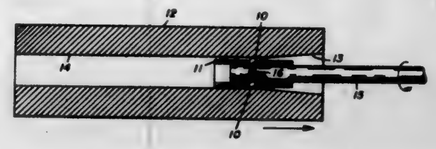
Metallic pieces are shaped by shock waves created by firing a charge within the piece to be shaped and shortly thereafter by the firing of a charge on top of a cap seated on the piece to be shaped. The cap has a central opening into the piece to be shaped and into a receptacle opening upwardly and located on the cap, the second explosive charge being located within the receptacle.

3,662,578

TURBULENCE PROMOTER FORMATION

Thomas E. Gleason, Campbell, and Charles C. Ripley, San Jose, both of Calif., assignors to General Electric Company

Filed June 28, 1968, Ser. No. 741,073
Int. Cl. B21d *13/04*
U.S. Cl. 72—75 14 Claims



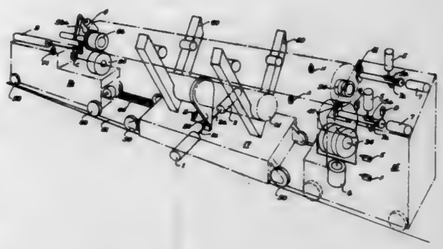
A method and an apparatus for forming fluid turbulence promoters on the outer surface of tubes is disclosed. Typically, a set of hardened balls is pressed against the tube surface with sufficient force to deform the tube surface. Simultaneously, the balls and tube are moved relatively rotationally and longitudinally so that depressed grooves are formed in the tube surface. By varying the relative movement direction and speed and groove depth, a wide variety of groove patterns may be produced.

3,662,579

METHOD AND APPARATUS FOR ROLL FORMING ENDS OF HELICALLY CORRUGATED PIPE

Clarence P. Lewis, Carlisle, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed Oct. 7, 1970, Ser. No. 78,892
Int. Cl. B21d *17/04*
U.S. Cl. 72—105 16 Claims

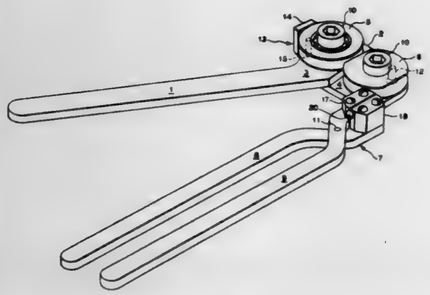


Method and apparatus for forming one or more annular corrugations and a flange on the ends of a length of helically corrugated pipe. The method involves forming the two ends, one at a time. The trailing end of the pipe, as it comes from a pipe forming machine or the like, is located axially in a predetermined relation to a forming apparatus, and the trailing end is formed while the length of pipe is backed up under pressure on the leading end and is supported intermediate its ends. Rotational force is applied to both ends of the pipe to avoid distortion. Thereafter, the leading end is formed while the length of pipe is backed up under pressure on the trailing end and is supported intermediate its ends; and again rotational force is applied to both ends of the pipe.

The apparatus comprises two units in tandem, disposed parallel to the pipe axis, and the pipe is moved, transversely of its axis, successively to the two units. In the first unit a forming section is in a fixed position, and a back-up and thrust section and an intermediate pipe supporting section

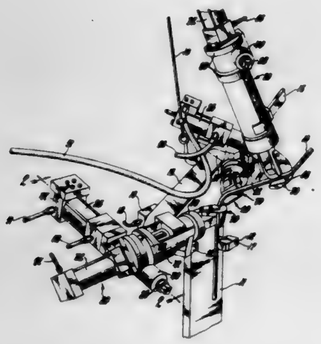
are movable in a 2:1 ratio to take care of different pipe lengths. In the second unit, a back-up and thrust section is in a fixed position, and a forming section and an intermediate pipe supporting section are arranged as above described, to take care of different lengths of pipe.

3,662,580
TUBE BENDER AND METHOD
Harlan D. Power, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Mar. 17, 1970, Ser. No. 20,330
Int. Cl. B21d 7/02
U.S. Cl. 72—217 6 Claims



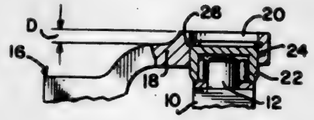
A tube bender, particularly adapted to bend plastic coated tubing, having a pivotally fixed tube supporting wheel, a pliers-like tube gripping means for holding and bending a tube around said wheel, and a roller positioned to encompass the tube between said roller and said wheel to roll said tube to said wheel while bending the same by actuating said gripping means to bend said tube around said wheel.

3,662,581
TUBE BENDER
Robert E. Early, Madison Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 23, 1970, Ser. No. 91,683
Int. Cl. B21d 11/04
U.S. Cl. 72—305 9 Claims



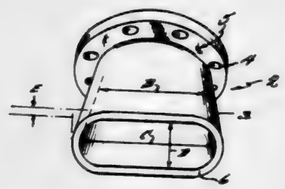
A tube bending apparatus for simultaneously forming multiple bends in metallic tubing, the tubing being secured at opposite ends and a plurality of double actuating forming or bending heads being used to form the bends, one such double actuating bending head being used for each of the bends.

3,662,582
HEAT-EXCHANGE TUBING AND METHOD OF MAKING IT
Fred W. French, Morris, Conn., assignor to Noranda Metal Industries Inc.
Filed May 18, 1970, Ser. No. 38,132
Int. Cl. B21d 53/06
U.S. Cl. 72—367 8 Claims



Heat-exchange tubing with a peripheral wall of oblong cross-section, and inner fins on the wall of which the fins on either of two opposite flat wall sections extend with their tips at least to the level of the tips of the fins on the other flat wall section, and a method of forming the tubing from a round inner-fin tube blank, involving partially flattening the round blank into the tubing with its peripheral wall of oblong cross-section.

3,662,583
TRANSITION MEMBERS
Charles H. Moore, Sr., 645 Matanzas Ct., Fort Myers Beach, Fla.
Filed Feb. 6, 1970, Ser. No. 9,324
Int. Cl. B21d 41/00
U.S. Cl. 72—370 4 Claims

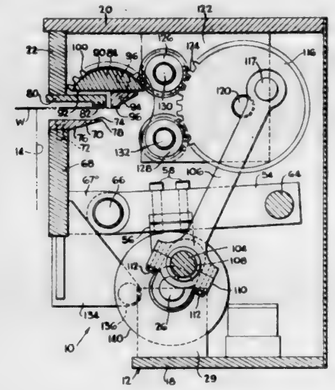


A round tubular work-piece of substantially uniform diameter and wall-thickness is forged from within, by a particularly shaped spud or mandrel, to obtain a nozzle or connector element having therewithin a substantially uniform cross-sectional area which changes in shape from round to oblong whereby it may uniformly supply fluid to a larger number of tubes or the like which are arranged in spaced parallelism with respect to each other.

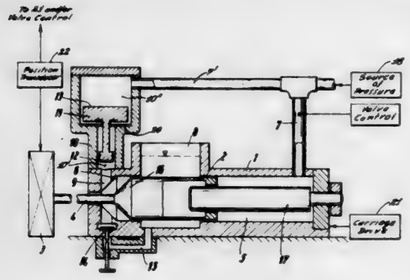
3,662,584
SHEET METAL FORMING APPARATUS
Clarence O. Jones, Jr., Eggertsville, and Fred F. Snuszki, Kenmore, both of N.Y., assignors to Niagara Machine & Tool Works, Buffalo, N.Y.
Filed June 15, 1970, Ser. No. 46,102
Int. Cl. B21d 31/00
U.S. Cl. 72—411 7 Claims

A sheet metal forming apparatus comprising an upstanding member having a pressure foot on the upper end thereof movable into a work clamping position. A rotatable forming

member engages the free edge of the workpiece and reversely bends it about a lip formation provided on the pressure foot. Prior to the completion of the bending operation, the pressure foot is pivotally withdrawn from the workpiece to permit the forming member to overbend the reversely bent portion of the workpiece beyond 180° and permit the natural resiliency of the material to restore the reversely bent portion to a true 180° reverse bend.



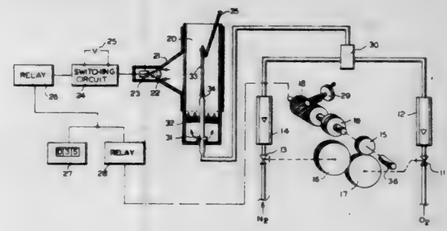
3,662,585
FEED MECHANISM FOR ROLLING MILL OF THE PILGER TYPE
Manfred Bellmann, Ratingen, Germany, assignor to Mannesman Aktiengesellschaft, Duesseldorf, Germany
Filed Sept. 1, 1970, Ser. No. 68,669
Claims priority, application Germany, Sept. 10, 1969, P 19 46 798.2
Int. Cl. B21b 25/02
U.S. Cl. 72—445 6 Claims



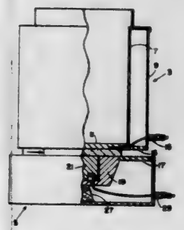
In a feed mechanism for pilger rolling mills, having a mandrel rod coupled to a piston of a liquid brake, cooperating with a brake chamber. The compressed liquid in the chamber acts upon one side of a differential piston acted upon on its other side by a pressure force that persists beyond the instant of reversal of the mandrel rod.

3,662,586
FLAMMABILITY TESTING DEVICE
Shigeru Suga, Yoyogi 5-20-2, Shibuya-ku, Tokyo, Japan
Filed June 15, 1970, Ser. No. 46,105
Int. Cl. G01n 25/00
U.S. Cl. 73—15 R 9 Claims

A flammability testing device. A combustion chamber having a specimen holder therein for holding a specimen and a gas inlet and means for distributing the flow of gas from the inlet to the entire horizontal cross sectional area of the chamber so that a uniform stream of gas will rise in the chamber, which chamber has conduit means coupled to said inlet. A nitrogen flow control valve and a nitrogen flowmeter are connected in series and an oxygen flow control valve and an oxygen flowmeter are connected in series, and both are connected to said chamber. The valves have flow characteristics which when combined with each other produce a constant total flow of nitrogen and oxygen. Constant speed valve driving means operate said valves according to said characteristics. A light sensing means adjacent said combusting chamber receives light from the burning specimen and produces an electric current in response thereto, and switching means is connected between said light sensing means and said valve driving means for stopping said valve driving means when said light sensing means no longer senses light from a specimen in said chamber.

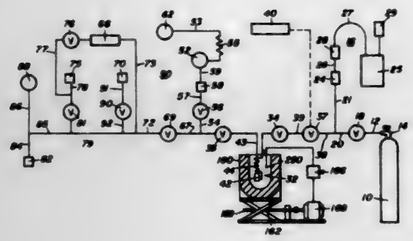


3,662,587
THERMAL CONDUCTIVITY APPARATUS
Edwin L. Allen, and Donald A. Willoughby, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army
Filed Oct. 2, 1970, Ser. No. 77,461
Int. Cl. G01n 25/20
U.S. Cl. 73—15 A 1 Claim



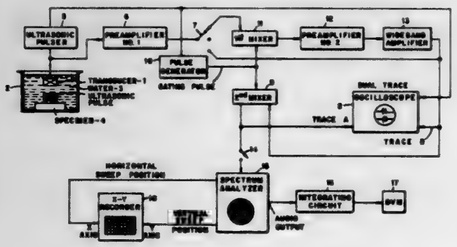
An apparatus for determining the thermal conductivity of solid propellant samples. The apparatus includes a vessel having a heaVy copper base plate for providing a heat source to one side of a propellant sample. The plate is connected to a thermocouple for measuring it temperature, which should be essentially identical to the temperature of the upper surface of the sample. A copper metering block is in contact with the lower surface of the sample and this block is connected to a second thermocouple for measuring its temperature, which should be essentially identical with the temperature of the lower surface of the sample. A guard block is spaced from and surrounds the metering block to prevent heat loss from the metering block.

3,662,588
DETERMINING IMPURITIES IN HELIUM
David E. Emerson; George W. Weems, and Clarence A. Hoffman, all of Amarillo, Tex., assignors to The United States of America as represented by the Secretary of the Interior
Filed Apr. 28, 1970, Ser. No. 32,668
Int. Cl. G01n 7/00; B01d 51/00
U.S. Cl. 73—23 2 Claims



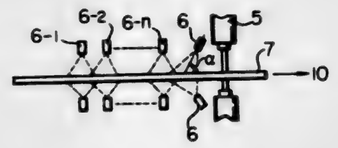
Method and apparatus for determining the component impurities of helium. A sample of helium flowing in an analyzer system, including conduits having as a fixed part thereof a trap and coil assembly, is maintained at above atmospheric pressure and a rate of flow which allows its passage freely through the assembly being maintained at the temperature of liquid helium. Impurities are solidified and thereafter isolated by evacuation of the gaseous content of the assembly. The subsequent warming of the assembly provides a gaseous sample of the impurities for analysis in a mass spectrometer of the system. The direction of gaseous flow and the reading of data from instruments of the system are facilitated by valves distributed among the conduits, including a time controlled sampler valve. Liquid helium is maintained at a proper level with respect to the trap and coil assembly by an automatically controlled lift to which is fixed a Dewar vessel containing the liquid helium.

3,662,589
ULTRASONIC FLAW DETERMINATION BY SPECTRAL ANALYSIS
Laszlo Adler, Knoxville, and Hubert L. Whaley, Powell, both of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Feb. 2, 1971, Ser. No. 111,958
Int. Cl. G01n 29/04
U.S. Cl. 73—67.8 3 Claims



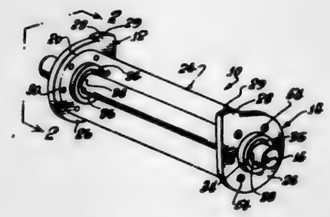
A method of quantitatively determining the size and orientation of flaws within a material. A broadband pulse having a frequency width of at least several MHz is used for an input pulse from a transducer which is directed toward the test material which may contain a flaw, and the average frequency interval between interference maxima in the reflected spectrum is relatable to both the size and orientation of the flaw. An experimental method using two known angle changes allows determination of the size and angle of randomly oriented discontinuities within metal specimens.

3,662,590
PRECOOLING APPARATUS FOR CONTINUOUS AUTOMATIC ULTRASONIC INSPECTION
Toshio Shiraiwa, Ikoma-gun; Hisao Yamaguchi, Akashi, and Yasunori Kido, Nishinomiha, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Higashi-ku, Osaka, Japan
Filed July 29, 1970, Ser. No. 59,111
Claims priority, application Japan, Aug. 9, 1969, 44/75367
Int. Cl. G01n 29/00
U.S. Cl. 73—71.5 3 Claims



A continuous automatic ultrasonic inspection apparatus detects flaws in a material by transmitting pulses or continuous waves into the material to be inspected through the medium of a laminar flow water jet column. The precooling apparatus is provided near the laminar flow water jet column and improves the accuracy of flaw detection of the material at high temperature moving at high speed and also increases the maximum inspection temperature.

3,662,591
TUBE TORQUING DEVICE
Ido A. Boas, Duarte, Calif., assignor to Whittaker Corporation
Filed Sept. 18, 1970, Ser. No. 73,425
Int. Cl. G01n 3/22
U.S. Cl. 73—99 4 Claims

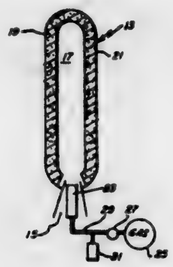


A device for torquing tubes provided with apertured end members comprises, in its simplest embodiment, a pair of lobed, generally-circular plates with each lobed plate having a plurality of radially spaced holes therethrough for connection to the apertured end members of a tube. The lobe portion of each lobes plate is eccentrically positioned with respect to the axis of rotation of that plate to cause rotation of that plate when a force acts against the lobe. Torquing of a tube is accomplished by applying equal forces, e.g., in a press, against the lobes of each lobed plates when the latter are connected to a tube to cause the lobed plates to counter-rotate about a common axis which, in turn, torques the tubes since the tube and lobes plates are fixedely interconnected.

In a preferred embodiment, the lobed plates are provided with axially-aligned apertures which are journaled to receive a shaft in such a way that the plates are maintained in alignment by the shaft but which permits free rotation of the lobed plates about the shaft. Tubes to be

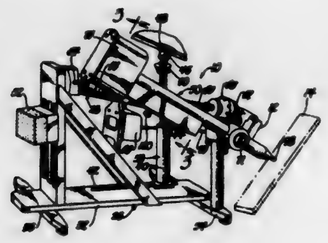
torqued are slipped over the shaft before the torquing device is assembled.

3,662,592
NON-DESTRUCTIVE TESTING DEVICE FOR THE DETECTION OF FLAWS IN SOLID ROCKET MOTORS
Robert L. Geisler, P.O. Box 6037, Edwards, Calif.
Filed Aug. 28, 1970, Ser. No. 67,825
Int. Cl. G01n 19/08; G01b 5/28
U.S. Cl. 73—104 4 Claims



The outer surface of an inflatable bladder is coated with a sensitizing material to make it sensitive to pressure and/or temperature. The bladder is then introduced through the nozzle of a rocket motor and inflated in the cavity. Depending upon the coating, the surface of the bladder becomes marked in a pattern corresponding to the imperfections in the surface of the rocket motor cavity. The bladder is deflated and removed from the rocket motor and inserted in a transparent cavity model and reinflated. The surface of the bladder on which the imperfection pattern marks appear is visually observed through the wall of the transparent model.

3,662,593
TEST APPARATUS FOR DEPRESSING VEHICLE BRAKE AND ACCELERATOR PEDALS
Antonio Pirrello, Lincoln Park, and Robert Campbell, Roseville, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 23, 1970, Ser. No. 91,893
Int. Cl. G05g 21/00
U.S. Cl. 73—132 3 Claims

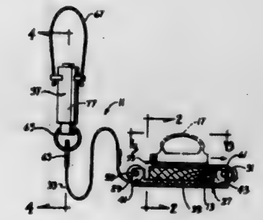


Apparatus for depressing the accelerator and brake pedals of a vehicle. The apparatus includes a test stand that is rigidly secured in the vehicle at a position proximate the accelerator and brake pedals for supporting accelerator and brake pedal actuators.

The accelerator actuator includes a threaded shaft that is rotatably driven by a motor and engaged by a pawl so as to move axially as it is rotated, the threaded shaft being drivably coupled to the accelerator pedal so as to depress and release the accelerator pedal in accordance with the rotation of the threaded shaft. A solenoid is provided for disengaging the pawl from the threaded shaft and the threaded shaft is spring biased so as to release the accelerator pedal when the pawl is disengaged from the threaded shaft by the solenoid.

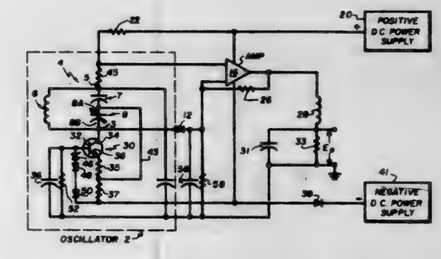
The brake pedal actuator includes a pneumatic cylinder containing a piston that is drivably coupled to the brake pedal of the vehicle so as to depress and release the brake pedal of the vehicle in accordance with the introduction of a pressurized fluid to the pneumatic cylinder.

3,662,594
SKI BINDING TESTER
Gloria L. Clifford, and Richard P. Clifford, both of 201 Via Orvieta, Newport Beach, Calif.
Filed June 15, 1970, Ser. No. 45,982
Int. Cl. G01l 5/03
U.S. Cl. 73—133 14 Claims



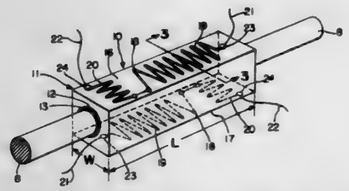
A ski binding tester for determining the force required to actuate a ski binding to permit separation of a ski and a ski boot. The ski binding tester includes a generally flexible, elongated, tension element drivingly connected to the ski boot and a scale attached to the tension element for measuring the maximum value of the pulling force applied through the tension element to the ski boot.

3,662,595
OSCILLATOR TYPE FORCE MEASURING SYSTEM INSENSITIVE TO INPUT VOLTAGE VARIATIONS
Charles E. Hurlburt, River Edge; Michael J. Lanni, Ridgewood, and Alphons Frecnkel, Fairlawn, all of N.J., assignors to The Bendix Corporation
Filed Mar. 19, 1970, Ser. No. 20,957
Int. Cl. G01l 1/14; G01p 15/08
U.S. Cl. 73—141 R 7 Claims



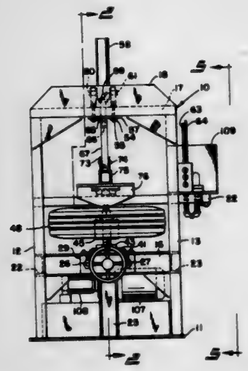
A force measuring system includes an oscillator energized by an input voltage and having a tank circuit and means for changing the impedance of the tank circuit in accordance with the movement of an element in response to an applied force. The oscillator output voltage changes with changes in impedance and is compared to the input voltage to cancel out input voltage variations. The difference between the compared voltages is used to apply a restoring force to the movable element and the restoring force is a measurement of the applied force.

3,662,596
DEVICE FOR MEASURING STRESS IN METAL TIRE CORDS
George J. Siefert, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Nov. 12, 1970, Ser. No. 88,960
Int. Cl. G01l 5/10
U.S. Cl. 73—143 12 Claims



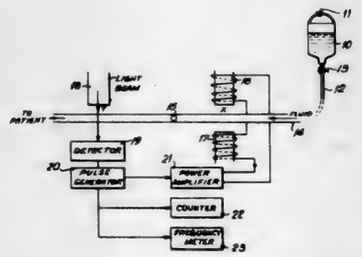
A transducer for measuring tension or compression stresses in a metal tire cord embedded in rubberized material of a tire. The transducer is secured to a metal cord which has been removed from unvulcanized rubber material in which the cord is embedded. The cord with the transducer is then repositioned in the rubber material which is then used to build an uncured tire for placing in a mold and vulcanizing. The transducer includes a metal billet or casing which is soldered in surrounding relation around a portion of the cord. Four strain gauges are secured to opposing flat surfaces of the transducer in special oriented relation to form a full gauge bridge for determining tension or compression while eliminating bending stresses. The bridge has a number of lead wires which are taken from the tire body and fastened to, for example, a Wheatstone bridge for recording the tension or compression in the cord under varying inflation conditions of the tire.

3,662,597
TIRE TESTING MACHINE
Anselm DeGhetto, Clifton, N.J., assignor to Getty Machine and Mold, Inc., Clifton, N.J.
Filed June 25, 1970, Ser. No. 49,610
Int. Cl. G01m 17/05
U.S. Cl. 73—146 9 Claims



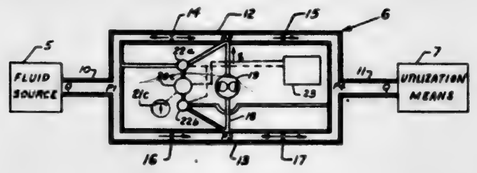
A tire testing machine capable of performing both a tire bead unseating test and a strength test in which a hydraulic piston cylinder assembly for exerting pressure against a tire is pivotally mounted for swinging movement during the unseating test and is held in a fixed position during the tire strength test. The tire supporting assembly is adjustably mounted for horizontal positioning of the tire below the piston cylinder assembly and one end of a horizontal guide arm is pivotally connected to the piston cylinder assembly for the bead unseating test. The horizontal position of the arm is adjustable with the piston cylinder assembly and different size tires may be tested by adjustments to the length of the guide arm and the position of the arm pivot. Control and recordation of the pressure exerted on the tires, the distance the pressure applying member moves and the position and pressure at which failure occurs is also provided.

3,662,598
FLOW CONTROL SYSTEM
Jordan L. Spencer, 560 Riverside Drive, New York, N.Y.
Original application June 9, 1969, Ser. No. 831,351, now Patent No. 3,605,741. Divided and this application Apr. 7, 1971, Ser. No. 131,945
Int. Cl. G01f 1/00
U.S. Cl. 73—194 E 12 Claims



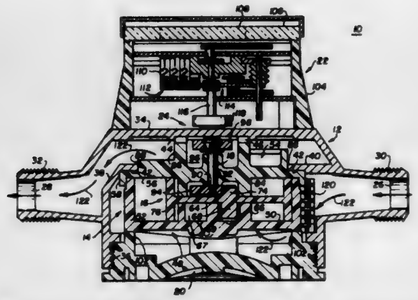
The present invention deals with an improved method and apparatus for measuring flow in fluid flow systems characterized by low flow rate. The invention utilizes the transit time or oscillatory frequency of a ball or float which moves along the direction of fluid flow and is returned to its original position by actuating a magnetic return system as it breaks a light beam or other sensing system. The cycle is repeated, with the transit time or oscillatory frequency being related to rate of fluid flow, and thus serving to indicate same for control purposes. The flow tube-ball measuring unit may take the form of a disposable insert into the flow measuring system.

3,662,599
MASS FLOWMETER
Walter Masnik, 11 Cecil Court, Cedar Grove, N.J.
Filed Mar. 31, 1970, Ser. No. 24,322
Int. Cl. G01f 1/00
U.S. Cl. 73—205 D 14 Claims



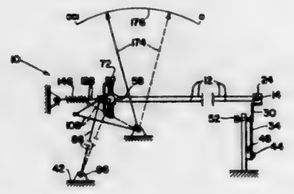
An extended viscosity range mass flowmeter comprising a pair of branch conduits connecting inlet and outlet conduits. The branch conduits each have a pair of flow restrictors comprising identical orifices with one edge sharp and the other rounded and oriented with their like edges in opposition in proceeding from inlet to outlet conduits. A constant volumetric recirculating pump connects the two branch conduits at points intermediate the orifices therein. A differential pressure measuring device is automatically connected between the inlet and outlet conduits or between the points intermediate the restrictors in each conduit depending upon whether the recirculating flow is greater or less than the measured flow.

3,662,600
FLUID METER
Joseph George Rosano, Jr., Roselle Park, N.J., and J. D. Coffman, Fort Worth, Tex., assignors to Gamon-Calmet Industries, Inc., Newark, N.J.
Filed Nov. 5, 1969, Ser. No. 874,123
Int. Cl. G01f 3/08
U.S. Cl. 73—257 8 Claims



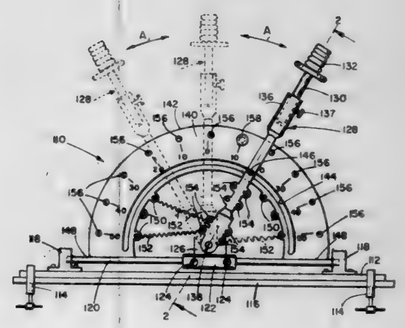
A fluid meter is disclosed which comprises a casing having first and second ports for fluid flow therethrough; a measuring chamber located within the casing, with the measuring chamber having upper and lower surfaces within which are situated entry and exit openings which communicate with the respective ports of the casing to thereby establish a vertical flow path through the measuring chamber; driven means preferably in the form of an oscillating piston located in the measuring chamber; motion transmitting means responsive to the driven means for transmitting the motion thereof to a location outside of the measuring chamber but within the casing; register means positioned outside of the casing for providing an indication of fluid flow; and magnetic coupling means responsive to the motion of the motion transmitting means for driving the register. Additionally, a removable screw-in bottom plate is provided to retain the measuring chamber within the casing and to selectively cover the bottom opening of the casing through which the measuring chamber is inserted during assembly.

3,662,601
HYGROMETER
Roger K. Strong, Doylestown, Pa., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Nov. 28, 1969, Ser. No. 880,762
Int. Cl. G01n 19/10
U.S. Cl. 73—337.5 2 Claims



An apparatus to convert any extremely small unnoticeable non linear expanding and contracting movement exhibited by a sensing element, such as a sensing element that expands in a non linear manner with changes in the relative humidity of an atmosphere into a greatly enlarged amplified motion. An example of this latter motion is the motion exhibited by a pointer moving along an associated scale and/or the motion of a pen moving along a chart which will provide an accurate linear indication of the percent of relative humidity being sensed by the aforementioned sensing element.

3,662,602
HAND WRESTLING EXERCISE APPARATUS
Marcel Weiss, 885 Montgomery St., Brooklyn, N.Y.
Filed Feb. 25, 1971, Ser. No. 118,755
Int. Cl. A63b 21/22
U.S. Cl. 73—381 R 14 Claims

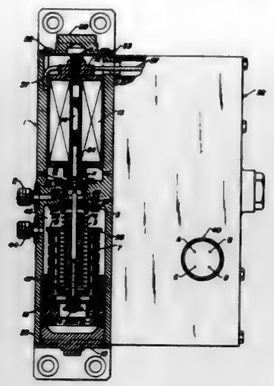


Hand wrestling apparatus comprising a base, and means for securing the base upon a table or the like at the edge thereof. The base includes a handle which is supported for universal articulation. A reference plate of disc-shaped character having a generally semi-circular peripheral extent is pivotally mounted upon the base and operatively associated with the handle so that the reference plate may be pivoted in a first direction toward and away from the base in unison together with the handle. A plurality of springs or the like interconnect the reference plate and the handle to one another for biasing the handle from movement in a second direction transversely of the direction of the reference plate displacement. The springs may be positioned in any of a number of locations on both the plate and handle so that the pressure exerted against the handle can be adjusted and controlled.

3,662,603
DIFFERENTIAL PRESSURE TRANSDUCER
Theodore R. Breunich, Stamford, Conn., and Emanuel J. Dinola, Briarcliff Manor, N.Y., assignors to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of application Ser. No. 819,918, Apr. 28, 1967, now abandoned. This application Jan. 14, 1971, Ser. No. 106,581
Int. Cl. G01l 9/10
U.S. Cl. 73—398 R 6 Claims

A differential pressure transducer utilizing a transformer and a means for maintaining a constant voltage sum on the secondary leads of the transformer to eliminate errors due to spurious electrical impulses in the transducer. The extensible

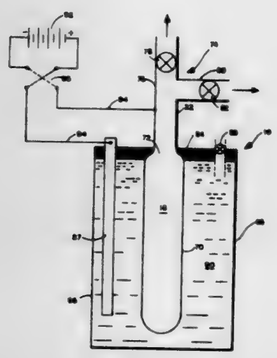
end of a bellows moves a magnetically permeable core with respect to the transformer, thereby inducing different voltages on separate secondary loops longitudinally spaced along the transformer.



3,662,604
ATMOSPHERIC SAMPLING DEVICES

George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of; James E. Lovelock, Bowerchalke, near Salisbury, Wiltshire, England, and Peter G. Simmonds, 5200 Palm Drive, La Canada, Calif.

Filed Oct. 15, 1970, Ser. No. 81,095
Int. Cl. G01n 1/24
U.S. Cl. 73—421.5 R 10 Claims

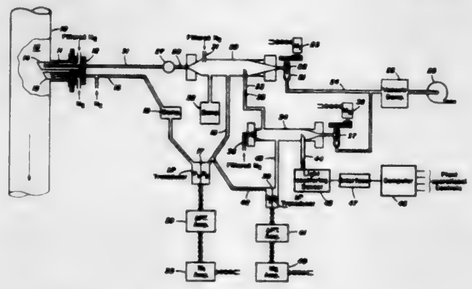


An atmosphere sampling chamber is disposed within a container. The chamber has an inlet communicating with the atmosphere to be sampled and an outlet communicating with an analysis device such as a gas chromatograph. The annulus in the container adjacent the outer walls of the chamber contains a fluid medium for pressurizing the chamber to exhaust its contents through the outlet. In one embodiment, the chamber is a gas-impervious bellows which is exhausted by feeding gas to the container. In another embodiment, the chamber is formed of a hydrogen-permeable palladium alloy tube and the fluid medium is an electrolyte capable of transporting an ionic species of hydrogen. When the tube is electrolytically connected to a counter electrode in a first evacuation polarity mode, the tube is exhausted and, sample is charged into the tube. In the reverse polarity mode, hydrogen is generated through the tube wall and acts as a purging gas and carrier gas to discharge the sample and sweep the sample through the gas chromatograph column and detector.

3,662,605
METHOD AND MEANS FOR AUTOMATING COMPUTER-CONTROLLED PRODUCTION OF PARTICULATE MATERIALS

Arthur G. Grotyohann, Lincroft, N.J., assignor to N. L. Industries, Inc., New York, N.Y.

Filed May 13, 1970, Ser. No. 36,918
Int. Cl. G01n 1/24
U.S. Cl. 73—421.5 R 15 Claims

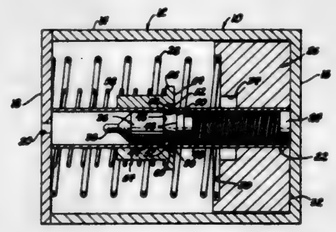


The particle size and particle size distribution of the particulate TiO_2 solids in a solids burdened reaction product gas produced in a vapor phase process for making pyrogenic TiO_2 are measured by diluting a sample of the solids burdened gas by an order of magnitude of at least about 10^{12} and feeding the diluted sample to measuring-means in the form of a multi-channel light scattering sensor the read-out of which constantly measures the particle size and particle size distribution of the particulate solids in the reaction product gases being produced. It is, of course, well known that particle size and particle size distribution of particulate TiO_2 particles may be correlated with the optical properties of the pigment. Hence the read-out of the light scattering sensor will be indicative of the quality of TiO_2 pigment being produced and may be usedd manually i.e. visual observation or by electronic means to effect adjustments in the appropriate plant operational controls so as to maintain the optical properties of the pigment substantially constant and at optimum levels throughout a plant run.

3,662,606
ACCELERATION SENSOR

Otakar P. Prachar, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 21, 1971, Ser. No. 108,455
Int. Cl. G01p 15/02
U.S. Cl. 73—514 6 Claims

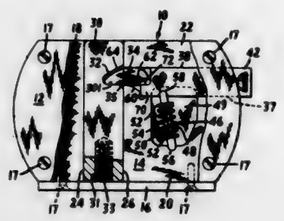


A sensor includes an operator mounted within a tubular guide for movement in one axial direction to an actuated position under a spring bias. The guide is mounted coaxially of a cylindrical support. A cylindrical seismic mass is slidable coaxially of the tube and support and is normally biased axially oppositely of the operator and against an end wall of the support by a coil compression spring seating against the other end wall of the support and a radial end wall of the mass. An annular retainer is slidable coaxially of the guide tube and includes an annular groove at one end thereof which includes a radial wall merging into an axial wall opening to a radial end wall of the retainer. A peripheral groove adjacent one end of the operator includes a conical wall located at a conical angle of approximately 60° to the axis of the operator. A plurality of balls are each freely received within a respective radial aperture of the guide tube and engage both the radial and axial walls of the retainer and the conical wall of the operator groove to detent the operator against movement. The retainer walls are spring biased into engagement with the balls by a coil compression spring seating on the other wall of the support and a radial flange at the one end of the retainer. The radial wall of the retainer is spaced a predetermined distance from the radial end wall of the mass. When an acceleration pulse of predetermined amplitude and time is applied coaxially of the mass, the movement of the mass engages the radial end wall of the mass with the radial wall of the retainer to move the retainer in the one axial direction and permit the balls to be forced outwardly of the retainer by the operator conical wall as the retainer axial wall moves axially and out of engagement therewith. This releases the operator. When the balls are released, they are received in an annular recess in the radial end wall of the mass.

3,662,607
LATCHING MECHANISM

Floyd J. Milanowski, Pocomoke City, Md., and Arthur J. Bowman, Jr., Succasunna, N.J., assignors to The United States of America as represented by the Secretary of the Army

Filed Jan. 25, 1971, Ser. No. 109,419
Int. Cl. G05g 17/00
U.S. Cl. 74—2 12 Claims



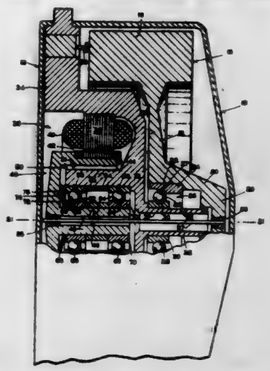
A latching mechanism is provided, such mechanism having a slide held in latched position by a cam received in a recess in the slide, the cam in turn being retained in holding position by a release latch. Upon application of a low magnitude force to the release latch, the cam displaces from its holding position into either the slide recess or the space which the release latch vacated upon movement thereof to unlatch the slide and allow it to slidably move to an unlatched position and perform a specified function.

3,662,608
TWO DEGREES OF FREEDOM BALL BEARING SUSPENSION FOR A ROTOR OF A GYROSCOPE

Gunnar Johan Vold, Mahwah, N.J., assignor to The Bendix Corporation

Filed Sept. 30, 1968, Ser. No. 763,867
Int. Cl. G01c 19/16
U.S. Cl. 74—5 10 Claims

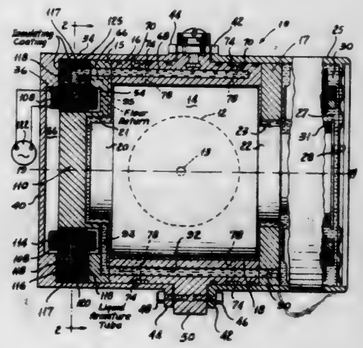
A two degrees of freedom ball bearing suspension for a rotor of a gyroscope to compensate for coercive torques through the provision of a torque wire connected between a drive element of a motor and the rotor of the gyroscope, the drive element of the motor being rotatably carried by internal roller bearings mounted in a stator element of the motor and the rotor of the gyroscope being rotatably mounted on a universal ball bearing joint supported by the stator element of the motor, the rotor of the gyroscope being axially biased toward the universal ball bearing joint under tension applied through the torque wire by a disc type belleville spring positioned between an end of the internal roller bearings and an internal surface of the stator element so that the coercive torques may be minimized by a negative spring action effected by the torque wire due to the tension therein so that the total elastic restraint of the ball bearing suspension may be brought extremely close to zero.



3,662,609
LIQUID ARMATURE INDUCTION PUMP FOR AN ELECTRICALLY CONDUCTIVE LIQUID TO SUPPORT A GIMBAL ELEMENT OF A GYROSCOPE IN A HYDROSTATIC BEARING

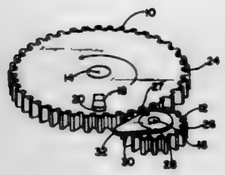
Oscar D. Jacobson, New York, N.Y., assignor to The Bendix Corporation

Filed July 1, 1969, Ser. No. 838,274
Int. Cl. G01c 19/20
U.S. Cl. 74—5 8 Claims



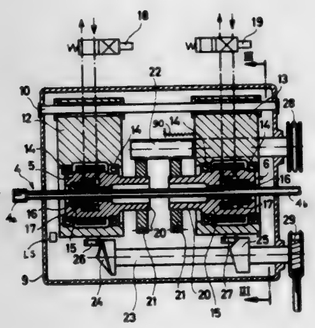
A liquid armature induction pump including a stator, liquid armature tube and magnetic shunt for pumping electrically conductive liquid such as mercury so as to hydrostatically support a gimbal element of a gyroscope in a hydrostatic bearing.

3,662,610
MULTI-TURN LIMIT STOP APPARATUS
Richard Thoen, Golden Valley, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Apr. 20, 1970, Ser. No. 29,956
Int. Cl. F16h *35/18*
U.S. Cl. 74—10.2 6 Claims



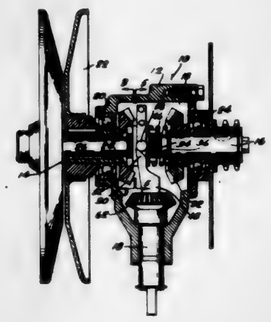
A high turns ratio, limit stop mechanism, comprising a pinion, a gear in engagement with the pinion, and stop members affixed to the pinion and gear. The ratio of the number of gear teeth to the number of pinion teeth is not an integer. The stop member affixed to the pinion extends beyond the periphery of the pinion and sweeps out an epitrochoidal path with respect to the gear pitch circle as it rotates. The stop member affixed to the gear is positioned inside the gear pitch circle. Since the ratio is non-integral, the epitrochoidal loops of the pinion stop member rotate with respect to the gear pitch circle on each gear revolution. Rotation in one direction is limited when the epitrochoidal path for the pinion stop member on a particular rotation enchoses the gear stop member.

3,662,611
APPARATUS FOR DRIVING AND FEEDING ELONGATED TOOLS OR THE LIKE
Hans Knoll, Dettingen (Wurttemberg), Germany, assignor to Tiefbohr-Technik, Dettingen (Wurttemburg), Germany
Filed Oct. 7, 1968, Ser. No. 765,349
Claims priority, application Germany, Oct. 7, 1967, P 26 02 994.0
Int. Cl. F16h *21/00*
U.S. Cl. 74—22 17 Claims



Apparatus for rotating and feeding elongated material removing tools comprises a pair of carriages which are reciprocable in opposite directions and each of which accommodates a rotary gripper movable into or away from engagement with the peripheral surface of the tool shank. When one of the grippers engages the tool and causes the tool to rotate and to move axially to advance its cutter into or along a workpiece, the gripper of the other carriage is disengaged from the tool and moves in opposite direction. Engagement and disengagement of grippers is controlled automatically and the grippers are rotated in their respective carriages.

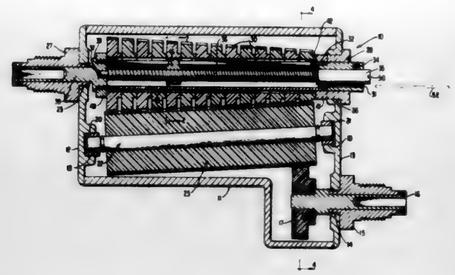
3,662,612
REVERSING TRANSMISSION
George G. Lassanske, Oconomowoc, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Aug. 24, 1967, Ser. No. 662,949
Int. Cl. F16h *3/40*
U.S. Cl. 74—355 5 Claims

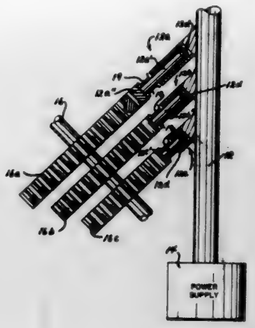


Disclosed herein is a compact, lightweight shifting or transmission mechanism with co-axial input and output shafts with each shaft carrying a bevel gear. A clutch collar or clutch dog is splined or connected to the output shaft and has lugs which engage the bevel gear on the input shaft to transfer power from the input shaft to the output shaft. Reverse rotation of the output shaft relative to the input shaft and provision of a neutral condition is afforded by a third shaft which is perpendicular to the input and output shafts and which supports an idler gear movable into and out of engagement with the bevel gears in response to axial movement of the third shaft. When it is desired to obtain neutral, or to reverse the direction of rotation of the output shaft, initial movement of the third shaft toward the input and output shafts engages a cam surface at the end of the third shaft with a cam follower on the clutch dog to move to clutch dog axially out of engagement with the gear on the input shaft and thus to obtain a neutral condition by disconnecting the input and output shafts. Continued movement of the third shaft provides for engagement of the idler gear with the gears on the input and output shafts and results in power transfer through the idler gear.

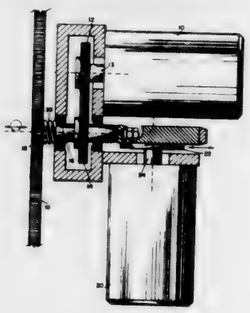
3,662,613
VARIABLE SPEED TRANSMISSION
Robert A. Ingalls, Springfield, Vt., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.
Filed June 11, 1970, Ser. No. 45,286The portion of the term of the patent subsequent to Aug. 26, 1986, has been disclaimed.
Int. Cl. F16h *3/08, 5/08*
U.S. Cl. 74—371 10 Claims

This invention relates to a variable speed transmission, the operative elements of which include a series of tapered output gears of different diameter but equal pitch which are rotatably mounted on a tubular member with a clutch arranged for translational movement within the tubular member and adapted to engage any one of a series of output gears to control the speed of the transmission. An input gear tapered in a plane parallel to that of the output gears is arranged to drive an elongated cylindrical gear and to transmit therethrough the drive motion to any of the tapered output gears.





3,662,614
FINE-COARSE DRIVE MECHANISM
John Quilty, c/o Photon, Inc., 355 Middlesex Ave., Wilmington, Mass.
Filed Dec. 14, 1970, Ser. No. 97,799
Claims priority, application Great Britain, Dec. 15, 1969, 61,089/69
Int. Cl. F16h *35/02, 35/06*
U.S. Cl. 74—393 5 Claims

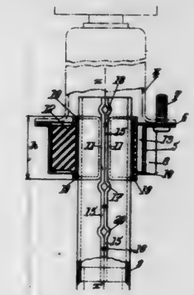


A pair of stepping motors form the basis of a coarse-fine drive mechanism. A coarse stepping motor imparts rotational motion through a drive gear to a driven shaft, and a fine stepping motor imparts linear or axial motion to the same shaft by means of a cam. The driven shaft is part of a system which integrates the afore-mentioned rotational and axial motions in order to rapidly and accurately move and position a rack through a wide range of drive increments which is afforded by the presence of the coarse and fine drives.

3,662,615
POWER INCREASE ARRANGEMENT
Joseph H. Bethel, 221 E. Missouri St., Evansville, Ind.
Filed July 15, 1970, Ser. No. 55,003
Int. Cl. F16h *1/12*
U.S. Cl. 74—416 5 Claims

An arrangement for increasing torque, while operating at the same RPM, characterized by a drive shaft having spokes or arms disposed thereon at an angle with respect to its longitudinal axis, preferably at 45°, which mesh with gears on a driven shaft for appreciably increasing the power afforded by the driven shaft.

3,662,616
SHOCK ABSORBER MEANS, ESPECIALLY FOR A VEHICLE STEERING COLUMN
Pierre Jousade, Levallois-Perret, France, assignor to Paulstra, Levallois-Perret, France
Filed June 8, 1970, Ser. No. 44,020
Claims priority, application France, June 13, 1969, 6919825
Int. Cl. B62d *1/18*
U.S. Cl. 74—492 9 Claims

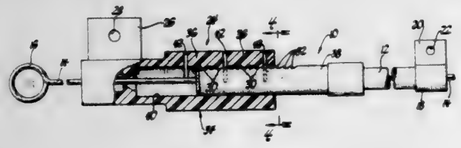


To permit axial thrust of the steering column of an automobile from the shock due to an accident, the inner end of the column is constituted by two omega-shaped parts, connected to the steering mechanism through a damping device comprising two semi-circular rubber masses. The masses are precompressed between a continuous outer ring and a central sleeve constituted by two omega-shaped parts clamping between themselves the first said omega-shaped parts. Bulges are provided on the latter to separate the parts of the sleeve and to rub against them after the shock.

3,662,617
REMOTE CONTROL ASSEMBLY
William G. Bennett, Troy, and Donald M. Miller, Pontiac, both of Mich., assignors to Teleflex, Inc., North Wales, Pa.
Filed Oct. 8, 1970, Ser. No. 79,195
Int. Cl. F16c *1/14, 1/22*
U.S. Cl. 74—501 R 2 Claims

A motion transmitting remote control assembly including a conduit and a motion transmitting core element movably

supported by the conduit with the ends thereof extending from the ends of the conduit. Adjustment means is disposed adjacent a first end of the conduit for automatically allowing the conduit to move longitudinally relative thereto in response to a predetermined force being applied thereto. More specifically, the first end of the conduit has a fitting at-



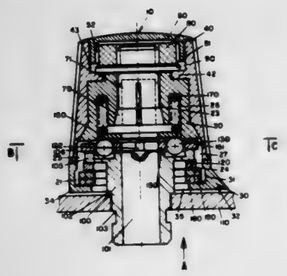
tached thereto with ratchet teeth thereon which coact with ratchet teeth in a support member adapted for attachment to support structure whereby the effective length of the conduit may be adjusted by applying a predetermined force to the core element to in turn adjust the distance the core element extends from the conduit.

3,662,618

INSTRUMENT KNOB HAVING INTEGRAL DETENT MECHANISM AND PANEL MOUNT SOCKET MEANS

Heinz Ernst Johannes Kroll, Heroldsberg, and Horst Dieter Ziegler, Nurnberg, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 27, 1970, Ser. No. 40,885
Claims priority, application Germany, July 31, 1969, P 19 27 901.7
Int. Cl. G05g 5/06
U.S. Cl. 74—527 10 Claims



A rotary instrument knob with integral detent and stop means. An integral bushing or "termination socket" is provided whereby the knob may be assembled onto a panel in a rotationally predetermined orientation. The detent mechanism includes an indentation contour on a flange end of the termination socket within the knob body. The knob body is constructed in sections whereby the assembly of stop rings, detent balls and spring retaining means may be accomplished and then enclosed within the knob body by snap-fit assembly of the knob body shell over those elements.

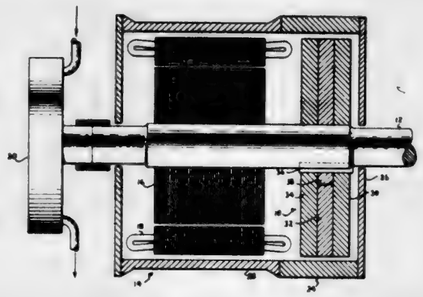
3,662,619

FAIL-SAFE ROTARY MACHINE

Kurt George Seeliger, Schenectady, N.Y., assignor to General Electric Company

Filed Aug. 26, 1970, Ser. No. 67,181
Int. Cl. F16f 15/30
U.S. Cl. 74—572 7 Claims

This invention relates to a fail-safe rotating machine wherein pre-determined failure locations are designed into the rotating element to assure minimum energy release upon failure of the element due to the centrifugal forces acting thereon. In a specific illustrated embodiment, a cylindrical flywheel mounted upon a motor shaft is formed of juxtaposed discs having diverse tensile strengths to inhibit simultaneous



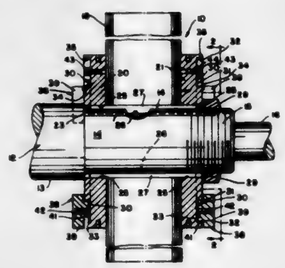
failure of the discs. Also disclosed are techniques for assuring pre-determined failure locations by fabricating a flywheel of concentric rings having differing thicknesses or by notching the cylindrical surface of a unitary flywheel in a design producing segments of a desired configuration upon failure.

3,662,620

BALANCE ARBOR ASSEMBLY FOR BUFFING AND LIKE MACHINE

George R. Carlson, 830 Cranbrook Road, Birmingham, Mich.

Filed July 2, 1970, Ser. No. 51,985
Int. Cl. F16f 15/32
U.S. Cl. 74—573 5 Claims



A work finishing wheel unit is clamped to a driving arbor by a pair of like holder collars between which conventional buff elements of the unit are held; and these collars each have an annular, dove-tail sectioned groove adjacent the outer periphery thereof. Mating balancing weights, also of dove-tail cross section, have slidable adjustment circumference-wise in the groove, being manually movable annularly to a desired balancing position, then fixedly clamped to the collar by a set screw to serve as a balancing counterpoise.

3,662,621

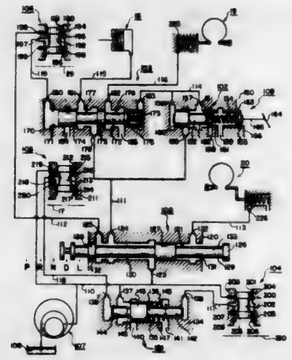
SPEED RESPONSIVE TRANSMISSION

Koichiro Hirozawa, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Aichi Pref., Japan

Filed May 26, 1970, Ser. No. 40,651
Claims priority, application Japan, May 30, 1969, 44/42840
Int. Cl. F16h 47/08
U.S. Cl. 74—731 5 Claims

This invention relates to improvements in a control mechanism for fluid-operated automatic speed change

mechanisms of an automotive vehicle which comprises a fluid coupling having a pump wheel and a turbine wheel, with an adjusting valve adapted for increasing the hydraulic line pressure in response to a signal from a first sensor sensing an



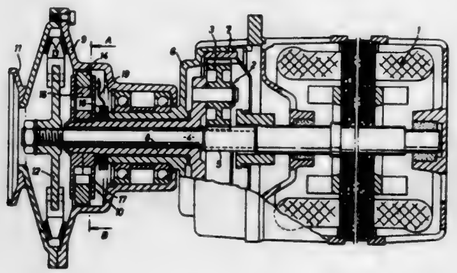
increase in the rotational speed of the pump wheel and adapted for decreasing the hydraulic line preasure in response to a signal from a second sensor adapted for sensing an increase in the rotational speed of the turbine wheel.

3,662,622

DRIVE UNITS FOR AUTOMATIC WASHING MACHINES

Gernot Neumann, Lipperreiche near Bielefeld, Germany, assignor to Hanning Elektro-Werke Robert Hanning, Bielefeld, Germany

Filed Aug. 31, 1970, Ser. No. 68,063
Claims priority, application Germany, Sept. 4, 1969, P 19 44 771.3
Int. Cl. F16h 5/42; F16d 11/04
U.S. Cl. 74—752 E 3 Claims



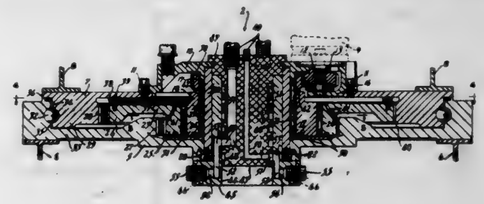
A drive unit for a drum-type automatic washing machine requiring a low speed of rotation for washing and rinsing and higher speeds for spin-drying, the drive unit comprising a drive motor in the form of a pole-changeable electric motor producing at least two speeds of rotation, a motor shaft, a hollow shaft mounted on the motor shaft, a reduction gear arranged to transmit drive from the motor shaft to the hollow shaft, a friction clutch mounted on the hollow shaft and engageable with a clutch casing, a centrifugal clutch mounted on the motor shaft and a drive member secured to the clutch casing, the friction clutch being operative at low speeds and the centrifugal clutch at high speeds of the drive motor to cause rotation of the drive member and the friction clutch comprising a flexible clutch ring having a recess in the form of a heart cam, pressure roller located at the recess and mounted on lateral flanges, the pressure roller being effective to force the clutch ring to engage the clutch casing after a single revolution of the lateral flanges.

3,662,623

TURNTABLE DRIVE MECHANISM

Ervin W. Lorence, Cedarburg, Wis., assignor to Lorence Manufacturing Corp., Milwaukee, Wis.

Filed Aug. 19, 1970, Ser. No. 65,014
Int. Cl. F16h 1/28; B66c 23/84
U.S. Cl. 74—805 14 Claims



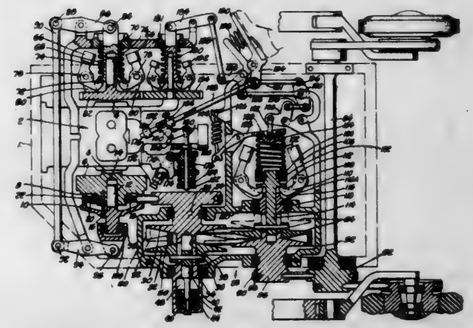
A turntable drive mechanism for heavy construction equipment including a base and a turntable which is mounted for rotation with respect to the base. A motor is mounted on the turntable and drives an eccentric which rotates within an opening in a floating gear unit. The floating gear unit includes a lower small diameter gear and an upper large diameter gear, with the small gear being engaged with a gear ring connected to the base, while the large gear is engaged with a gear ring connected to the turntable. Each gear has a lesser number of teeth than the corresponding gear ring and rotation of the gear unit provides a speed reduction to the turntable. The gear ring associated with the turntable is journalled within and upstanding peripheral flange formed on the base. The space between the turntable and the base serves as an oil reservoir, and to provide more effective lubrication, a series of passages are formed in the floating gear unit adjacent the teeth of the smaller gear and are directed toward the input drive gear. Engagement of the teeth of the smaller gear with the gear ring acts to pump oil through the passages and direct the oil toward the drive gear. An improved swivel coupling connection is provided for connecting the power lines on the rotating turntable to the power lines on the non-rotating base.

3,662,624

VEHICLE TRANSMISSION CONTROL

Lloyd H. Leonard, 14877 Valley Vista Blvd., Sherman Oaks, Calif.

Filed June 5, 1970, Ser. No. 43,819
Int. Cl. B60k 21/00
U.S. Cl. 74—865 10 Claims



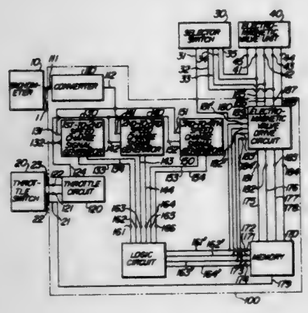
An internal combustion engine control system including a continuously variable speed transmission at its lowest ratio when it rests, and increasing in ratio responsive to increases

in transmission output, transmission output speed responsive means to adjust transmission ratios at a fixed throttle setting, the entire relationship between transmission output speed, the means responsive thereto to vary the transmission ratio and the throttle setting being such as to cause the engine to "lug" continuously at relatively low engine speeds in comparison with the normal currently recommended and used engine RPM vs. torque relationship. The term "lug" is herein used to describe the lowest engine speed at a given torque load which will provide acceptably smooth operation.

3,662,625
AUTOMATIC TRANSMISSION CONTROL SYSTEM ON AUTOMOBILES

Hisato Wakamatsu, Kariya; Akira Kitano, Nagoya, and Hisai Kawai, Toyohashi, all of Japan, assignors to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Continuation-in-part of application Ser. No. 34,098, May 4, 1970. This application May 7, 1970, Ser. No. 35,327
Claims priority, application Japan, May 9, 1969, 44/35864
Int. Cl. B60k *21/00*
U.S. Cl. 74—866 **5 Claims**



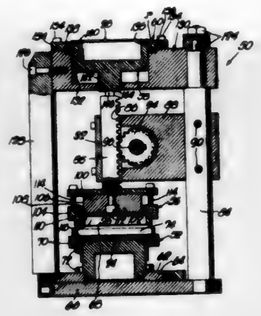
An automatic transmission control system of automobiles, wherein the coupling of a gear of the multiposition shifting mechanism and a gear meshing therewith on the engine side is released when a speed change signal is sent out, thereby placing the gears in neutral for a predetermined time interval until the specified change gear is meshed by the fluid coupling with the engine side gear, so as to eliminate shocks otherwise experienced by the automobile at the time of gear shifting to prevent people on the automobile from feeling discomfort, as well as to reduce wear on the gear mesh clutches per car-mile.

3,662,626
BUTTON-FORMING DEVICE

Jacob J. Alpert, 3 Burnt Swamp Road, Amity Station, P.O. Box 3896, Woodbridge, Conn.

Filed Nov. 23, 1970, Ser. No. 91,876
Int. Cl. B29d *19/00*
U.S. Cl. 79—4 **6 Claims**

Device for forming buttons from a pin-on back plate, a front plate, and a cover over the front plate, with the device having a pair of button-forming dies alternately shiftable into operation alignment with a forming punch which on descent with the successively aligned dies cooperates with the latter to assemble the separate button parts into a button, and a cover-blanking punch and die set above the forming punch, of which the blanking die is topmost and has a die aperture open at the top and bottom and a cutting edge at the bottom of the aperture, with the blanking die being by the forming punch raised into blanking cooperation with the blanking die,

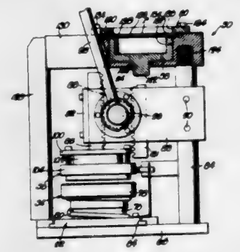


and the forming punch being moved upwardly and downwardly by manually operable means.

3,662,627
BUTTON-FORMING DEVICE

Walter Spruegel, New Haven, Conn., assignor to Jacob J. Alpert, Woodbridge, Conn.

Filed Jan. 4, 1971, Ser. No. 103,747
Int. Cl. B29d *19/00*
U.S. Cl. 79—4 **2 Claims**



Device for forming buttons from a pin-on back plate, a front plate, and a cover over the front plate, with the device having a pair of button-forming dies alternately shiftable into operative alignment with a forming punch which on descent into the successively aligned dies cooperates with the latter to assemble the separate button parts into a button, and a blanking punch and die set above the forming punch, of which the blanking punch is raised into cooperation with the blanking die for blanking a cover from a supply sheet, and a handlever operatively connected with the punches for simultaneously lowering the forming punch and raising the blanking punch.

3,662,628
TORQUE RELEASE ADAPTER

Lawrence S. Schnepel, 250 Goodman Hill Road, Sudbury, Mass.

Continuation-in-part of application Ser. No. 860,231, Sept. 23, 1969, now abandoned. This application Apr. 20, 1970, Ser. No. 30,043
Int. Cl. B25b
U.S. Cl. 81—52.4 **10 Claims**

A torque release adapter comprising a receptacle and rigid plate rotatably mounted therein with confronting surfaces

normal to the axis of rotation, said surfaces containing recesses in which are mounted bearing members, and means for yieldably applying pressure to the parts to constrain the bearings to said recesses to transmit torque from one part to the other, said yieldable means being yieldable to a torque in

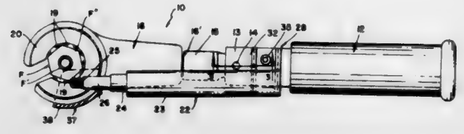


excess of a predetermined adjustable amount to permit the parts to separate so that one part rides over the bearing members relative to the other part a distance corresponding to the distance between recesses and then become re-engaged with the bearing members.

3,662,629
COMBINED WRENCH AND MARKING DEVICE

Christopher James Lance, Royal Oak, Mich., assignor to Ivan F. Belknap, Detroit, Mich., a part interest

Filed July 13, 1970, Ser. No. 54,466
Int. Cl. B25b
U.S. Cl. 81—52.4 **10 Claims**



A marking wrench for hand use has a torque-limiting, over-center type of connection between an operating handle and a remote wrench end pivoted to the handle and engageable with the bolt end of a tubular type headed fitting. The handle fixedly mounts an elongated felt marking pen, whose tip is positioned to one side of the tubular shank of the fitting, in axially spaced relation to the plane of the fitting's hex head. Hence when a desired torquing stress is attained and the torque-limiting connection yields the marking tip wipes across the shank beneath the fitting's head, thus marking the fitting as being properly torqued up. An arcuate shield is applied to the wrench end in the plane of the marking tip.

3,662,630
ADJUSTABLE RATCHET WRENCH

John C. Baxter, 3033 Mary S.E., Grand Rapids, Mich.

Filed Sept. 29, 1969, Ser. No. 861,865
Int. Cl. B25b *13/28*
U.S. Cl. 81—97 **7 Claims**

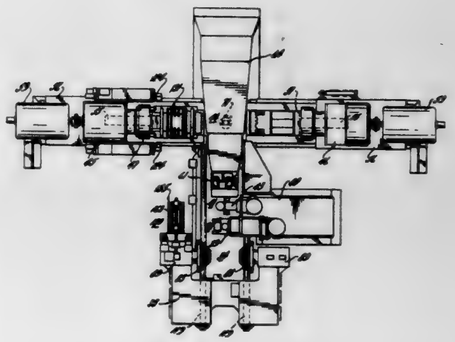
An adjustable ratchet wrench of the open-face type, a movable jaw and at least two fixed gripping surfaces. The movable jaw is adjustable toward and away from the fixed jaw's two gripping surfaces along a line parallel to the bisector of the angle formed by the surfaces. The movable jaw is pivoted to give the ratcheting function.



3,662,631
APPARATUS FOR TRANSFERRING AND MACHINING WORKPIECES

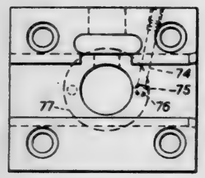
Hans J. Baechle, and James O. Holtey, both of Rockford, Ill., assignors to The Ingersoll Milling Machine Company, Rockford, Ill.

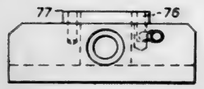
Filed Aug. 12, 1970, Ser. No. 63,087
Int. Cl. B23b *15/00*
U.S. Cl. 82—2.5 **17 Claims**



A cylinder whose ends are to be machined is first centered in an accurately located position by cones on a loading carriage which thereafter advances the cylinder from a loading station to a machining station where the cylinder is clamped radially and held in its accurately located position prior to release of the cones and retraction of the loading carriage to the loading station. After the ends of the cylinder have been machined by cutters supported on a pair of tool heads, the cylinder is unclamped and is transferred laterally out of the machining station with one of the tool heads as an incident to the normal retraction of such head. During the next advance of the loading carriage to deliver a succeeding cylinder to the machining station, a fork lift on the carriage picks up the machined cylinder from its transferred position adjacent the retracted tool head and, when the loading carriage is subsequently retracted, carries the machined cylinder back to an unloading station adjacent the loading station.

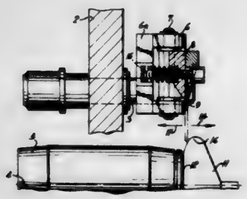
3,662,632
RELATING TO MACHINE TOOLS
Raymond A. Riley, Bulkington, near Nuneaton, England, assignor to The Dunlop Company Limited, London, England
Filed May 14, 1969, Ser. No. 824,533
Claims priority, application Great Britain, May 17, 1968, 23,520/68; Sept. 18, 1968, 44, 260/68; Jan. 11, 1969, 1,786/69
Int. Cl. B23b *29/20*
U.S. Cl. 82—36 2 Claims





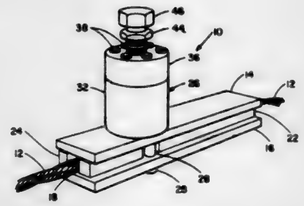
In a machine-tool arranged to accept pre-set tools, a tool carrier on which the pre-set tools are detachably mounted. The tool carrier is arranged to be adjustably located on a tool support structure so as to permit alignment, and re-alignment after wear has taken place, of the carrier with the spindle axis of the machine-tool, of which the following is a specification.

3,662,633
CUTTING DEVICE FOR MACHINES FOR CUTTING ARTICLES MADE OF BLOWN PLASTICS
Jacques Bourgeois, Lyon, France, assignor to Lesieur-Cotelle, General Leclerc, Boulogne sur Seine, France
Filed July 1, 1969, Ser. No. 838,361
Claims priority, application France, July 3, 1968, 50,177
Int. Cl. B23b *3/04, 5/14*
U.S. Cl. 82—101 2 Claims



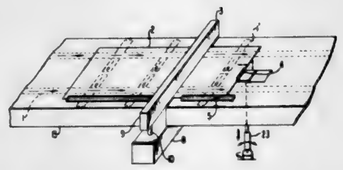
A plastic article is rotated about an axis of rotation and a cutting blade mounted on a pivotal arm is moved towards the rotating article proximate a groove therein where the article is to be cut. The arm is resiliently supported to permit transverse movement therein parallel to the axis of rotation and when the blade is lowered against the article, it rides along an inclined surface adjacent the groove so as to be guided into the groove to effect the removable of the undesired waste on the article beyond the groove.

3,662,634
HYDROSTATICALLY POWERED MESSENGER STYLE WIRE CUTTER
John C. Burke, North Falmouth, Mass., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Dec. 18, 1970, Ser. No. 99,381
Int. Cl. B26d *5/12*
U.S. Cl. 83—1 4 Claims



A hydrostatically actuated messenger type wire cutter for severing wire below the surface of a body of water consisting of a slide having an assembly for actuating a cutting tool to sever or weaken the wire at a preselected depth. A rupture disk collapses at the preselected depth, permitting water pressure to react against a piston carrying the cutting edge.

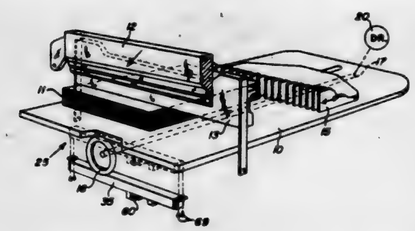
3,662,635
ELECTROMAGNETIC INDUCTION TYPE FEEDING AND POSITIONING METHOD AND APPARATUS FOR METAL PLATES
Yukio Yabuta, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 24, 1970, Ser. No. 22,297
Claims priority, application Japan, Mar. 25, 1969, 44/22616
Int. Cl. B65h *5/00, 9/06*
U.S. Cl. 83—23 14 Claims



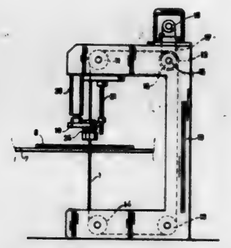
A metal plate to be processed is supplied to, positioned in and removed from a processing machine by electromagnetic induction feeding and positioning apparatus. The feeding and positioning units comprise electromagnets which are disposed under a table on which the metal plate is fed, and adjustable stopper and guide means are provided on the table to properly position the metal plate at a work station.

3,662,636
MATERIAL CUTTER CONTROL APPARATUS
Dorse James Young, Centerville, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed June 12, 1970, Ser. No. 45,702
Int. Cl. B26d *1/08, 5/36;* G11b *31/00*
U.S. Cl. 83—71 4 Claims

A material cutting apparatus includes a modular, replaceable control assembly for positioning a movable machine element, such as a backgauge, on the material cutter by controlling the element drive means. The control assembly includes a continuous magnetic tape which moves in response to the movement of the machine element past magnetic recording and/or playback heads. The magnetic tape is contained within a housing and supported for movement therein on a pair of rollers. The housing also contains recording and/or playback heads and means for indexing these heads relative to the tape to define a plurality of job programs on the tape. The housing is removably attached to the machine, preferably within easy access of the operator, and a mechanical connection is made by a chain between the magnetic tape and the machine element for moving the tape through a distance proportional to the movement of the machine element. An electrical connection is also made between the magnetic heads and the drive means for controlling the movement of the machine element in accordance with control signals on the magnetic tape.



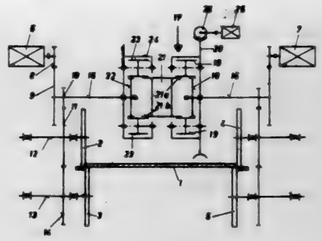
3,662,637
DEVICE FOR CUTTING PLATE MATERIAL
Hendrik Glastra, Enschede, Netherlands, assignor to N.V. Maatschappij voor Industriele Research en Ontwikkeling, Enschede, Netherlands
Filed Mar. 19, 1970, Ser. No. 20,980
Int. Cl. B23d *55/08*
U.S. Cl. 83—201.15 8 Claims



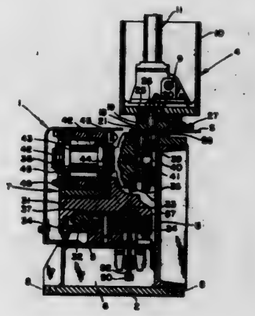
Cutting machine for plate material with a loop of cutting wire, which is driven in the circumferential direction, and has a cross-section which is substantially equilaterally triangular, while furthermore suitable drive means impart to the wire a movement around its center line.

3,662,638
SHEARLINE FOR TRIMMING PLATES AND SHEETS, IN PARTICULAR HEAVY PLATES, BY MEANS OF CIRCULAR CUTTER MEANS
Gunter Karl Fries, Neunkirchen (Saar), and Berthold Jakob Marx, Rohrbach (Saar), both of Germany, assignors to Moeller and neumann GmbH, Ingbert (Saar), Germany
Filed Jan. 19, 1970, Ser. No. 3,651
Claims priority, application Germany, Jan. 24, 1969, P 19 03 488.9
Int. Cl. B23d *19/06*
U.S. Cl. 83—367 6 Claims

In a shears line for trimming sheets or plates by means of two oppositely disposed circular cutter shears, variable gear means are provided for varying the rotary speed of the one circular cutter pair relatively to the other circular cutter pair, thereby to obtain a straight line delivery of the trimmed sheets or plates. The variable gear means may be controlled manually or automatically.

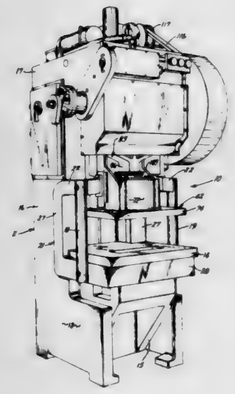


3,662,639
SHEARING APPARATUS
Donald J. Wheeler, Kent, and William Adle, Solon, both of Ohio, assignors to Roller Shear Corporation, Bedford, Ohio
Filed Apr. 17, 1970, Ser. No. 29,488
Int. Cl. B26d *7/02*
U.S. Cl. 83—456 16 Claims



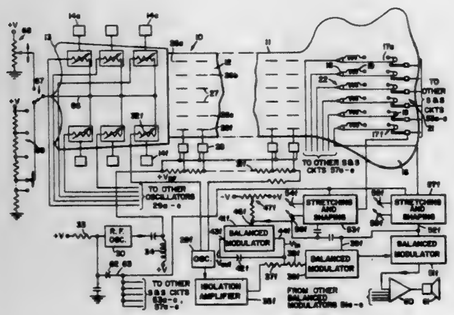
Shearing apparatus comprises a vertically movable shear assembly for releasably clamping the strip material during shearing, and a transversely movable shear assembly which cooperates with the vertically movable shear assembly to shear the strip material during traversal across the strip. A cam roll track may be provided for supporting one end of the mounting shaft for the transversely movable shear assembly during traversal across the strip material to take the load off the shaft, and electromagnets may also be provided to resist bowing of the rectangular shear blade for the vertically movable shear assembly resulting from separation forces created during shearing without having to provide a large superstructure therefor. The support for the transversely movable shear assembly may be mounted for pivotal movement to permit adjustment of the vertical clearance or overlap between both shear blades, and provision may also be made for adjusting the axial or lateral clearance between such shear blades.

3,662,640
MACHINE TOOL
Theodore J. Wrona, Sturgis, Mich., assignor to Press Systems, Inc., Sturgis, Mich.
Filed Oct. 9, 1969, Ser. No. 865,095
Int. Cl. B26d 7/26, 5/16
U.S. Cl. 83—530 7 Claims



A press having a C-shaped frame including a die support surface and slide means for moving a punch toward and away from the support urface. A Y-shaped pitman has upwardly extending arms eccentrically mounted upon shaft means for effecting vertical reciprocation of the stem at the lower end of the pitman which is pivotally connected through a pressure fluid actuator to the slide means. Thus, vertical movement of the slide means relative to the support surface can be effected both by the eccentrics acting through the pitman and by the pressure fluid actuator acting between the pitman and the slide means. The fluid actuator includes means for making extremely small adjustments in the stroke of the pressure fluid actuator.

3,662,641
ELECTRONIC MUSICAL APPARATUS
Joseph Stevens Allen, 202 Valparaiso, Atherton, Calif., and Zeb Vance Bulla, Jr., 4018 C Woodmont, Nashville, Tenn.
Continuation-in-part of application Ser. No. 864,024, Oct. 6, 1969. This application Oct. 1, 1970, Ser. No. 77,280
Int. Cl. G01h 1/00
U.S. Cl. 84—1.01 32 Claims



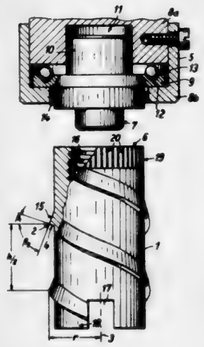
An electronic musical instrument in which the fingerboard of a guitar is replaced by capacitive touch contact switches simulating all of the fret positions of a string. The touch plates are coupled to various oscillators and the output frequency is amplitude modulated by a transducer produced output signal from a set of strings which are plucked. This output signal is stretched and shaped as desired to modulate the audio frequency signal and produce the final musical output.

3,662,642
RETAINING DEVICES
James A. Bernard, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed May 18, 1970, Ser. No. 38,170
Int. Cl. F16b 21/18
U.S. Cl. 85—8.8 3 Claims



A retaining device for presenting actual displacement of parts or elements concentrically arranged with respect to one another wherein the retaining device in the form of a split ring, substantially U-shaped in cross section, is provided with an annular split collar or web portion and radially extending split spring rings adapted to be seated in grooves provided in the elements to be held together, one of the spring rings having at least a portion of it bent toward the adjacent spring ring to provide a biasing force when the retaining device is placed in position to hold the two elements together.

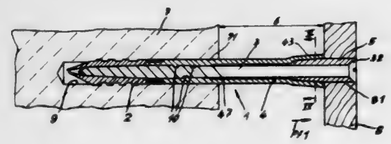
3,662,643
SELF-TAPPING SCREW INSERT
Harry Scheffer, Brachwede/Westphalia, Germany, assignor to Boilhoff & Co., Brackwede, Westphalia County, Germany
Filed May 15, 1970, Ser. No. 37,662
Int. Cl. F16b 25/00, 35/00, 39/30
U.S. Cl. 85—46 11 Claims



This invention relates to a screw threaded insert or member cutting its own thread in a workpiece, adapted to be fitted in a workpiece of soft material, such as for instance aluminum, plastics, wood, or the like, wherein the thread has flanks differentially inclined relative to a plane normal to the axis of the thread at angles predetermined in accordance

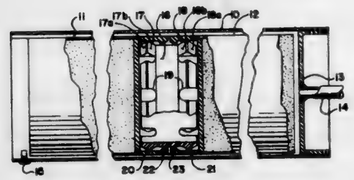
with specific mathematical relationships so as to be self-locking against rotation due to axial loading of the insert in the direction of pull-out while permitting installation of the insert under axial loading in the opposite direction.

3,662,644
WALL PLUG ASSEMBLY, PARTICULARLY FOR AFFIXING FACINGS
Friedrich Flesch, Emmendingen, and Hansjorg List, Waldkirch, both of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein
Filed June 30, 1970, Ser. No. 51,182
Claims priority, application Germany, July 1, 1969, P 19 33 313.2
Int. Cl. F16b 13/06
U.S. Cl. 85—69 6 Claims



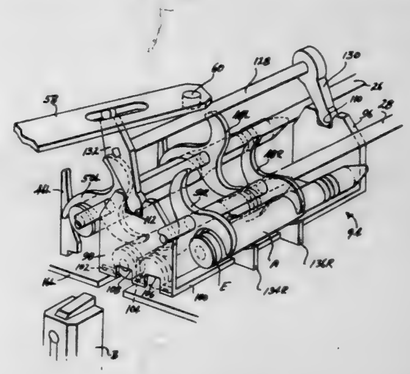
A wall plug assembly, particularly for affixing facings, comprising the actual "dowel" or plug itself, a securing screw, an extension shank and an expanding sleeve for the latter. The plug, in a zone not capable of being expanded, and/or in the extension shank are respectively is provided with at least one thrust bearing for the purpose of fixing the securing screw in its axial position.

3,662,645
COUPLER FOR INTERCONNECTION OF TANDEM LAUNCHED AERIAL FLARES
James R. Thurston, Brigham City, and Roger A. Groegebauer, Ogden, both of Utah, assignors to Thiokol Chemical Corporation, Bristol, Pa.
Filed Mar. 9, 1970, Ser. No. 17,555
Int. Cl. B64d 1/04
U.S. Cl. 89—1.5 R 5 Claims



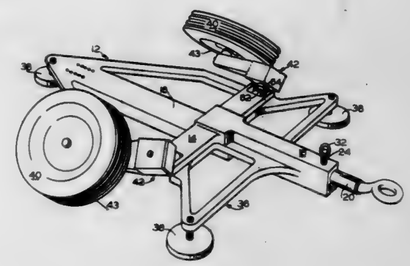
A coupler is provided for interconnecting two aerial flares prior to and during the early stages of their launching from an aircraft in order to prevent erratic tumbling of the flares which could result in striking of the flares on some part of the aircraft. The flares stay coupled only until they are clear of the aircraft and are then pulled apart by the air turbulence in the wake of the aircraft. The coupler is formed of semi-resilient plastic and is installed in place in each flare prior to launch.

3,662,646
FEEDER
John F. O'Brien, and Herve J. Ouellette, both of Springfield, Mass., assignors to General Electric Company
Filed Oct. 24, 1969, Ser. No. 869,148
Int. Cl. F41d 9/02
U.S. Cl. 89—33 SF 10 Claims



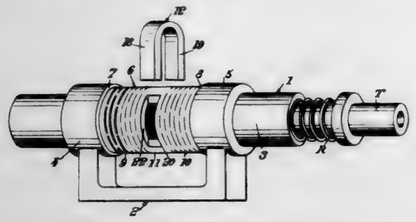
An ammunition feeder for a machinegun has two sets of infeed sprockets which alternatively feed rounds to a shiftable tray having two alternative stripping stations, either of which may be alternatively disposed to cooperate with the bolt.

3,662,647
QUICK EMPLACEMENT GUN CARRIAGE MECHANISM
Leonard L. King, Rock Island, Ill., assignor to The United States of America as represented by the Secretary of the Army
Filed Nov. 19, 1970, Ser. No. 90,979
Int. Cl. F41f 23/20
U.S. Cl. 89—40 J 15 Claims



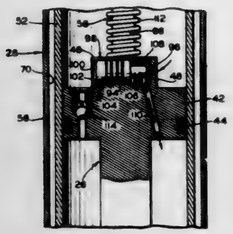
In order to convert a wheeled gun carriage between fixed emplacement thereof and a mobile towing position, each wheel is mounted to one end of a support arm which is, in turn, angularly pivoted to the side of the gun-support frame in geared connection with a rotatable shaft extending transversely through the frame in position to be rotated by movement of the vehicle utilized to tow the carriage whereby back-up movement of the towing vehicle actuates the support arms to tilt the wheels outwardly of the frame to effect the lowering thereof into fixed emplacement on the ground and whereby subsequent forward movement of the towing vehicle actuates the support arms to return the wheels to the vertical position required to permit the normal towing of the carriage.

3,662,648
ELASTIC DAMPING DEVICE FOR FIRE-ARMS
Bernard Maillard, Geneva, Switzerland, assignor to Brevets Aero-Mecaniques S.A., Geneva, Switzerland
Filed Mar. 4, 1970, Ser. No. 16,409
Claims priority, application Switzerland, Mar. 5, 1969, 58,147
Int. Cl. F41f *19/06*
U.S. Cl. 89—44 7 Claims



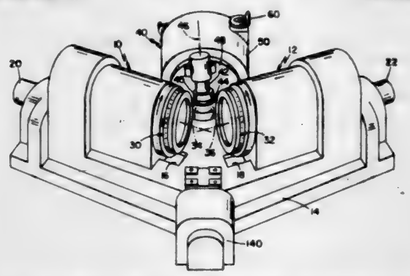
The fire-arm includes a breech casing, a barrel recoiling with respect to the breech casing against elastic return means and a rigid support on which the breech casing slides. The elastic damping device interposed between the breech casing and the rigid support is an elastic cylindrical sleeve inserted between the two axial stop surfaces. The cylindrical sleeve has two elastic end zones separated by a rigid zone. The rigid support has two cylindrical co-axial rings axially separated. Yokes are used as removable fixing means for a cylindrical collar to the rigid zone. The weapon can be a fixed or movable installation.

3,662,649
SELF-LOCKING HYDRAULIC LINKAGE
Jimmy H. Williams, Bettendorf, Iowa, assignor to The United States of America as represented by the Secretary of the Army
Filed Mar. 23, 1970, Ser. No. 21,575
Int. Cl. F41f *23/34*
U.S. Cl. 89—40 J 11 Claims



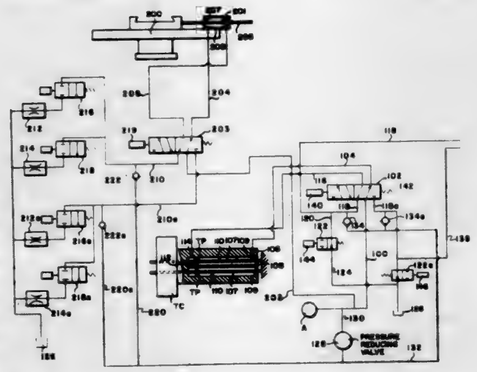
A self-locking hydraulic piston and cylinder arrangement interposed between a stationary and a movable member is provided with a slidable poppet valve in the heat of the piston. The valve is normally spring biased to a fully open position to permit a slightly restricted passage of hydraulic fluid through the piston head during the movement of the pivotal member relative to the stationary member. However, when the poppet valve is subjected to a differential pressure in excess of the spring bias thereagainst, it is automatically actuated to block the passage of the hydraulic fluid through the piston heat thereby preventing further relative movement between the piston and cylinder which then acts as a rigid link between the movable and stationary members.

3,662,650
GEAR MAKING
Paul Maker, Marion, Mass., assignor to Bird Island, Inc., Boston, Mass.
Filed Feb. 16, 1970, Ser. No. 11,503
Int. Cl. B23f *5/20*
U.S. Cl. 90—3 15 Claims



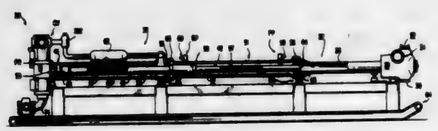
Apparatus for making gears, featuring a workpiece support mounted to provide rotation of the workpiece about its axis at a basic rate; a cutter having profile generating cutting edges mounted for rotation about a cutter axis at a basic rate bearing a ratio to the basic workpiece rate dependent upon the ratio of the number of profiles being generated to the number of profile generating cutting edges in the cutter, the cutter axis being at an angle to the workpiece axis which differs from 90° by an angle other than the helix angle (taken at the generating circle) of the gear being made, the cutter and workpiece being mounted for relative translation axially of the workpiece; and an element responsive to that relative translation to add to or subtract from the basic workpiece rate a rate of rotation to which the rate of translation bears a ratio equal to the desired lead of the gear being made; whereby successive cuts made in each toothspace are tangent to the adjacent profile at lines oblique to the workpiece axis and extending generally between the fillet and tip of the profile, and between successive cuts tangent to any one desired profile there will intervene a complete revolution of the workpiece.

3,662,651
HYDRAULIC SYSTEM FOR LIMITING DEFLECTION OF A PISTON STOP
Henry L. Cunningham, Horseheads, N.Y., assignor to Hardinge Brothers, Inc., Elmira, N.Y.
Filed Dec. 17, 1969, Ser. No. 885,891
Int. Cl. F15b *13/04*, *13/06*
U.S. Cl. 91—165 4 Claims



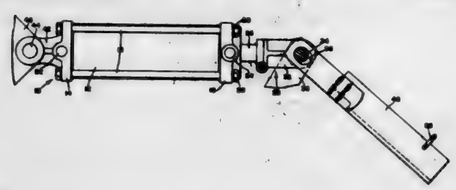
This invention relates to a hydraulic system for machine tool operation which limits deflection of a stop at the end of machine tool travel. The hydraulic system includes a cylinder, a piston, a fluid line connected to one end of the cylinder, with the fluid lines being alternately pressure and exhaust lines. Fluid under pressure is introduced alternately in one of the fluid lines for moving either a piston or a cylinder housing relative to the piston and a means for reversing fluid flow in the lines acts to move either the piston or cylinder housing back and forth. Maximum flow pressure is maintained in one of the fluid lines when used as a pressure line, and a minimum fluid pressure is maintained in one of the fluid lines when used as an exhaust line. The cylinder housing includes a stop whereby said minimum fluid pressure on one side of the piston acts against the maximum fluid pressure on the other side of the piston for limiting deflection of the stop.

3,662,652
HYDRAULICALLY POWERED POWER UNIT
Clinton W. Cole, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
Original application Dec. 19, 1969, Ser. No. 886,687. Divided and this application Jan. 21, 1971, Ser. No. 108,382
Int. Cl. F15b *11/00*, *13/00*; F04b *17/00*, *35/00*
U.S. Cl. 91—411 R 18 Claims



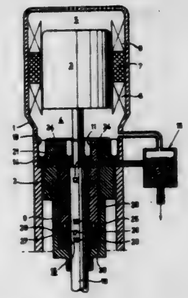
An hydraulically powered multiplex pump having at least three pumping units, each operable in a cycle including suction, precompression and discharge phases, with the cycles being out of phase with one another, whereby simultaneous performance of these functions results in a substantially constant pressure and flow of both the pumped fluid and the power fluid. Separate power and cycle control circuits, which may employ different fluids, are provided. Control valve assemblies, each including two sleeve valves communicating with a common chamber, are operated by the control circuit fluid to condition power circuit flow for the various phases of the pumping cycle. The power end of the pumping units includes power cylinders which may be fluid interconnected at their rod ends so that operations in each power cylinder affect functions in the other chambers, and provision is made for automatic correction of errors in stroke length.

3,662,653
SAFETY LOCK FOR A LINEAR FLUID PRESSURE ACTUATOR
Robert Philip Carlson, Bettendorf, Iowa, and George Frederick Oelschlaeger, Rock Island, Ill., assignors to Deere & Company, Moline, Ill.
Filed Mar. 26, 1970, Ser. No. 22,922
Int. Cl. F15b *15/26*
U.S. Cl. 92—15 4 Claims



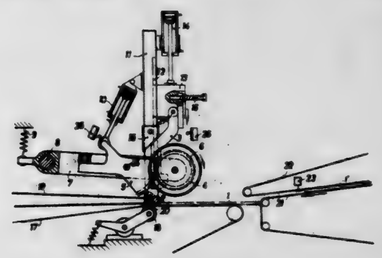
A rigid, elongated spacer of generally U-shaped cross-section adapted to fit over the extended piston rod of a hydraulic ram and having opposite ends engageable with the cylinder body and outer end of the rod, respectively, to prevent retraction of the latter. The spacer is pivotally mounted on the outer end of the rod for swinging movement between its operative position and an inoperative position. A removable pin acts to releasably maintain the spacer in the former position.

3,662,654
RECIPROCATING ROD AND SLEEVE ASSEMBLY WITH A LIQUID-SUPPORTED ROLLING DIAPHRAGM SEAL AND A PUMPING RING
Johannes Cornelis Bax, Emmasingel, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 14, 1970, Ser. No. 97,585
Claims priority, application Netherlands, Jan. 8, 1970, 7000189
Int. Cl. F15b *21/04*
U.S. Cl. 92—83 5 Claims



A device including a reciprocally moving piston and cylinder pair with a rolling-diaphragm seal secured between them and axially spaced therefrom a pumping ring disposed in an annular space between the piston and cylinder; also in this annular space intermediate the seal and pumping ring is a sleeve secured to the cylinder and releasably engagable to the ring, as part of a mounting assembly for the pumping ring.

3,662,655
APPARATUS FOR ALIGNING LONGITUDINAL GLUE SEAM OF A TUBULAR CARDBOARD BOX BLANK
Karl Saro, and Willi Troederff, both of Duesseldorf, Germany, assignors to Jagenberg-Werke AG, Duesseldorf, Germany
Filed Feb. 17, 1971, Ser. No. 115,949
Claims priority, application Germany, Mar. 2, 1970, P 20 09 608.6
Int. Cl. B31b *1/00*
U.S. Cl. 93—36 SQ 9 Claims



An apparatus for the alignment of two portions of a cardboard tube made from a box blank, which portions are joined by a longitudinal glue seam, comprising an endless belt having a run resiliently urged upwards below a stop which is en-

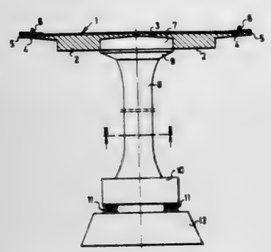
gaged by the box blank. Means actuated by the movement of a box blank past a sensing station intermittently actuates a pair of spaced rollers which help align the blank against the stop and intermittently actuates a vertically displaceable lever which moves down, engages the blank and forces it down together with the belt therebelow against the upward resilient urging on the belt. This moves the blank below the stop so that it can be advanced by the belt.

3,662,656

MULTI-SECTION BRIDGE SUPPORTING STRUCTURE OF STEEL OR REINFORCED CONCRETE HAVING SUPPORTS CENTRALLY OF THE CROSS-SECTION OF THE STRUCTURE

Ulrich Finsterwalder, Munich-Obermenzing, and Klemens Finsterwalder, Socking, both of Germany, assignors to Dyckerhoff & Widmann Kommanditgesellschaft, Munich, Germany

Filed June 12, 1970, Ser. No. 45,839
Claims priority, application Germany, June 11, 1969, P 19 29 702.0
Int. Cl. E01c *1/00*
U.S. Cl. 94—1 5 Claims



Bridge or highway supporting structure of steel concrete or prestressed concrete for multiple section structure with columns disposed centrally of the cross-section of the bridge, a superstructure of beams in the form of slabs rigidly connected to the columns with at least one slab-shaped longitudinal girder and slab-shaped transverse beams of the same structural height as the longitudinal girders where the columns are slender in the direction longitudinally of the bridge supporting structure and relatively wider transversely thereof and connected with the transverse beams with a pedestal at the foot of each column, a foundation block below each pedestal and bearings intermediate the pedestal and the foundation block which are spaced transversely of the structure to permit tilting movement of the bridge in longitudinal direction.

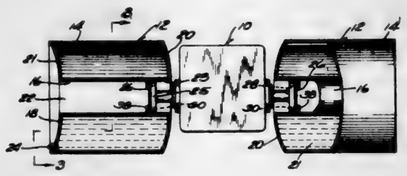
3,662,657

TURF ROLLER FOR TRACTOR

Francesco Aluppa, 58286 Hill & Dale Drive, Muskego, Wis.

Filed July 9, 1970, Ser. No. 53,403
Int. Cl. E01c *19/26*
U.S. Cl. 94—50 R 3 Claims

Disclosed herein is a turf roller adapted to be connected to the wheel hub of a vehicle such as a tractor and used as both a driving wheel and a roller. The roller includes inner and outer concentric cylindrical walls and end walls which connect the outer and inner walls to define a concentric water chamber and an axial passage adapted to receive the wheel hub of a vehicle. A bracket or partition located in the axial passage and spaced intermediate its length is provided with a plurality of apertures for receiving the hub studs. Nuts are threaded on the studs to secure the partition to the hub. Access to the nuts is afforded by the axial passage.

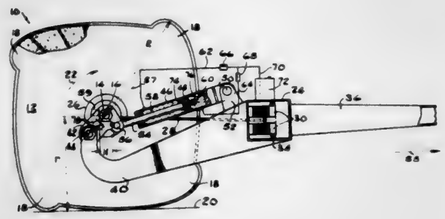


3,662,658

IMPACT COMPACTION OF LOOSE MATERIALS

Aubrey Ralph Berrange, Pretoria, South Africa, assignor to South African Inventions Development Corporation, Pretoria, South Africa

Filed Mar. 19, 1970, Ser. No. 21,016
Claims priority, application South Africa, Apr. 2, 1969, 69/2360
Int. Cl. E01c *19/30*
U.S. Cl. 94—48 16 Claims



The specification discloses an impact roller which is attachable to a hauling vehicle via a drawbar and a resilient coupling and which includes restraining means, for example in the form of damping means or braking means, to restrain excessive relative horizontal movement between the roller and the drawbar during hauling of the roller.

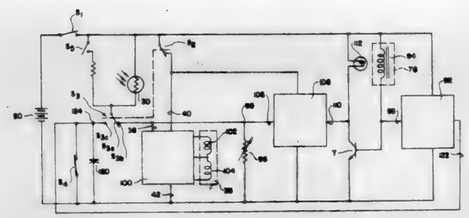
3,662,659

CAMERA APPARATUS FOR CONTROLLING DIAPHRAGM AND SHUTTER SPEED

Lenard M. Metzger; Richard J. Bresson, both of Rochester, N.Y., and Randall T. McConaughey, Boulder, Colo., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 22, 1970, Ser. No. 48,365
Int. Cl. G03b *9/07, 7/08*
U.S. Cl. 95—10 CD 2 Claims

An exposure control system for use in photographic apparatus which provides automatic adjustment of the exposure aperture in response to a signal from a photoresponsive member and then actuates a shutter mechanism to make an exposure for an interval determined by a timing circuit as a function of the aperture adjustment and the signal from the photoresponsive member. Preferably, the system includes in-



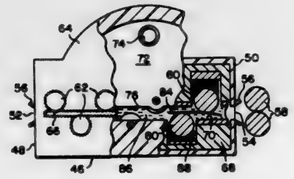
dicator means controlled by the photoresponsive member to provide an indication of low light conditions and of the termination of the exposure interval.

3,662,660

APPARATUS FOR PROCESSING SENSITIZED MATERIAL

Ronald P. Layne, 15598 Addison, Southfield, Mich.

Continuation-in-part of application Ser. No. 727,821, May 9, 1968, now abandoned. This application Aug. 5, 1970, Ser. No. 61,181
Int. Cl. G03d *3/06*
U.S. Cl. 95—89 R 15 Claims



Apparatus for processing sensitized material such as X-ray film and the like which automatically transports the film through successive processing stages such as developing, fixing, washing and drying. No external connection to water sources or drains are required. The film is oriented in a vertical plane as it passes through the processing stages and the chemical solutions flow downwardly by gravity between wetted surfaces with the surfaces acting to confine the downwardly moving stream so that seals at the film inlet and outlet of the apparatus are not required. The film is passed through the downwardly moving stream of chemical solution which assures constant supply of fresh solution and continuous drainage of the by-products of the chemical reaction.

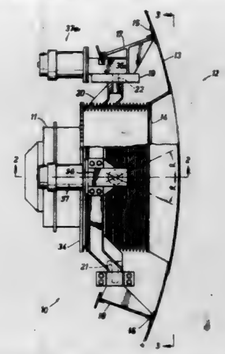
3,662,661

SCIENTIFIC EXPERIMENT FLEXIBLE MOUNT

Horace E. Whitacre, Pasadena, and Arthur R. White, Houston, both of Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Aug. 17, 1970, Ser. No. 64,391
Int. Cl. G03b *29/00*
U.S. Cl. 95—12.5 10 Claims

An apparatus for mounting scientific experiments in a spacecraft which permits their utilization without maneuvering of the spacecraft. One end of an elongated flexible bellows is hermetically attached to the framework of the spacecraft in an encircling relationship about an opening. The other end is sealed over with an adapter plate to permit interconnection of a camera, optical system, sextant, or other equipment. A gimbal system attaches the adaptor plate to the frame of the spacecraft permitting rotational movement on a pair of orthogonal axes. Drive motors or hand operated adjusting means interconnect the pair of gimbals for controlled movement of the scientific experiment.

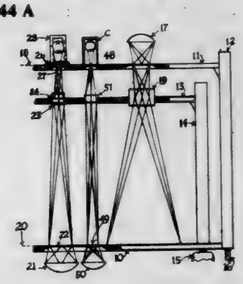


3,662,662

FOCUS SENSOR

Leon Dewan, 16 West End Ave., Old Greenwich, Conn.

Filed June 3, 1970, Ser. No. 42,939
Int. Cl. G03b *27/52*
U.S. Cl. 95—44 A 4 Claims



Apparatus for sensing and automatically adjusting the focus of a photographic variable size copying machine.

An optical system identical to that of the camera is mechanically coupled to operate in parallel therewith. A photoelectric sensing system located in the plane of the photographic plate receiving light through the optical system from a light source in the plane of the negative carrier is activated by inaccuracy of focus. Signals of the photoelectric system are applied to control motor driven focusing means to restore and maintain sharp focus.

3,662,663

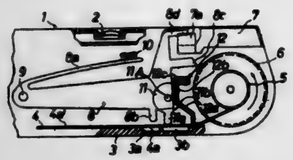
FILM METERING MECHANISM

Richard Schmierl, Unterhaching, and Dieter Maas, Munich, both of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 26, 1969, Ser. No. 861,281
Claims priority, application Germany, Sept. 28, 1968, P 17 97 44.6
Int. Cl. G03b *1/62, 17/42*
U.S. Cl. 95—31 FM 8 Claims

A still camera for use with roll film of the type having a row of perforations, one for each film frame, wherein the housing accommodates a lever biased from a starting to an

operative position in which the lever prevents further operation of the film transporting mechanism. A tracking arm of the lever enters an oncoming perforation in response to transport of the film and thereby permits movement of the lever to operative position. A follower on the lever holds the tracking arm away from the film path when the lever is

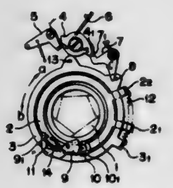


returned to starting position in response to actuation of the shutter release and prior to renewed operation of the film transporting mechanism so that the tracking arm cannot reenter the same perforation.

3,662,664
CAMERA SHUTTER INCORPORATING A GOVERNOR MECHANISM

Takeshi Goshima, Tokyo, Japan, assignor to Canon Camera Kabushiki Kaisha, Tokyo, Japan

Continuation of application Ser. No. 373,383, June 8, 1964, now abandoned. This application June 6, 1966, Ser. No. 555,316
Claims priority, application Japan, June 20, 1963, 38/32348
Int. Cl. G03b *9/58*
U.S. Cl. 95—63 6 Claims



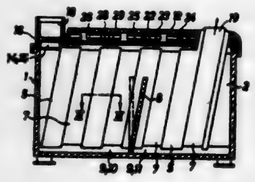
Lens shutter for a camera in which the shutter blades determine the exposure time and the diaphragm opening, the shutter blades being rotatably mounted on one rotatable ring and interconnected with a second ring rotatable relative to the first ring, a governor mechanism being provided on either of the two rings and cooperating with the other of the two rings to provide a shutter speed control in accordance with the diaphragm setting.

3,662,665
APPARATUS FOR TRANSPORTING ROLL FILM OR THE LIKE

Louis Achilles Mecuwen; Emile Frans Stievenart, both of Antwerp, Belgium; Karl-Wilhelm Schraaz, Opladen, Germany; Josef Busch, Bensberg-Rafrath, Germany; Siegfried Froch, Cologne-Stammheim, Germany, and Herbert Bruck, Leverkusen, Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 14, 1968, Ser. No. 775,803
Claims priority, application Germany, Nov. 18, 1967, P 15 97 658.6
Int. Cl. G03d *3/08*
U.S. Cl. 95—94 R 14 Claims

Photographic roll film is transported through the tank of a continuous developing unit by moving along an extended helical path defined by a stationary drum which is installed in the tank and has a cylindrical wall carrying a helical rail formed with outwardly flaring helical channels for the edges

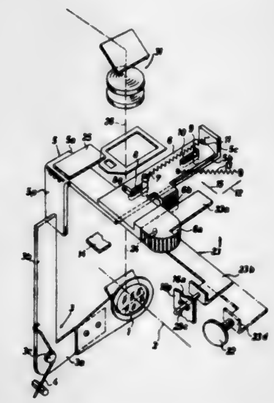


of roll film. Driven transporting rollers extend into openings provided therefor in the drum to engage the edges of film and to transport it in the channels.

3,662,666
PHOTOGRAPHIC APPARATUS WITH ADJUSTABLE FILTER

Karl Neudecker, Munich, and Friedrich Winker, Unterhaching, both of Germany, assignors to Afga-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 11, 1970, Ser. No. 45,485
Claims priority, application Germany, June 19, 1969, G 69 24 527.8
Int. Cl. G03b *19/00*
U.S. Cl. 95—11 L 13 Claims

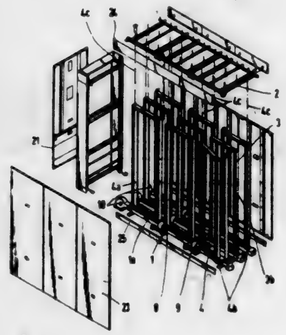


A photographic camera wherein a filter is moved away from the path of incoming scene light in response to attachment of a source of artificial light. The filter is also movable by way of a manually operated selector which can be locked in a position corresponding to inoperative position of the filter. The selector is automatically unlocked in response to attachment of the light source but continues to hold the filter away from the path of incoming light as long as the light source remains attached. A spring returns the filter into the path of incoming light when the light source is detached so that the camera is then ready for making of exposures in daylight.

3,662,667
FRAME ARRANGEMENT FOR ELECTRONIC DEVICES

Kurt Murawski; Anton Schmucker; Bernd Sensburg, and Josef Lanzendorfer, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed July 24, 1970, Ser. No. 57,927
Claims priority, application Germany, Aug. 13, 1969, P 19 41 276.1
Int. Cl. H02b *1/00*; F25d *17/04*
U.S. Cl. 98—40 R 3 Claims

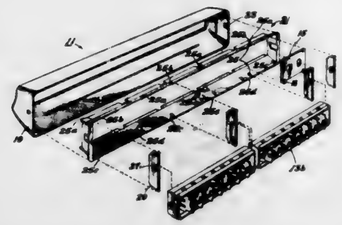


A frame arrangement for supporting electronic devices is disclosed in which groups of components are supported in vertical holding frames. These frames are fixedly attached or swivel-mounted about a vertical axis in a cabinet. Cooling air can be introduced through hollow spars integral with the holding frames.

3,662,668
BEZEL INNER GUIDE FRAME

Randall W. Johnson, 421 Circle View Drive N., Hurst, Tex.

Filed Aug. 24, 1970, Ser. No. 66,221
Int. Cl. F24f *13/08*
U.S. Cl. 98—40 V 10 Claims

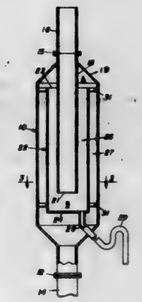


A bezel for use in a fluid distribution system characterized by an outer frame for connecting with a plenum and an inner guide frame adapted to conformingly fit within the outer frame to define a relatively streamlined flow boundary therewithin, the inner guide frame having a plurality of stations for mounting a plurality of louvers and a control panel within the outer frame. Also disclosed are preferred embodiments in which a plurality of sets of stations are included within the inner guide frame such that a variety of sizes of louvers may be employed; wherein the set of stations comprise at least a pair of stations adapted to receive a control panel and a pair of stations adapted to receive a support web that may be snapped into place, the support web in turn having a slot adapted for receiving the louvers which may be snapped into place; as well as preferred materials of construction.

3,662,669
AIR FLOW CONTROL FOR FLARE STACK

Claude E. Callinane, Jr., Houston, Tex., assignor to John Zink Company, Tulsa, Okla.

Filed Jan. 17, 1969, Ser. No. 792,010
Int. Cl. F23l *17/02*
U.S. Cl. 98—60 1 Claim

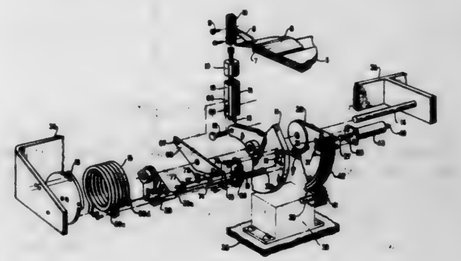


An apparatus for limiting air flow into a flare stack comprising an inlet tube closed on the upper end and terminating in an open lower end connected to the flare stack, a cup-shaped member coaxially spaced within the tube having a substantially closed end spaced above the lower end of the tube and an open upper end and an exit conduit coaxially spaced within the cup member and having an open end extending near the closed end of the cup member, said conduit extending upwardly through the closed end of the tube.

3,662,670
BLAST-ACTUATED VALVE-CLOSURE SYSTEM

Robert Gordon McCoy, Whippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 26, 1970, Ser. No. 40,527
Int. Cl. F23l *13/08*
U.S. Cl. 98—119 32 Claims



A blast-actuated valve-closure system for closing an opening in response to the overpressure of a blast. The system comprises a plurality of louvers disposed across the opening in a normally open position. The louvers are fastened by cranks to a rod which is adapted to be moved by a rotatable actuating crank driven by a torsion spring. Normally, rotation of the actuating crank is blocked by two spring-loaded rollers interposed in a detent therein. A rotatable triggering crank is responsive to the impingement of a blast pressure wave on

the louvers for unblocking the actuating crank which then effects movement of the rod for tilting the louvers to their closed position. A rotatable resetting crank is provided for restoring the actuating crank and the rod to their initial positions thereby moving the louvers to their open position. In addition, the actuating crank may alternatively be unblocked by electromechanical means which has its energization controlled either electrically by sensing devices or manually by an attendant.

3,662,671
PROTEIN FIBER FORMING
Christopher W. Frederiksen, St. Louis, and Wilhelmus Heusdens, Kirkwood, both of Mo., assignors to Ralston Purina Company, St. Louis, Mo.
Filed May 19, 1969, Ser. No. 825,973
Int. Cl. A23l 1/20
U.S. Cl. 99—17 9 Claims

A process of continuously forming tender textured protein structures is disclosed. The structures are formed from an aqueous slurry of a proteinaceous material having a solids content of up to about 35 percent by weight. The proteinaceous slurry is formed into textured filaments or fibers by continuously heating the slurry under pressure and cooling the slurry.

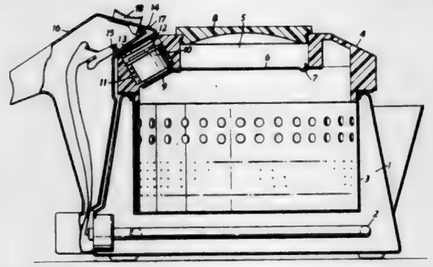
3,662,672
PROTEIN FIBER FORMING
Ralph A. Hoer, Ballwin, Mo., assignor to Ralston Purina Company, St. Louis, Mo.
Filed May 19, 1969, Ser. No. 825,979
Int. Cl. A23l 1/20
U.S. Cl. 99—17 7 Claims

A process of continuously forming tender textured protein structures is disclosed. The structures are formed from an aqueous slurry of a proteinaceous material having a solids content of up to about 35 percent by weight. The proteinaceous solids should be of a fairly high purity. The proteinaceous slurry is formed into textured filaments or fibers by continuously heating the slurry under pressure and cooling the slurry. The texture of the protein structures can be readily controlled by the process conditions, starting material, or reagents used in the process.

3,662,673
TEXTURED PROTEIN PRODUCTS
Robert A. Boyer, Creve Coeur; Arthur A. Schulz, St. Louis; Edward V. Oborsh, Ballwin, and Arthur V. Brown, Fenton, all of Mo., assignors to Ralston Purina Company, St. Louis, Mo.
Filed May 27, 1969, Ser. No. 828,389
Int. Cl. A23j 1/14
U.S. Cl. 99—17 10 Claims

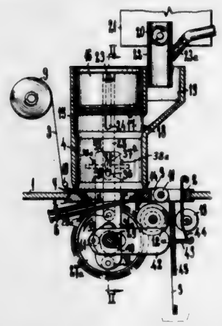
A method for producing expanded, textured protein products which comprises mixing oleaginous seed materials and an aqueous liquid in a ratio of between 1:0.2 and 1:4 to form a mixture having a pH of between about 4 and 7; generating heat internally in the mixture by means of radiant energy (e.g. infrared, microwave, induction ovens) to expand the mixture at substantially atmospheric pressure to form an expanded product, setting the expanded product to form an expanded substantially water-insoluble irreversible cross-linked structure; and subsequently cooling the expanded product.

3,662,674
BEVERAGE MAKING APPARATUS
Georges Jean Louis-Marie Clausse, 5 Muncester House, Ferry Lane, Laleham, Middlesex, England
Filed Oct. 9, 1970, Ser. No. 79,610
Claims priority, application Great Britain, Oct. 9, 1969, 49,708/69
Int. Cl. A47j 31/18
U.S. Cl. 99—283 23 Claims



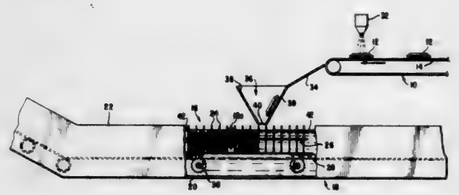
Beverage making apparatus has a liquid receptacle, means normally positioned to support soluble or infusible matter above liquid in the receptacle, and means for releasing the support means to dispense the matter into the liquid. The release means includes materials which normally are held together by magnetic attraction and which, when the temperature of the body exceeds a predetermined value, separate from one another to release the support means.

3,662,675
FILTERING DEVICE FOR PREPARING DRINKS
Frederik Walraven Olland, Bilthoven, Netherlands, assignor to Olland Industrie-en Handelmaatschappij N. V., De Bilt, Netherlands
Filed July 3, 1969, Ser. No. 838,909
Claims priority, application Netherlands, Dec. 23, 1968, 6818569
Int. Cl. A23f
U.S. Cl. 99—289 10 Claims



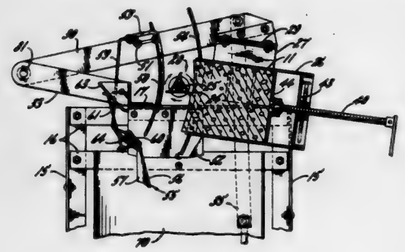
A chamber has an open bottom that is adapted to rest on a sheet of filter paper, and has an aperture for the introduction of solids together with liquid for extracting soluble material therefrom. A piston is reciprocated between a position above such aperture and a position below the aperture where the piston has a sealing engagement with the interior of the chamber. Hold-down apparatus for the chamber is synchronized with the mechanism for reciprocating the piston and operates during the downward stroke of the piston to press the chamber downward against the filter paper, and also operates to free the chamber for upward movement by friction between the chamber and the piston during upward movement of the piston. A stop limits the upward movement of the chamber.

3,662,676
APPARATUS FOR FEEDING FILLED CONTAINERS TO A RETORT OR THE LIKE
Gerald Hartz, Wheaton, Ill., assignor to Reynolds Metals Company, Richmond, Va.
Filed Mar. 31, 1970, Ser. No. 24,089
Int. Cl. A47j 27/20
U.S. Cl. 99—360 4 Claims



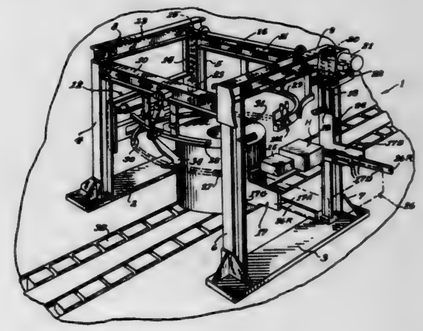
A method of and apparatus for feeding filled containers to a retort or the like. A pocket conveyor is immersed in a suitable liquid, such as water, and has filled containers transferred thereto from an input conveyor. The pocket conveyor is incrementally advanced in synchronism with the advance of filled containers on the input conveyor with the presence of individual containers being detected by a suitable means such as a photocell. The liquid is preferably heated so as to maintain the contents of the containers at or near the temperature at which they have been filled. The liquid is maintained at such a height so as to effect a cushioning of the filled containers as they are transferred from the input conveyor to the pocket conveyor. In addition, the liquid functions to permit a quality control inspection on the containers to be performed in that those containers having too much air therein float in the liquid.

3,662,677
MACHINE FOR SHREDDING CHEESE AND FOR DEPOSITING THE CHEESE ONTO PIZZAS
Donald E. Westling, 2432 Iva Court, Beloit, Wis.
Filed Apr. 1, 1970, Ser. No. 24,654
Int. Cl. A21c 5/00
U.S. Cl. 99—450.1 14 Claims



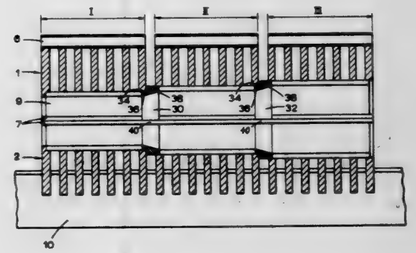
A block of pizza cheese is shredded by a power-rotated cutter as the cheese is swept upwardly past the cutter. The resulting free falling cheese flakes are spread uniformly across an unbaked pizza by a paddle which swings over the pizza and beneath the cutter as the cheese is moved upwardly.

3,662,678
COIL TIGHTENER
Robert A. Johnson, Flossmoor, Ill., assignor to Interlake Steel Corporation, Chicago, Ill.
Filed June 23, 1970, Ser. No. 49,047
Int. Cl. B65b 13/14
U.S. Cl. 100—4 2 Claims



Coil tightening and tying system provides a strap loop having overlapping end portions in circling relation to the coil, establishes travel-retarding engagement of strap at a single intermediate location between the ends of the loop, shrinks the portion of the loop between one of the end regions and the circumferential location into gripping contact with the outer coil convolution, and produces relative rotary movement between the coil and the strap of the loop in a direction to rotate the outer convolution of the coil in a volute direction while maintaining the engagement to maintain gripping contact with the outer convolution.

3,662,679
PRESS CAGES ON SCREW PRESSES
Olaf Georg Braten, P.O. Box 9, 5401 Stord, Norway
Filed Sept. 1, 1970, Ser. No. 68,649
Claims priority, application Norway, Sept. 2, 1969, 3516/69
Int. Cl. B30b 9/06
U.S. Cl. 100—127 2 Claims



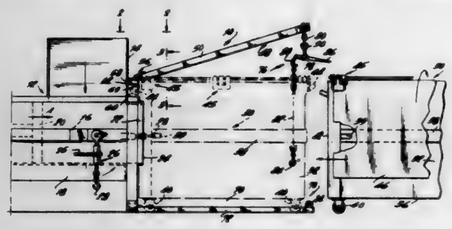
A screw press for extracting liquids from materials such as cotton seeds, copra, linen seeds, bagasse an the like, wherein the screw acts as a conveyor through a press cage having decreasing diametral dimensions and spacings for varying the pressure on the material.

3,662,680

LOCKING ASSEMBLY FOR REFUSE CONTAINERS

Frank Palopoli, Babylon, and Salvatore Palopoli, Amity Harbor, both of N.Y., assignors to Sanitary Controls, Inc., Deer Park, N.Y.

Filed Feb. 18, 1971, Ser. No. 116,330
Int. Cl. B30b *15/00*
U.S. Cl. 100—229 A **13 Claims**



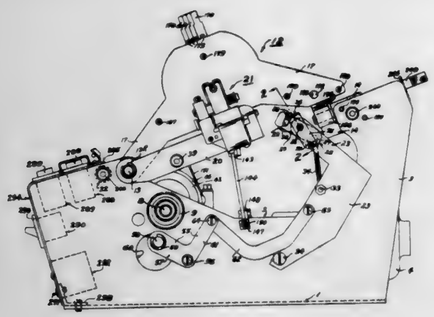
A locking assembly for refuse containers comprises a reinforced locking bar spring mounted above the refuse exit doorway of a compactor. The locking bar is drawn tightly down over the refuse removal doors of a refuse container while the container is held in place against the compactor, to prevent the opening and buckling of these doors during compaction of refuse in said container. The locking bar is drawn into place by a quick-acting load binder.

3,662,681

TICKET PRINTING AND ISSUING MACHINE WITH ROLLER INKER MEANS

Robert D. Smith, Richboro, Pa., assignor to Avery Products Corporation, San Marino, Calif.

Filed Mar. 30, 1970, Ser. No. 23,783
Int. Cl. B41j *27/12, 15/00, 1/46*
U.S. Cl. 101—68 **6 Claims**



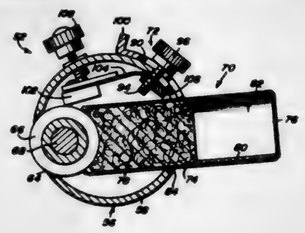
A ticket or label printing and issuing machine, including a pivotally mounted type-head having a plurality of type-wheel modules whose axes are parallel but spaced apart from one another so as to place their downwardly facing selected printing type elements into separate spaced-apart print-lines, each type-wheel having a set of printing type elements along one-half of its periphery and a corresponding set of indicator type elements along the other half of its periphery facing upwardly, each type module having a separate impression-adjusting means, the type-head being releasably locked in its operative position and being swingable to an open access position, and a print-impression and tape-feed head operatively disposed beneath the type-head and including a tape-supporting press-platen and tape-feed-bed and tape-feeder carried on pivoted arms and arranged to be oscillated up and down between an upper printing position and a lower retracted position, and a pivotally mounted inker arranged to be oscillated in a path transverse to the oscillating path of the print-impression and tape-feed head between an inking position and a retracted position, and eccentric means for oscillating the print-impression and tape-feed head between its upper and lower positions and for oscillating the inker between its inking and retracted positions in timed relation to each other so that the inker is moved through its inking and retracting motions while the print-impression and tape-feed head is retracted, and so that the latter is moved through its print-impression and retracting motions while the inker is retracted.

3,662,682

REPLACEABLE CARTRIDGE TYPE OF INKING APPARATUS

Alfred A. Marozzi, 37 West St. Bloomfield, Upper Montclair, N.J.

Filed June 12, 1970, Ser. No. 45,785
Int. Cl. B41f *31/24*
U.S. Cl. 101—219 **13 Claims**



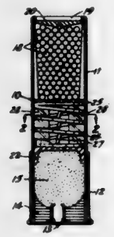
An ink marking system for moving surfaces having an ink component from which a continuous flow of fast drying ink is obtained for prolonged periods of time without recharging. Recharging is accomplished by replacement of an ink storage container having a foam-like filler in wiping contact with an ink transfer roller. The transfer roller is mounted within a housing from which the ink storage container projects releasably clamped in an operative position.

3,662,683

SHOTGUN SHELL WAD

Edward E. Merritt, Anoka, Minn., assignor to Federal Cartridge Corporation, Minneapolis, Minn.

Filed Nov. 4, 1970, Ser. No. 86,687
Int. Cl. F42b *7/08*
U.S. Cl. 102—42 C **30 Claims**



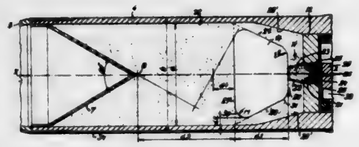
A wad for a shotgun shell comprising a polyethylene unit having an obturator wad connected to a shot pouch by a generally helically extending compression spring member, the flights of which are maintained in spaced relation by axially extending strut members arranged to cause the spring member to increase in radial dimensions when compressed in an axial direction and thereby scrub the barrel interior as it leaves the latter upon firing of the shell.

3,662,684

HOLLOW CHARGE WARHEAD

Gaston Jean Olivier Bodinaux, Angleur, Belgium, assignor to Les Ferges De ZeebruggeS.A., Herstal-lez-Liege, Belgium

Filed Dec. 4, 1969, Ser. No. 882,045
Claims priority, application Belgium, Oct. 27, 1969, PV 49639
Int. Cl. F42b *13/10*
U.S. Cl. 102—56 **6 Claims**



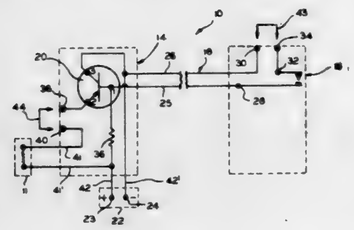
A hollow charge warhead having an inert deflecting element embedded within said charge, said element being of a generally frusto-conical shape, the small basis of which being directed towards a punctiform detonator.

3,662,685

FIRING MEANS FOR A MODEL ROCKET

Daniel M. Lurey, Chicago, Ill., assignor to Simpliway Products Co., Chicago, Ill.

Filed Mar. 5, 1970, Ser. No. 16,749
Int. Cl. F42b *5/08*
U.S. Cl. 102—70.2 R **7 Claims**



A firing means for launching a model rocket utilizing a solid state power means for supplying an electrical firing voltage and current to an ignitor circuit of the rocket, upon signal from a remote control switch.

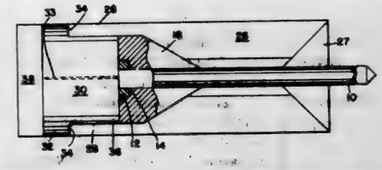
3,662,686

ROD AND SABOT ASSEMBLY

Luigi F. Baldini, Elkins Park, Pa., assignor to The United States of America as represented by the Secretary of the Army

Filed Sept. 18, 1970, Ser. No. 73,340
Int. Cl. F42b *13/16*
U.S. Cl. 102—93 **20 Claims**

The invention relates to an improved rod and sabot assembly comprising a pusher type rod sabot or carrier which is full caliber constructed and functions in the normal manner to launch sub-caliber rod projectile penetrators from conventional smooth bore gun tubes. The inventive improvement obviates the flight perturbation of such penetrators attending the use of conventional longitudinally halved sabots which bear on the stabilizer cone by a construction which extends



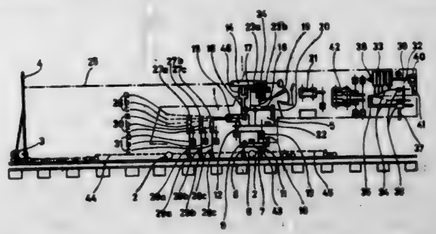
the sabot halves to bear on a rearwardly disposed full caliber pusher-spacer plate.

3,662,687

TRACK LEVELLING AND TAMPING MACHINES

Heinrich Helgemeir, Munich, Germany, assignor to Robel & Co., Munich, Germany

Filed June 11, 1970, Ser. No. 45,500
Claims priority, application Germany, June 12, 1969, P 19 29 869.2
Int. Cl. E01b *27/17, 29/04*
U.S. Cl. 104—7 **4 Claims**



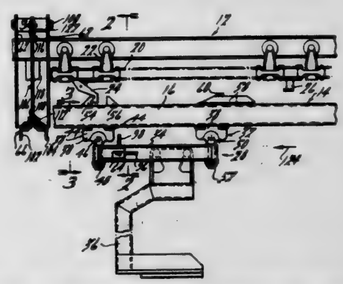
A track levelling and tamping machine having an optical sighting device for sighting elevation marks on a vertical graduated staff on a front vehicle, for alignment of an optical reference sighting system controlling the height of the track-lifting means on a main vehicle of the machine by means of a light transmitter which is associated with the reference sighting system.

3,662,688

CODER FOR INDUSTRIAL CONVEYORS

Dennis W. Doellets, Sterling Heights, and Michael E. Cleaver, Farmington, both of Mich., assignors to Standard Alliance Industries, Inc., Chicago, Ill.

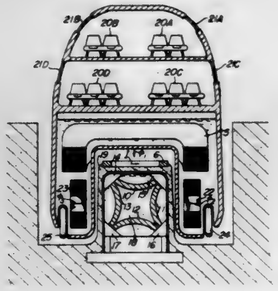
Filed Jan. 28, 1970, Ser. No. 6,505
Int. Cl. B65g *43/08, 17/42*
U.S. Cl. 104—88 **4 Claims**



A coder for industrial conveyors comprising pivoted indicator and switch actuating means mounted on and movable

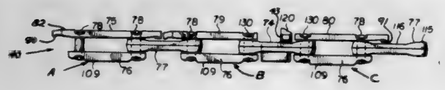
with the work carriers, and an actuator means adapted to be mounted beside the track which supports the work carriers and in the path of travel of the indicator means and operative as the work carriers move thereby to move the indicator means either to or from the switch actuating position.

3,662,689
HIGH SPEED TRAIN UTILIZING HARD SUPERCONDUCTOR
Ushio Kawabe; Hiroshi Kimura, and Toshio Doi, all of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed July 10, 1970, Ser. No. 53,773
Claims priority, application Japan, July 23, 1969, 44/57702
Int. Cl. B61b *13/08*; H01f *9/00*
U.S. Cl. 104—148 SS **4 Claims**



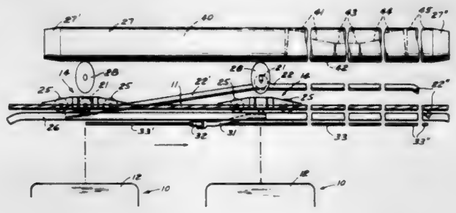
Superconducting high speed train system comprising a rail including at least one elongated hard superconducting member disposed horizontally along the running direction of the train and having a hollow or gap portion extending in the elongated direction, and a train body including a superconducting magnet for generating a magnetic field perpendicular to the hard superconducting member, thereby floating the body from the rail by the magnetic force acting between the superconducting magnet and the hard superconducting member.

3,662,690
LOW PROFILE TRUCK TOW CONVEYOR SYSTEM
Roderick S. Galloway, Atlanta, Ga.; Horace M. Swartz, Doylestown, and Joseph H. Walsh, Chalfont, both of Pa., assignors to FMC Corporation, San Jose, Calif.
Filed May 5, 1970, Ser. No. 34,673
Int. Cl. B65g *17/38*
U.S. Cl. 104—172 C **24 Claims**



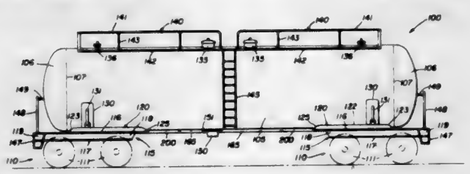
A floor level conveyor system is provided with a chain sliding in a low profile guideway which engages a tow pin mounted on a truck to propel the truck. The chain is of the rivetless type having its chain pins vertical. Its upper link extends beyond the chain pins on each end partly over the center links and is substantially smooth and continuous for the tow pin to ride over until it reaches a pusher assembly. The upper link has two T-shaped recesses to receive T-shaped upper head of the chain pins and abutment surfaces on its ends to prevent over-riding of adjacent upper links. The lower links have a wearing surface projecting below the lower ends of the chain pins to support the chain. The chain operates around horizontal curves, and vertical curves of a larger radius, without losing the continuity of the upper links.

3,662,691
AERIAL ROPEWAY VEHICLE SYSTEM
Pierre Goirand, Grenoble, France, assignor to Societe Generale de Constructions Electriques et Mecaniques (Alsthom), Grenoble, France
Filed Mar. 24, 1970, Ser. No. 22,278
Claims priority, application France, Mar. 27, 1969, 6908609
Int. Cl. B61b *9/00*, *11/00*
U.S. Cl. 104—173 **8 Claims**



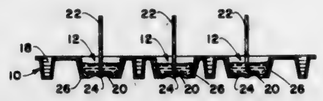
In the aerial ropeway vehicle system herein, when a vehicle arrives at a station at which is provided a carriage rail, its driven connection to the towing cable is broken and simultaneously its load is taken up by the stationary carriage rail and it is connected to a local rotating cylinder drive system. The local drive system is constructed to decelerate the vehicle in a given manner and to accelerate the vehicle as it leaves the station to be again connected to the towing cable.

3,662,692
SUPPORT STRUCTURE FOR TANK CAR
Albert E. Price, Brookfield, and Erling Mowatt-Larssen, Warren, both of Ohio, assignors to General American Transportation Corporation, Chicago, Ohio
Filed Jan. 23, 1970, Ser. No. 5,196
Int. Cl. B61d *5/06*
U.S. Cl. 105—358 **10 Claims**



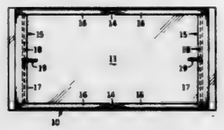
A railway tank car including a longitudinally extending tubular body shell, first and second truck saddle structures respectively positioned adjacent to the outer ends of the body shell for supporting the same upon associated trucks each carrying draft connections, first and second elongated slabbing structures respectively positioned between the first and second truck saddle structures and the body shell, first and second reinforcing members respectively associated with the first and second slabbing structures, each of the reinforcing members including a plurality of parallel spaced-apart bars extending longitudinally of the body shell, the reinforcing members cooperating to provide at least one bar extending substantially the entire length of the body shell between the slabbing structures, the bars being suitably secured to the slabbing structures and to the body shell to distribute stress due to buff and draft forces to the body shell.

3,662,693
METHOD OF MOLDING CANDY IN PLASTIC MOLD
Eugene K. Dana, 937-18th St., Santa Monica, Calif.
Filed Sept. 22, 1970, Ser. No. 74,383
Int. Cl. A23g *3/00*
U.S. Cl. 264—299 **7 Claims**



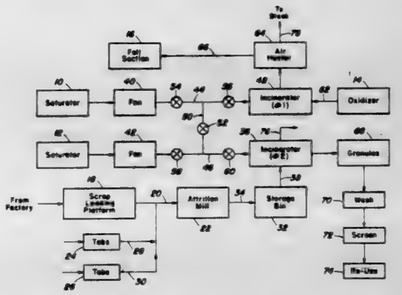
A plastic mold formed of low density polyethylene having a relatively low deformation temperature has an upwardly opening mold cavity preferably with a mold extension extending horizontally from the mold cavity and opening freely horizontally into the cavity. Candy formed of principally sweetening ingredients such as sugar and corn syrup mixtures and the like is heated to approximately 280° F. assuming a hot fluid state, said temperature being in the order of approximately 30° to 100° above the plastic mold deformation temperature. Where the cavity extension is provided, a usual stick is positioned partially in the mold cavity and partially in the cavity extension only part vertically filling the cavity extension and the hot fluid candy is poured into the mold cavity intermediate thereof against a cavity bottom wall spaced from cavity sidewalls. As the hot fluid candy contacts the cavity walls which are at room temperature, a border portion of the candy immediately at least partially solidifies insulating the cavity sidewalls against the remaining hot fluid candy being poured and until all of the candy solidifies thereby preventing deformation of the plastic mold. A similar solidified border is formed by the candy around the stick at the general line between the mold cavity and cavity extension preventing the hot fluid candy from flowing horizontally into the cavity extension despite there being no obstruction between the cavity and cavity extension.

3,662,694
LINKAGE ASSEMBLY FOR FOLDING TABLES AND THE LIKE
Paul H. Mitchell, Fort Smith, Ark., assignor to Fort Smith Table & Furniture Co., Fort Smith, Ark.
Filed Sept. 11, 1969, Ser. No. 857,054
Int. Cl. A47b *3/00*
U.S. Cl. 108—131 **10 Claims**



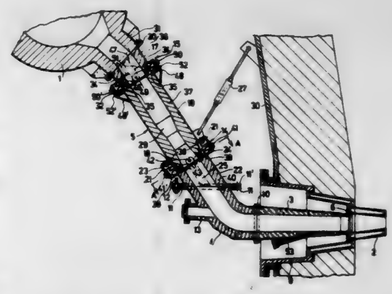
The folding table includes a pair of U-shaped leg units, each comprising two legs connected by an apron member. The leg units are pivotally attached to opposite ends of a table top, having side apron members, by a compact linkage assembly located at each corner of the table and concealed by the apron members. Each linkage assembly includes an inclined link member having one end pivotally attached to a leg unit and the other end pivotally attached to a side apron. Each linkage assembly also includes latch members locking the leg unit to the table top in both the erected and the folded positions and an adjustment device is provided to ensure that the leg members tightly abut the table top side aprons in the locked condition.

3,662,695
ROOFING FACTORY FUME AND SOLID WASTE DISPOSAL SYSTEM
Harry B. Johnson, Somerville, N.J., assignor to GAF Corporation, New York, N.Y.
Filed Aug. 18, 1970, Ser. No. 64,706
Int. Cl. F23g *7/00*
U.S. Cl. 110—8 R **5 Claims**



The solid wastes of combustible and noncombustible roofing material are comminuted in an attrition mill, fed to a surge bin, and then used as fuel in a solid waste and fume incinerator which also receives and ecologically incinerates the exhaust fumes from a saturator. A fume incinerator also receives saturator exhaust fumes along with effluent gas from the oxidizer of the factory, and ecologically incinerates the same with a minimum consumption of conventional fuel. The fume ducts from the saturator exhausts to the incinerators include a cross duct and switching valves for selectively controlling the flow of the saturator exhaust fumes from one or both saturators to one or both incinerators for optimum operational efficiency of the system in accordance with current production of the roofing factory. Granules resulting from the solid scrap incineration are washed and recovered for re-use.

3,662,696
TUYERE STOCK FOR FURNACES
Rene N. Mahr, Luxembourg, Grand Duchy, Luxembourg; Henri Joseph Radoux, Luxembourg, Grand Duchy, Luxembourg, and Clement E. Burton, Esch sur Alzette, Grand Duchy, Luxembourg, assignors to S.A. Des Anciens Etablissements Paul Wurth
Filed Apr. 20, 1970, Ser. No. 30,179
Claims priority, application Luxembourg, Apr. 21, 1969, 58,457; Feb. 13, 1970, 60,351
Int. Cl. F23l *5/00*
U.S. Cl. 110—182.5 **7 Claims**



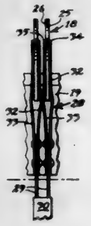
A feed conduit having utility in the transmission of heated fluids is disclosed. The apparatus of the present invention is

characterized by a curved section, which communicates at its discharge end with a nozzle which supplies the heated fluid to the desired environment, and by a straight portion, which couples the source of heated fluid to the curved portion; the straight portion being formed from at least three members with an intermediate member being connected to the end members by means of articulated joints comprised of cardan compensators. The bellows units of the cardan compensators are protected from the fluid being transmitted by cascade joints packed with a compressible refractory material.

3,662,697
METHOD AND APPARATUS FOR TUFTING UNIFORM CUT PILE

William Erby Passons, and William R. Reese, both of Broad Street Machine Co., 2614 S. Broad St., Chattanooga, Tenn.

Filed Oct. 9, 1970, Ser. No. 79,387
Int. Cl. D05c *15/24*
U.S. Cl. 112—79 R 9 Claims

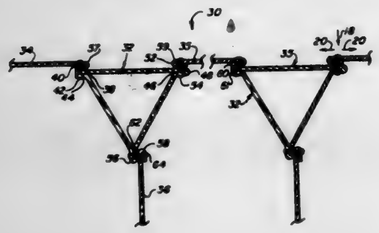


A tufting looper mechanism including a looper element or hook and a knife member having blades or cutting edges disposed on opposite sides of each looper element, and means for reciprocably moving the looper element and knife edges relative to each other for cutting a yarn loop held by the looper element in two different places to form cut pile yarn ends of equal height.

3,662,698
METHOD OF SEWING A SEAM AND PRODUCT THEREOF

James Scott Stineman, 615 W. Civic Center Drive, Santa Ana, Calif.

Continuation-in-part of application Ser. No. 799,806, Feb. 17, 1969, now abandoned. This application Apr. 14, 1970, Ser. No. 28,428
Int. Cl. B32b *7/08*
U.S. Cl. 112—426 2 Claims

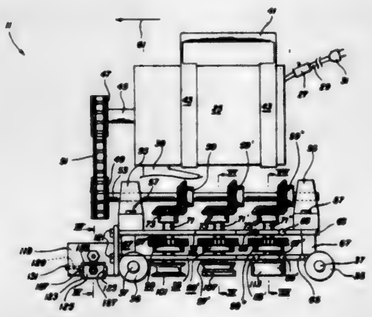


A method for sewing a seam in continuous large segmented surface material subjected primarily to forces directed inward and perpendicular to the surface and the product thereof are presented. The most severe seam stresses in a continuous segmented surface material subject to force directed inward and perpendicular to the surface are perpendicular to the applied force at the seams. The product of the present invention includes lap seams between adjacent surface segments where said seams are subject to great stress when the surface is subject to a force directed inward and perpendicular to the surface.

3,662,699
METAL ROOF SEAMING MACHINE

Leo B. Horn, 4951 Scheibler Road, Memphis, Tenn., and Charles W. Summers, 7087 Old Poplar Pike, Germantown, Tenn.

Filed Nov. 16, 1970, Ser. No. 89,982
Int. Cl. B21d *39/02*
U.S. Cl. 113—55 4 Claims



A machine for forming a standing seam on heavy gauge metal roof panels having upstanding opposite margins terminating upwardly with a preformed partially closed interlocking portion being bent so as to be substantially parallel with the plane of the panel. The machine includes a pair of rollers horizontally disposed axially, being rotatably attached to the forward end of the machine and arranged so as to straddle the interlocked portion of two adjacent panels for: (1) closing the interlocked portions; (2) foldably urging the interlocked portions of the panels downwardly so as to start forming the standing seam; (3) clampingly securing the front of the machine to the panels. The machine also includes a plurality of vertically disposed pairs of rollers, each succeeding pair further folding the interlocked portions of the panels downwardly so that the final pair finishes forming the standing seam. Additionally, certain of these rollers include flanges suitably arranged to engage the interlocked portions of the panels so that the rearward end of the machine is held firmly against the metal as it is being folded.

3,662,700
FLOATING HULL TO MAINTAIN A CUSHION OF AIR

Leon Roumejon, 22 bis Boulevard de Bellevue, Chambery, Savoie, France

Filed Apr. 16, 1970, Ser. No. 29,187
Claims priority, application France, Apr. 18, 1969, 6911368; Mar. 10, 1970, 7009576
U.S. Cl. 114—67 A 5 Claims

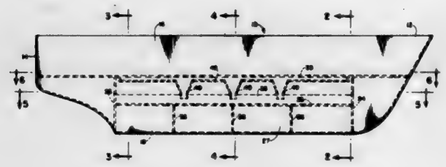


A floating hull is provided with an elongated tunnel on the bottom surface thereof the forward end of which may be terminated by a bulkhead. The heart of the tunnel may gradually diminish toward the stern of the boat or the heart of the tunnel may be constant from the bulkhead to the stern of the boat. An air intake opening is placed at the bow of the hull above the normal water-line of the boat and is disposed in communication with the tunnel in the vicinity of the bulkhead defining the forward end of the tunnel.

3,662,701
MARINE HULL

Alvin A. Cobb, 1625 Foucher St., New Orleans, La.

Filed May 7, 1970, Ser. No. 35,365
Int. Cl. B63b *43/10*
U.S. Cl. 114—68 1 Claim

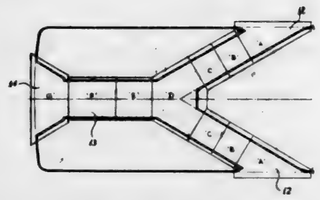


A hull having conventional fore and after parts but with an intermediate part secured therebetween and comprising two similar closed structures having rounded bottoms and arranged longitudinally parallel and spaced transversely apart to define a center well opening upwardly and downwardly. The outer sides of the closed structures are extended upwardly to form the opposite sides and freeboard of the hull. A plurality of decks are spaced vertically apart between said side and define grate covered openings that vertically interconnect said center well with the topside.

3,662,702
MULTIPLE PROPELLER DUCTED SYSTEM

David John Doust, 276 St. James St. W., Montreal, Quebec, Canada

Filed June 16, 1970, Ser. No. 46,779
Int. Cl. B63h *5/08*
U.S. Cl. 115—37 18 Claims



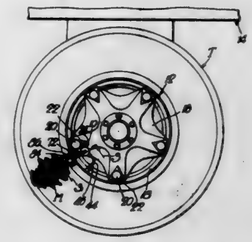
A ducted propulsion system for waterborne, semi-submerged or fully submerged vessels comprising a ducted system having two or more intake ducts which open below the mid depth of the vessel, and which merge into a specially shaped non-circular composite duct which generally extends in the fore and aft direction of the vessel. Propeller means are mounted independently in the composite duct and adapted to induce a flow of water through the system of ducts to propel said vessel. The propeller means comprise two or more propellers or impellers each having its own independent shafting, bearings and supporting structure.

3,662,703
TIRE UNDERINFLATION TELLTALE DEVICE

Richard M. Jackson, 42 Augur St., Hamden, Conn.

Filed Sept. 3, 1970, Ser. No. 69,336
Int. Cl. B60c *23/06*
U.S. Cl. 116—34 14 Claims

A casing with two compartments has in one cylinder compartment a plunger, and in the other compartment a replaceable spray can which has some sliding freedom therein, with the plunger being on one side subjected to air pressure which is always the same as the air pressure in an associated tire, and being on its other side subjected to the force of a preloaded spring which will displace the plunger when the tire pressure drops below a given safe minimum

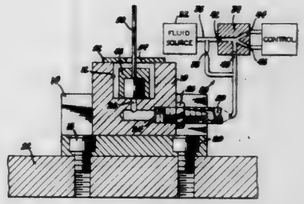


pressure. The can is provided with a normally closed valve which is depressible for opening, and the plunger will, on displacement, move the can with its valve against an abutment to thereby depress and open the valve for discharge of a telltale spray from the can and its passage through a tube against the tire to form a readily perceptible telltale mark or blot thereon.

3,662,704
FLUIDIC DETECTION DEVICE

Fred W. Dega, Oak Park, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 20, 1970, Ser. No. 56,593
Int. Cl. G01l *19/12*
U.S. Cl. 116—70 3 Claims



A fluidic detection device for detecting the presence of an article or component. The detection device has a housing having a fluid passage therein and a detector portion having a magnet attracted to the housing adjacent to and closing the fluid passage and a catwhisker type detector element secured to the magnet and adapted to contact the article or component. Contact between the catwhisker and the article causes the magnet to open the fluid passage which controls a fluid signal to indicate the presence of the article.

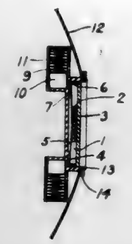
3,662,705
SPEED CONTROLLED WHEEL BALANCE INDICATOR

Karl O. Vartia, 5214 Grover Ave., Austin, Tex.

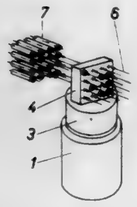
Filed Apr. 23, 1971, Ser. No. 136,937
Int. Cl. G01m *1/00*
U.S. Cl. 116—114 R 1 Claim

In an indicator device using a float immersed in viscous fluid at the axis of rotation of a rotating assembly to detect uni-directional, cyclically repeated accelerative forces acting upon the assembly, a speed responsive mechanism is ar-

ranged to allow float movement only while rotation is occurring at higher than a prescribed minimum speed thus permitting observation of indicator position at any time after the assembly is brought to a halt.

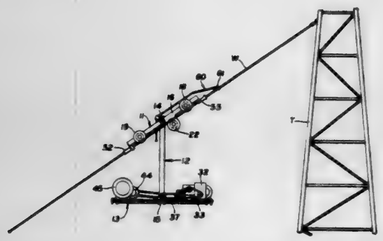


3,662,706
IDENTIFYING DEVICE FOR SPECIMEN CONTAINERS CONTAINING RADIOACTIVE SUBSTANCES
Erkki Juhani Soini, Abo, Finland, assignor to Wallac Oy, Abo, Finland
Filed Jan. 17, 1969, Ser. No. 792,026
Int. Cl. G09f *9/00*
U.S. Cl. 116—114 **1 Claim**



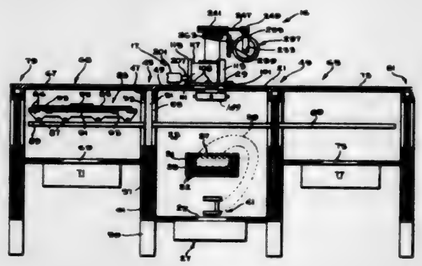
A device for identifying sample bottles, such as bottles containing radioactive substances, has the shape of a cap which is placed upon the regular bottle cap and the top of which carries a vertical tag-like member. The tag-like member has perforations extending therethrough and arranged to provide positive identification of the contents.

3,662,707
GUY WIRE RUST INHIBITOR APPLICATOR
Wendel E. Dreve, Jr., 1592 College Hill Drive, Columbus, Ohio
Filed Feb. 11, 1970, Ser. No. 10,450
Int. Cl. B05c *5/02*, *11/00*
U.S. Cl. 118—7 **3 Claims**



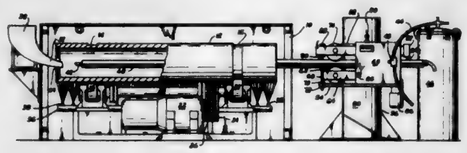
A self-contained wheeled carriage adapted to be applied to and to be supported by an inclined wire such as an inclined guy-wire used in supporting a radio or television broadcast tower. The carriage is provided with self-contained means for causing it to climb the inclined wire and descend at a controlled rate of speed. The power unit for the carriage and other units are supported on a platform suspended from the carriage by a pendulum arm which maintains the platform substantially horizontal during the ascent and descent on the guy-wire. The units carried by the platform may include containers for carrying supplies of the substances used in the treating operations.

3,662,708
APPARATUS FOR SUPPORTING A SUBSTRATE HOLDER
Robert Leland Shrader, Castro Valley, Calif., assignor to Airco, Inc., New York, N.Y.
Filed Mar. 23, 1970, Ser. No. 21,837
Int. Cl. C23c *13/08*
U.S. Cl. 118—49 **6 Claims**



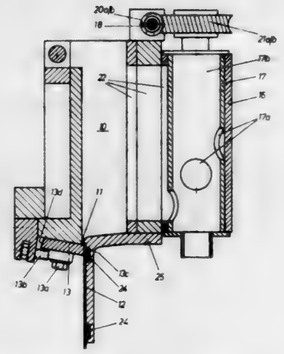
Apparatus is described for supporting a substrate holder in a vacuum coating system. The substrate holder is supported and, if desired, rotated within the vacuum system by an electromagnetically energized armature.

3,662,709
APPARATUS FOR COATING THE INSIDE OF A CYLINDRICAL MEMBER
Nathan Janco, P.O. Box 947, Tulsa, Okla.
Filed Aug. 19, 1969, Ser. No. 851,344
Int. Cl. B05c *7/02*
U.S. Cl. 118—318 **4 Claims**



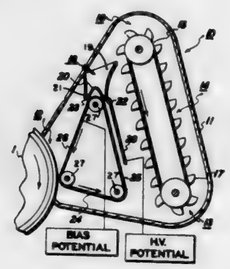
This invention is an improved spray equipment for use with a cylindrical metal mold which is rotated about its horizontal axis. A stationary support is mounted adjacent one end of the cylindrical metal mold and supports a vertically adjustable spray lance. The spray lance is moved longitudinally into and out of the bore of the cylindrical mold. Tiltable means are provided on the stationary support for keeping the end of the spray lance along the axis of the cylindrical metal mold out of contact with the inside of the cylindrical metal mold.

3,662,710
APPARATUS FOR POURING SURFACE TREATMENT LIQUIDS ONTO WORKPIECES
Werner Pankoke, and Dieter Kormeyer, both of Bielefeld, Germany, assignors to Theodor Hymmen KG, Bielefeld, Germany
Filed Sept. 11, 1969, Ser. No. 857,182
Int. Cl. B05c *5/00*
U.S. Cl. 118—324 **7 Claims**



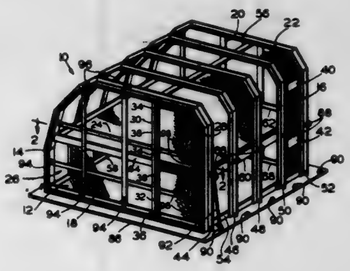
The invention comprises apparatus for pouring surface treatment liquids onto substantially level workpieces to enable different liquids with different viscosities to be used to good effect comprising an elongated liquid container having upper liquid feed means and walls defining a longitudinally extending pouring gap between their surfaces in the lower region of said container, characterized by an overflow device for adjusting said liquid level in said container which device is located on said container and communicates with said liquid container; the surface of said overflow device defining openings at various levels which are offset relative to one another and alternately closable whereby said liquid level may be adjusted. The overflow device is preferably a rotatable hollow cylindrical body and is laterally arranged of the liquid container, the opening(s) defined by said surface and in communication with said liquid being differently locatable with respect to the liquid surface by rotation of said cylindrical body.

3,662,711
DEVELOPMENT APPARATUS
Frederick W. Hudson, W. Henrietta, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Mar. 19, 1970, Ser. No. 21,008
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **11 Claims**



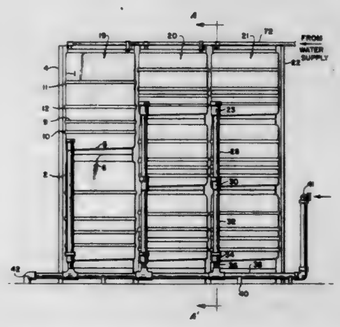
An apparatus for developing a surface bearing a latent electrostatic image to be developed wherein developer material is cascaded between the image bearing surface and a movable electrode member. The electrode member carries to the development zone a supply of toner particles on its surface which provides enhanced development results. As the carrier particles in the developer flow become depleted of toner in the development zone, the toner supplied by the endless electrode is attracted to the carrier for retonerization directly in the development zone. Also, the impact of the carrier upon the electrode releases toner from the electrode to effect enhanced development results with a relatively low flow of developer material.

3,662,712
CONVERTIBLE PEN
Murray Singer, 1626 N. 28th Court, Hollywood, Fla.
Filed Apr. 8, 1971, Ser. No. 132,273
Int. Cl. A01k *01/02*
U.S. Cl. 119—17 **10 Claims**



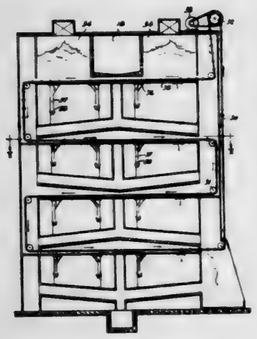
An animal pen having a platform dividing the pen into two levels each of which is adapted to contain small animals, the platform being removable to convert the pen to receive cargo or larger animals. The pen is shaped to fit in a vehicle, such as an airplane, for transport of the animals or cargo by the vehicle.

3,662,713
MODULAR ANIMAL CAGE SYSTEM
Sidney Sachs, 50 Hobart Road, Paramus, N.J.
Filed Nov. 18, 1969, Ser. No. 877,809
Int. Cl. A01k *31/04*, *01/02*
U.S. Cl. 119—18 **13 Claims**



Modular animal cage system including adaptable gravity sewage system with overall pressure flushing, individual adaptable water supply system, adjustable floor and perch, anti-insect strips, swivel feeding bowl, adjustable doors using hinge adaptor and lock adaptor, cleaning device, adjustable swivel drinking device with water cut-off, and safety spring lock.

3,662,714
STRUCTURE FOR HOUSING ANIMALS
Yull Guan Poon, 204 Centre Street South, Calgary, Alberta, Canada
Filed Apr. 2, 1970, Ser. No. 25,221
Int. Cl. A01k 01/00
U.S. Cl. 119—18 2 Claims



An improved structure for housing animals. The structure includes:

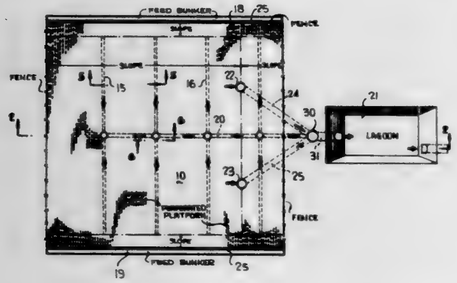
a. a plurality of vertically tiered rooms, each room having a slightly inclined floor and hollow walls engaging the higher and lower ends of the inclined floor,

b. deflector means to direct refuse material falling from the lower end of one floor down a hollow wall to the higher end of a floor on the next lower tier,

c. conveyor means to carry material across each inclined floor from the higher end to the lower end, whereby refuse material is carried sequentially from floor to floor along a continuous path from the top to the bottom of the structure, and

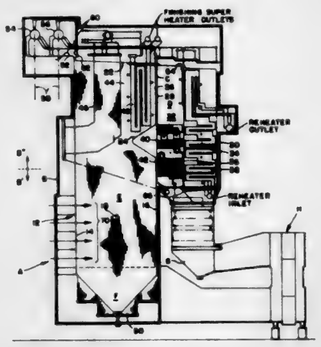
d. conveyor means to carry feed from storage bins at the top of the structure down through the several tiers with feed outlets serving each tier.

3,662,715
ANTI-POLLUTION CATTLE FEEDING STATIONS
Fred L. Schapler, 1313 Mitchell Blvd., Mitchell, S. Dak.
Filed June 24, 1970, Ser. No. 49,351
Int. Cl. A01j 1/00
U.S. Cl. 119—28 5 Claims



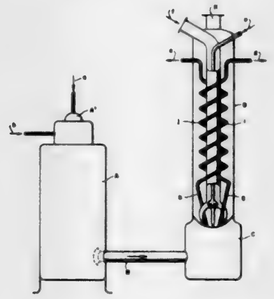
Animal feeding stations comprising a layer of perforated sheet steel, underlaid by a layer of particulate material such as sand and gravel, which is in turn underlain by a base lamina of asphalt. Collection pipes are located in the porous material, which are arranged to lead liquid waste produced by the animals to a sump.

3,662,716
FURNANCE ENCLOSURE FOR NATURAL CIRCULATION GENERATOR
William D. Stevens, North Caldwell, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.
Filed Dec. 14, 1970, Ser. No. 97,700
Int. Cl. F22d 7/00
U.S. Cl. 122—6 A 11 Claims



A natural circulation generator having a rectangular furnace enclosure. A plurality of parallel, upright, finned tubes welded together along their lengths make up the walls of the enclosure. Burners are provided in the front wall of the enclosure, in the lower portion thereof, providing a heat input to the finned tubes. In accordance with the present invention, the tubes have a first diameter in the lower portion of the furnace, and a second greater diameter in the upper portion of the furnace. The increased tube diameter in the upper portion of the furnace gives a higher circulation ratio in the generator, and in addition provides more heat absorption surface area which increases the throughput steam flow per hour-foot of furnace periphery. This enables construction of a natural circulation unit having increased capacity.

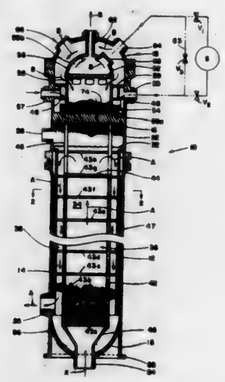
3,662,717
WASTE-HEAT BOILER
Leonard W. Ter Haar, Hague, Netherlands, assignor to Shell Oil Company, Houston, Tex.
Filed Dec. 30, 1970, Ser. No. 102,588
Claims priority, application Netherlands, Jan. 21, 1970, 7000812
Int. Cl. F22b 1/18
U.S. Cl. 122—7 R 5 Claims



An improved waste-heat boiler for cooling and recovering heat from hot gases. The improvement comprises employing two concentric tubes for delivering coolant liquid, the coolant liquid from the inner concentric tube under pressure

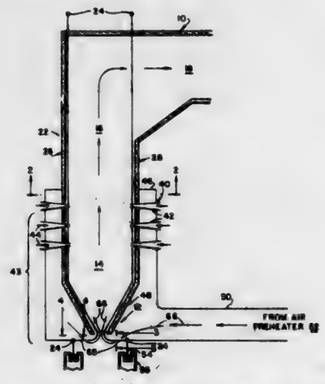
serving as feed to a plurality of ejectors which draw coolant liquid from the outer concentric tube and by means of an arrangement of spray nozzle arms, direct the coolant against the bottom plate of the boiler and the inlet ends of the heat exchange tubes connected thereto.

3,662,718
SODIUM HEATED STEAM GENERATOR
Ronald B. Creek, Northridge, Calif., and Karl A. Gardner, Chatanooga, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Mar. 2, 1971, Ser. No. 120,151
Int. Cl. F22b 1/16
U.S. Cl. 122—32 5 Claims



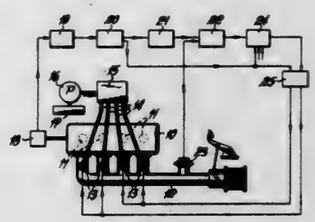
A sodium heated steam generator having a tube sheet which is subject only to saturated or near saturated steam temperatures. Double-walled evaporative and superheated steam tubes extend through said tube sheet into the liquid metal. In both the evaporative and superheated steam tubes the saturated steam passes through the annular passageways which contact the tube sheet.

3,662,719
APPARATUS AND PROCESS FOR SLAG REDUCTION IN A VAPOR GENERATOR
Justin P. Winkin, Fairlawn, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.
Filed Oct. 9, 1970, Ser. No. 79,581
Int. Cl. F22b 37/00
U.S. Cl. 122—235 R 2 Claims



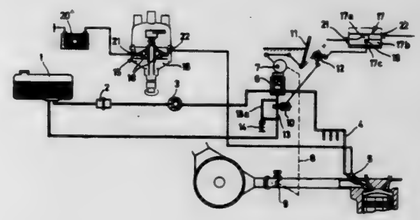
The formation of slag is reduced on the heat absorption surfaces in the furnace section of a vapor generator. This is achieved by circulating a stream of air through the hopper section of the furnace.

3,662,720
FUEL INJECTION ARRANGEMENT FOR ITERNAL COMBUSTION ENGINES
Karl-Ernst Boeters, Berlin; Klaus Streit, Tubingen; Gerhard Coazelmann, Leinfelden; Hermann Schmid, Goppingen, and Hans-Joachim Fleischer, Berlin, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed July 15, 1970, Ser. No. 55,084
Claims priority, application Germany, July 22, 1969, P 19 37 111.0
Int. Cl. F02m 51/00
U.S. Cl. 123—32 EA 21 Claims



An AND circuit, controlled by an engine-rpm-dependent bistable multivibrator, triggers a monostable circuit that produces a pulse having a length dependent on the intake-manifold-suction pressure. This pulse partly controls a logic circuit also controlled by the output of the multivibrator. The logic circuit, in turn, controls an amplifier the output of which operates the fuel injection spray valves.

3,662,721
FUEL INJECTION DEVICE FOR INTERNAL COMBUSTION ENGINES
Heinz Klein, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany
Filed Nov. 6, 1969, Ser. No. 874,146
Claims priority, application Germany, Nov. 8, 1968, P 18 07 773.1
Int. Cl. F02b 3/10
U.S. Cl. 123—32 AE 3 Claims

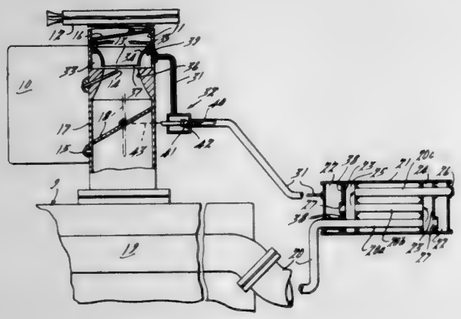


An injection device for internal combustion engines with injection valves and an excess pressure valve controllable by an adjustment of throttle valves for control of the pressure of the introduced fuel.

3,662,722
COOL EXHAUST RECYCLING

Jorma O. Sarto, Orchard Lake, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Apr. 22, 1970, Ser. No. 30,722
Int. Cl. F02m 25/06
U.S. Cl. 123—119 A 19 Claims

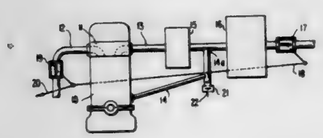


An automobile engine recycles a fraction of its exhaust gases by means of a restricted bypass conduit connecting its fuel-air inlet conduit at the diffuser region of the customary fuel inducing venturi restriction with a source of comparatively cool exhaust gases comprising a dead-end sound attenuating chamber of the exhaust muffler. The chamber is in communication with the exhaust gases in the muffler but is out of the direct exhaust flow path, such that lead contaminants in the exhaust gases cool and solidify as minute particles that readily flow through the restricted bypass duct. The recycling exhaust gas flow is modulated by the pressure differential between the chamber and venturi restriction. A supplemental control valve responsive to the position of the engine throttle valve may be employed in the bypass conduit to close or restrict the latter when the throttle valve is at either its idle or wide open position.

3,662,723
INSTALLATION FOR VENTING THE CRANKCASE OF AN INTERNAL COMBUSTION ENGINE

Hans-Wilhelm Buhl, Stuttgart-1, Germany, assignor to Daimler-Benz Aktiengesellschaft

Filed Apr. 23, 1970, Ser. No. 31,236
Claims priority, application Germany, Apr. 25, 1969, P 19 21 068.5
Int. Cl. F02f 9/02; F02m 25/06
U.S. Cl. 123—119 B 21 Claims

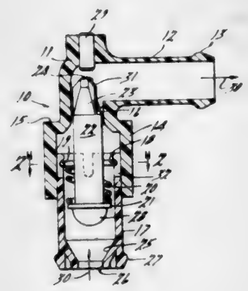


An installation for venting the crankcase of an internal combustion engine in which a vent line that terminates in the crankcase, is positively closed off with respect to the atmosphere when the throttle valve in the exhaust gas line is closed, for example, during engine braking.

3,662,724
CRANKCASE VENTILATION

Wasyl Ohar, Ann Arbor, and Elmer L. McIntire, Northville, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Jan. 13, 1971, Ser. No. 106,067
Int. Cl. F02m 25/06
U.S. Cl. 123—119 B 7 Claims



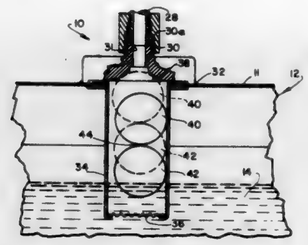
The crankcase for an internal combustion engine is vented to the fuel-air inlet induction passage via a ventilation valve comprising a one-piece molded inner tubular valve housing member of resilient material having a downstream end adjustably telescoped into the upstream end of an outer tubular valve housing member. The outer member has a comparatively small metering orifice which cooperates with a valve element movable within the housing members in response to decreasing pressure in the induction conduit to restrict the orifice. A coil biasing spring within the inner member has an upstream end seated against a downstream facing shoulder of the valve element to oppose the latter's downstream movement. An enlarged downstream coil of the spring is confined within an interior spring retaining enlargement of the inner tubular member adjacent the latter's downstream opening and is insertable, as is also the valve element, through said downstream opening prior to telescoping of the inner member into the outer member. A plurality of endwise opening slits in the inner member at the region of the interior enlargement enable expansion of said downstream opening for insertion of the enlarged spring coil into the enlargement. After the insertion, the resilient material of the inner member returns the expanded downstream opening to its unexpanded condition, whereupon the assembly of the inner member with the valve element and biasing spring confined therein is adjustably telescoped into the outer member. An integral annular backfire control valve seat at the upstream end of the inner member defines a second orifice smaller than said downstream opening and adapted to be closed by an upstream backfire valve portion of the valve element when the latter moves upstream into seating engagement with the valve seat.

3,662,725
EVAPORATION EMISSION CONTROL DEVICE FOR FUEL TANKS

James W. Dragon, Arlington Heights, and Alfred G. Ocken, Franklin Park, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 26, 1970, Ser. No. 67,086
Int. Cl. F16k 45/02, 31/18
U.S. Cl. 123—136 4 Claims

An evaporation control device consists of two spherical balls which float in a housing defining a cavity so that the balls move up and down in accordance with the fuel level in the tank to allow the top ball to engage a conical seat to seal the vented passageway from the fuel tank to the engine. The

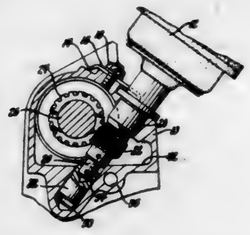


spherical contact surfaces between the two balls allow quick and easy movement of the top ball to seal the opening at once where gasoline moves toward the opening.

3,662,726
DISTRIBUTOR DRIVE ARRANGEMENT

Harold M. Haskew, Utica, and David A. Martens, Washington, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 13, 1970, Ser. No. 27,675
Int. Cl. F02p 7/00
U.S. Cl. 123—146.5 A 2 Claims

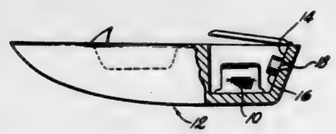


A distributor drive arrangement to prevent spark scatter in which the distributor drive shaft is journaled at one end in a bushing to which oil under pressure is supplied to load the drive shaft in one direction, the oil leaking between the bearing surfaces of the bushing and the shaft so that as the shaft rotates, viscous shearing of the oil will provide a controlled drag on the rotating drive shaft.

3,662,727
BLOCKING CIRCUIT FOR INBOARD ENGINE IGNITION

George W. Abplanalp, 6148 Rogue Lane, Belmont, Mich., and Steve Corson, R.R. 1, Luther, Mich.

Continuation-in-part of application Ser. No. 16,355, Mar. 4, 1970, now abandoned. This application Oct. 12, 1970, Ser. No. 79,799
Int. Cl. F02n 17/00
U.S. Cl. 123—179 B 3 Claims

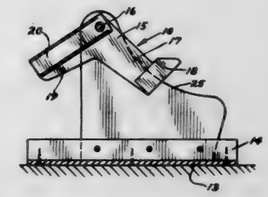


A blocking circuit is provided in combination with an inboard motorboat engine, blower and ignition circuit, which prevents actuation of the ignition circuit until after the blower has functioned for a certain length of time to expel the fumes from the engine compartment. A bimetallic switch, a timer motor, or a switching circuit is utilized to open and close the leads to the ignition circuit. In the embodiment featuring the bimetallic switch, either a pair of alternately operating heating coils cause the switch to transfer from activating the blower to connecting the ignition circuit to the operator's switch, or a single coil by itself or in parallel with the solenoid supply this function.

3,662,728
FOOTBALL CATAPULT

Fergus Retrum, Minneapolis, Minn., assignor to Mini Pro Sports, Inc., Minneapolis, Minn.

Filed Oct. 8, 1970, Ser. No. 79,084
Int. Cl. F41b 3/02
U.S. Cl. 124—1 5 Claims

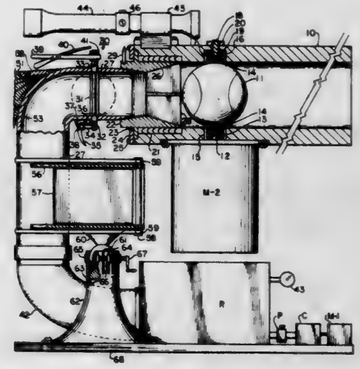


A catapult for propelling a toy football includes a pair of parallel upright panels forming a forwardly facing ramp for supporting the ball, and a lever arm pivotally mounted between the panels. The lever arm includes a kicking leg integrally supporting a kicking foot in position to be in contact with the ball when it is on the ramp and an impact arm integral with and extending outwardly from the leg adjacent the point of pivotal mounting and rearwardly from the ramp in position to impart a kicking action to the ball when the arm receives a manual impact. The kicking foot, when in a rest position, will be positioned above the football supporting ramp. When a football is positioned on the ramp the lever arm will be caused to be pivoted. The kicking foot will thus remain in engagement with the football until which time the football is forced off the ramp by the action of the kicking foot.

3,662,729
BALL THROWING AIR GUN

Homer I. Henderson, 2220 Live Oak St., San Angelo, Tex.

Filed Aug. 10, 1970, Ser. No. 62,567
Int. Cl. F41b 11/00
U.S. Cl. 124—11 2 Claims



A ball is propelled from a gun barrel by compressed gas, normally air. The air is stored in a reservoir at a selected pressure to give to the ball the desired muzzle velocity. A quick acting valve is opened to admit the reservoir stored air into the barrel to propel the ball. The device is equipped to

spin the ball if one wishes to simulate pitched curves, such as is used in the game of baseball. A speed-controlled motor is mounted on the breech of the gun barrel and engages the chambered ball. When a curve is desired the motor is energized to spin the ball at any desired spin speed so that the ball has this spin speed when the valve is opened to project the ball. The barrel is rotatable so that the operator can orient the axis of the ball spin.

3,662,730

ELASTIC DEVICE FOR PROJECTING CANS

Marshall H. Feldman, P.O. Box 922, Twenty-Nine Palms, Calif.

Filed June 30, 1970, Ser. No. 51,114
Int. Cl. F41f 7/00
U.S. Cl. 124—17 6 Claims



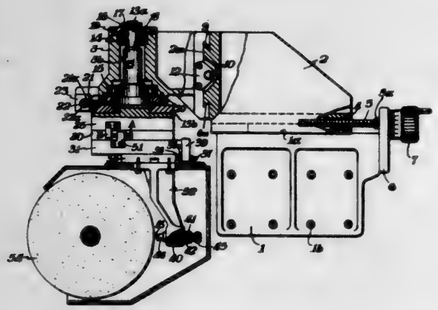
A sling for hurling empty beverage cans into the air for target practice, comprising a handle having a length of elastic rubber tubing connected to one end thereof, wherein the rubber tubing has a length of ball chain attached to its other end. One of the balls of the chain is hooked into the apex of a V-notch cut into the end of the can by a punch having its pointed end shaped to provide a good seat for the ball chain.

3,662,731

DOUBLE SPHERICAL DRESSING APPARATUS

Makoto Kikuchi, Asahimachi, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Asahimachi, Japan

Filed Apr. 1, 1970, Ser. No. 24,581
Claims priority, application Japan, Apr. 7, 1969, 44/26779
Int. Cl. B24b 53/06
U.S. Cl. 125—11 5 Claims



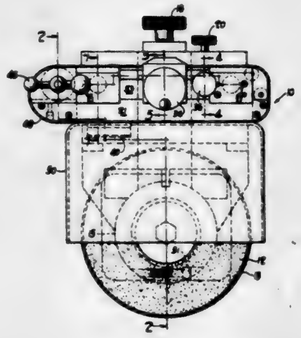
Double spherical dressing apparatus for grindstone includes cutting table slidably mounted at right angles to axis of rotation of grindstone. Swing shaft is journaled within main assembly and assembly is attached to cutting table for sliding motion along path parallel to the axis of grindstone. Swing table is connected to rotate with and relative to swing shaft. Shaft table carries dresser tool and tool rotates about axis of swing shaft and swing table to dress peripheral faces of grindstone.

3,662,732

GRINDING WHEEL DRESSER

George Banko, Euclid, and William J. Knuff, Maple Heights, both of Ohio, assignors to Brown & Sharpe Mfg. Co., Precision Park, North Kingstown, R.I.

Filed Apr. 30, 1970, Ser. No. 33,364
Int. Cl. B24b 53/06
U.S. Cl. 125—11 R 1 Claim



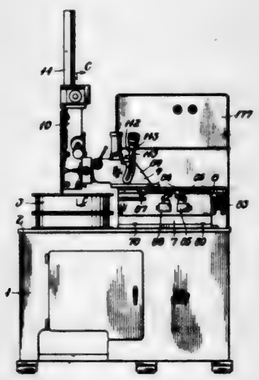
A grinding wheel dresser having a contour block mounted on the grinding wheel spindle housing for reciprocating horizontal movement above and across the upper peripheral face of the grinding wheel to provide a wheel shape that is a mirror image of the contour block.

3,662,733

ANNULAR CUTTING APPARATUS WITH WORK REMOVAL MEANS

Isamu Okamoto, Yokohama, Japan, assignor to Yoji Hattori, Tokyo, Japan

Filed Apr. 24, 1970, Ser. No. 31,645
Claims priority, application Japan, Oct. 12, 1969, 44/81375; 44/81374; 44/96933
U.S. Cl. 125—13 8 Claims



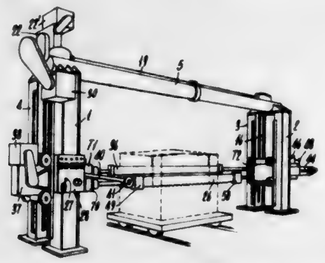
A cutting device includes an annular cutting member for cutting a crystal into slices which have smooth and parallel surfaces. The crystal is supported by a crystal holder in a rotatable head and is cut into slices which are aligned with the crystal axis with a high degree of precision. The cut slices are safely and readily removed by a takeout means which is provided beneath the annular cutting member.

3,662,734

RECIPROCATING, SENSITIVE SAW, WITH UNIDIRECTIONAL CUT, PARTICULARLY ADAPTED FOR USE WITH DIAMOND BLADES

Remo Sisler, Via Mercato, 3, Sommacampagna Verona, Italy

Filed Oct. 6, 1969, Ser. No. 863,950
Claims priority, application Italy, Oct. 4, 1968, 61287 A/68
Int. Cl. B28d 1/06
U.S. Cl. 125—16 R 8 Claims



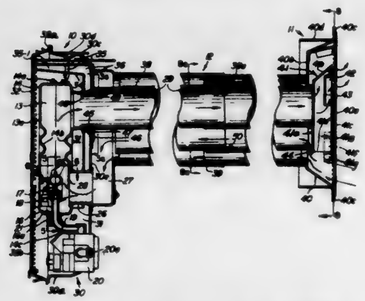
A reciprocating saw, particularly adapted for stone cutting, has unidirectional cut because the blade is raised on the return stroke. The blade follows a path which is arcuate at the end of the return stroke (FIG. 7) so as to engage the saw gradually with the workpiece. The saw is progressively fed downwardly; but when the saw encounters a particularly resistant portion of the workpiece, then the downward movement is retarded until the resistance is overcome (FIG. 9). A special recirculating roller bearing system (FIG. 11) permits heavy load on the blade without hindering vertical movement of the blade.

3,662,735

WALL-MOUNTED FLUID-FUEL FURNACE

George W. Jackson, Salt Lake City, Utah, assignor to Hydro Flame Corporation, Salt Lake City, Utah

Continuation-in-part of application Ser. No. 825,189, May 16, 1969, now abandoned. This application July 16, 1970, Ser. No. 55,378
Int. Cl. F23l 1/00; F24h 3/02
U.S. Cl. 126—85 B 13 Claims



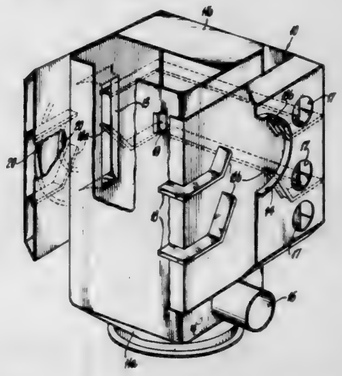
A gas or other fluid fired furnace for mounting in a wall, especially of a recreational vehicle providing living accommodations, such as so-called "campers," house trailers, and the like, where space is at a premium and special problems of vibration, proper venting, and reliability in operation are presented. An elongate, specially fabricated, Venturi-tube burner is mounted, along with a fuel feed control unit, on a removable closure plate positioned across the lower end of a front pan-like member of a shallow, rectangular, upstanding firebox. The firebox provides a combustion chamber and heat exchanger for the furnace in a compact heater unit housing and has an outwardly extending peripheral fin through which a fuel supply extends at the bottom of the firebox and is preferably canted forwardly along the top of the firebox to direct air flow and increase efficiency. A special vent unit, provided for mounting exteriorly of the spaced to be heated flush with the exterior wall face and having a lower air inlet separated from an upper gas outlet by baffles, is connected with the heater unit by air or gas flow conduits which are thermally isolated one from the other by special gasket and mounting arrangements.

3,662,736

HEAT EXCHANGE STRUCTURE FOR A HOT AIR HEATER

Thomas L. Tyson, and Edward G. Crane, Jr., both of Richmond, Va., assignors to Texaco Inc., New York, N.Y.

Filed June 1, 1970, Ser. No. 42,366
Int. Cl. F24c 3/00; F24h 3/06
U.S. Cl. 126—91 R 6 Claims



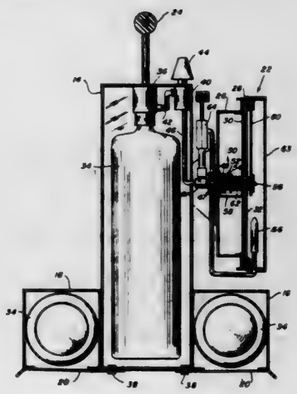
A heat exchange structure for an air heater furnace wherein the cross-over port structure from the first stage of a heat exchanger is an elongated rectangular inlet into the second stage of the heat exchanger, which has a number of spaced flanges therein for guiding the flow of the products of combustion more evenly in their passage to the outlet of the second stage.

3,662,737

CATALYTIC HEATER

Joe M. Richards, Tulsa, Okla., assignor to Nupar Manufacturing Co., Inc., Tulsa, Okla.

Filed June 29, 1970, Ser. No. 50,557
Int. Cl. F24c 3/04
U.S. Cl. 126—92 R 4 Claims



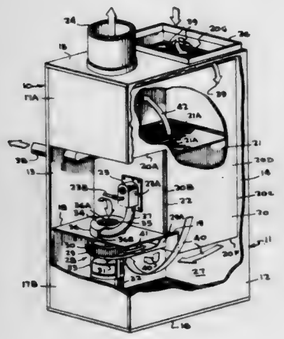
A catalytic heater having a catalytic bed connected to a frame, incorporates an improved ignition and fuel shutoff

system. A needle valve controlling the discharge of fuel onto the catalytic bed for oxidation includes a thermosensitive needle which is preheated by a pilot light. Upon reaching a predetermined temperature, the thermosensitive needle disengages its valve seat to allow fuel from the fuel supply to discharge onto the catalytic bed where oxidation thereof occurs. Upon cooling of the catalytic bed the thermosensitive needle resets to abrogate the discharge of fuel onto the catalytic bed and thereby prevent leakage of fuel.

3,662,738
COMPACT FORCED WARM AIR FURNACE

James L. Solka, Bridgewater; Charles A. Reichelderfer, Harrisonburg; John J. Dieckmann, Harrisonburg, and Anthony M. Castello, Harrisonburg, all of Va., assignors to Dunham-Bush, Inc., Harrisonburg, Va.

Filed June 25, 1970, Ser. No. 49,732
Int. Cl. F24h *3/02*
U.S. Cl. 126—110 R **6 Claims**



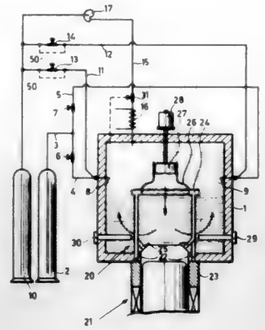
A furnace for a forced warm air heating system capable of multipoise installation, including an outer jacket, an inner jacket, a heat exchanger within the inner jacket enclosing a combustion zone, and a burner assembly producing combustion within the heat exchanger. A supply air blower is arranged within the outer jacket to propel return air along a return path beside the inner jacket through the space between the inner and outer jackets and circulate the air within the inner jacket along a supply path in counterflow relation to the return air path. A combustion air blower may be driven from the same shaft as the supply air blower to provide air for the burner assembly.

3,662,739
HEATER SYSTEM

Johann Schroder, Aachen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 24, 1969, Ser. No. 860,521
Claims priority, application Netherlands, Sept. 30, 1968, 6813987
Int. Cl. F24j *1/00*
U.S. Cl. 126—263 **12 Claims**

A heater system comprising a reaction vessel containing a mixture of metals which is melted during operation, an oxidant container, at least one duct with outlet member for communicating the oxidant to the reaction vessel for an exothermic reaction therein with the metal mixture, and a container having an inert gas which communicates via a regulating valve with the duct between the oxidant container and the reaction vessel; the outlet member is readily cooled and

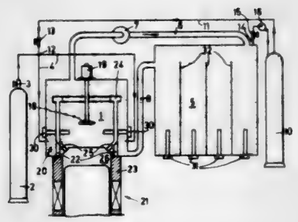


manufactured from a material which is not or substantially not wetted by the liquid in the reaction vessel.

3,662,740
HEATER SYSTEM

Johann Schroder, Aachen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 25, 1969, Ser. No. 860,893
Claims priority, application Netherlands, Sept. 30, 1968, 6813988
Int. Cl. F24j *1/00*
U.S. Cl. 126—263 **7 Claims**



A heater system comprising a reaction vessel having a liquid metal mixture and a container of oxidant communicating therewith via a regulating valve. The oxidant reacts with the metal melt exothermically producing solid and/or liquid reaction products. The system furthermore comprises a spare container filled with the same metal mixture, this spare container being in heat contact with the reaction vessel and in communication with said vessel through a supply duct and removal duct; pumping means are present for maintaining a continuous liquid flow from the reaction vessel to the spare container, all this in such manner that the formed reaction products settle in the spare container.

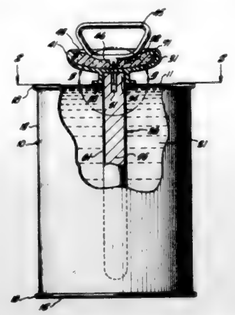
3,662,741
APPARATUS FOR HEATING INDIVIDUAL PORTIONS

Robert J. Licher, 170 N. Adams St., Sierra Madre, Calif.

Filed Mar. 2, 1970, Ser. No. 15,673
Int. Cl. A47g *23/04;* **F24j** *1/00*
U.S. Cl. 126—263 **5 Claims**

A combustible heating element detachable from the portion after use makes central contact with the portion. The portion may be food or other substances. A metallic heat transfer sheath surrounds a combustible substance within the element. The sheath has a Teflon coating between it and the portion. A friction igniter is attached to a pull tab extending

exteriorly of the heating element. Preferably hand grips extend from an igniter base for stability while pulling the tab.

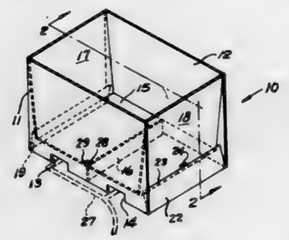


The base also holds a filter unit to absorb the products of heating combustion.

3,662,742
HOT TANK FOR PARTS DEGREASING

James E. Turner, P.O. Box 173, Nashville, Ark.

Filed June 26, 1970, Ser. No. 50,077
Int. Cl. E01c *19/45*
U.S. Cl. 126—344 **2 Claims**

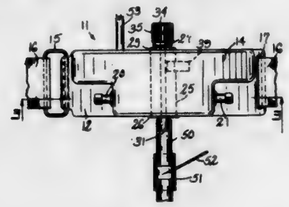


A hot tank for parts degreasing in which a bottom wall is spaced above gas burners which are surrounded by side walls to direct the flow of heat across the bottom wall and up along an outwardly sloping end wall. The degreasing tank contains a degreasing fluid which is heated by the gas burners. Parts degreased in the degreasing fluid can be hung on the end walls so as to be dried by the heat flowing upwardly from the gas burners.

3,662,743
PRESSURE TRANSDUCER FOR CATHETER PRESSURE MEASUREMENT

Joseph A. Amarante, North Haven, Conn., and Robert E. Montgomery, Arcadia, Calif., assignors to Corometrics Medical Systems, Inc., North Haven, Conn.

Filed Jan. 22, 1970, Ser. No. 4,982
Int. Cl. A61b *5/00*
U.S. Cl. 128—2 S **7 Claims**

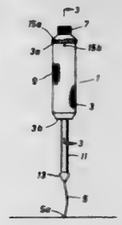


This specification primarily relates to a device for detecting pressure and pressure changes in a remote area and particularly in internal cavities through liquid coupling. A liquid filled tubing is inserted into the area to be monitored and coupled to an external transducer. A mounting for the transducer includes means to facilitate complete liquid filling of the tubing and exhaustion of air therefrom.

3,662,744
METHOD FOR MEASURING CUTANEOUS SENSORY PERCEPTION

George M. Low, Acting Administrator of the National Aeronautics and Space Administration in respect to an invention of; Robert W. Richardson, 2325 Hayes Road, Norristown, Pa., and David B. Wright, 2617 Wayland Road, Berwyn, Pa.

Filed Dec. 2, 1970, Ser. No. 94,347
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 N **2 Claims**



A method for detecting and measuring cutaneous sensory perception. The method utilizes an instrument comprises an elongate tubular housing having a sleeve member extending axially from an end thereof. Mounted on the other end of the tubular housing is a vernier counter adjustment, the operating mechanism of which is disposed internally of the housing. Telescopically positioned within the sleeve is a thin wire-like member or monofilament stimulating element. One end of the monofilament stimulating element extends from the sleeve while the other end is mechanically coupled to the internal operating mechanism of the vernier counter adjustment.

3,662,745
METAL-METAL SALT ELECTRODE AND METHOD FOR MAKING THE SAME

Louis Ciro Cosentino, West Paterson, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed June 30, 1969, Ser. No. 837,424
Int. Cl. A61l *5/00*
U.S. Cl. 128—2 E **5 Claims**

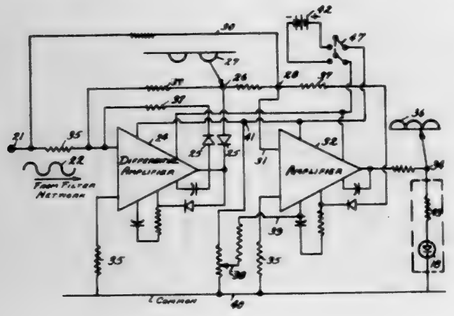


An improved electrode comprising a mixture of a metal and a metal salt incorporated into a matrix material. This basic electrode material is coatable on an electrically conducting substrate to provide an excellent quality, low cost electrode assembly. The method of making the same comprising forming a mixture of a metal and metal salt incorporating the resultant mixture into a matrix therefor and applying that resulting mixture to the electrically conducting substrate.

3,662,746
APPARATUS FOR DETECTING, ANALYZING AND RECORDING BIOELECTRIC POTENTIALS

Bernard Saltzberg, 3702 Octavia St., New Orleans, La.; Leonard S. Lustick, 3721 Rue Mignon St., New Orleans, La., and Robert G. Heath, 419 Walnut St., New Orleans, La.

Filed May 14, 1969, Ser. No. 824,501
Int. Cl. A61f *5/04*
U.S. Cl. 128—2.06 R **1 Claim**



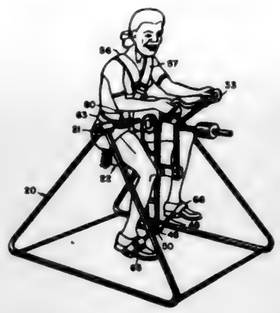
A means for monitoring electrophysiological activity is described having electrodes connected to an animal body with the output therefrom coupled to an amplifier which in turn feeds the amplified physiologically generated signal to a band pass filter network. The band pass filter is adapted to pass only those portions of the signals from the electrodes which occur in a predetermined frequency band. The filtered signal is coupled to an absolute value detector which produces a unidirectional output current signal the instantaneous amplitude of which corresponds to the instantaneous amplitude of the filter output signals. The detector output signal is coupled to a reversible microcoulometer which plates a metal from one electrode to another. The plating activity of the reversible microcoulometer produces a mass of plated material which is equivalent to the current-time integral, hence the average value, of the filter output signal. A readout device may be provided which causes the microcoulometer to operate in a reverse direction at a predetermined flow rate thereby causing a current of a predetermined value to flow. The value of the current-time integral may then be determined by determining the time required for the microcoulometer to operate in the reverse direction at the known current value. As an alternative, an event detection means may be provided which receives the signal from the electrodes and produces an output current signal of a known amplitude and duration or any signal producing a fixed, known charge for each occurrence of a predetermined wave form. In this mode of operation the reversible microcoulometer in effect operates as a counter with the amount of plating being equivalent to the number of occurrences of the predetermined wave form.

3,662,747
CIRCULATION-STIMULATING MACHINE

Chester I. Williams, 347 Greenbriar, Grand Rapids, Mich.

Filed Apr. 15, 1970, Ser. No. 28,651
Int. Cl. A61h *1/00*
U.S. Cl. 128—24 **5 Claims**

A machine for stimulating circulation in the upper portion of a human body by the effect of slow rotation on a horizontal axis through upright and inverted positions. A rotatable carrier includes a seat or standing support equipped with a retaining harness, and also includes a preferably pedal-operated drive system. A modified form of the invention includes a ring supported on parallel horizontal rollers. A driving belt surrounds the ring, and holds it against the rollers.

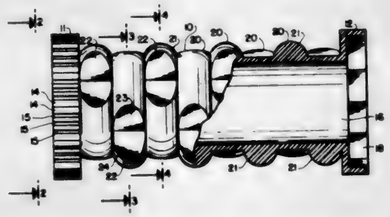


The ring has an inside diameter selected to receive an occupant in crouching position.

3,662,748
FOOT MASSAGE ROLLER

Allan C. Thurman, 44 Clinton Ave., Nyack, N.N.Y.

Filed Feb. 18, 1971, Ser. No. 116,561
Int. Cl. A61h *15/00*
U.S. Cl. 128—57 **7 Claims**

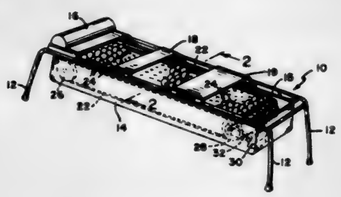


A massage roller for rolling with the sole of the foot has faceted side flanges containing serrations to grip a surface, the faceted side flanges causing a vibration of the roller on rolling it, and the roller has a smaller diameter center portion between the side flanges formed as adjacent disks with rounded edges, the disks having shallow "V" shaped notches equally spaced about their edges with adjacent disks having their notches offset relative to each other.

3,662,749
MASSAGING DEVICE

Luther G. Simjian, 7 Laurel Lane, Greenwich, Conn.

Filed Dec. 21, 1970, Ser. No. 100,165
Int. Cl. A61h *11/00*
U.S. Cl. 128—58 **22 Claims**

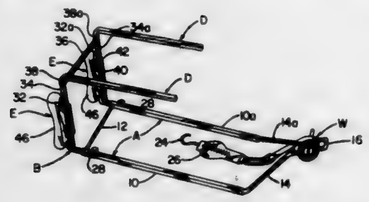


A massaging device comprises an array of inflated elements which are adapted to deflate under external pressure. Motive means are provided to move the array of elements past a body portion to be massaged. A respective element, as it is distorted, rolls over the body and provides a massaging action. When the applied force ceases, the element, having a yieldable enclosure, reinflates to its normal size.

3,662,750
MULTI-PURPOSE TRACTION APPARATUS

Thor V. Jorgensen, P.O. Box 248, Frisco, Colo.

Filed Jan. 6, 1970, Ser. No. 983
Int. Cl. A61h *1/02*
U.S. Cl. 128—75 **4 Claims**

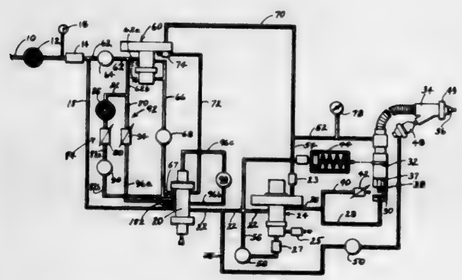


Traction apparatus for the human anatomy characterized by a main frame and a pulling device connected to one end thereof, the other end of the frame being open to provide a space for a portion of the anatomy to extend across same, and a plurality of attachments for the main frame which may be employed in various combinations to provide various abutments or loci of countertraction on various parts of the anatomy. It is a lightweight device which may be used to apply traction to entire limbs or portions of limbs, to the neck, and other portions of the anatomy. In some uses the main frame is disposed in a horizontal position but is also self supporting in a vertical position for other applications of use. The attachments may be oriented to various positions relative to the main frame and are detachable therefrom to render the apparatus compact, whereby it may be readily transported.

3,662,751
AUTOMATIC RESPIRATOR-INHALATION THERAPY DEVICE

Clare E. Barkalow, Comstock Park, and Ilden R. Folkerth, Sparta, both of Mich., assignors to Michigan Instruments, Inc., Grand Rapids, Mich.

Filed May 20, 1970, Ser. No. 38,948
Int. Cl. A62b *7/04*
U.S. Cl. 128—145.8 **18 Claims**

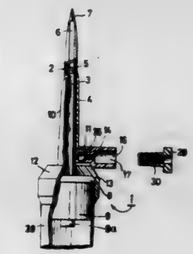


A primary control valve when open permits the flow of a pressurized oxygen containing gas from a source to a patient adapter for use by the patient. A pressure control means controls the opening of the primary valve and is responsive to a sub-ambient pressure in the adapter caused by initial patient inhalation to actuate the primary valve to an open position. A pair of adjustable timing mechanisms control the lapse time for the primary valve in the open or closed position. The timing mechanism controlling the time during which the primary valve is closed is subservient to the pressure control means so that patient inhalation causes the valve to open prior to the preselected lapse time. It may also be turned off to permit gas flow only as a result of patient inhalation. A pressure regulator is also provided to prevent flow pressures in the adapter above a predetermined level. A mechanism is also provided to adjust the level of output flow to meet varying patient needs.

3,662,752
INFUSION DEVICE

Kousou Yokoyama, Hiroshima, Japan, assignor to Japan Medical Supply Co., Ltd., Hiroshima-ken, Japan

Filed July 8, 1970, Ser. No. 53,102
Claims priority, application Japan, July 12, 1969, 44/65523
Int. Cl. A61m *05/00*
U.S. Cl. 128—214 R **1 Claim**

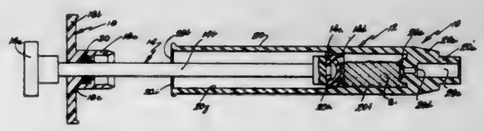


An infusion device in which a back-flow check valve is provided at an opening communicated with an air and medical fluid injection groove formed along the length of the needle body, said check valve being made of a flexible material such as rubber or soft plastics and having its forward end formed spherically or in other similar configuration, with a slit being formed at the front thereof, and whereby either air or liquid medicine, as the case may be, caused to flow in the injected direction when so desired.

3,662,753
SYRINGE

Kitchener B. Tansell, 4048 Brenton Road, Grand Rapids, Mich.

Filed May 25, 1970, Ser. No. 40,197
Int. Cl. A61m *5/00*
U.S. Cl. 128—218 M **9 Claims**



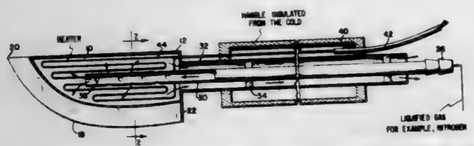
A syringe assembly enabling mixed discharge of substances retained in separated condition until intended use, employing a plunger and barrel arrangement that retains the substances separated during storage, allows mixing thereof prior to discharge, and causes discharge of the mixed substances.

3,662,754
INJECTION APPARATUS
William X. Halloran, 440 Fair Drive, Costa Mesa, Calif.
Filed May 4, 1970, Ser. No. 34,179
Int. Cl. A61m 5/00
U.S. Cl. 128—221 8 Claims



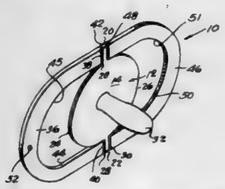
Injection apparatus including a needle formed on one extremity with a point and connected on its opposite end with coupling means for coupling to a syringe or the like. A protective sleeve is telescoped over the one extremity of the needle and has one end of a pusher connected therewith, such pusher projecting rearwardly along the needle shank and being connected on its rear extremity with a finger-grasp handle whereby the sleeve may be telescoped rearwardly on such extremity of the needle, the point inserted through the wall of a patient's vein and the needle projected down such vein. Thereafter, the handle may be pushed to telescope the sleeve outwardly over the needle point to thereby protect the wall of the vein from puncture by said point.

3,662,755
CRYO-SCALPEL
Robert Rautenbach; Wolfgang Lutzeyer, both of Aachen; Udo Werner, Karlsruhe; Stravros Lymberopoulos, Aachen, and Hubert Zimmerman, Aachen, all of Germany, assignors to Leybold-Heraeus GmbH & Co. Kommandit-Gesellschaft, Cologne-Bayental, Germany
Filed Aug. 8, 1969, Ser. No. 3,258
Claims priority, application Germany, Aug. 8, 1968, P 17 66 906.6
Int. Cl. A61b 17/38, 17/32
U.S. Cl. 128—303.1 4 Claims



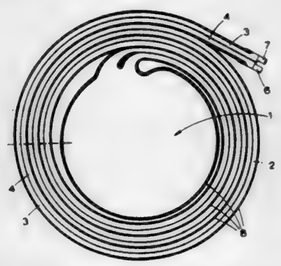
A method of cryogenic surgery and a scalpel suitable for the practice of the method. The scalpel has a hollow chamber within which a fluid medium may be injected, there being knife blade means in heat transfer contact therewith. In the practice of the method the scalpel is cooled by injection of an appropriate fluid. Thereafter animal tissue is cut with the scalpel thereby freezing the cut areas. The knife is heated as necessary to permit detachment of the scalpel from the frozen areas.

3,662,756
PACIFIERS
Albert S. Hakim, P.O. Box 4826, Monroe, La.
Continuation-in-part of application Ser. No. 815,749, Apr. 14, 1969, now abandoned. This application May 7, 1970, Ser. No. 35,432
Int. Cl. A61j 17/00
U.S. Cl. 128—360 11 Claims



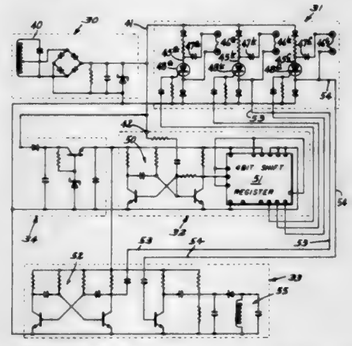
Pacifiers of integral construction have a shield with handle portions forming co-planar extensions which increase the overall shield area in one position and which are foldable to second positions to form a handle.

3,662,757
DIATHERMY PLATE ELECTRODE
John Harold Blackett, London, England, assignor to Matburn (Holdings) Limited, London, England
Filed Apr. 14, 1970, Ser. No. 28,311
Claims priority, application Great Britain, Apr. 25, 1969, 21,180/69
Int. Cl. A61n 1/06
U.S. Cl. 128—416 6 Claims



This invention relates to a plate electrode for use in surgical diathermy or electrosurgical apparatus. The electrode is a thin flexible sheet of metal foil backed by a flexible film of plastics material.

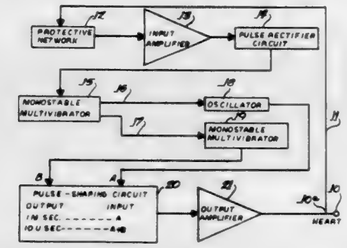
3,662,758
STIMULATOR APPARATUS FOR MUSCULAR ORGANS WITH EXTERNAL TRANSMITTER AND IMPLANTABLE RECEIVER
Eugene G. Glover, Minneapolis, Minn., assignor to Mentor Corporation, Minneapolis, Minn.
Filed June 30, 1969, Ser. No. 837,701
Int. Cl. A61m 1/36
U.S. Cl. 128—419 E 4 Claims



A unit adapted to be implanted in a human body including a power supply for having power induced therein from a source external of the body, electrodes adapted to be attached to a muscular organ, such as a bladder or the like, capacitors and SCR's in circuit with said electrodes and said power supply for normally storing electrical energy and discharging said electrical energy through the electrodes upon conduction of the SCR's, triggering circuitry connected between the power supply and the SCR's for triggering the SCR's when the power induced in the power supply is temporarily interrupted and an FM transmitter connected to the power supply and between a pair of spaced apart electrodes so as to transmit a signal varying in frequency according to the resistance of the material between the electrodes; and an external control unit including means for inducing power into the internal power supply and controllable to periodically

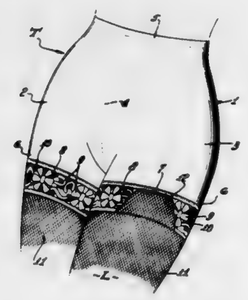
and temporarily remove power to control the energy supplied to the electrodes and an FM receiver with indicating means attached to provide an indication as to the operation of the muscular organ.

3,662,759
CARDIAC PACER SYSTEM
Laurence L. Dabolt, Newport Beach, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Sept. 22, 1969, Ser. No. 859,900
Int. Cl. A61n 1/36
U.S. Cl. 128—419 P 15 Claims



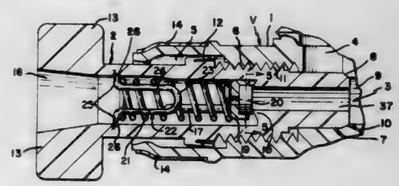
An implanted pacer system includes a resettable oscillator for generating a train of pulses having a period slightly greater than the period of a natural heartbeat. The pulses generated in the oscillator are coupled to a pulse shaper network which transmits pulses to an electrode contacting the heart. If no natural heartbeat is sensed, the oscillator operates at its natural frequency and the shaper network transmits heart-stimulating pulses to the electrodes. If a natural heartbeat is detected, the oscillator is reset and timing circuitry in the shaper network is modified so that a non-stimulating pulse is transmitted to the electrode. The non-stimulating pulses are detectable by a receiver outside the body to permit an examining physician to ascertain whether the pacer system is operative when the heart is functioning normally even though the system is non-competing. Further, the non-stimulating pulses do not produce an artifact on an EKG machine monitoring the patient's heartbeat, and negligible energy is dissipated in the non-stimulating pulses.

3,662,760
PANTY GIRDLE WITH DECORATIVE HOSE SUPPORT
Jan J. Erteszek, Los Angeles, Calif., assignor to Olga Company, Van Nuys, Calif.
Filed June 19, 1970, Ser. No. 47,818
Int. Cl. A41c 1/00
U.S. Cl. 128—535 4 Claims



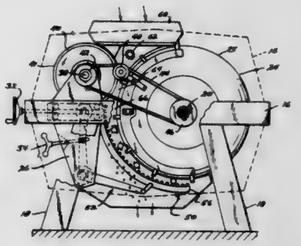
Panty girdle in which the leg portions are terminally edged by ornamentally patterned lace fabric bands adapted to support a wearer's hose, the bands elastically encircling the wearer's leg and having hose gripping adhesive distributed on their inside surfaces in a manner congruent with ornamental aspects of the bands.

3,662,761
VALVE STRUCTURE WITH A U-SHAPED SPRING RETAINER
Joseph Willard Hoffman, Liverpool, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Continuation-in-part of application Ser. No. 846,516, July 31, 1969, now abandoned. This application Mar. 23, 1970, Ser. No. 21,691
Int. Cl. F16k 17/04
U.S. Cl. 137—543.19 7 Claims



A valve has a body provided with a passageway therethrough. A valve seat is located along the passageway. A sealing member is biased into sealing engagement with the valve seat via a spring member. A U-shaped retaining member is disposed in the passageway and in engagement with the spring member; it has outwardly directed sharp ends that dig into the wall of the passageway to seat the sealing member onto the valve seat in accordance with a prescribed pressure under which the spring member is placed by the retaining member. A modification of a sealing skirt provides better sealing characteristics.

3,662,762
CORN SHELLER
Ronald W. Brass, Ackley, Iowa, assignor to Iowa State University Research Foundation, Ames, Iowa
Filed Aug. 31, 1970, Ser. No. 68,375
Int. Cl. A01f 11/06
U.S. Cl. 130—6 4 Claims



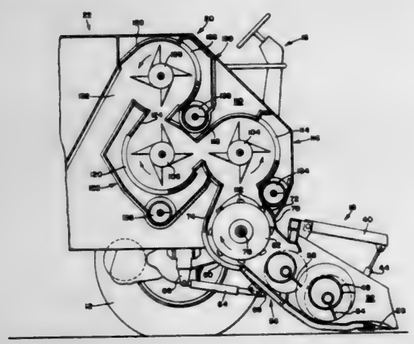
A corn sheller comprising a frame means having a first pneumatic roller means rotatably mounted thereon about a horizontal axis and having a second pneumatic roller means rotatably mounted thereon about a horizontal axis which is spaced from the first roller means to define a feed opening therebetween. A feed hopper is positioned above the feed opening for feeding corn ears thereto. An arcuate concave means is positioned below the feed opening and extends downwardly therefrom in a spaced relationship with respect to the periphery of the first roller means. A power means is connected to the first and second roller means for rotating the same in the same direction whereby the first and second roller means will cause a corn ear to pass downwardly through the feed opening so that the longitudinal axis of the

corn ear will be parallel to the rotational axis of the first roller means. The space between the concave means and the periphery of the first roller means is such that radial compressive forces are applied to the corn ear to loosen the kernels thereon without damage thereto. The concave means is comprised of a plurality of parallel rods which are adapted to cooperate with the first roller means to apply the radial compressive forces to the corn ear.

3,662,763
COMBINE

Henry Hoyt Denison, Moline, Ill., and Roy Edwards Harrington, New Delhi, India, assignors to Deere & Company, Moline, Ill.

Filed July 22, 1970, Ser. No. 57,234
Int. Cl. A01f *12/20*
U.S. Cl. 130—27 P 9 Claims



A self-propelled combine having a rotary separating mechanism mounted forwardly thereon including a threshing cylinder and associated closed concave which initially thresh the crop, and a series of three separating impellers and associated open concaves which cooperate to move the threshed crop along a serpentine path while separating the grain from the straw. The grain is collected from each of the open concaves and delivered first to a rotary cleaning mechanism mounted on the extreme rear of the combine, then to a clean grain storage tank mounted on the combine frame intermediate the separating and cleaning mechanisms. The concave associated with the threshing cylinder is constructed as an integral part of the combine header and is swingable therewith about the cylinder axis of rotation. The header is mounted on an eccentric on the axis such that the cylinder-concave spacing can be adjusted by rotating the eccentric.

3,662,764
SMOKER'S PIPE

Francisco Blanco, 501 N.E. 69th Street, Miami, Fla.

Filed Oct. 23, 1970, Ser. No. 83,527
Int. Cl. A24f *07/04*
U.S. Cl. 131—207 5 Claims



A smoker's pipe having an axial cylindrical bore within the pipe shank portion wherein a plurality of filter elements are removably disposed for filtering, cooling and absorbing moisture. The filter elements are of cylindrical shape and supported in spaced relation along and within the pipe shank by means of a helical compression spring having stretched-out portions providing spaced gaps within which the filter elements are removably constrained. A wire loop handle at the outer end of the spring facilitates manual insertion. A removable friction-fit bit at the outer end of the pipe shank abuttingly constrains the spring-filter assembly in place.

3,662,765
SMOKE FILTER

Robert F. Clark, Schenectady, N.Y., assignor to General Electric Company

Continuation of application Ser. No. 749,380, Aug. 1, 1968, now abandoned. This application Nov. 27, 1970, Ser. No. 93,504
Int. Cl. A24b *15/02*; B01d *39/00*
U.S. Cl. 131—265 18 Claims



A porous filter is provided which is effective for removing undesirable materials such as particulate matter from smoke, including tobacco smoke, comprising an organopolysiloxane disposed in the conduit through which the smoke is forced to pass, the said filter being formed of an organopolysiloxane of the formula

$$(R)_a(R')_bSiO(4-a-b)/2$$

Where R is a monovalent polar organic radical selected from the group consisting of cyanalkyl, fluoroalkyl, nitroalkyl, arylsulfonylalkyl, carbamylalkyl, carbalkoxyl, uriedoalkyl and nitroaryl, R' is a monovalent hydrocarbon radical, a has a value equal to 0.1 to 3, inclusive, b has a value of 0 to 2.5 inclusive, and the sum of $a+b$ has a value equal to 1 to 3, inclusive, mixed with up to about 300 parts of filler. The filter can be used in combination with a cigarette, or as an anti-air pollution device. The organopolysiloxane can also be carried on a porous substrate such as polyurethane or polyvinyl chloride.

3,662,766
METHOD OF ATTACHING A HAIRPIECE

Ralph Maassen, and Alex Pollock, both of 6381 Hollywood Blvd., Hollywood, Calif.

Filed Mar. 10, 1971, Ser. No. 122,966
Int. Cl. A41g *5/00*
U.S. Cl. 132—5 8 Claims



A hairpiece which is anchored with the surrounding natural hair. The hairpiece has a plurality of locking devices attached to its base. The locking devices have a first section, which is attached to the hairpiece, and a second section which is adapted to being lockingly engaged with the first section. The second section is attached to the natural hair by means which permits adjustment of the attachment between the natural hair and the second section to compensate for growth of the natural hair.

3,662,767
HAIR DYEING AID

Irene Murtha, 147-20 34th Avenue, Flushing, N.Y.

Filed Apr. 2, 1971, Ser. No. 130,651
Int. Cl. A45d *1/06*
U.S. Cl. 132—9 6 Claims

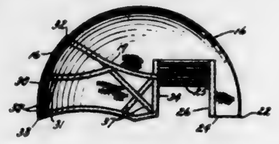


A woman's hair is held up in small bunches by a novel clamp to permit selective dyeing at the roots. The clamp comprises a plastic shell with resilient plastic opposed members for frictionally clamping a small bunch of hair and for holding it outwardly from the head.

3,662,768
WIG CONSTRUCTION HAVING SYNTHETIC RESINOUS SUBSTRATE ELEMENT

Raphael Klugmann, 43 West 16th St., New York, N.Y.

Filed Jan. 21, 1971, Ser. No. 108,306
Int. Cl. A41g *3/00*
U.S. Cl. 132—53 1 Claim



A wig construction in which the forwardly disposed portions of the hair strands may be parted at a desired laterally disposed location to give the appearance of the scalp of the wearer at the parting line. The wig includes a rearwardly extending foundation element of conventional netted textile construction defining a forward edge, and a laminated substrate element interconnected to said forward edge at a rearward edge thereof, and including an upper lamina of colored synthetic resinous material to which hair strands are tufted, and a lower lamina of relatively stiff textile netting interconnected to said upper lamina at at least the peripheral edges thereof to stiffen the same and conform it to the head of the wearer. Integrated flexible boning communicates with a forward edge of said substrate element to prevent said edge from curling.

3,662,769
COSMETIC APPLICATOR

Martin M. Vasas, Fairfield; John C. White, Easton, and Paul M. Alexander, Newton, all of Conn., assignors to The Bridgeport Metal Goods Manufacturing Company, Bridgeport, Conn.

Filed Oct. 5, 1970, Ser. No. 77,978
Int. Cl. A45d *40/26*
U.S. Cl. 132—88.7 9 Claims

A cosmetic applicator including a normally liquid cosmetic containing reservoir and a self-contained brush. The open end of the reservoir is closed by a centrally apertured annular resilient diaphragm which provides means for sealing the reservoir against leakage and for wiping excess cosmetic from the bristles of the brush when the latter is being removed from the reservoir. The brush includes a two-part shaft with a peripheral depression defined intermediate the two parts and which projects through the diaphragm when

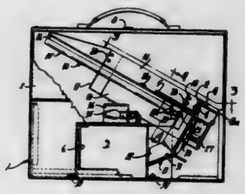


the applicator is not in use. The depression is dimensioned such as to permit the diaphragm to maintain an unstressed condition as opposed to its stressed conditions caused during insertion and removal of the brush into and from the reservoir.

3,662,770
DISPENSING APPARATUS FOR SEQUENTIALLY DISCHARGING TOKENS FROM AN INCLINED STACK OF TOKENS

Ronald S. Cohen, Milwaukee, Wis., assignor to Behavioral Controls, Inc., Milwaukee, Wis.

Filed Nov. 29, 1968, Ser. No. 779,836
Int. Cl. G07d *1/00*
U.S. Cl. 133—5 R 10 Claims

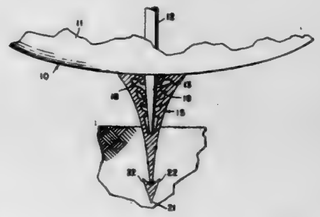


This disclosure relates to a coin dispenser. A "U" shaped tray is angularly mounted with the lower end slightly spaced from a stop plate to define a discharge opening. The tray opens upwardly with the coins disposed in the tray with one or more backing balls continuously urging them downwardly into clamping engagement against the stop plate. A wiper blade is centrally secured to a motor shaft to one side of the discharge opening such that the shaft rotation moves the opposite ends of the blade through the discharge space or opening.

3,662,771
UMBRELLA ATTACHMENT

Albert W. Gravatt, 2401 South Broad St., Treaton, N.J.

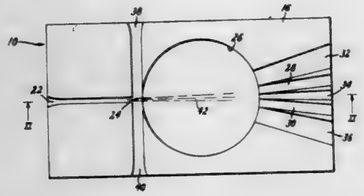
Filed May 22, 1970, Ser. No. 39,782
Int. Cl. A45b *1/00*, *11/00*
U.S. Cl. 135—16 4 Claims



An attachment for an umbrella wherein a receiver engages the stick extension of the umbrella and is provided with an

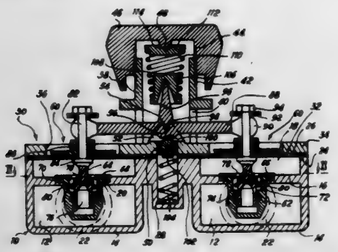
impaling member for engagement in a ground surface, in order that the umbrella be temporarily held in position during nonuse.

3,662,772
LAMINAR FLUIDIC DEVICES
Trevor D. Reader, King of Prussia, Pa., assignor to General Electric Company
Filed Nov. 21, 1969, Ser. No. 878,824
Int. Cl. F15c 18/18, 1/00
U.S. Cl. 137—81.5 6 Claims



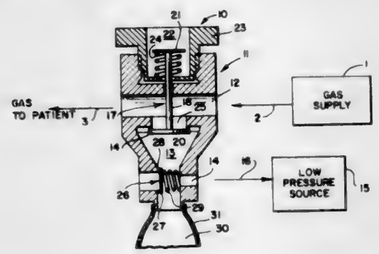
Fluidic devices wherein the fluid stream or streams acting therein are always in the laminar state. The important elements of each fluidic device, which include one or more supply passageways, one or more receiver passageways, vents, a cavity and possibly one or more control passageways, are of a configuration and location such that fluid flowing through each supply passageway forms a laminar fluid stream which is capable of being received by one or more of the receiver passageways in a laminar state. The Reynolds number of the fluid forming the laminar fluid stream is preferably within the range of 200–1,500. The subject invention is applicable to a wide variety of fluidic devices including proportional and digital amplifiers, OR and AND gates, and rate sensors wherein the signal-to-noise ratio is substantially lower than that of conventional turbulent flow fluidic devices.

3,662,773
MIXER ASSEMBLIES
Jean-Pierre Nicolas, La Chiquita-Gairout Superior -06/, Nice, France
Filed May 27, 1970, Ser. No. 40,971
Claims priority, application France, May 27, 1969, 6917254; 6945390
U.S. Cl. 137—100 7 Claims



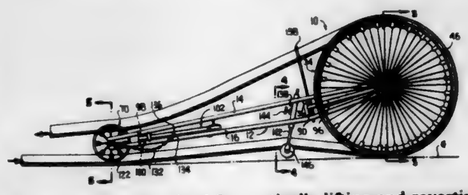
A mixer assembly for mixing two expanded and separate fluids under pressure. The assembly operates to maintain the relationship between the pressures of the two expanded fluids substantially constant and also to deliver the mixed fluids at a substantially constant pressure. The assembly comprises a pair of escape valves each having an inlet for one of said fluids. The closure members of these valves are associated with membranees and are operatively interconnected by means such as a beam which permits the valve members to be displaced in relatively opposed directions when the supply pressure of the two fluids vary. The beam or other form of connecting means is acted upon by a resilient element which is compressed or expanded when the supply pressures of the two fluids respectively increase or decrease thus moving the beam in the direction to close or open the escape valves thereby stabilizing the fluids pressures.

3,662,774
GAS EVACUATOR FOR BREATHING APPARATUS
Dag Olof Alfred Johannisson, Lidingo, and Gustaf Silas Staffan Lundberg, Ystad, both of Sweden, assignors to AGA Aktiebolag, Lidingo, Sweden
Filed Aug. 31, 1970, Ser. No. 68,364
Claims priority, application Sweden, Sept. 9, 1969, 12384/69
Int. Cl. F16k 45/02
U.S. Cl. 137—115 7 Claims



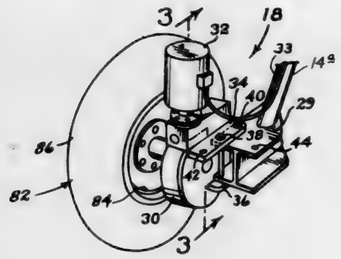
A gas evacuator for removing excess gas conveyed to a patient through a duct from a gas supply. The device includes a conduit connectable to the gas duct to convey the gas from one portion of the duct to another portion thereof. A chamber is provided with a drain line connectable to a low pressure source, such as a vacuum pump, for maintaining a reduced pressure in the chamber. A first valve is provided for venting excess gas from said conduit to said chamber in response to the differential pressure therebetween. A second valve is provided to introduce gas to said chamber from atmosphere in response to pressure in the chamber. The chamber is kept under low pressure by the vacuum pump. At a desired value of low pressure, the second valve opens to maintain that pressure in the chamber. If excess gas is present in the duct, the first valve opens venting that excess gas to the chamber until the excess gas is removed. The vented gas is removed through the drain line. In the event of a temporary increase in pressure in the chamber above the mentioned desired value, the second valve closes thus ensuring that the excess gas removed from the duct is not vented to atmosphere in the area adjacent the device.

3,662,775
VERTICAL LOOPER WHEEL FOR IRRIGATION HOSE
Warren R. Clark, Box 323, Eastville, Va.; Warren G. Clark, Box 215, Cheriton, Va., and Page N. Scott, R.F.D., Cape Charles, Va.
Filed Dec. 7, 1970, Ser. No. 95,654
Int. Cl. B05b 9/02; E01h 3/02
U.S. Cl. 137—344 10 Claims



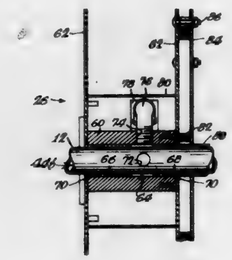
A traveling looper wheel for vertically lifting and reverting field hose connected with and towed by conventional mobile field water sprinkling means providing field irrigation, the looper wheel preventing damage to planted crops.

3,662,776
SELF-PROPELLED SPRINKLER SYSTEM
Raymond W. Bryant, Seattle, Wash., and Clifford V. Engel, Beaverton, Oreg., assignors to Said Engel, by said Bryant
Filed Feb. 17, 1970, Ser. No. 11,951
Int. Cl. B05b 9/02; E01h 3/02
U.S. Cl. 137—344 6 Claims



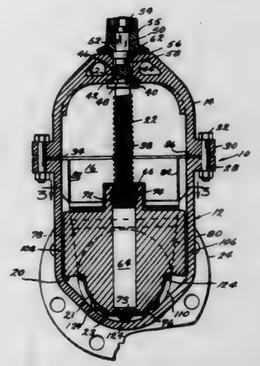
A self-propelled sprinkler system including an elongated conduit supported, by an upright support frame, in a substantially horizontal position above the ground. A self-contained drive unit is pivotally connected to a lower portion of the support frame for swinging about an upright axis relative to the frame. The drive unit includes a motor, a ground-engaging wheel disposed with its central axis substantially horizontal, and reduction gears drivingly connecting the motor to the wheel. The drive unit can be swung relative to the support frame to position the wheel's axis substantially parallel to the conduit, or at a substantial angle relative thereto, and it may be locked in either position. A disengagable coupling interconnects the wheel and the gears. With the coupling disengaged the wheel rotates freely accommodating towing of the system.

3,662,777
TOOL CART
Larry D. Plunkett, Crystal Lake, and Robert J. Mannion, Des Plaines, both of Ill., assignors to Signode Corporation
Filed July 28, 1970, Ser. No. 58,904
Int. Cl. B65h 75/36
U.S. Cl. 137—355.17 4 Claims



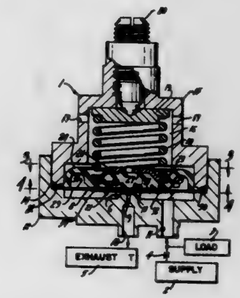
A cart for transporting fluid actuated devices and having an axle rotatably supporting wheels on opposite ends thereof with the axle defining a fluid flow passage for supplying actuating fluid to the respective devices.

3,662,778
GATE VALVE STRUCTURE
Wilbur R. Leopold, Jr.; John J. Smith; Frank C. Hackman; Lawrence F. Luckenbill, and Joseph L. Daghe, all of Decatur, Ill., assignors to Mueller Co., Decatur, Ill.
Filed Jan. 5, 1971, Ser. No. 104,116
Int. Cl. F16k 27/00, 31/50, 3/00
U.S. Cl. 137—375 51 Claims



A gate valve structure for use in mains carrying a fluid under high pressure, the fluid being of the type which could possibly cause corrosion to the elements of the gate valve structure including the casing. An improved valve gate member is provided which permits operation from closed to open position and vice versa with a minimum of torque and with maximum holding power in the closed position. The valve gate member is designed so that there is unobstructed communication between the ports of the valve casing to thereby reduce turbulence and currents within the valve structure and thus effectively reduce corrosion deposits and collection of debris within the structure. The valve gate member is a flat and hollow chamber for reception of a valve operating stem and means are provided to completely protect the valve gate member and the track in which it operates from corrosion and possible damage.

3,662,779
BLEED TYPE FLUID PRESSURE CONTROL APPARATUS AND DIAPHRAGM UNIT THEREFOR
Urban A. Weber, Brookfield, and George J. Janu, Milwaukee, both of Wis., assignors to Johnson Service Company, Milwaukee, Wis.
Filed Jan. 13, 1971, Ser. No. 106,185
Int. Cl. F16k 17/06, 31/12
U.S. Cl. 137—489 36 Claims



A pneumatic diaphragm control includes a diaphragm unit overlying a nozzle with a chamber connected to a fluid supply and to a load. The diaphragm unit is biased toward

the nozzle by a coil spring or a fluid pressure. The diaphragm unit includes a rubber diaphragm, a central nozzle seal portion and an outer clamp ring connected by a single intermediate convolute portion. A single piece flat spring includes a peripheral clamp ring connected to a center member by three integral arms which extend circumferentially and radially between the inner and outer portions. The bottom surface of the diaphragm's seal portion is bonded by a suitable adhesive to the corresponding center portion of the spring. In the spring loaded unit the diaphragm is formed with an integral back lug supporting a spring guide such that spring force is on the top of the lug. The thickness of the lug provides temperature compensation for the expansion and contraction of the control housing or body.

ERRATUM

For Class 137—543 see:
Patent No. 3,662,761

3,662,780

FLUID FLOW DIRECTING STRUCTURE FOR PRESSURE VESSEL

Robert E. Marsh, 12200 Montecito Rd., Apt. D-309, Seal Beach, Calif.

Original application Oct. 31, 1967, Ser. No. 679,304, now Patent No. 3,557,827, dated Jan. 26, 1971. Divided and this application May 25, 1970, Ser. No. 48,680
Int. Cl. B01d *27/12*
U.S. Cl. 137—590 8 Claims



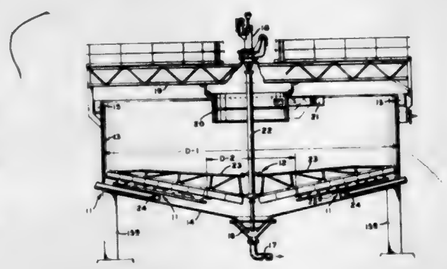
A light weight filament wound pressure vessel. The vessel includes a central cylindrical shell and a pair of end caps adapted to fit into the opposite ends of the shell. Each of the end caps includes a convex, dome-like upper portion, a cylindrical skirt depending from the upper portion and integrally connected thereto, and an annular land connected to the edge of the cylindrical skirt. The cylindrical skirts are of substantially the same outer diameter as the central shell. The lands have an outer diameter which is slightly less than the inner diameter of the central shell so that the junction between the lands and the skirt forms a shoulder having a radial dimension substantially equal to the thickness of the central shell. Each land has an annular groove therein for carrying a resilient O-ring. The O-rings are of a slightly larger diameter than the outer diameter of the lands so that they sealingly engage the inner wall of the central shell when the lands are inserted into the central shell. The central shell and cylindrical skirts of the end caps form a smooth external junction. The assembly is overwound with a fiberglass filament to provide the desired bursting strength of the vessel. The lands may be integrally connected to the skirts or mounted on a collector ring. In one embodiment of the pressure vessel of this invention a fluid flow directing means is integrally connected to the internal surfaces of one of the end caps for guiding fluids through the vessel and eliminating "channeling." This embodiment of the invention is particularly adapted for use as a water conditioning tank.

3,662,781

MEANS FOR THE SUBMERGED INTRODUCTION OF A FLUID INTO A BODY OF LIQUID

Patsy J. Figliola, Stamford, and Douglas J. McCallum, Jr., Norwalk, both of Conn., assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Continuation-in-part of application Ser. No. 699,012, Jan. 11, 1968, now abandoned. This application July 24, 1970, Ser. No. 58,070
Int. Cl. B05b *1/32*; F16k *15/06*
U.S. Cl. 137—543.17 32 Claims



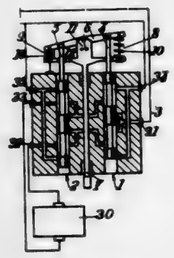
Improved system for the submerged introduction and distribution of a fluid into a body of liquid, for instance in an apparatus for the hydraulic upflow classification and/or deliming of metallurgical pulps or the like in a teeter bed, employing self-cleaning nozzles in the form of resiliently yieldable check valves.

3,662,782

DISTRIBUTING DEVICES FOR FLUID UNDER PRESSURE

Marcel Rene Schott, Bois-Colombes, France, assignor to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation, Paris, France

Filed Feb. 16, 1971, Ser. No. 115,470
Claims priority, application France, Feb. 25, 1970, 7006811
Int. Cl. F15b *13/04*; F16k *11/10*
U.S. Cl. 137—596 9 Claims



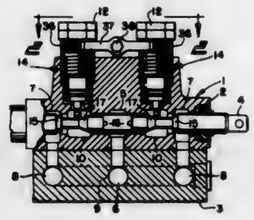
Two distributors for liquid are actuated by two lateral rods which are provided at two end points of a cross bar whose middle point is provided on a central rod. Two threshold mechanical systems are provided at the level of the two hinges on the cross bar on the lateral rods. The device is useful for controlling a double-acting jack and especially in systems for actuating the control surfaces of an aircraft.

3,662,783

SPOOL VALVE ASSEMBLY

Hugh J. Stacey, Willoughby, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Feb. 2, 1970, Ser. No. 7,836
Int. Cl. F16k *11/07*
U.S. Cl. 137—596.14 8 Claims



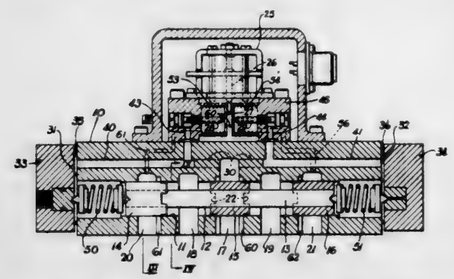
A spool valve assembly having a flow control and cam spool which cams pilot check valve members to unseated position to initiate return flow of fluid from a fluid motor to a tank, said assembly being characterized in that the pilot operated check valves are disposed in cartridges which are adjustable in the valve housing to enable accurate positioning of the cam operated pilot check valves with respect to the spool cams. The assembly herein is further characterized in that although the main check valve is opened by differential fluid pressure upon cam opening of the pilot check valve, the main check valve is prevented from closing so long as the valve spool is in operating position. The assembly herein also has means to prevent buildup of pressure in the valve chambers upstream of the cam operated check valves so that fluid leaking past the spool land at the pressure inlet is vented to the tank via the upstream chambers aforesaid. Still another characterizing feature of the invention is that the pilot operated check valves have chatter or flutter preventing means which precludes inadvertent closing of that check valve which is on the pressure side due to pressure surges or pulsations, or other sudden rise in pressure between the fluid motor and the spool valve assembly.

3,662,784

TORQUE MOTOR CONTROLLED FLUID VALVE

John M. Perbach, Buffalo, N.Y., assignor to Glar-Ban Corporation, Buffalo, N.Y.

Filed Nov. 2, 1970, Ser. No. 86,134
Int. Cl. F15f *5/00*; F16k *11/07*
U.S. Cl. 137—625.62 7 Claims



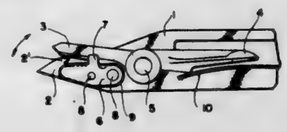
Movement of the armature of a torque motor controls the position of the spool valve element of a four-way valve. A valve member carried by the armature lies between a pair of nozzles leading from the pressure port of the four-way valve and balanced springs normally center the spool valve element. Movement of the armature moves the valve carried thereby closer to one of the nozzles and farther from the other and this causes unbalanced dynamic fluid pressure in the passages leading to the nozzles which pressures are applied to opposite ends of the spool valve and thus moves the spool valve in one direction or the other from its neutral central position. Bellows members extend from opposite faces of the valve carried by the armature of the torque motor to enclose the region in which the nozzles discharge thus effectively isolating the nozzle discharge fluids from the torque motor itself and the ambient atmosphere to prevent egress of the fluid being controlled and to prevent contamination or dilution of the fluid by the ambient atmosphere.

3,662,785

GRIPPER HEAD FOR USE IN A SHUTTLELESS LOOM

Nikolaus Kokkinis, Eriskirch, Germany, assignor to Lindauer Dornier Gesellschaft m.b.H., Friedrichshafen/Bodensee, Germany

Filed Apr. 10, 1970, Ser. No. 27,225
Claims priority, application Germany, Nov. 11, 1969, P 19 56553.8
Int. Cl. D03d *47/20*
U.S. Cl. 139—122 N 1 Claim



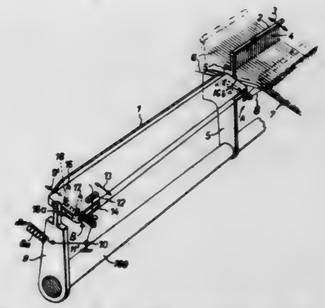
This invention relates to an improved gripper head for use in a shuttleless loom, the gripper head having a pair of clamping jaws for weft thread and the improvement comprising resilient ring-shaped covering means on one of said jaws.

3,662,786

WEFT THREAD INSERTING METHOD AND APPARATUS

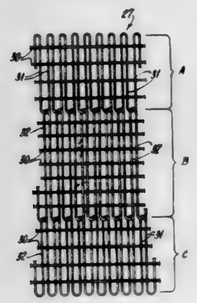
Allan William Henry Porter, Stosswald, Switzerland, assignor to Adolph Saurer, Ltd., Arbon, Switzerland

Filed Nov. 4, 1969, Ser. No. 873,996
Claims priority, application Switzerland, Nov. 5, 1968, 16482/68
Int. Cl. D03d *47/24*
U.S. Cl. 139—125 10 Claims



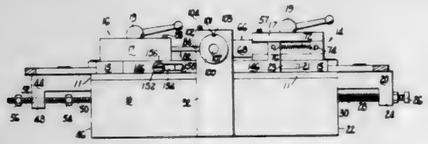
Weft threads are inserted into successive warp sheds in opposite directions by a shuttle which has at both ends frictional holding means which can be opened and closed, and frictionally guide in the closed position the weft thread along a tortuous path without clamping the weft thread. The respective trailing holding means receives and holds the inserted weft thread for the next pick and is automatically opened at the end of the same to release this thread at the same time as the previously leading holding means is opened and closed to receive and hold a new weft thread for the subsequent following pick when the leading and trailing positions of the two holding means are reversed.

3,662,787
NARROW ELASTIC FABRIC AND METHOD OF MAKING THE SAME
Antonio Schiappa, Pawtucket, and Richard E. Goff, Barrington, both of R.I., assignors to Johnson & Johnson
Filed June 26, 1970, Ser. No. 50,126
Int. Cl. D03d 15/08
U.S. Cl. 139—422 5 Claims



A narrow elastic fabric having a center portion having elasticity in both the longitudinal and transverse directions of the fabric and a pair of side portions. The side portions form the longitudinal edges of the fabric and have elasticity in only the longitudinal direction of the fabric. A method for manufacturing such a narrow elastic fabric by weaving elastic filling yarns in the center portion of the fabric and non-elastic filling yarns in each edge or side portion of the fabric.

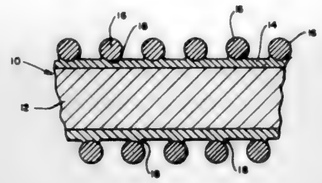
3,662,788
SPRING MAKING MACHINES AND METHODS
Terence J. L. Clarke; Robert C. Quarmby, and Kenneth Dennis, all of Union Works, Belgrave Road, Leicester, England
Filed Apr. 30, 1970, Ser. No. 33,271
Int. Cl. B21f 35/02
U.S. Cl. 140—103 6 Claims



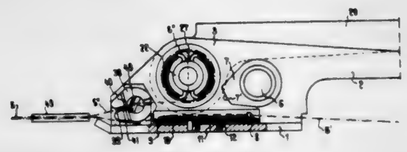
The invention relates to machines and methods for use in forming attaching loops in generally longitudinal orientation at or from end portions of coil springs. A spring is supported by support means of a machine with an end portion to be looped projecting therefrom. The projecting portion is operated upon by means or tools to bend it away from the remainder of the spring as to form a loop and then impart a permanent set to a portion of the wire of the spring whereby to retain the loop in a desired orientation.

3,662,789
MANDREL FOR MANUFACTURING FILAMENT COILS AND METHOD FOR MANUFACTURING FILAMENT COILS
Ronald C. Koo, Weehawken, and Joel Shurgan, Washington Township, both of N.J., assignors to Duro-Test Corporation, North Bergen, N.J.
Filed Aug. 24, 1970, Ser. No. 66,275
Int. Cl. B21f 45/00
U.S. Cl. 140—71.5 13 Claims

A mandrel and a method for manufacturing filament coils for electric lamps. The mandrel is coated with a material, such as copper, which does not alloy with the filament coil during annealing. The coil is wound on the coated mandrel and the mandrel is dissolved after the filament is annealed.



3,662,790
DEVICE FOR STRETCHING CASE RIBBONS OF PLASTIC MATERIAL
Rudolf Styner, Frauenkappelen, Switzerland, assignor to Strapex A. G., Wohlen, Switzerland
Filed Mar. 16, 1970, Ser. No. 19,776
Claims priority, application Switzerland, Mar. 20, 1969, 4201/69
Int. Cl. B21f 9/00
U.S. Cl. 140—123.6 12 Claims

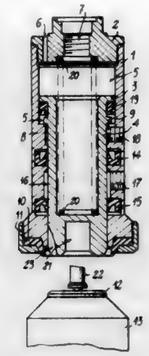


A device for stretching case ribbons of plastic material, having a clamping device for the one ribbon end, a cutting device and stretching mechanism for the other ribbon end and an actuating lever for the stretching mechanism and cutting device, the device being made of simple and cheap molded plastic parts combined with stamped metal parts, and said clamping device having clamping jaws of which the one only is toothed thereby allowing easy operation of the clamping device and careful treatment of the ribbon.

3,662,791
DEVICE FOR EVACUATING THE INTERIOR OF AN AEROSOL MATERIAL CONTAINER ON THE INLET OR MOUTH OF WHICH A BOTTOM PROVIDED WITH DISPENSING
Tomaso Ruscitti, Milan, Italy, assignor to Coster Technologie Speciali S.p.A., Milan, Italy
Filed June 18, 1970, Ser. No. 47,347
Int. Cl. B65b 31/04
U.S. Cl. 141—65 5 Claims

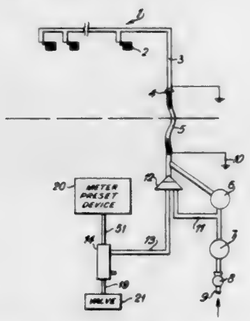
Device for evacuating the interior of an aerosol material container on the inlet or mouth of which a bottom provided with dispensing valve merely bears, the device comprising a rigid body having a recess opening to the outside at an aperture where a resilient sleeve is mounted having a projecting free edge. Within the recess of the rigid body is mounted and movable a piston having a stem between which and the rigid body two gaskets are in sealing relationship and define a chamber connected to a suction pump. The piston is movable between a lowered position where the lower end of the stem

extends adjacent said aperture and the two gaskets are both at sealed conditions, and a raised position where the lower



end of the stem is moved away from said aperture and the lower gasket is no longer at a sealed condition.

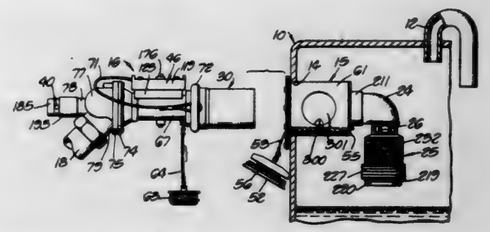
3,662,792
ANTI-OVERSPILL CONTAINER FILLING APPARATUS
Ian James Grant, Orpington, England, assignor to The British Petroleum Company Limited, London, England
Filed Feb. 6, 1970, Ser. No. 9,183
Claims priority, application Great Britain, Feb. 6, 1969, 6,476/69
Int. Cl. B67d 5/04
U.S. Cl. 141—198 13 Claims



A pneumatically operated overspill prevention system to close a control valve in a liquid supply line if a liquid level sensor mounted in a container being filled responds to a predetermined liquid level. The system includes a pneumatically extensible member mounted in linkage between the valve and a conventional preset meter with the linkage collapsing and the valve automatically returning to a closed position in the event the sensor detects an excessive liquid level. The entire system is pneumatic and is failsafe in that the valve automatically opens in the event of failure of the compressed air supply of the control assembly.

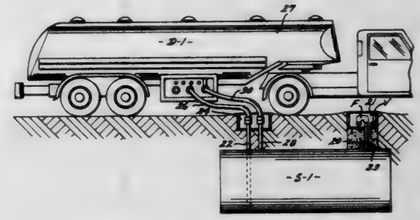
3,662,793
CLOSED SYSTEM LIQUID TRANSFER APPARATUS WITH PRESSURE-SENSITIVE SHUT-OFF
Jay V. Calisher, Montebello, and Ross E. Burbick, Bellflower, both of Calif., assignors to E. B. Wiggins, Inc., Los Angeles, Calif.
Filed Oct. 29, 1969, Ser. No. 872,146
Int. Cl. B65b 1/30, 3/26; B67d 5/372
U.S. Cl. 141—198 5 Claims

A vented tank has a receptacle fitting at its fill port that mates with a nozzle on the end of a supply hose. Both the receptacle fitting and the nozzle have normally closed valves which open in response to mating of the two parts. The nozzle fitting is equipped with a normally closed snap acting valve which is cocked open during the filling operation and



snaps closed in response to abrupt rise in back pressure in the receptacle fitting. The receptacle fitting is equipped with a float valve which closes to cause the abrupt rise in back pressure as the tank fills.

3,662,794
VAPOR CONTROL SYSTEM FOR AN UNDERGROUND STORAGE TANK
Deane S. Turner, 5902 Franmar Circle, Huntington Beach, Calif.
Filed Nov. 23, 1970, Ser. No. 91,719
Int. Cl. B65h 39/04
U.S. Cl. 141—290 5 Claims

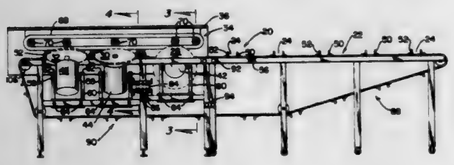


A vapor control system for an underground storage tank for gasoline or the like. In this system the underground tank is provided with a vent pipe having its discharge end disposed within an exhaust chamber arranged closely adjacent the ground. This eliminates the conventional comparatively tall vent stack which permits air to escape into the atmosphere as the underground storage tank is filled with gasoline or the like. The vapor control system also includes a vapor discharge pipe that extends from the underground storage tank to the interior of the delivery truck to transfer vapors displaced from the tank into the truck as the tank is filled by the truck.

3,662,795
APPARATUS FOR FORMING STAKES, BRIDGING AND THE LIKE
Donald R. Heflin, Fort Collins, Colo., assignor to R. Edward Burton, Fort Collins and Duane C. Burton, Boulder, Colo., part interest to each
Filed Sept. 25, 1969, Ser. No. 860,969
Int. Cl. B27b 5/00; B27m 3/32
U.S. Cl. 143—38 10 Claims

Apparatus for forming stakes, bridging and the like from new or scrap material particularly from pieces of material of similar but varying cross-sectional dimensions. The apparatus includes a conveyor means having a plurality of laterally disposed pockets longitudinally spaced therealong, three saws one of which is disposed along one side of the conveyor means and the remaining saws being disposed along the other

side of the conveyor means, means for securely holding within each pocket during the sawing operation the pieces of material to be disposed therein to prevent vertical movement thereof relative to the saws, shield means disposed in partial encompassing engagement about said pocket as same pass adjacent to saws and about said saws, and means for driving the conveyor means and the saws. Each of the pockets has opposed wall means for limiting longitudinal movement of the pieces of material to be disposed therein relative to the



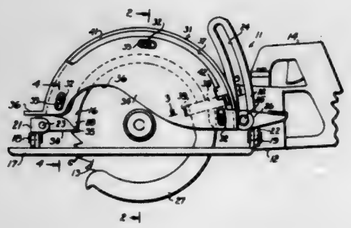
conveyor means. Each of the saws is mounted for pivotal movement about a corresponding line disposed parallel to the longitudinal axis of the conveyor means. The driving means includes a separate electric motor for each saw, each saw being mounted upon the shaft of its corresponding motor. A fourth saw may also be mounted along the other side of said conveyor means. An apparatus for forming stakes is obtained by using a guide rail in lieu of a saw along said one side. An apparatus for forming bridging is obtained by using one saw on each side of said conveyor means.

3,662,796

SAWDUST DEFLECTOR FOR PORTABLE SAW

Nello Batistelli, 9929 South Downey & Sanford Bridge Rd., Downey, Calif.

Filed Nov. 6, 1970, Ser. No. 87,412
Int. Cl. B27g *19/00*
U.S. Cl. 143—159 H **3 Claims**



A deflector mountable on the saw blade guard of a portable rotary saw for deflecting sawdust, splinters and other cuttings, comprising a transparent semi-circular channel member adapted to be attached to the saw guard of the saw and effective to deflect the cuttings downwardly without interfering with the operator's view of the saw blade and workpiece at the cutting point.

3,662,797

SCREWDRIVING APPARATUS

George A. Healis, Fort Lauderdale, Fla., assignor to Behring Corporation, Fort Lauderdale, Fla.

Filed June 18, 1970, Ser. No. 47,412
Int. Cl. B23p *19/06*; B25b *21/00*
U.S. Cl. 144—32 **6 Claims**

A rotary screwdriver tool is movable reciprocatively along a linear path to drive a screw temporarily held by screw holders fitting together to retain a screw in the path of the tool. The screw holders are separable as the tool passes between them. Screws are fed successively to the holders by feed means. A cam device further separates the holders during the return stroke of the tool to release any screw which fails to



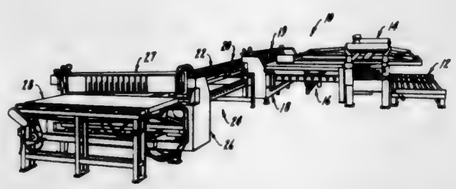
enter the work. The operation of the apparatus is controlled pneumatically.

3,662,798

METHOD OF CUTTING PANELS

James W. Campbell, Fort Worth, Tex., assignor to Wetoma Corporation, Ft. Worth, Tex.

Filed Feb. 17, 1969, Ser. No. 805,943
Int. Cl. B27b *5/06*
U.S. Cl. 144—326 **8 Claims**



The method and apparatus for efficiently cutting accurately sized panels in an unlimited combination of sizes and shapes from larger sheets. The sheets are automatically counted and stacked on a gauge table, the stack is clamped by jaws which establish a reference line relative to a cutting station, and the stack is advanced along the table for accurately dimensioned rip cuts. One or more of these cut stacks are then moved on a rip run-out unit to a cut-off infeed and gauge table where they are automatically aligned, clamped to establish a second reference line, and accurately advanced to a cut-off station where cross-cut sawing produces finished panels. The stacks are moved and gauged by either digital or analog hydraulic servo motors which accurately position the reference lines relative to the saw stations by controlled deceleration of the load to stop the stacks. At each saw station holddowns prevent sheet displacement as the saw traverses. Each saw automatically senses cutting load and returns to its initial position immediately upon finishing a cut. Linear saw speed is controlled as a function of saw load. Means are provided to automatically remove trim and scrap.

3,662,799

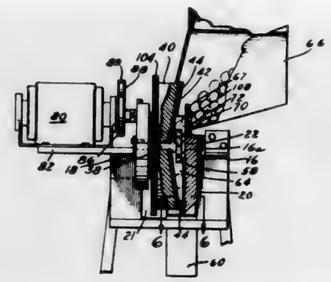
NUT CRACKING APPARATUS

Paul W. Shaw, 2151 West Road, Whittier, Calif.

Filed Apr. 20, 1970, Ser. No. 29,821
Int. Cl. A23n *5/04*
U.S. Cl. 146—11 **11 Claims**

Apparatus for cracking nuts, without crushing the kernels thereof, having a fixed plate with a cutting blade and a

rotatable wheel adjacent the plate and having radially arranged cutting blades cooperable with the blade of the plate, the side of the wheel adjacent the plate being in the shape of a shallow frustum, so that the space between the plate and the wheel comprises an operating compartment or chamber.



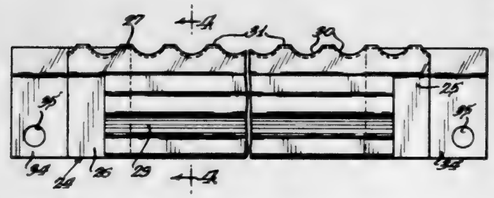
The nuts are fed to the chamber one at a time and, at the bottom of this chamber, the nuts are cracked between the blade of the plate and one of the blades of the wheel. The nuts are cut and twisted by the blades so that the kernels are freed whole and the shells and kernels fall from the operating chamber to a receptacle therefor.

3,662,800

FEED CONVEYOR FLIGHT

Kelly P. Ryan, Blair, Nebr., assignor to Blair Manufacturing Co., Inc.

Filed Jan. 30, 1970, Ser. No. 7,147
Int. Cl. B26d *1/04*
U.S. Cl. 146—129 R **9 Claims**



A flight construction for use in a conveyor for conveying feed from a collection thereof. The flight is arranged to mix the feed by integral self-cleaning means adapted to break up the feed such as by a tearing or cutting operation.

3,662,801

COMPOSITION CAUSING COMBUSTION WHEN CONTACTED WITH WATER

Karl Schneider, Basel, Switzerland, assignor to Scheidemandel-Metard-Werke AG, Berlin-Spandau, Germany

Filed May 15, 1969, Ser. No. 825,059
Claims priority, application Switzerland, May 24, 1968, 7573/68
Int. Cl. C06b *19/02*
U.S. Cl. 149—5 **16 Claims**

A material for causing combustion which includes a carbide capable of reacting with water to form an inflammable gas, an igniter in the form of a metal such as sodium and, optionally, an amide or peroxide of an alkali metal or an alkaline earth metal, and/or other compounds evolving oxygen.

3,662,802

HYDRAZINE PERCHLORATE LITHIUM PERCHLORATE EUTECTICS

Stanley F. Bedell, Andover, Mass., assignor to Monsanto Research Corporation, St. Louis, Mo.

Filed July 2, 1962, Ser. No. 207,460
Int. Cl. C06d *5/00*, *5/06*
U.S. Cl. 149—36 **3 Claims**

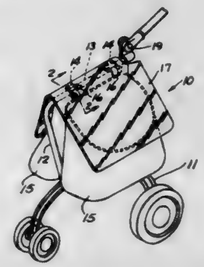
1. A hydrazine perchlorate/lithium perchlorate eutectic, molar ratio of hydrazine perchlorate to lithium perchlorate selected from 1:1 and 1:2.

3,662,803

MAIL BAG PROTECTOR

Joseph J. Kuvik, 4601 West 97th Place, Oak Lawn, Ill.

Filed Sept. 25, 1970, Ser. No. 75,351
Int. Cl. B65d *65/02*
U.S. Cl. 150—52 R **1 Claim**



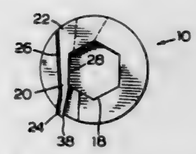
A mail bag protector for protecting mail bags suspended on a cart of the type having the mail bags secured to the cart by means of cleats on the cart over which rings secured to the bag are engaged. The protector consist of a flexible transparent plastic panel having rings secured centrally thereof for engagement over the cleats on the cart with the panel overlying the open top of the bags. In a modified form of the invention the rings are magnetized to improve their grip with the cleats.

3,662,804

SELF-LOCKING FASTENERS

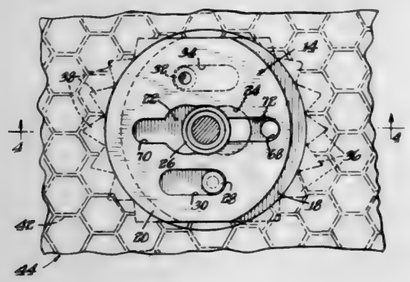
Leo L. Krywitsky, Toronto, and Robert S. Morrow, Weston, Ontario, both of Canada, assignors to said Krywitsky, by said Morrow

Continuation of application Ser. No. 737,685, June 17, 1968, now abandoned. This application Jan. 29, 1970, Ser. No. 6,752
Int. Cl. F16b *39/30*, *39/02*, *39/00*
U.S. Cl. 151—14 **2 Claims**



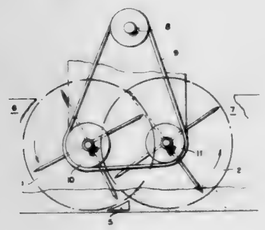
A self-locking screw having an elongated beam extending transversely of the screw at one end of the screw. The beam is formed from the material of the screw and has a length less than the diameter of the screw. A distal end of the beam is adapted to engage the axial wall of a generally cylindrical opening to lock the screw in place. A removal tool is also provided to remove the screw. The tool engages in a tool-engaging well in the screw and deflects the beam radially inwards to disengage the beam from the wall of the opening.

3,662,805
PANEL INSERT DEVICE
Henry A. Sygnator, Arlington Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed May 19, 1970, Ser. No. 38,782
Int. Cl. F16b *39/00*
U.S. Cl. 151—41.73 12 Claims



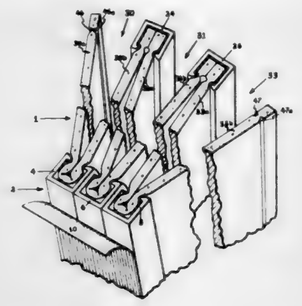
The present invention relates generally to screw accommodating insert devices for installation in panels and more particularly to insert devices adapted for installation in relatively light weight panel structures such as panels comprised of a honeycomb type core bounded by skin sheets. The embodiments of the invention disclosed herein include an adapter member to be accommodated by a complementary cavity formed in a panel, said adapter having a central screw accommodating aperture and hub section, the over all axial extent of the adapter being not substantially greater than the thickness of the panel with which it is to be used. The insert device also includes a pair of superimposed apertured plate members telescopically associated with the hub section and shiftable laterally thereof between concentric and eccentric relation with respect to the hub axis.

3,662,806
AGITATOR FOR BELT CONVEYOR
Kenneth Ridgway, Reading, England, assignor to Fisons Limited, Suffolk, England
Filed June 4, 1970, Ser. No. 43,419
Claims priority, application Great Britain, June 13, 1969, 30,100/69
Int. Cl. B01f *15/00*
U.S. Cl. 259—2 10 Claims



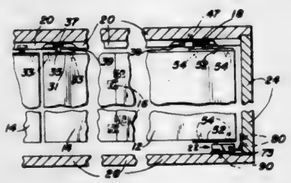
A machine for agitating (or for breaking up agglomerates in) a material, preferably a pharmaceutical composition, on a conveyor, comprising two rotors rotatable in the same sense and having inter-meshing pins, and a 'plough share' co-operating with the rotors to carry material off the conveyor and into the milling zone between the two rotors. A process of milling a material on a conveyor is also provided.

3,662,807
DISPLAY DEVICES
Melvin M. Miller, 3302 Stoney Crest, Bloomington, Ind.
Filed June 29, 1970, Ser. No. 50,586
Int. Cl. A47g *5/00*
U.S. Cl. 160—135 10 Claims



A display device having a composite hinged section which is adapted to receive a plurality of display panels. The hinge section generally consist of a hinge means and a plurality of display panel retaining means. In the preferred embodiment the hinged section is formed from a plurality of U shaped channels the backs and or side of which are connected in such fashion that the individual channels can move in a plane which is parallel with the axis of said channels. The channels can be connected by a plurality of means. It is preferred that a hinge be formed by a sheet material which is attached to the display panel retaining means or that the hinge be an integral part of the display panel retaining means.

3,662,808
BIFOLD DOOR HARDWARE
James A. Edeus, Rock Falls, Ill., assignor to National Manufacturing Co., Sterling, Ill.
Filed Mar. 2, 1970, Ser. No. 15,360
Int. Cl. E05d *15/26*
U.S. Cl. 160—206 9 Claims



Bifold door hardware includes a socket member mounted on an overhead support structure for receiving an upstanding pivot pin on the top edge of the door, and a jamb bracket assembly mounted below the bottom edge of the door for receiving and supporting a depending pivot pin on the bottom edge of the door. The socket member includes a mounting base, a resilient clip extending from one side of the base and having in its distal end a pin-receiving socket hole, and a bumper tab extending from the opposite side of the base. The jamb bracket assembly includes a bracket adapted to be fastened to the support structure, a housing adjustably connected to the bracket for adjusting the horizontal position of the door relative to the support structure, and a helical cam rotatably mounted in the housing below a pivot-pin receiving hole in the top wall thereof for adjusting the vertical position of the door.

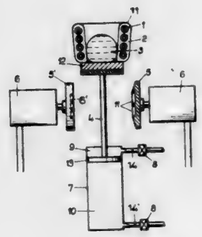
3,662,809
METHOD OF PRODUCING METAL CASTINGS BY USING INSULATING PADS IN THE MOLD
John Ernest Gotheridge, Stoneybrook Drive, North Olmsted, Ohio; Jack Morgan, 5059 Douglas Drive, North Olmsted, Ohio, and Edward John Jago, 226 Edgewood Drive, Bera, Ohio
Filed Oct. 3, 1969, Ser. No. 863,700
Claims priority, application Great Britain, Oct. 3, 1968, 47,040/68
Int. Cl. B22d *27/04*
U.S. Cl. 164—53 6 Claims

By incorporating in sand moulds, at or near places where there is risk of insufficient metal feed during casting, pads of bonded fibrous refractory material, metal feed may be substantially improved and the need for padding the casting avoided.

3,662,810
METHOD OF INTERNAL NUCLEATION OF A CASTING
Albert M. Talbot, Mountain Lakes, and Henry W. Soller, Dover, both of N.J., assignors to Howmet Corporation
Filed Sept. 2, 1969, Ser. No. 854,775
Int. Cl. B22d *27/02*
U.S. Cl. 164—57 4 Claims

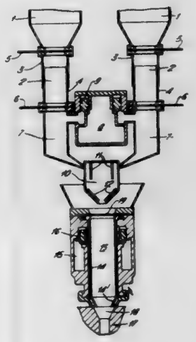
This disclosure relates to methods for nucleating castings to control their grain formation and teaches the addition of a slug of solid material to the superheated melt shortly before pouring for the purpose of forming and maintaining crystalline dendrite fragments in the melt during and after it has been poured into the mold.

3,662,811
METHOD OF CASTING BY CATCHING FREE-FALLING MOLTEN METAL MASS
Paul Esslinger, Frankfurt am Main, and Rudolf Walkling, Frankfurt am Main-Bockenheim, both of Germany, assignors to The Battelle Development Corporation, Columbus, Ohio
Filed June 30, 1969, Ser. No. 837,726
Claims priority, application Germany, July 3, 1968, P 17 58 596.5
Int. Cl. B22d *27/10, 35/00*
U.S. Cl. 164—113 4 Claims



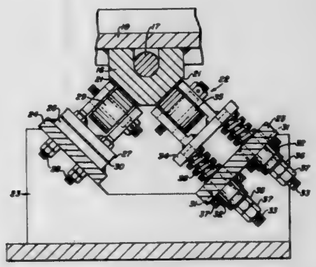
Manufacturing cutting tools from rapidly solidifying alloys in which the molten alloy mass is rapidly transferred between a pair of operating movable mold means which are provided with suitable recesses for forming said molten alloy mass into the desired shape. The pair of mold means are adapted to rapidly cool the molten alloy mass while it is being shaped.

3,662,812
APPARATUS FOR MIXING SAND/RESIN/CATALYST AND BLOWER-FORMING FOUNDRY CORES
Ronald G. Godding, Birmingham, England, assignor to British Cast Iron Research Association, Birmingham, England
Original application May 9, 1967, Ser. No. 637,222, now Patent No. 3,472,307, dated Oct. 14, 1969. Divided and this application Aug. 26, 1969, Ser. No. 870,820
Claims priority, application Great Britain, May 14, 1966, 21,507/66
Int. Cl. B22c *15/24*
U.S. Cl. 164—193 8 Claims



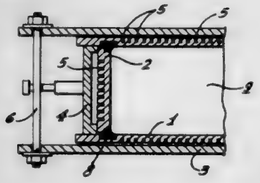
Foundry cores (and possible also molds) are formed using a fast-curing resin by putting the resin in one body of sand and the resin-curing catalyst in another body of sand, blowing these two bodies into a common chamber and then immediately transferring the resulting mixture, for example by blowing, to the core-forming or mold-forming cavity.

3,662,813
GUIDE MECHANISM FOR OSCILLATING CONTINUOUS CASTING MOLD
James T. Stull, Jackson Township, Butler County, Pa., assignor to United States Steel Corporation
Filed Aug. 6, 1970, Ser. No. 61,568
Int. Cl. B22d *11/00*
U.S. Cl. 164—273 5 Claims



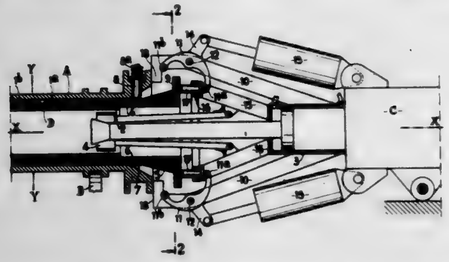
A conventional continuous-casting mold oscillates vertically. Invention is an improved guide mechanism for maintaining the mold in alignment with parts beneath and holding the mold firmly as it oscillates. The frame which carries the mold has vertically extending guide rails of hollow V-shape in cross section on opposite sides. Rails are engaged by rollers, one of which is spring mounted. Hold-down rods for the oscillating mold frame extend lengthwise through the rails.

3,662,814
MOLD FOR CONTINUOUS CASTING OF METAL
Adolf Kipp, Ouerbruck, Germany; Walter Stockinger, Torshalla, Sweden, and Peter J. Konig, Zumikon, Switzerland, assignors to Concast AG, Zurich, Switzerland, a part interest
Filed Aug. 28, 1969, Ser. No. 853,698
Claims priority, application Germany, Aug. 24, 1968, P 17 58 867.9
Int. Cl. B22d *11/02*
U.S. Cl. 164—283 15 Claims



A mold for continuous casting is disclosed having plates joint at corner pieces, whereby a corner piece is bolted to a plate and tensioned against the other plate at that corner.

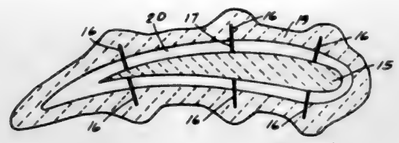
3,662,815
DEVICE FOR LOCKING AND EXTRACTING A CENTRIFUGAL CASTING SHELL AND REMOVING THE CAST PART FROM THE SHELL
Jean Roger Bouyt, Fumel, France, assignor to Centre De Recherches De Pont-A-Mousson, Maidieres, Pont-A-Mousson, France
Filed Feb. 1, 1971, Ser. No. 111,223
Claims priority, application France, Feb. 4, 1970, 7003938
Int. Cl. B22d *13/10*
U.S. Cl. 164—292 5 Claims



Device for locking a shell in, or extracting the shell from, a sleeve of a centrifugal casting machine for casting tubular parts. The device has tong means for extracting the part which are connected to an extracting carriage movable in the axial extension of the sleeve. Locking means for locking the shell in the sleeve are combined with a head having a flange and connected to move axially with the shell. Hooking members pivotably mounted with respect to the carriage cooperate with the flange and are adapted to exert a push or a pull on the head and shell for respectively locking or unlocking the shell. The extracting carriage also carries counter-support abutments for the sleeve.

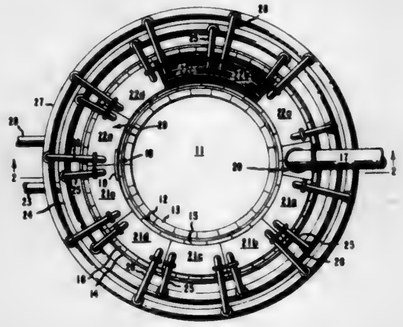
3,662,816
MEANS FOR PREVENTING CORE SHIFT IN CASTING ARTICLES
Thomas H. Bishop, Alliance, and Kenneth K. Young, Jr., Paris, both of Ohio, assignors to TRW Inc., Cleveland, Ohio
Original application Oct. 1, 1968, Ser. No. 764,208, now Patent No. 3,596,703. Divided and this application Apr. 30, 1970, Ser. No. 43,624
Int. Cl. B22c *9/10, 21/14*
U.S. Cl. 164—366 1 Claim

Shell-type casting molds for producing hollow cast articles, the mold being built up by forming a low melting pattern about a ceramic core, inserting thin metal pins through the pattern and into engagement with the core, forming a shell mold about the resulting pattern so that the ends of the pins



are anchored in the resulting shell mold, removing the meltable pattern, and casting the molten metal into the cavity thus produced whereby the molten metal dissolves the pins and no holes appear in the finished article.

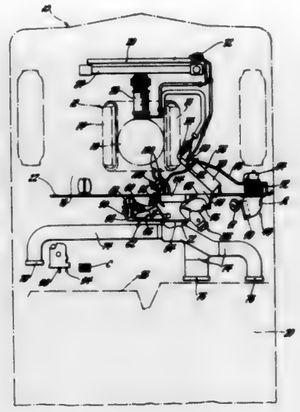
3,662,817
PROCESS FOR ACCOMPLISHING HEAT EXCHANGE BETWEEN A CORROSIVE LIQUID PROCESS STREAM AND A SECOND LIQUID
Earl L. Kendrick, and Harry W. Sandberg, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed May 26, 1970, Ser. No. 40,584
Int. Cl. F28c *7/06*
U.S. Cl. 165—1 9 Claims



The use of a plurality of heat exchange bundles, each comprising a plurality of tubular elements made from an organic polymeric composition and disposed serially in a narrow channel through which a heat exchange liquid flows in a manner such that substantially all of the flowing heat exchange liquid comes into contact with the tubular elements of each bundle before passing to the next bundle, thereby developing a temperature gradient in the fluid within the channel, provides a heat exchange system which is particularly useful in cooling hot process streams.

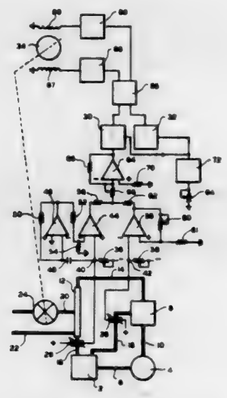
3,662,818
VAPOR TRANSFER
John Snyder, Lockport, N.Y., assignor to General Motors Corporation, Detroit, Mich.
Filed May 11, 1970, Ser. No. 36,078
Int. Cl. B60h *3/04*
U.S. Cl. 165—23 5 Claims

In preferred form, an automobile heating and air conditioning system having a plenum chamber containing a heater core and an evaporator core, and a closable purge outlet opening into the passenger compartment. When the heating and air conditioning system is inoperative, the purge outlet allows air to flow through the plenum chamber and into the passenger compartment to prevent the formation of odor and humidity in the chamber. When the system is operative to heat, cool or ventilate the automobile interior, the purge outlet is blocked by a pivotal door which also directs air through



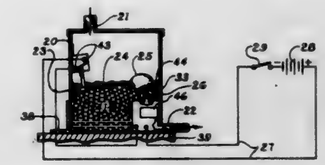
a heater outlet for distribution into the passenger compartment.

3,662,819
FLUID TEMPERATURE CONTROLLER
Rolland L. Hartline, Jr., Buchanan, Mich., assignor to Clark Equipment Company
Filed Oct. 9, 1970, Ser. No. 79,417
Int. Cl. F25b *29/00*
U.S. Cl. 165—26 10 Claims



Apparatus for controlling the operating fluid temperature in a closed fluid circuit including a torque converter and a heat exchanger in which the heat generated in the torque converter fluid varies widely and in which part of the fluid bypasses the heat exchanger. An electrical signal is generated whose amplitude is dependent on the temperature of the fluid leaving the heat exchanger which signal is modified to reflect the rate of change of this temperature. A second signal is generated, the amplitude of which is dependent on the temperature of the fluid bypassing the heat exchanger and this signal is modified to reflect the percentage of the fluid bypassing the heat exchanger. These signals are combined and the resulting signal is compared at preselected intervals to a standard signal representing the desired fluid temperature to control the coolant flow through the heat exchanger.

3,662,820
RADIATOR OVERFLOW APPARATUS
Bob N. Myer, 4834 Wanamaker Drive, Indianapolis, Ind.
Filed Feb. 18, 1970, Ser. No. 12,270
Int. Cl. F01p *11/02*
U.S. Cl. 165—51 2 Claims



An apparatus for allowing excess radiator fluid to overflow without loss of fluid. An overflow tank is connected to an overflow tube in the top of the radiator. The exit tube of the overflow tank is connected to the radiator hose and a valve is provided which prevents fluid from flowing into the overflow tank from the radiator hose. A pump is provided within the overflow tank to pump the fluid held by the tank into the radiator hose. The pump is battery powered and may be energized by automatic or manual means.

3,662,821
HEAT TRANSFER ROLL WITH SEPARATE TEMPERATURE ZONES FOR PROCESSING MATERIALS
Daniel I. Saxon, Route 10, Otari Drive, Kingsport, Tenn.
Filed Feb. 1, 1971, Ser. No. 111,346
Int. Cl. F28f *5/02*
U.S. Cl. 165—89 3 Claims



Heat transfer roll for processing materials and having separate temperature zones along its outer surface. The roll has an outer shell and an inner shell with a series of serpentine channels formed between the two shells along a predetermined length of the roll, and with a helical channel formed between the two shells around the roll along the remaining length of the roll. A heat transfer medium circulates through the serpentine channels and is of a different temperature than the heat transfer medium that flows along the helical channel. The two channels are arranged so as to establish along part of the length of the roll working surface a uniform temperature zone above the serpentine channels and along the remaining length of the roll working surface a temperature gradient zone above the helical channel. The temperature from the uniform temperature zone is conducted in part to the adjacent temperature gradient zone to minimize possibility of thermal shock due to differential expansion.

3,662,822
METHOD FOR PRODUCING A BENTHONIC WELL
Charles E. Wakefield, Jr., Dallas, Tex., assignor to Atlantic Richfield Company, New York, N.Y.
Continuation of application Ser. No. 595,790, Nov. 21, 1966, which is a continuation-in-part of application Ser. No. 498,851, Oct. 20, 1965, now Patent No. 3,332,481, dated July 25, 1967. This application May 12, 1969, Ser. No. 823,734
Int. Cl. E21b *33/035*
U.S. Cl. 166—.5 4 Claims

This invention relates to a method for production of oil and gas from an underwater formation with a remotely con-

trollable production head positioned proximate the ocean floor. According to the method described, an apertured landing base is installed at the formation and a well casing attached to the lower end of the production head is lowered through the base into the well and landed on the base.



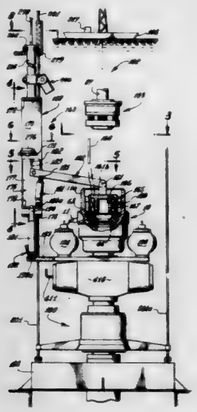
Production tubing is then secured to a tubing hanger mandrel and lowered through the well and production head and landed in the production head. The production head is then plugged and the well produced through side outlets in the production head without connection to the structure at the ocean surface.

3,662,823

REPLACEMENT OF SUB-SEA BLOW-OUT PREVENTER PACKING UNITS

Fernando Murman, Palos Verdes Peninsula; George E. Lewis, Arcadia; Allen I. Dunn, Los Angeles, and Charles E. O'Brien, Whittier, all of Calif., assignors to Hydril Company, Los Angeles, Calif.

Filed July 31, 1970, Ser. No. 60,066
Int. Cl. E21b *33/035*
U.S. Cl. 166—.6 **6 Claims**



A method of retrieving a blow-out preventer packer from a blow-out preventer body at a sub-sea well head location includes the steps:

a. elevating, relative to the body, a packer holddown means to vertically expose the packer for removal, in the sea,

b. moving a packer retrieval tool laterally and downwardly to penetrate the body, and effecting lifting attachment of the tool to the packer, and

c. moving said tool with the packer attached thereto upwardly and laterally in the sea to lift the packer out of vertical alignment with the body, for subsequent elevation of the packer to the surface.

3,662,824

SELF-CLOSING, SUB-SURFACE WELL SAFETY VALVE

John S. Page, Jr., 2842 Fifth Street, Boulder, Colo.

Filed Oct. 5, 1970, Ser. No. 77,811
Int. Cl. E21b *33/10*
U.S. Cl. 166—72 **14 Claims**



Sub-surface well flow control apparatus comprises:

a. a tubular body,

b. production tubing extending into the well below said body,

c. a source of control fluid pressure,

d. actuator means cooperating with the body and responsive to sufficient increase of control fluid pressure application to elevate the tubing within a limited range, and to sufficient reduction of said fluid pressure application to effect lowering of the tubing, and

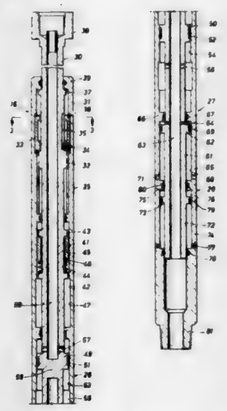
e. valving means responsive to said lifting and lowering of the tubing to change the rate of production flow from the tubing to the upper interior of the body.

3,662,825

WELL TESTER APPARATUS

Benjamin P. Nutter, Bellville, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed June 1, 1970, Ser. No. 42,373
Int. Cl. E21b *49/00*
U.S. Cl. 166—152 **9 Claims**



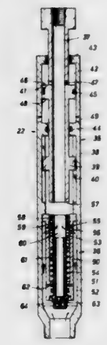
A drill stem tester assembly is disclosed including an inner member movable upwardly and downwardly within an outer member, valve means for opening and closing a test passage through said members in spaced longitudinal positions, a balance piston on said inner member having its upper and lower faces subjected respectively to the pressure of fluids within the inner member and in the well annulus, and a bias piston responsive to the hydrostatic head of fluids in the annulus to apply upward force to said inner member.

3,662,826

OFFSHORE DRILL STEM TESTING

David E. Young; James W. Kisling, III, both of Houston, and Benjamin P. Nutter, Bellville, all of Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed June 1, 1970, Ser. No. 42,374
Int. Cl. E21b *49/00*
U.S. Cl. 166—152 **11 Claims**



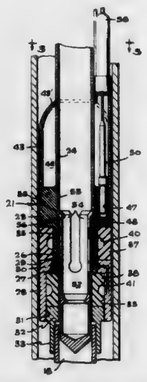
Apparatus for offshore drill stem testing from a floating vessel using a tester operated by upward and downward motion and coupled to a packer by a slip joint, the equipment being suspended in the well bore on upper and lower pipe string sections connected together by a slip joint. The tester and slip joints are balanced with respect to fluid pressure so that a sequence of free points observed on the rig weight indicator at the surface provides positive indications of operation of the tools.

3,662,827

WELL CONTROL MEANS

August L. Segelhorst, 211 Las Alturas, Santa Barbara, Calif.

Filed Aug. 25, 1970, Ser. No. 70,625
Int. Cl. E21b *33/127*
U.S. Cl. 166—187 **13 Claims**



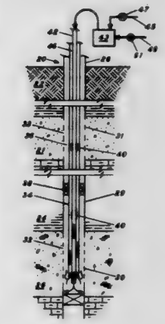
A control device for mounting in a well tubing and serving in place of a short section thereof, embodying normally retracted, expansible seal means to close the annular space around the device inside the well casing and to close the passage through the device, together with its own supply of pressure fluid for expanding the seal means, and remote control means to operate and test the seal means.

3,662,828

THROUGH TUBING WELL CLEANOUT METHOD USING FOAM

Stanley O. Hutchison, Bakersfield, Calif., assignor to Chevron Research Company, San Francisco

Filed Sept. 11, 1970, Ser. No. 72,934
Int. Cl. E21b *21/00*
U.S. Cl. 166—312 **3 Claims**



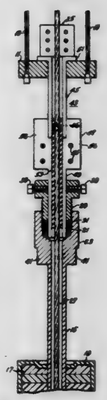
A method of cleaning out a well having a production tubing located therein without removing the production tube from the well by providing a flushing tube inside the production tube, generating pre-formed foam having a liquid volume to gas volume ratio in the range of from 0.05 to 0.1, injecting said foam into the flushing tube and down the well at a pressure within the range of from 350 to 1,000 or more psi and circulating the foam up the annulus between the production tube and the flushing tube while maintaining the annular velocity of the foam within the range of from 600 to 1,000 feet per minute.

3,662,829

POLISHED ROD LINER EXTENSION

Robert H. Gault, Midland, Tex., and Robert F. Joy, Bethlehem, Pa., assignors to Bethlehem Steel Corporation

Filed July 2, 1970, Ser. No. 51,874
Int. Cl. E21b *33/04*
U.S. Cl. 166—84 **14 Claims**



A tubular extension is secured to the upper portion of a polish rod liner and suspends it from a carrier bar. Improved sealing is provided by a resilient lining within a portion of the extension.

3,662,830

AQUEOUS HYDRAULIC CEMENT COMPOSITION HAVING IMPROVED RETARDATION TO SET AND USE THEREOF IN HIGH TEMPERATURE ENVIRONMENTS

Robert C. Martin, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Filed June 1, 1970, Ser. No. 42,569
Int. Cl. E21b *33/13*; C04b *13/28*
U.S. Cl. 166—293 5 Claims

In a method of cementing at relatively high ambient temperatures employing an aqueous hydraulic cement slurry, the improvement comprising admixing therewith an effective amount of both (1) a salt of lignosulfonic acid and (2) boric acid or a borate whereby a synergistic retarding effect on the setting rate of the slurry is attained without any accompanying adverse effects.

3,662,831

METHOD FOR SEALING EARTH FORMATIONS

Patrick H. Hess, Diamond Bar, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 28, 1970, Ser. No. 68,032
Int. Cl. E21b *33/138*
U.S. Cl. 166—295 11 Claims

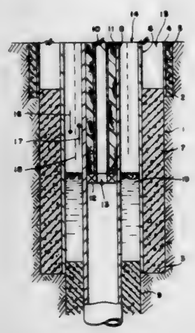
Porous earth formations are sealed by alternately injecting concentrated phosphoric acid and furfuryl alcohol into the formations.

3,662,832

INSULATING A WELLBORE IN PERMAFROST

William A. Keeler, and Frank J. Schuh, both of Dallas, Tex., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Apr. 30, 1970, Ser. No. 33,223
Int. Cl. E21b *43/24*
U.S. Cl. 166—302 9 Claims



A method and apparatus for maintaining at least a portion of the interior region of a wellbore thermally insulated from the wall of the wellbore wherein a single zone in the wellbore is utilized for the introduction, circulation, and return of cooling fluid.

3,662,833

METHODS AND APPARATUS FOR COMPLETING PRODUCTION WELLS

James W. Kisling, III, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed June 3, 1970, Ser. No. 43,066
Int. Cl. E21b *43/00*
U.S. Cl. 166—314 20 Claims

This application discloses new and improved methods and apparatus for completing production wells having perforations which either are to be cleaned or penetrate earth formations which are to be fractured, acidized, or treated such as, for example, to inhibit the subsequent production of unconsolidated formation materials. To practice the present invention, a new and improved production tool is arranged for coupling into a string of production tubing and includes a typical well packer coupled to an elongated tubular member defining an enclosed chamber of a substantial volume and which is initially maintained at a reduced pressure by a selectively-releasable tubing plug and a new and improved normally-closed valve respectively arranged at the upper and lower ends of the tubular member. The production string and the tool are installed in a cased well bore with the packer being set above a previously-perforated interval traversing an



earth formation which is to be subsequently produced. Once the customary wellhead equipment is installed, the normally-closed valve is selectively opened by rotating the production string from the surface. Upon opening of this valve, formation fluids will be suddenly exhausted into the reduced-pressure chamber for removing contaminants that may have previously entered the formation following the perforation of the casing so as to leave only uncontaminated formation materials immediately surrounding the perforations. Thereafter, the tubing plug is removed to permit selected fluids to be pumped by way of the production string through the perforations and into the adjacent earth formations.

3,662,834

METHODS AND APPARATUS FOR COMPLETING PRODUCTION WELLS

David E. Young, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed June 3, 1970, Ser. No. 43,067
Int. Cl. E21b *43/00*
U.S. Cl. 166—314 20 Claims



This application discloses new and improved methods and apparatus for completing production wells having perforations which either are to be cleaned or penetrate earth formations which are to be fractured, acidized, or treated such as, for example, to inhibit the subsequent production of unconsolidated formation materials. To practice the present invention, a new and improved production tool is arranged for coupling into a string of production tubing and includes a typical well packer having an elongated tubular member dependently coupled therebelow and capped at its lower end for defining an enclosed chamber of a substantial volume below the packer which is initially maintained at a reduced pressure by a new and improved normally-closed pressure-actuated valve arranged at the upper end of the tubular member. The production string and the tool are installed in a cased well bore with the packer being set above a previously-perforated interval traversing an earth formation which is to be subsequently produced. Once the customary wellhead equipment is installed to provide communication from the surface with the tubing, the normally-closed valve is selectively opened by increasing the pressure of the fluids in the production string above the packer. Upon opening of this valve, formation fluids will be suddenly exhausted into the reduced-pressure chamber for removing contaminants that may have previously entered the formation following the perforation of the casing so as to leave only uncontaminated formation materials immediately surrounding the perforations. Thereafter, a selectively-releasable tubing plug in the production tool above the normally-closed valve is removed to permit selected fluids to be pumped by way of the production string through the perforations and into the adjacent earth formations.

3,662,835

PHASE CHANGE METHOD

William L. Livingston, Norwood, Mass., assignor to Factory Mutual Research Corporation, Turnpike, Mass.

Filed Apr. 14, 1970, Ser. No. 28,509
Int. Cl. A62c *3/00*
U.S. Cl. 169—1 R 7 Claims

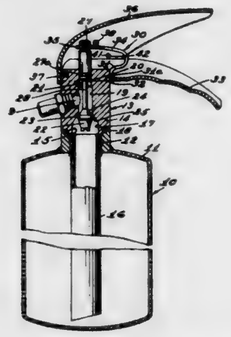
Imparting a phase change to liquids normally characterized by properties of Newtonian flow and internal convection by converting said liquids to a gel characterized by plastic flow and no internal convection, and exposing said gel directly or indirectly to a heat exchange medium. This method provides essentially instant initial response, minimizes convection losses, and provides phase change without total system involvement.

3,662,836

FIRE EXTINGUISHER

Timo Silmes, 1680 Kildare Road, Windsor, Ontario, Canada

Filed July 28, 1969, Ser. No. 845,226
Int. Cl. A62c *13/00*
U.S. Cl. 169—31 R 8 Claims



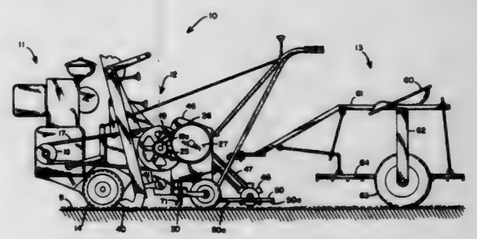
A fire extinguisher comprises a container filled with fire extinguishing material under pressure and a valve assembly on the container. The valve assembly comprises a valve body having an axial opening and a plunger which is yieldingly urged outwardly to close the opening and prevent the fire extinguishing material from being dispensed. A lever is provided for moving the plunger and thereby dispensing the material.

3,662,837

SOD SEVERING AND ROLL FORMING APPARATUS

Raymond C. Rothi, St. Paul, Minn., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 10, 1969, Ser. No. 797,972
Int. Cl. A01b *45/04*
U.S. Cl. 172—20 10 Claims



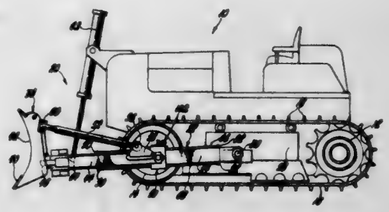
A sod severing and rolling apparatus having a reciprocating knife for severing the sod at predetermined intervals and a set of prongs for lifting the end of the severed sod vertically upward and a rack for forming the start of a sod roll.

3,662,838

ANGLE DOZER ASSEMBLY

Dwaine N. Polzin, Hudson, and Leslie J. Lesko, Novelty, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed July 15, 1970, Ser. No. 54,903
Int. Cl. E02f *3/76*
U.S. Cl. 172—804 4 Claims



An angle dozer assembly including a C-frame supported by a tractor. A pair of thrust members extend rearwardly from a moldboard and each terminates with a carriage which is slidable along the C-frame to different locked positions for purposes of angling the moldboard.

3,662,839

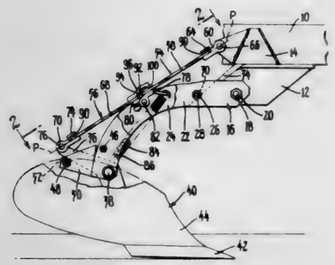
EARTHWORKING IMPLEMENT

Ole J. Thorsrud, Dearborn Heights, and Howard G. Thompson, Livonia, both of Mich., assignors to Massey Ferguson Inc., Detroit, Mich.

Filed May 21, 1970, Ser. No. 39,195
Int. Cl. A01b *61/04*, *35/20*
U.S. Cl. 172—266 9 Claims

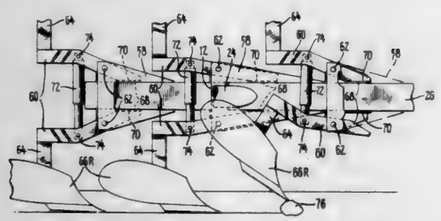
An improved earthworking implement which includes a frame, a standard pivotally attached to the frame, an earthworking tool and a shank pivotally attached to the lower portion of the standard, stops to limit pivotal movement of

the standard and the earthworking tool, and a spring trip device to position the standard in a lower working position, to absorb energy and to release and allow the earthworking tool to move up and to the rear when the earthworking tool strikes an obstruction. The spring trip device includes a first bar assembly with a leaf spring pivotally attached to the frame for pivotal movement about a first axis, a second bar assembly with a leaf spring pivotally attached to the shank for pivotal movement about a second axis which is in the same plane as the first axis, and a pin means to pivotally attach the first bar assembly to the second bar assembly for pivotal movement relative to the second bar assembly about an axis which is parallel to and spaced to one side of the plane containing the first axis and the second axis when the standard is in the working position. Stops are provided to



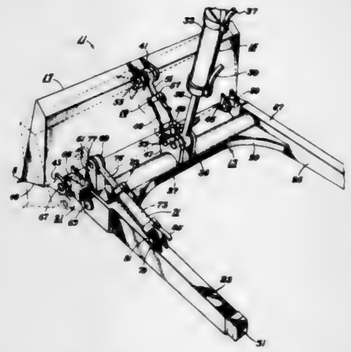
limit movement of the pin means, for attaching the first bar assembly to the second bar assembly, away from the plane containing the first and second axis when the standard is in the working position. An abutment surface on the first bar assembly contacts an abutment surface on the second bar assembly, after the trip assembly has been loaded and the leaf springs have been deformed a certain amount, to limit pivotal movement of one bar assembly relative to the other bar assembly. A relative small increase of the force on the earthworking tool after the abutment surfaces make contact causes bar assemblies to move rapidly away from stops. A resilient cantilevered beam is rigidly attached to one of the bar assemblies, and engages a surface on the other bar assembly. By adjusting the force which the cantilevered beam exerts on the bar assemblies, the force required to trip the spring trip assembly can be adjusted.

3,662,840
TWO-WAY PLOW WITH HYDRAULIC TRIP AND RESET
Clarence B. Richey, Fresno, Calif., assignor to Massey-Ferguson, Inc., Des Moines, Iowa
Filed Jan. 21, 1969, Ser. No. 792,391
Int. Cl. A01b *3/34*
U.S. Cl. 172—224 **7 Claims**



A two-way semi-mounted plow comprises a pull tube having a rear steerable tail wheel and which journals a diagonal beam mounting two rows of opposed left and right-hand plow bottoms. Power means is provided for rotating the beam 180° to alternately engage each row of bottoms with the ground. Each bottom is mounted on the end of a support arm which is pivoted to the beam. A hydraulic ram interconnects each pair of opposed support arms to extend the bottoms until the other ends of the support arms abut the beam. Upon encountering an obstacle, a bottom will deflect, compressing the ram which reacts through the opposed support arm on the frame. Thus only one ram is required for each pair of opposed bottoms.

3,662,841
MOUNTING OF DOZER BLADES
Lloyd A. Molby; Lloyd L. Magown, and Larry T. Steiner, all of Longview, Tex., assignors to R. G. Le Torneau, Inc., Longview, Tex.
Filed Feb. 2, 1970, Ser. No. 7,830
Int. Cl. E02f *3/76*
U.S. Cl. 172—804 **5 Claims**

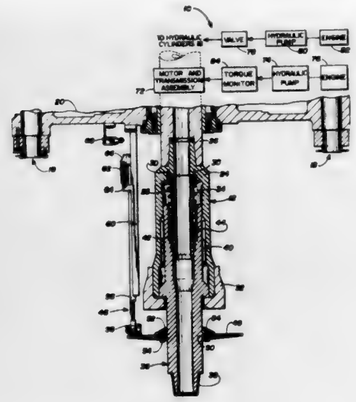


This specification discloses a method and a mounting assembly for attaching a dozer blade to a tractor characterized by enabling the blade to be set to a desired degree of pitch and tilt without inducing twist into or causing other undesirable concentrations of stresses in the mounting assembly and by enabling side booms of the mounting assembly to be fit closely to the tractor on which the blade is mounted. The mounting assembly has a rigid frame for attaching to the tractor; an independent pitching means connecting the top center of the blade with the rigid frame for effecting pitch of the blade; and independent tilting means including at at least one end of the blade a bell crank connected therewith for moving that end of the blade up and down with respect to the rigid frame in response to torque from a means inter-connected between the other end of the bell crank and the rigid frame and operable to rotate the bell crank about a fulcrum axis on the rigid frame. Also disclosed is a preferred embodiment in which each end of the blade is individually movable up or down by rotation of its respective bell crank about respective fulcrum axes on the rigid frame. Other elements necessary or advisable for efficient operation are also disclosed, even though some are conventional.

3,662,842
AUTOMATIC COUPLING SYSTEM
Raymond J. Bromell, Dallas, Tex., assignor to Automatic Drilling Machines, Inc., Dallas, Tex.
Filed Apr. 14, 1970, Ser. No. 28,344
Int. Cl. B23p *19/04*; **E21b** *19/16*
U.S. Cl. 173—1 **18 Claims**

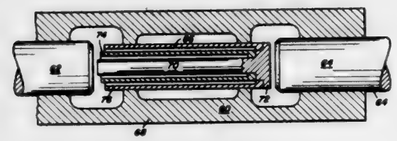
In an automatic coupling system, a threaded quill is connected to a rotating and advancing mechanism by a slip coupling and is biased toward a drill pipe by a spring. In the use of the system, the quill is advanced toward the drill pipe and is simultaneously rotated with respect to the pipe. When the quill engages the pipe, it slips relative to the advancing

and rotating mechanism against the action of the spring until a quill advance terminating switch is closed. The rotation of



the quill is continued until the torque on the quill reaches a predetermined limit.

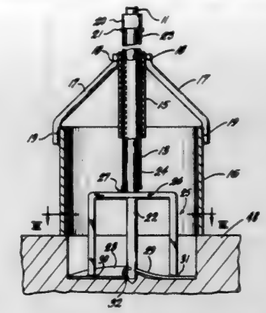
3,662,843
IMPACT TOOLS
Boyd A. Wise, Webster, N.Y., assignor to General Dynamics Corporation
Filed Jan. 29, 1970, Ser. No. 6,820
Int. Cl. B25d *9/04*
U.S. Cl. 173—131 **18 Claims**



Impact tools are described which have an anvil system for transmitting force pulses generated by the hammer to a load. The anvil system includes an impact spring arrangement, the spring being either mechanical or liquid. In one embodiment the spring has a variable spring rate which changes under the duration of the force pulses. In the other embodiment the spring is operative to absorb the energy in the trailing end of the force pulse and return it to the hammer. In this manner, force pulses are transmitted which have a shape which may be efficiently utilized by the load.

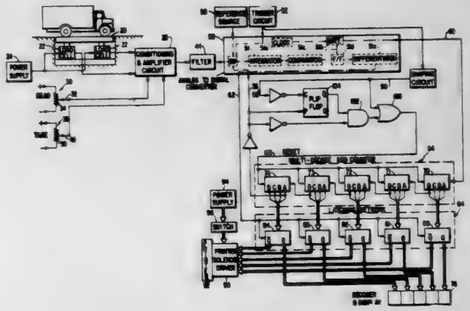
3,662,844
DETACHABLE POWER AUGER ASSEMBLY
Edward C. Baker, 200 Hawthorn Road, Marshall, Mich.
Filed July 6, 1970, Ser. No. 52,539
Int. Cl. F25c *5/04*
U.S. Cl. 175—18 **5 Claims**

A portable power auger attachment designed for boring holes in ice for fishermen is provided which is adapted to be connected to a portable power source, as for example the gasoline engine of a snowmobile. The auger comprises a flexible shaft, means for coupling one end of the shaft to the power source, and an auger blade assembly connected to the other end of the shaft including an auger blade mounted in a tubular support and having a housing axially slidable on said



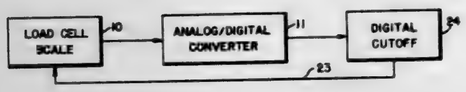
support serving as a guide and protective guard for the blade assembly.

3,662,845
ELECTRICAL WEIGHING SYSTEM WITH ANALOG-TO-DIGITAL DUAL RAMP CONVERTER
Chapin A. Pratt, Rutland, Vt., assignor to Howe Richardson Scale Company, Clifton, N.J.
Filed July 27, 1970, Ser. No. 58,260
Int. Cl. G01g *3/14*
U.S. Cl. 177—25 **4 Claims**



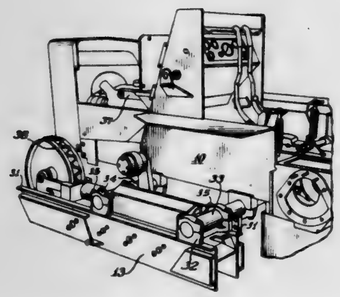
An electrical system having an analog-to-digital dual ramp converter wherein an analog input signal to be converted into recurrent digital form is applied to the input of the converter's integrator circuit for a first, predetermined time interval and a known, predetermined analog reference signal is applied to the input of the integrator in response to a predetermined control signal for a second time interval that is proportional to the magnitude of the analog input signal. A series of sequentially occurring pulses of fixed time separation are produced by a pulse generator and are transmitted by a gate to a pulse counter. The gate, which is under the control of the integrator output, will be open for the two time intervals during which the integrator output deviates from a predetermined level in a predetermined direction. At the beginning of the first time interval the counter is reset to a predetermined starting count, and it will be driven by the gated generator-produced pulses to a predetermined intermediate scale count which is less than the full scale count. At this time, the previously mentioned control signal is supplied from the counter for applying the reference signal to the integrator. The control signal is also gated by a logic circuit to reset the counter. The logic circuit is conditioned by the reset signal and the occurrence of the control signal at the end of the first time interval to inhibit any re-occurrence of the control signal during the second time interval in which the counter is being driven by the generator-produced pulses to supply a digital output representing the magnitude of the analog input signal.

3,662,846
BATCH WEIGHING WITH NON-CUMULATIVE DIGITAL CUTOFF
Charles F. Sandusky, Morenci, Mich., and William C. Susor, Toledo, Ohio, assignors to The Reliance Electric and Engineering Company, Toledo, Ohio
Filed Dec. 23, 1968, Ser. No. 785,992
Int. Cl. G01g 19/22
U.S. Cl. 177—70 4 Claims



A digital cutoff system comprising a weighing scale for producing analog signals in accordance with the desired weights of a plurality of materials successively placed upon the scale, analog-to-digital converter means for changing the analog signals to digital signals, means operable while one or more of the materials are upon the scale for resetting the converter means to cancel the digital signals corresponding to said one or more materials, and circuit means for producing a cutoff signal in response to digital signals corresponding to the desired weight of each of said plurality of materials. By resetting the converter means after each material is weighed and while the load is upon the scale, noncumulative weighing of multiple materials is accomplished with digital control of each material.

3,662,847
TRACK ROLLER SHAFT MOUNTING
Fredrick A. Skanes, Burlington; Ludwig E. Aker, Hamilton, and Ronald G. Kraemer, Mitchell, all of Ontario, Canada, assignors to International Harvester Company, Chicago, Ill.
Filed Jan. 12, 1970, Ser. No. 2,226
Int. Cl. B62d 55/14
U.S. Cl. 180—9.2 R 12 Claims



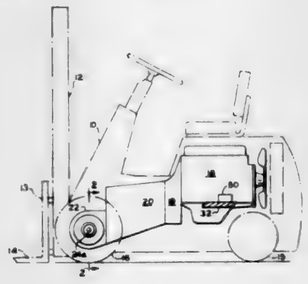
Seal bracket and spacer construction for mounting track rollers of a crawler tractor. Brackets are provided which not only carry seals between track rollers and their shafts as well as mount the shafts on side members, but also aid in maintaining the side members in spaced relation to one another. To this end, upwardly projecting extensions on the brackets and a longitudinal plate are provided. The longitudinal plate is the back up member against the top ends of the bracket extensions and is welded at intervals to the side members, to which members the brackets are secured, and which members are secured to the tractor body by gage bars.

3,662,848
HITCHES FOR TRACTOR-MOUNTED IMPLEMENTS
Elof Folke Magnusson, Sydvarnsgatan 5 B, 653 44 Karlstad, Sweden
Filed July 2, 1969, Ser. No. 838,478
Claims priority, application Sweden, July 2, 1968, 9084/68
Int. Cl. B62d 15/00
U.S. Cl. 180—51 1 Claim



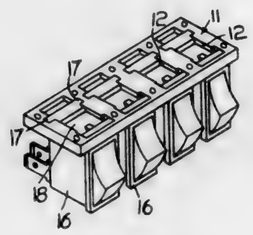
This invention relates to a hitch for tractor mounted implements of the self-propelled type having two or four-wheel drives wherein the wheels are non-pivotally connected to the two axles and steering is effected by articulation of the two wheel axle carrying vehicle parts in relation to one another by means of a steering mechanism provided between the vehicle parts. The hitch is mounted for pivotal movement on a vertical shaft carried on one of the vehicle axle carrying wheel parts such that the hitch is pivotally connected to one of the aforesaid vehicle parts. The hitch is coupled to the steering mechanism by means of a transmission which is adapted to swing the hitch approximately equally in opposite directions in relation to the aforesaid vehicle parts.

3,662,849
MOUNTING ARRANGEMENT FOR VEHICLE DRIVE TRAIN
Wayne W. Bostad, and Ralph F. Golik, both of Portland, Oreg., assignors to Hyster Company, Portland, Oreg.
Filed Sept. 23, 1969, Ser. No. 860,215
Int. Cl. B60k 5/12
U.S. Cl. 180—54 E 14 Claims



A lift truck has a short coupled unitized drive train including engine, transmission, differential gearing, axle shafts and drive wheels drivingly interconnected without universal joints. Split axle housings are connected rigidly to the truck frame and rotatably support the axle shafts and drive wheels. Rubber isolators support the engine block on the frame. A differential housing has sleeve portions which extend between the axle shaft and axle housing. Elastomer bushings separate the differential sleeves from the axle housings but resiliently support the differential housing on such axle housings, thereby isolating the differential housing and rigidly connected transmission housing and engine block from wheel loads and brake torque transmitted from the drive wheels to the axle housing and frame.

3,662,850
MOUNTING MEANS FOR SWITCHES INSTRUMENTS OR THE LIKE
David Foley, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Oct. 7, 1969, Ser. No. 864,504
Claims priority, application Great Britain, Oct. 15, 1968, 48,842/68
Int. Cl. B60k 35/00
U.S. Cl. 180—90 2 Claims



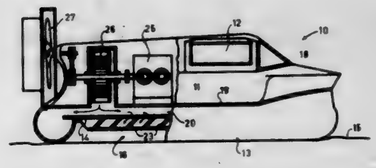
Mounting means for instruments, switches or the like in road vehicles. The mounting means includes a mounting frame which can be attached to a panel of a road vehicle. A part associated with the instrument, switch or the like is engaged in an aperture in the mounting frame, and the mounting frame and said part include co-acting parts for pivotally interconnecting said part and the frame. In addition, said part and said frame include co-acting releasable catch means positioned in use between the axis about which the part can pivot relative to the frame, and the passenger compartment of the vehicle said co-acting catch means serving to hold the part against pivotal movement relative to the frame until the part has sufficient force applied thereto to release said catch means. Sufficient force is applied to said part for example, in the event of an occupant of the vehicle striking the instrument, switch or the like when the vehicle is involved in a collision, whereupon said catch means is freed, and said part is free to pivot relative to the frame in a direction away from the passenger compartment of the vehicle, thereby minimizing the risk of injury to said occupant of the vehicle.

3,662,851
AIR-CUSHION VEHICLE WITH BRUSH SUPPORT
Harry E. Ramsey, Averill Park, N.Y., assignor to Air Cushion Vehicles, Inc., Poestenkill, N.Y.
Filed Feb. 25, 1970, Ser. No. 13,986
Int. Cl. B60v 1/00
U.S. Cl. 180—116 1 Claim



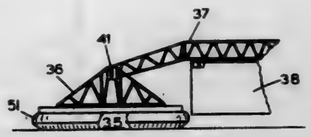
An air-cushion vehicle has a plurality of brushes mounted on the body within the boundary of the downwardly extending peripheral wall or skirt thereof, and extending downwardly to or below the level of the peripheral wall or skirt to support the vehicle while at rest without substantial deformation of the wall or skirt. The individual flexibility of the bristles allows the brushes to pass over obstacles, or to part so as to allow an obstacle to pass therethrough.

3,662,852
AIR CUSHION VEHICLE
Robert Vincent Taylor, 3 Forrestall Road, Elizabeth Downs, Australia
Filed Jan. 4, 1971, Ser. No. 103,622
Int. Cl. B60v 1/06, 1/16
U.S. Cl. 180—117 11 Claims



An air cushion vehicle of the type wherein air at superatmospheric pressure in a plenum supports a vehicle and the vehicle is provided with an inflatable bag skirt, there being a duct extending between a blower on the one hand and both the bag skirt and the plenum on the other, the plenum containing a door which can be opened or closed to control pressure differential between the inflatable skirt and the plenum whereby the vehicle may be lifted to take-off point with the plenum door closed, and take-off can be achieved by opening of the plenum door.

3,662,853
TRANSPORTERS
Norman Edward Love, Binstead, Ryde, Isle of Wight, England, assignor to British Hoovercraft Corporation Limited, Yeovil, Somerset, England
Filed Dec. 15, 1969, Ser. No. 885,136
Claims priority, application Great Britain, Dec. 19, 1968, 60,354/68
Int. Cl. B60v 1/00
U.S. Cl. 180—121 9 Claims



A load transporter in which two supporting cushions of pressurized air are located one at each side of a load being moved, the load being supported by rigid beam members carried by rigid structures forming the upper boundary of the air cushions. In one embodiment the rigid beam members serve to join the rigid structures in spaced relationship, and are adapted to support the load either from below or above. In a further embodiment the rigid beam members are adapted to be secured to the sides of the load to permit taller loads to be transported, while maintaining the space relationship of the cushions. Propulsion of the transporter is either by towing, self-winching, or through the road wheels of a conventional vehicle being carried by the transporter.

3,662,854
HIGH-SPEED GROUND EFFECT VEHICLES
Jean Henri Bertin, Neuilly-sur-Seine, France, assignor to Bertin & Cie, Boite Postale Plaisir, France
Filed Nov. 6, 1969, Ser. No. 874,149
Claims priority, application France, Nov. 8, 1968, 173226
Int. Cl. B60v 1/08, 1/04
U.S. Cl. 180—121 13 Claims

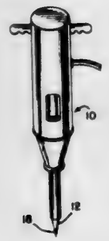
A ground-effect vehicle comprising air cushions normally confined by solid walls, the front and rear walls of the front

and rear air cushions, symmetrically with respect to the longitudinal axis of the vehicle, including portions which are



orientatable to permit the cushions to be supplied by ram pressure when the vehicle is travelling at high speed.

3,662,855
MUFFLED TOOL FOR VIBRATORY OR IMPACT MACHINES
Robert D. Adams, Little Greys, Wrington, Bristol, and Ian J. Sharland, 2 Honywood Road, Colchester, both of England
Filed May 4, 1970, Ser. No. 34,272
Int. Cl. F16f *7/12, 15/02, 15/12*
U.S. Cl. 181—33 A **19 Claims**



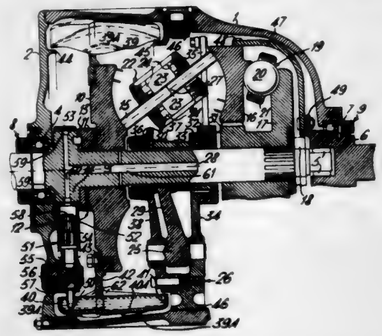
A tool for vibratory or impact machines, having a collar of vibration dampening material mounted around the tool body for reducing or muffling tool noise occurring during operation of the machines. The collar should be located at least around the point of maximum lateral amplitude of the tool body during operation of the machine, and may be enclosed in a casing or otherwise secured to the tool body.

3,662,856
EASY LADDER SAFETY PROTECTOR
Andre K. D'Amico, and Thomas J. Bryan, both of Rochester, N.Y., assignors to said D'Amico, by said Bryan
Filed Apr. 30, 1970, Ser. No. 33,389
Int. Cl. E06c *7/46, 5/36*
U.S. Cl. 182—108 **7 Claims**



A ladder protector for a ladder having side rails is disclosed wherein electrical and bearing functions are provided for each end of the side rails by a flexible foam body member having a plurality of resilient closed gas filled cells. The protector includes elastic wall means for easy assembly and removal of the protector from each end of the ladder rails.

3,662,857
ROTARY SUMP WITH FLUID PICK-UP
Forbes George de Brie Perry, East Grinstead, England, assignor to National Research Development Corporation, London, England
Filed Nov. 24, 1969, Ser. No. 879,217
Claims priority, application Great Britain, Dec. 6, 1968, 58,217/68
Int. Cl. F01m *1/06*
U.S. Cl. 184—6.2 **10 Claims**



The lubrication, cooling, etc., of a machine which cannot run flooded with fluid, or almost so, presents a problem when the machine is subject to changes of orientation, because the intake pipe of a fluid delivery pump or the like is starved except for one attitude of the machine when the pipe end is at the bottom. This problem is solved by the provision of a rotary sump in the form of an annular channel with inturned side walls.

The fluid pick-up dips into the body of fluid maintained in the channel by centrifugal force and may be connected to a pump inlet or may be self pressurizing by exploiting the ram effect.

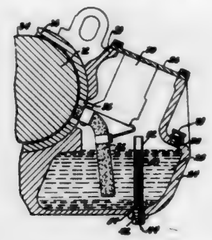
The submerged end of the pick-up may be of hydrofoil section to counteract fluid starvation by the plowing of a channel in the fluid.

As far as possible, the channel surrounds rotary parts of the machine, to gather fluid flung off by them, the examples described being toroidal race rolling friction variable ratio transmission units. Rotating parts not so enclosed are surrounded parts of the casing, shaped to direct fluid towards the rotary sump.

The sump may be replenished from a fluid supply maintained at a predetermined pressure applied to a duct dipping into the fluid in the rotary sump to a depth where the centrifugal head of the fluid equals the predetermined pressure for chosen conditions of sump speed etc. If the sump level falls, the centrifugal head is insufficient to prevent fluid entering the sump through the replenishment duct. Otherwise the pressure at the duct outlet is either in balance or the centrifugal head exceeds the predetermined pressure. A closed-circuit assembly of machines is illustrated, having a driven machine running flooded with fluid with a scavenge pump providing the pressure for the replenishment duct of the rotary sump. A fluid cooler may be inserted in the circuit.

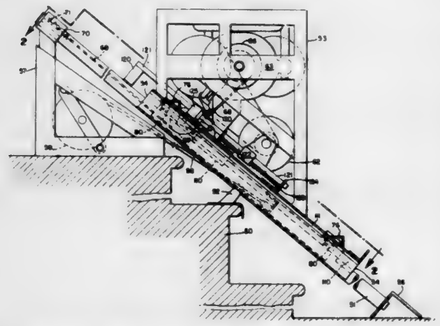
3,662,858
SELF-PURGING LUBRICANT RESERVOIR
David W. Peterson, Oak Brook, Ill., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 27, 1970, Ser. No. 67,513
Int. Cl. B01d *17/02;* **F01m** *11/12*
U.S. Cl. 184—103 R **1 Claim**

In a preferred embodiment, the axle bearing caps of a railway locomotive traction motor include oil containing sumps from which lubricating oil is delivered by wick means to lubricate the axle-carrier motor support bearings. Overflow conduit means are provided which connect with an interior portion near the bottom of the sump and extend upwardly to an overflow outlet that is open to atmosphere and located at approximately the desired maximum oil level in the sump.



When oil is added to the sump in excess of that required to reach the maximum level, the excess volume is forced from the bottom of the sump, out through the overflow conduit, thereby removing water and other contaminating liquids which are heavier than oil and settle to the bottom of the sump.

3,662,859
STAIRWAY ELEVATOR
Henry K. Flinchbaugh, 930 Arlington Road, York, Pa.
Filed Sept. 21, 1970, Ser. No. 73,760
Int. Cl. B66b *9/06*
U.S. Cl. 187—12 **7 Claims**



In a stairway elevator unit riding on tubular tracks mounted on the steps of a stairway, a carriage riding on the tracks and carrying a car frame, the car frame and carriage being driven by a motor powered winch which winds or unwinds a cable anchored at the top of the stairway, so as to raise or lower the elevator unit, the car frame being supported on the carriage by a support assembly, the position of which is controlled by the cable so as to support the car frame upward and outward from the inclined track when the cable is taut, and to drop the car frame downward and inward toward engagement with the inclined tracks when the cable is not taut. The support mechanism comprises an idler pulley normally supported by the cable, the idler pulley being mounted on an idler shaft, and a two member toggle controlled by the idler shaft and pivotably interconnecting the car frame and the carriage shaft. A channeled track member rigidly attached to the car frame rides on the carriage shaft such that when the cable is taut, the toggle holds the carriage shaft in position at the rear of the channel member, thus carrying the car frame in a forward and elevated position; when the cable is not taut, the toggle positions the carriage shaft to the front of the channel member, thus carrying the car frame in a backward and lowered position, engaging wedge members of the car frame with the tubular track so as to lock the car frame on the track and hold it securely. Movement of the car frame downward with respect to the carriage also activates an override safety switch which, when activated, prevents further drive by the motor.

3,662,860
ELEVATOR VERTICAL SHIFT AND LATERAL DOLLY CONTROL SYSTEM
Arthur R. Burch, Plainwell, Mich., assignor to Clark Equipment Company, Buchanan, Mich.
Filed May 28, 1970, Ser. No. 41,278
Int. Cl. B66b *1/46*
U.S. Cl. 187—29 R **10 Claims**

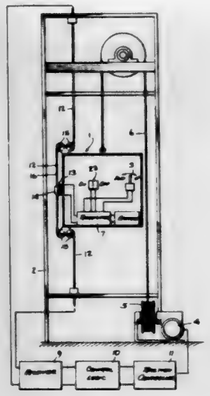


An automatic control system is disclosed for an elevator of the type adapted for material handling in an automatic warehouse. The control system includes means for moving the elevator selectively to one of two different vertical null positions in accordance with the desired operation of either depositing or withdrawing a material unit from an adjacent bin. The first and second null positions are established by a first and second pair of transducer means on the elevator car which coact with a reference signal device on the elevator mast. The first and second transducer means may be selectively enabled and disabled to cause a shift of the elevator from one null position to the other. The elevator car is provided with a lateral dolly movable between an extended position and a retracted position for the manipulation of the material unit. An automatic control system is provided for the lateral dolly to correlate the motion thereof with the vertical shift of the elevator between the null positions in a sequence dependent on whether a material unit is being deposited or withdrawn from the bin.

3,662,861
ELEVATOR CONTROL DISPENSING WITH TRAVELING CABLES
Gerome R. White, Tenafly, and Arnold M. Lawner, Rutherford, both of N.J., assignors to Whitesons Sales Corp., Hackensack, N.J.
Filed Aug. 14, 1969, Ser. No. 850,046
Int. Cl. B66b *1/16*
U.S. Cl. 187—29 R **11 Claims**

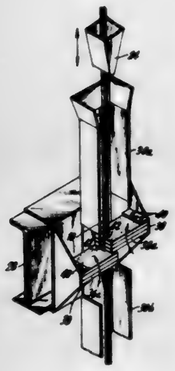
"Up slow," "Down slow," "Up Fast," and "Down Fast" command signals in the form of magnetic flux from an elevator car are transmitted to a hoist motor at an end of the shaft, using ferromagnetic flux to magnetically couple a transmitter in the car and a receiver at the motor to a cable in the shaft or to a fixed structural member of the shaft either of which acts as the secondary of a transformer coupling the receiver to the transmitter. The transmitter-receiver system operates

at low frequencies (between about 300 to 1,200 cycles/sec.) to avoid electromagnetic radiation and its signals are so



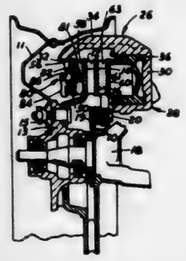
coded as to insure unambiguous command signals immune to electrical noise, and to provide certain fail-safe features.

3,662,862
GUIDE ROPE STABILIZER
Harry S. Poller, Salem, Mo., assignor to Missouri Lead Operating Company, New York, N.Y.
Filed Oct. 5, 1970, Ser. No. 77,876
Int. Cl. B66b 7/02
U.S. Cl. 187—95 **15 Claims**



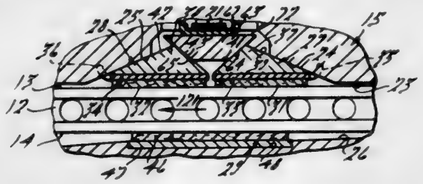
A device for stabilizing fixed guide ropes in a mine shaft elevator system comprises flexible leaf members secured at one of their ends along and transversely to the shaft. In their normal position, the free ends of the leaf members transversely engage the guide ropes and prevent their undesired movement. When the guide rope shoe carried on a cage passes by the device, the leaf members are radially flexed and thus separated to permit the shoe to pass thereby, after which the leaf members return to the initial guide rope stabilizing position.

3,662,863
BRAKE LINING WEAR INDICATOR
Edward K. Dombeck, South Bend, Ind., assignor to The Bendix Corporation
Original application Nov. 21, 1968, Ser. No. 777,762, now Patent No. 3,556,046. Divided and this application Oct. 29, 1970, Ser. No. 85,048
Int. Cl. F16d 66/02
U.S. Cl. 188—1 A **5 Claims**



This invention relates to a device providing a warning signal to the vehicle operator when the brake lining has worn a predetermined amount. The signal device comprises a weight which is released after brake lining wear to engage the brake assembly for an audible signal.

3,662,864
DISK TYPE BRAKE WITH SPLIT PRIMARY SHOE
Anthony C. Evans, Westland, Mich., assignor to Kelsey-Hayes Company
Filed Nov. 5, 1969, Ser. No. 874,349
Int. Cl. F16d 55/46
U.S. Cl. 188—72.2 **9 Claims**



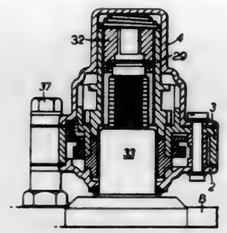
A disk type parking brake embodying a split primary shoe with a wedge-like actuator. The wedge-like actuator holds the split primary shoes against inclined surfaces of the caliper for effecting a self servo action upon the shoes. A lever type actuating mechanism is incorporated and pivotal movement of an actuating lever accomplishes an automatic adjustment of the mechanism to compensate for wear.

3,662,865
AUTOMATIC ADJUSTER FOR SHOE DRUM BRAKE
Charles Newstead, and Norman S. Moss, both of Birmingham, England, assignors to Girling Limited, Birmingham, England
Filed June 23, 1970, Ser. No. 49,114
Claims priority, application Great Britain, June 25, 1969, 32,109/69
Int. Cl. F16d 65/56
U.S. Cl. 188—196 F **8 Claims**

A bolt on adjuster unit for auto-adjustment of the manual adjuster spindle of a drum brake comprises an actuating spring means which is loaded progressively and incrementally by successive mechanical input signals corresponding to brake shoe movements; when a predetermined number of signals have been received, the spring means is automatically

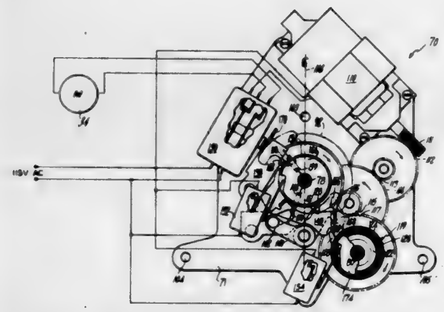
released to drive a transfer means which operates to effect adjustment of the spindle.

The unit also exhibits a novel manual re-setting arrangement in which a final driven member of the mechanism is



formed with a ring of gear teeth in constant mesh with a pinion. A manually depressable and rotatable plunger is used to engage and rotate the pinion and driven member, and at the same time to break the driving engagement between the driven member and the rest of the transmitting mechanisms.

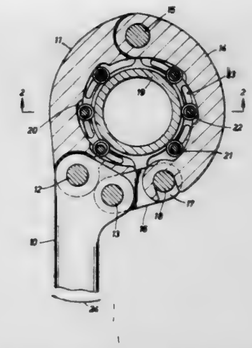
3,662,866
DRIVE UNIT FOR FLUID DELIVERY PUMP
Silvio Conte, East Hartford, Conn., assignor to Veeder Industries Inc., Hartford, Conn.
Filed Sept. 14, 1970, Ser. No. 71,997
Int. Cl. F16d 13/10; B67d 5/24; G06c 15/42
U.S. Cl. 192—.02 **6 Claims**



A gasoline delivery pump with a resettable delivery register, a ticket printer mounted above the register operable for recording the amount of each fluid delivery and a two-phase drive unit having a first drive shaft connected to a register reset shaft for resetting the register to "0" prior to the commencement of each fuel delivery and a second drive shaft connected for operating the printer after the completion of each fluid delivery. The drive unit comprises an electrical drive subassembly adapted to be selectively mounted in an explosion-proof housing in either of two reverse positions for selectively rotating the drive shafts in either direction of rotation for facilitating selectively mounting the drive unit on either side of the register.

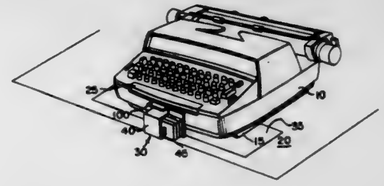
3,662,867
FORCE TRANSMITTING COUPLING
Robert B. Kinzbach, 6203 Valley Forge, Houston, Tex.
Filed Mar. 13, 1970, Ser. No. 19,249
Int. Cl. F16d 15/00, 41/06
U.S. Cl. 192—45 **10 Claims**

A coupling for use with two relatively movable members to transmit force between said members comprising a resilient element having a plurality of convolutions positioned between the members and a solid core element positioned within the convolutions of said resilient element, said resilient element being positioned such that the relative movement of said members urges said convolutions into frictional engagement with both of said members. The solid core



element is of a size such that when frictional engagement of said members with said convolutions occurs, the convolutions are prevented from being distorted beyond their elastic limit to thereby cause permanent set of the resilient element.

3,662,868
PORTABLE TRANSCRIBER UNIT
Albert Paul Jordan, 1103 Colony Drive, Mechanicsville, Va.
Filed Apr. 30, 1970, Ser. No. 33,314
Int. Cl. B41j 29/00
U.S. Cl. 197—180 **4 Claims**

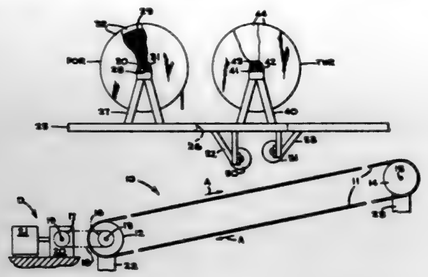


A transcriber unit adapted to attach to a typewriter or typewriter desk in close proximity to the operator's hands for ease of operation, the transcriber having a transcriber switch preferably located near the typewriter spacer bar. A portable magnetic tape recorder placed in the transcriber unit is rewound and the recorded portion played by means of the transcriber switch in accordance with the operator's speed and desire.

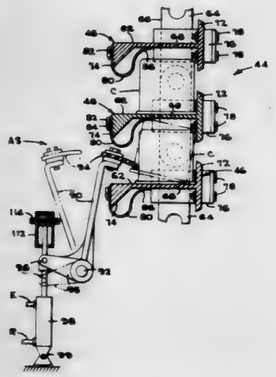
3,662,869
METHOD AND APPARATUS FOR CHANGING CONVEYOR BELT
Sherman Carl Burkitt, Arlington Heights, Ill., assignor to FMC Corporation, San Jose, Calif.
Filed Nov. 16, 1970, Ser. No. 89,961
Int. Cl. B65g 15/00
U.S. Cl. 198—1 **12 Claims**

A pay-out reel containing new belting is positioned adjacent the conveyor. The old endless belt is severed and the leading edge thereof is connected to a take-up reel. The leading edge of the new belting is temporarily connected to the trailing edge of the old belting so that when the conveyor is driven, the old belt will pull the new belting around the conveyor. The new belting is trained over the take-up reel to

rotate the take-up reel. When the new belting is completely around the conveyor, the leading edge thereof is disconnected from the old belting and the new belting is severed from the pay-out reel to be spliced into an endless belt.



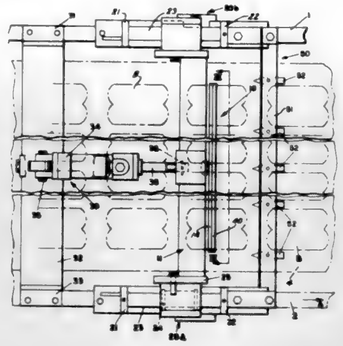
3,662,870
CONTAINER RE-ORIENTING MECHANISM
Adil A. Mughannam, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.
Filed Aug. 24, 1970, Ser. No. 66,513
Int. Cl. B65g 47/22
U.S. Cl. 198—29 **5 Claims**



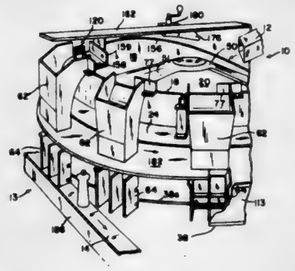
A container orienting device, for a hydrostatic cooker of the type having a conveyor comprising multiple I-beam carriers thereon, for returning containers into a proper orientation prior to reaching the discharge point. Containers which have become misoriented due to articulation of the conveyor are properly reoriented by a container orienting device comprising a pivotal finger which is inserted between said I-beam carriers in timed relation to the motion thereof for engaging the side surface of the containers and urging them into a properly oriented position.

3,662,871
ARTICLE ALIGNER FOR A CONVEYOR SYSTEM
Paul J. Koepnick, Grand Rapids, Mich., assignor to Werner Lehara, Inc., Grand Rapids, Mich.
Filed Sept. 16, 1970, Ser. No. 72,586
Int. Cl. B65g 47/26
U.S. Cl. 198—30 **13 Claims**

For aligning articles on a conveyor in straight rows extending transversely of the conveyor. A device is provided which includes an aligner element with means for moving the aligner element into an upper and lower position out of or into engagement with articles. Actuator means is provided for moving the aligner also in a direction longitudinally with the conveyor for contacting the articles from behind and aligning them in straight lines transversely and longitudinally of the conveyor.



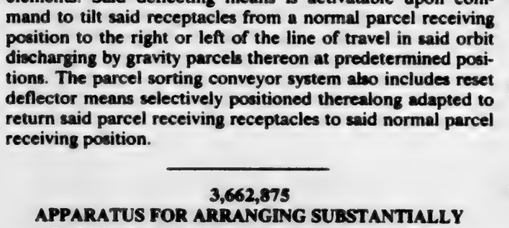
3,662,872
APPARATUS FOR ORIENTING AND FEEDING ARTICLES
John C. Nalbach, Jersey City, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed July 10, 1969, Ser. No. 840,739
Int. Cl. B65g 47/24
U.S. Cl. 198—33 AA **26 Claims**



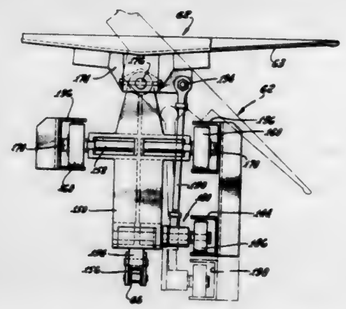
Apparatus for orienting and feeding lightweight plastic bottles or the like having a rotating bowl in which a supply of randomly arranged bottles is placed, a plurality of chutes spaced around the bowl for rotation therewith, with each chute having a bottle receiving opening at the upper edge of the bowl. A plurality of vertically reciprocable bottle pushers are mounted within the bowl and rotate therewith, each pusher being operatively associated with one of the chutes. As the bowl rotates, each pusher moves a bottle up a stationary helical discharge track from the top of which the bottles are deposited in a predetermined oriented position into the respective associated chute, with the bottle eventually being transferred onto a linear conveyor which is arranged along a tangent to the path of rotation of the bottles as they are positioned in the rotating chutes.

3,662,873
CONVEYOR SYSTEM
Ivan L. Ross, Birmingham, Mich., assignor to American Chain & Cable Company, Inc., New York, N.Y.
Filed Apr. 22, 1970, Ser. No. 30,780
Int. Cl. B65g 37/00; B61b 13/00
U.S. Cl. 198—78 **12 Claims**

A conveyor system including a first load supporting track and a second load supporting track with an intermediate transfer portion. A powered conveyor is provided in association with each of the first and second tracks. A plurality of carriers are provided. Each of the carriers has a first dog that is in position for normal engagement with the pusher member of the conveyor and a second dog that is normally urged to an operative carrier pushing position but is held by the track out of operative position. At a transfer point a portion of the track is cut away for a distance sufficient to permit the second dog to move to operative carrier transferring position. Beyond the transfer point, a portion of the track is again cut away to permit the second dog to be cammed downwardly out of operative position.



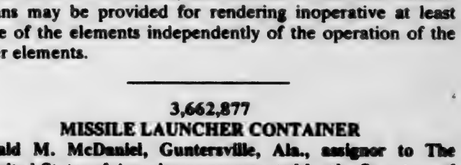
3,662,874
PARCEL SORTING CONVEYOR SYSTEM
Donald C. Muller, Whittier, Calif., assignor to Butz Engineering Corporation, Azusa, Calif.
Filed Oct. 12, 1970, Ser. No. 79,928
Int. Cl. B65g 17/18
U.S. Cl. 198—155 **14 Claims**



An endless parcel sorting conveyor system embodying a plurality of contiguous parcel receiving receptacles movable through a predetermined orbit. Deflecting means associated with each of said parcel receiving receptacles including track elements. Said deflecting means is activatable upon command to tilt said receptacles from a normal parcel receiving position to the right or left of the line of travel in said orbit discharging by gravity parcels thereon at predetermined positions. The parcel sorting conveyor system also includes reset deflector means selectively positioned therealong adapted to return said parcel receiving receptacles to said normal parcel receiving position.

3,662,875
APPARATUS FOR ARRANGING SUBSTANTIALLY LAMINAR ARTICLES INTO SPACED GROUPS
Jacob Salomon, 10 Weizman Square, Holon, Israel
Filed Nov. 30, 1970, Ser. No. 93,736
Claims priority, application Great Britain, Dec. 1, 1969, 58,643/69
Int. Cl. B65g 15/00
U.S. Cl. 198—180 **15 Claims**

A counting mechanism in which a stream of articles passing along a guide are interposed with regularly arranged spacer fingers which expand to bunch up the articles into discrete separated groups prior to delivery at for example a boxing station. Expansion of the fingers may be effected by causing the fingers to travel in pairs, one finger of each pair being driven by a first conveyor, and the other finger of each pair being slidably connected thereto and contacted by a second, slower moving conveyor.

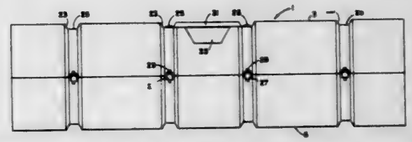


3,662,876
CONVEYOR SYSTEMS
John Gordon Hollis, Peterborough, England, assignor to The Newall Engineering Company Limited, Peterborough, England
Filed Sept. 1, 1970, Ser. No. 68,600
Claims priority, application Great Britain, Sept. 12, 1969, 45,095/69
Int. Cl. B65g 25/04
U.S. Cl. 198—219 **4 Claims**



A conveyor system comprising a main frame defining a fixed path with a succession of stations each having receiving means for receiving and supporting articles conveyed, a movable frame having conveying elements pivotally mounted thereon for up and down movement, and means for reciprocating the movable frame so that each element is moved between a pair of stations. The operation is such that each element lifts an article from a station, moves to the second station of its pair carrying the article, lowers the article at the second station, and returns to the first station. Means may be provided for rendering inoperative at least some of the elements independently of the operation of the other elements.

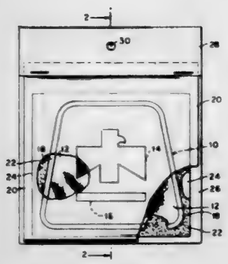
3,662,877
MISSILE LAUNCHER CONTAINER
Donald M. McDaniel, Guntersville, Ala., assignor to The United States of America as represented by the Secretary of the Army
Filed Mar. 31, 1970, Ser. No. 24,293
Int. Cl. F42b 37/00, 39/00; B65d 85/30
U.S. Cl. 206—3 **1 Claim**



A container for a missile launcher and batteries for operating the launcher consisting of shell of rectangular cross sec-

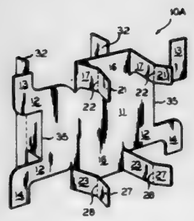
tion including a pair of sections that are provided with a plurality of contiguous cavities. Padded seats are located in the cavities for supporting the launcher and a pair of cushions is placed in each section for restraining end movement of the launcher. Walls are formed in one of the sections to provide storage compartments for the batteries. A shoulder is formed on one of the sections and a seal is disposed for engagement with a shoulder of the other section to provide a waterproof seal between the sections. The sections include circumferential recesses and bands engage the recesses and include cooperating closure latch members for securing the sections together. A handle is secured to a pair of the bands to provide a means for carrying the container. The shell is provided with a depression to allow clearance adjacent the handle.

3,662,878
DISPLAY PACKAGE OF A SCHIFFLI-EMBROIDERED EMBLEM PATCH
E. Heary Conrad, P.O. Box 537, Weaverville, N.C.
Filed Dec. 2, 1970, Ser. No. 94,264
Int. Cl. B65d *65/14*
U.S. Cl. 206—45.33 **5 Claims**

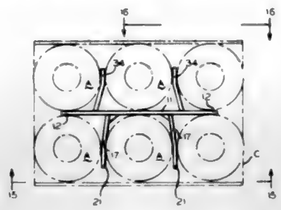


A new article of commerce, a display package, consisting of a Schiffli-embroidered emblem patch and a separable laminate of a solid thermoplastic adhesive and paper enclosed in a transparent bag mounted on and sealed by a mounting card.

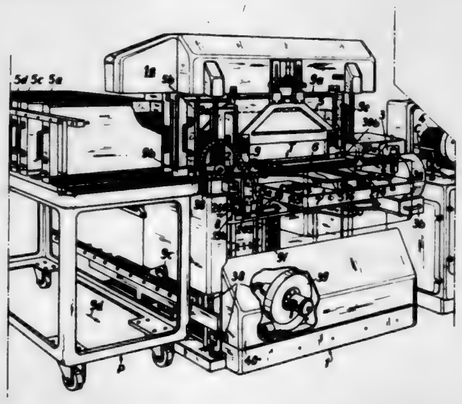
3,662,879
DIVIDER PARTITIONS FOR BOTTLE CARRIERS
Charles Robert Helms, Barto, Pa., assignor to Container Corporation of America, Chicago, Ill.
Filed Aug. 1, 1969, Ser. No. 846,661
Int. Cl. B65d *5/48, 71/00*
U.S. Cl. 206—65 E **9 Claims**



A divider partition for a bottle carrier having bottles arranged in a pair of side by side rows, the divider partition being formed from a cut and scored blank to provide fingers extending laterally therefrom, the distal portions of such fingers extending between the bottles and slightly beyond a plane marked by the line of centers of the bottles of a row.



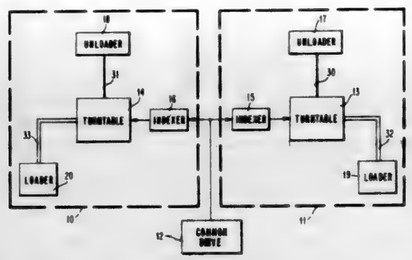
3,662,880
METHOD AND APPARATUS FOR MANIPULATING ROD-SHAPED ARTICLES
Horst Kochalski, Hamburg-Lohbrugge; Willy Rudszinat, Dassendorf; Harry David; Otto Erdmann, both of Hamburg-Bergedorf; Ludwig Rode, Neu Boernsen, and Hans Suck, Hamburg-Neuengamme, all of Germany, assignors to Hauni-Werke Koerber & Co. KG, Hamburg-Bergedorf, Germany
Original application Mar. 6, 1969, Ser. No. 806,035, now Patent No. 3,519,143, which is a continuation of application Ser. No. 533,942, Mar. 14, 1966, now abandoned, which is a division of application Ser. No. 306,368, Sept. 3, 1963, now Patent No. 3,245,558, which is a division of application Ser. No. 181,669, Mar. 22, 1965, now Patent No. 3,190,459. Divided and this application May 4, 1970, Ser. No. 34,357
Int. Cl. B07c *3/02*
U.S. Cl. 209—73 **5 Claims**



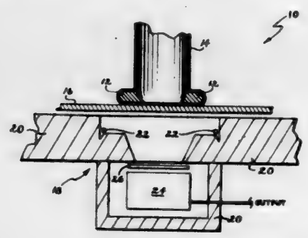
Cigarettes of multiple unit length are severed to yield pairs of shorter cigarettes which form two rows. The cigarettes of one row are inverted end-for-end and added to the other row to form a single third row. The cigarettes of the third row are thereupon tested for the presence of defects and the defective cigarettes are segregated so that the third row contains only satisfactory articles which are stacked in chargers.

3,662,881
MODULE HANDLING APPARATUS
William J. Fineran, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 29, 1971, Ser. No. 110,940
Int. Cl. B07c *3/12*
U.S. Cl. 209—73 **18 Claims**

Method and apparatus for unloading articles from storage for performing operating processes on them and thereafter loading the articles for storage into categories determined by the processes. The articles are stored in stacked trays and automatically moved to a station for unloading to a processing station such as an article tester. After testing, the articles are sorted based on the test results and again automatically moved to stations for loading into stacked trays.



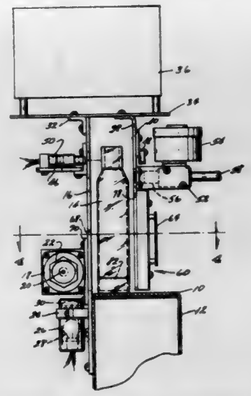
3,662,882
METHOD AND APPARATUS FOR QUALITY CONTROL OF EXPLOSIVE PRIMERS BY CHARACTERISTIC X-RAY EMISSION
Arthur S. Obermayer, Newton, Mass., assignor to Molecular Research Corporation, Cambridge, Mass.
Filed June 25, 1969, Ser. No. 836,248
Int. Cl. B07c *5/346*
U.S. Cl. 209—111.5 **10 Claims**



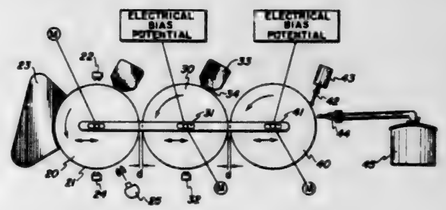
A method and apparatus for indirectly measuring the weight or composition of an explosive primer by utilizing the characteristic X-ray emissions from a radiation excitable constituent of the primer. The explosive primer is exposed to an external source of ionizing radiation which induces characteristic X-ray emissions of the selected primer constituent. The quantity of the emitted characteristic X-rays is determined by an ionizing radiation energy-resolving detection system. Since the quantity of the emitted characteristic X-rays is a function of the amount of the excitable constituent present in the primer, determination of the quantity of the X-rays emitted provides an indirect measurement of the weight of the primer.

3,662,883
BIRD SWING DETECTOR
James R. Sager, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed Dec. 7, 1970, Ser. No. 95,589
Int. Cl. B07c *5/342*
U.S. Cl. 209—111.7 **5 Claims**

Apparatus for inspecting glass containers to determine the presence of the defect termed "bird swing." Containers to be inspected are moved in series on a moving belt conveyor to an inspection position where a rotating multifaceted mirror causes a beam of light to sweep the container sidewall from bottom to top. If no defect is present, the beam of light passes through the container sidewall. A pair of elongated photosensitive elements are positioned adjacent to the container to view the illuminated wall portion of the container at an angle with respect to the direction of the moving light beam. Should a "bird swing" defect be present, the light beam is deflected from its normal position into one or both of the photosensitive elements. The receipt of a signal by one or the other of these photosensitive elements activates a reject circuit which causes the container having the defect to be rejected from the stream of bottles. The reject mechanism takes the form of a stream of high pressure air under the control of a solenoid valve.



3,662,884
METHOD AND APPARATUS ELECTROSTATICALLY CLASSIFYING TONER PARTICLES
Bruce R. Robinson, Pittsford, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Oct. 20, 1969, Ser. No. 867,739
Int. Cl. B03c *7/00*
U.S. Cl. 209—129 **13 Claims**

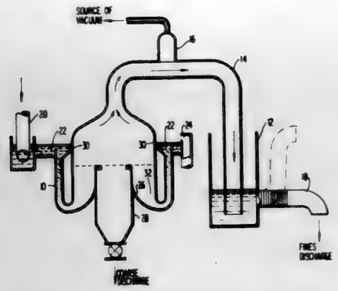


Method and apparatus to electrostatically classify electroscopic toner particles according to size. Particles to be classified are supported on a photocondctive surface and electrically charged to one polarity. An electrically conductive surface spaced a predetermined distance from the charged particles is electrically biased by a potential of opposite polarity to collect toner particles which are attracted to the surface in response to the magnitude of the biasing voltage and the between-surface spacing.

3,662,885
APPARATUS FOR THE HYDRAULIC CLASSIFICATION OF SOLIDS
Thor Dorph, 5 West 63d Street, New York, N.Y.
Continuation-in-part of application Ser. No. 853,324, Aug. 27, 1969, now abandoned. This application Dec. 31, 1969, Ser. No. 889,608
Int. Cl. B03b *3/34*
U.S. Cl. 209—161 **12 Claims**

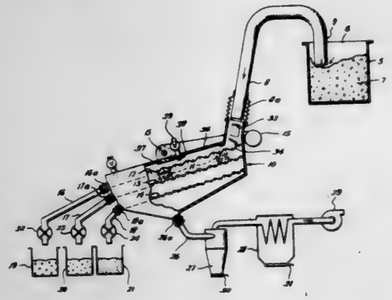
Hydraulic classifying apparatus for liquid slurries of mixed coarse and fine particles includes first and second syphon

connected containers and means for maintaining syphon flow between the containers while continuously feeding slurries to be separated to the first container. An enlarged inlet portion of the syphon is positioned within the first container and



together with an upstanding central outlet defines a separating zone so that coarse particles settle through the central outlet and fines continue through the syphon to the second container.

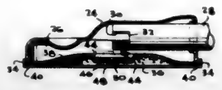
3,662,886
HANDLING APPARATUS FOR PARTICULATE DRY PRODUCT
Alvin B. Kennedy, Jr., Alvin, Tex., assignor to Catalyst Services, Inc., Alvin, Tex.
Filed Feb. 5, 1970, Ser. No. 8,919
Int. Cl. B07b 1/28
U.S. Cl. 209—250 4 Claims



Particulate dry product of more-or-less fragile nature, such as pelletized catalysts, is transported by suction in an air stream to a vibrating screen system and the classified particles caught by the screen or screens are directed through air lock devices to collection receptacles. The air and fine material which pass through the screens continue in the closed system through further separating devices for dust and fine particles and thence through the suction pump.

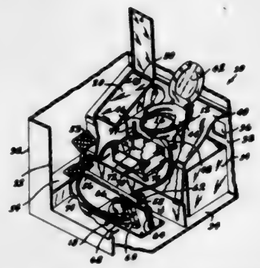
3,662,887
OIL PUMP INLET STRAINER
Walker S. Uhlhorn, Jr., Germantown, Tenn., assignor to Ripley Screen and Strainer Company, Collierville, Tenn.
Filed Jan. 21, 1970, Ser. No. 4,586
Int. Cl. B01d 29/04
U.S. Cl. 210—131 10 Claims

A sump immersed pump inlet strainer in which a metal casing connected to a pump inlet has a circular inflow opening with a straining screen extending across the opening and peripherally retained in the opening with the screen having a central crimped protrusion extending outwardly and holding a metal plate in place in blocking relationship with respect to an aperture in the screen so that movement of the screen from an outwardly bowed position with respect to the inflow opening to an inwardly bowed position due to clogging of the



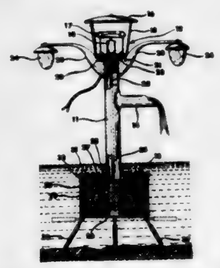
screen and pump suction on the interior of the casing will release the plate to permit oil flow inwardly through the then unblocked aperture.

3,662,888
RECIRCULATING TOILET SYSTEM AND FILTER THEREFOR
James Morgan Kemper, Hollywood, Calif., assignor to Monogram Industries, Inc., Los Angeles, Calif.
Filed Apr. 29, 1971, Ser. No. 138,727
Int. Cl. C02c 1/26
U.S. Cl. 210—167 4 Claims



A portable toilet system of the recirculating type is provided with a perforated metal filter of a size and open area relative to the container or tank to provide for a minimal flow rate of liquid from the tank to the filter interior. This prevents movement of waste products and paper which would tend to block or close the openings of the filter when the system is activated; nevertheless, the filter is simply constructed and economical to manufacture and assemble.

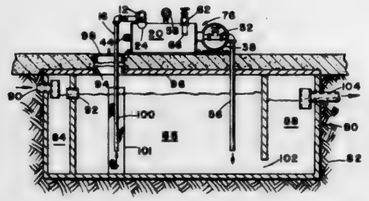
3,662,889
WATER CLEANER
Shigehiro Takarabe, 5-28, Nishi, 3-chome Omori, Ota-ku, Tokyo, Japan
Filed June 18, 1970, Ser. No. 47,213
Claims priority, application Japan, Dec. 25, 1969, 44/122397; Dec. 26, 1969, 44/123062
Int. Cl. E04h 3/20
U.S. Cl. 210—169 3 Claims



The present invention provides a water cleaner for automatically circulating the water body in a pond or the like for keeping of fishes for amusement and/or food for filtration,

purification, and aeration. A filter unit driven by a motor may be located at any depth and position in the pond in a very stabilized manner. A lighting unit is installed above the water surface so as to facilitate the feed, viewing, and luring fishes at night.

3,662,890
WASTE TREATMENT SYSTEM
Derald E. Grimshaw, Denver, Colo., assignor to Environmental Services, Inc., Little Ferry, N.J.
Filed Oct. 19, 1970, Ser. No. 81,838
Int. Cl. C02c 1/08
U.S. Cl. 210—195 6 Claims



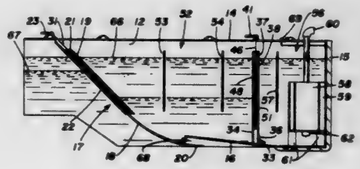
A system and method of treating contaminated liquid, such as domestic waste liquid in a septic tank, by progressively withdrawing part of the liquid into a closed chamber and aerating it under pressure to permeate it extensively with clean ambient air, and discharging the saturated liquid into the septic tank, or other type of tank if different waste liquid from domestic waste is being treated, to enhance the reduction of B.O.D. and/or C.O.D. of said liquid prior to discharge from the tank.

3,662,891
APPARATUS FOR CONFINING FLOATING MATERIALS
Edward E. Headrick, 4900 Crown Avenue, La Canada, Calif.
Filed Apr. 22, 1970, Ser. No. 30,927
Int. Cl. B01d 21/02; E02b 15/04
U.S. Cl. 210—242 12 Claims



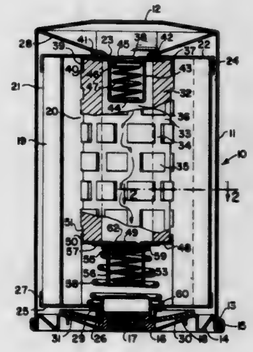
A boom arrangement for the collection of oil or other material floating on the surface of water, the boom being suited for towed or stationary positioning. The boom comprises two flexible arms defining the sides of a converging channel and a harness located between the arms for providing the load bearing structure for supporting and maintaining the boom in proper configuration whether being drawn through the water or being used in a station keeping application. A plurality of wave attenuators may be located near the narrow end of the channel with a controllable gate linking this end of the boom and a collection device located on the side of the gate opposite the narrow end.

3,662,892
IMMISCIBLE LIQUID SEPARATING APPARATUS
Robert M. Sorensen, Bryan, Tex., assignor to Ocean Pollution Control, Inc., Dallas, Tex.
Filed Oct. 21, 1970, Ser. No. 82,568
Int. Cl. B01d 17/02
U.S. Cl. 210—242 4 Claims



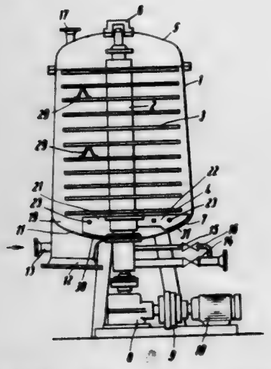
An immiscible liquid separating apparatus having an adjustable weir which admits a predominant portion of the lighter of the two liquids and a minor portion of the heavier of the two liquids into a first chamber. Liquid in the first chamber may communicate with a second chamber over another adjustable weir to permit the lighter of the two liquids to flow over the top of the second weir into the second chamber. The first chamber is provided with an aspirating slot disposed generally transversely across the bottom of the chamber to permit the heavier of the two liquids admitted to the first chamber to be withdrawn therefrom upon movement of the apparatus through the liquid body. The lighter of the two liquids collected in the second chamber may be removed by pump means disposed within the second chamber or through a line connected to the pump means positioned externally of the chamber.

3,662,893
FILTER CARTRIDGE
Kingsley E. Humbert, Jr., Gastonia, N.C., assignor to Wix Corporation, Gastonia, N.C.
Filed Aug. 25, 1969, Ser. No. 852,597
Int. Cl. B01d 27/06
U.S. Cl. 210—315 2 Claims



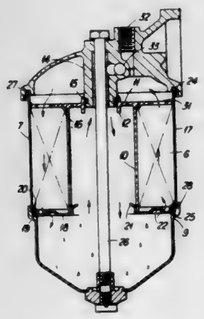
A filter cartridge having a pleated paper filter element therein and concentrically therewith a molded porous filter element that has a resin incorporated therein, the molded element having an outer surface configuration providing channels for the flow of fluid and with the molded element providing a support for the inner peaks of the pleated paper filter element.

3,662,894
CENTRIFUGAL CLEANING FILTER
Herbert Bockler, Schwabisch Gmund, Germany, assignor to Schenk-Filterbau GmbH, Waldstetten, Germany
Filed July 2, 1970, Ser. No. 51,978
Claims priority, application Germany, July 25, 1969, G 69 29 523.4
Int. Cl. B01d *35/16, 29/42*
U.S. Cl. 210—330 13 Claims



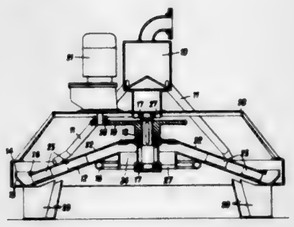
A centrifugal filter having a vertical rotatable shaft supporting horizontal filter elements within a housing. The housing bottom has an outlet aperture swept by ejector shovels mounted on the shaft, the shovels having portions of different inclination.

3,662,895
FILTER ELEMENTS FOR LIQUID FILTERS
Derrick Percival Tuffnell, and Stanley William Kemp, both of Southampton, England, assignors to General Motors Corporation, Detroit, Mich.
Filed Jan. 25, 1971, Ser. No. 109,208
Claims priority, application Great Britain, Jan. 28, 1970, 4,070/70
Int. Cl. B01d *27/06*
U.S. Cl. 210—439 4 Claims



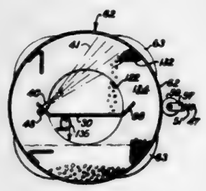
A filter element is formed from a strip of filter paper having a regularly spaced series of transverse fold lines, two lines of adhesive being respectively applied to one edge on one face of the strip and to the opposite edge on the opposite face of the strip, the strip then being formed into pleats by folding about the transverse fold lines, the two halves of each pleat being sealed to each other at one end of the assembly but at the other end being sealed to the adjacent halves of adjacent pleats to each side thereof, so as to form a series of pockets which are open alternately at the top and the bottom of the assembly, and the ends of the assembly of pleats being sealed to each other to form it into a hollow tubular element which may then be fitted into a housing with a center tube and end plate assembly, the element being sealed at one end to the housing and at the other end to the center tube.

3,662,896
APPARATUS FOR DRAINING LIQUID FROM A SUSPENSION
Peter Pink, Klein Rotz near B. Korneuburg, and Rupert Dallner, Vienna, both of Austria, assignors to Chemie Und Metall Gesellschaft M.B.H. Rheax, Vienna, Austria
Filed June 17, 1970, Ser. No. 46,918
Claims priority, application Austria, June 19, 1969, 5804/69
Int. Cl. B01d *12/00*
U.S. Cl. 210—525 10 Claims



Water is drained from sand by moving the slurry upwardly along a conical support surface by a plurality of entrainment shovels which are arranged in a spiral and are rotated over the surface. While successive shovels move ever drier portions of the sand upwardly along the surface to a discharge opening at the apex of the conical support surface, the water runs down the surface.

3,662,897
CUTTING SAMPLE RECOVERY DEVICE
Kenneth O. Huff, 275 Townsend Building, Casper, Wyo.
Filed Sept. 8, 1970, Ser. No. 69,996
Int. Cl. B01d *21/06*
U.S. Cl. 210—523 18 Claims



A sampling device for recovery of cuttings suspended in a fluid, such as a drilling mud containing suspended cuttings produced in oil well drilling, comprising a slowly driven rotary drum having openings in its ends and riffle plates and into which the drilling fluid returning from an oil well is continuously discharged to settle and deposit the cuttings on the lower wall of the rotating drum, the supernatant fluid being continuously passed outward through an open end of the drum, the drum having vanes mounted on its wall which lift the settled cuttings, a series of nozzles disposed in the drum which discharge streams of water upon and wash mud from the cuttings in each vane as it unloads cuttings upon an angularly mounted trough centrally through the open ends of the drum, the trough having perforations at one end to classify the washed cuttings passing downward and outward of the drum, and having containers mounted beneath the perforations to collect the washed recovered cuttings.

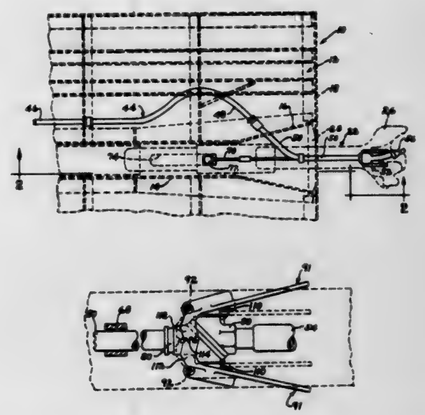
3,662,898
SECTIONAL SERPENTINE DISPENSING COLUMN HAVING MEANS PREVENTING ARTICLE JAMMING
John W. Baxendale, Kansas City, Mo., assignor to The Vendo Company, Kansas City, Mo.
Filed Apr. 24, 1970, Ser. No. 31,605
Int. Cl. A47f *7/00*
U.S. Cl. 211—49 5 Claims



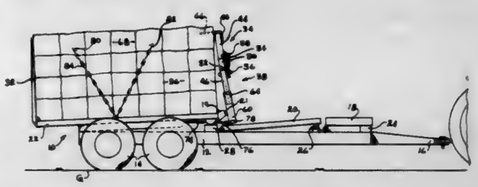
A sectional, double-depth serpentine column for a dispensing or vending machine has a pair of spaced vertical walls provided with inclined rails on their inner surfaces arranged to support the ends of cylindrical articles, such as canned beverages, in a serpentine stack for gravitational movement in unison as individual articles are delivered from the bottom of the column. Inwardly projecting, narrow beads on the inner wall surfaces extend in the direction of inclination of the respective rails and are spaced thereabove less than one-half the diameter of the articles for engagement by the ends of the articles below the center thereof in order to prevent such ends from contacting the wall surfaces and to provide minimum resistance to rotation of the articles as they engage the beads during downward travel. The column is a sectional assembly comprising an uppermost, a lowermost, and one or more intermediate sections, each of the three types of sections having different wall, rail and bead configurations designed to permit the number of intermediate sections to be varied in accordance with the desired article capacity, or permit complete elimination of intermediate sections if it is desired to provide a shorter column of reduced article capacity.

3,662,899
ANGLE COCK FOR AIR BRAKE TRAINLINE IN RAILWAY CARS
Robert W. Randolph, St. Charles, Mo., and Boris S. Terlecky, New York, N.Y., assignors to ACF Industries, Incorporated, New York, N.Y.
Filed July 8, 1970, Ser. No. 53,210
Int. Cl. B61g *5/08*
U.S. Cl. 213—1 R 5 Claims

An angle cock for a trainline is mounted centrally of the width of a railway car generally beneath the coupler. The angle cock comprises a valve movable between fully open and fully closed positions and a valve stem extending in a horizontal direction generally transversly of the car from opposite sides of the valve. A handle is mounted on each valve stem and is pivoted outwardly from a releasably locked position before rotation of the associated valve stem. After rotation of the valve stem and valve to the fully open or fully closed position the handle is pivoted inwardly to releasably lock the handle in position. The handles on opposite sides of the valve are interconnected so that the unlocking of one handle effects unlocking of the other handle therefore to permit rotation of the valve. Upon rotation of the valve to the fully open or fully closed position, the associated handle is pivoted inwardly to a locked position and simultaneous locking of the other handle is likewise effected.



3,662,900
RETRIEVER ATTACHMENT FOR A BALE WAGON
Donald M. Grey, Selma, and Albert C. Cook, Kingsburg, both of Calif., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed July 29, 1970, Ser. No. 59,262
Int. Cl. B65g *57/32*
U.S. Cl. 214—6 B 8 Claims

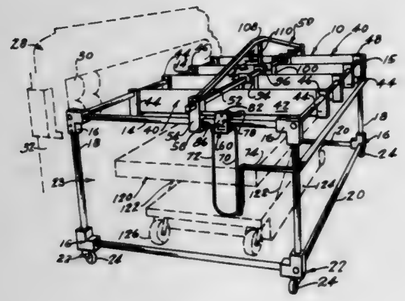


A retriever clamping device for attachment onto a bale wagon for providing the same with the additional capability of retrieving load stacks. The clamping device is generally T-shaped and includes an elongated beam having a cross bar attached thereto about the upper portions and extending laterally thereacross. A series of spaced apart tines are disposed on the cross bar and extend rearwardly for engagement with the top tier of the load stack to be retrieved. The T-shaped clamping device is pivotally mounted transversely the forward end of a load table by securing a mounting bar that is affixed to the clamp within mounted brackets extending from the load table. The clamp is actuated by a remotely controlled hydraulic cylinder whose piston is connected to the lower portion of the elongated beam.

3,662,901
STACKING MACHINES
Eugene L. Brintley, Sr., 1042 Lanier Boulevard, N.E., Atlanta, Ga.
Continuation of application Ser. No. 575,701, Aug. 29, 1966, now abandoned. This application July 23, 1970, Ser. No. 64,053
Int. Cl. B65g *57/11*
U.S. Cl. 214—6 H 9 Claims

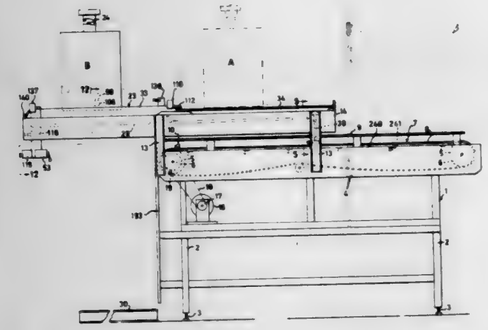
A stacking machine which receives individual metal plates from a slitting machine that moves and slits a larger metal

plate into the smaller individual plates moving side-by-side and deposited and stacked by the present stacking machine on top of a lift table that lowers from time to time during the stacking operations. Adjustable pneumatically operated stack separators on the stacking machine include stack separator plates operating with pusher bars on the stacking machine



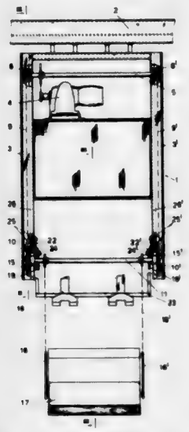
which reciprocate, receive and engage the pieces, cushion the shock and cause the pieces to drop into respective stacks. The stacking machines may be mounted on legs that are high enough to permit the insertion and removal of a conventional lift table such as the "Globe" lift table, a "Southward" lift table or a "Jarke" lift table.

3,662,902
PALLETIZER
Konrad Emil Meissner, Lafayette, Calif., assignor to Filper Corporation, San Ramon, Calif.
Filed Dec. 4, 1969, Ser. No. 881,978
Int. Cl. B65g 57/24
U.S. Cl. 214—6 FS **3 Claims**



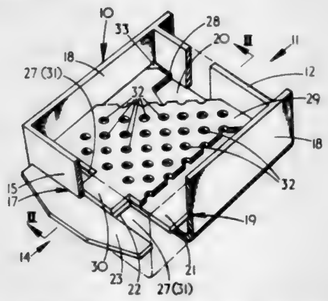
An air-actuated palletizer for cans having a vertically reciprocable platen with vacuum cup for connection with cans on a conveyor carried against a pattern forming bar over which the cans are elevated by said cups and moved to a loading position for lowering said cans onto a pallet supported stack. A system of air-actuated valves controls the movements, including a valve actuated by movement of one of the cans releasably connected with and suspended from one of said cups.

3,662,903
CARRIAGE FOR CARRYING AND VERTICALLY MOVING TUMBLERS OR FRAMES RELATIVE TO A TREATMENT OR PROCESSING LINE
Claudio Mazzone, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, (Turin), Italy
Filed Feb. 24, 1970, Ser. No. 13,609
Claims priority, application Italy, Feb. 26, 1969, 50733 A/69
Int. Cl. B65g 69/00
U.S. Cl. 214—1 QC **14 Claims**



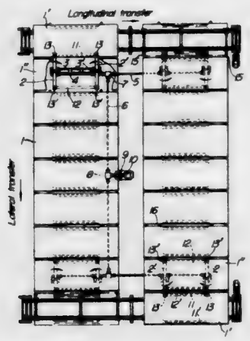
A carriage for carrying workpieces such as drums, and frames through a treatment or processing line is described. The carriage is capable of lifting and lowering the workpieces at predetermined intervals as determined by a plurality of treatment or processing stations along the line. The carriage is useful in carrying the workpieces along a treatment line, for example electroplating, wherein the workpieces must be introduced into a tank, rotated while in the tank and from which they must be lifted after completion of the treatment accomplished in each tank.

3,662,904
COUNTING DEVICE
Vincent John Tune, 1 Buxton Close, Maidstone, England
Filed Sept. 3, 1970, Ser. No. 69,418
Int. Cl. G07d 9/06
U.S. Cl. 214-1C **4 Claims**



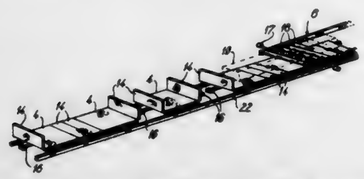
A unit for counting tablets or other like elements which is in the form of an open box having an intermediate withdrawable floor on which is supported a plate having a predetermined number of holes for accommodating tablets and the back of the box being open at the bottom so that when the holes in the plate are filled with tablets and the withdrawable floor is pulled out the predetermined number of tablets fall to the bottom of the box and can be removed out of the back.

3,662,905
STORAGE PALLETS AND DRIVE MEANS THEREOF
Kaoru Mizuno; Tetsuo Kitamura; Shoichi Nakao; Takenhiko Yasuda; Akio Ueno; Kyunojyo Yoshikawa; Takeo Yuminaka, and Kazuhiro Sakata, all of Katsuta-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 23, 1967, Ser. No. 625,539
Claims priority, application Japan, Dec. 7, 1966, 41/11477; Oct. 14, 1966, 41/95069; May 24, 1966, 41/48661; 41/48660; May 2, 1966, 41/40456; Jan. 11, 1967, 42/1769; Apr. 19, 1966, 41/24841
Int. Cl. E04h 6/06
U.S. Cl. 214—16.1 CD **3 Claims**



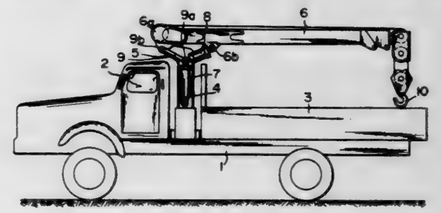
A horizontal circulation type of storage equipment having a plurality of horizontal rows of article carrying pallets arranged in a manner to provide a vacancy of pallet at one end of each of the pallet rows so that successive and alternate transfer of pallets can move a desired pallet to a predetermined station. Drive means for successively and alternately transferring the pallets in their longitudinal and lateral directions, plural-storied storage equipment consisting of a stack of the above storage equipments, storage equipment provided with lift means, and coupling means for the pallets are described herein.

3,662,906
CONVEYOR SYSTEMS
Svend Christensen, Risskov, Denmark, assignor to Crisplant A/S, Risskov, Denmark
Filed Sept. 2, 1970, Ser. No. 68,843
Claims priority, application Great Britain, Sept. 2, 1969, 43,342/69
Int. Cl. B65g 67/12
U.S. Cl. 214—41 **10 Claims**



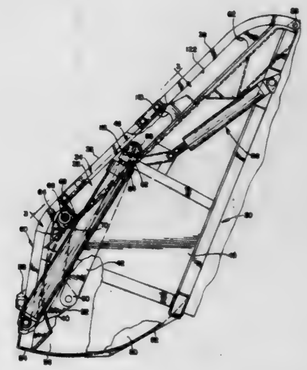
A conveyor system comprising a number of carrier vehicles each having a load supporting platform operable to receive articles to be conveyed, driving means for said vehicles, and means for guiding said vehicles along a predetermined track, said track extending past a feeding station and at least one unloading station, said feeding station adjacent said track having transfer means operable to transfer articles to said vehicles during presence of vehicles in said feeding station, said unloading station adjacent said track having means operable to effect unloading of said articles from the vehicles, said vehicles being provided with releasable coupling means operable to couple together two consecutive vehicles in such a manner that the load supporting platforms thereof form a substantially unbroken platform of a length bigger than that of the platform of a single vehicle, detector means being provided adjacent said feeding station for detecting the length of each article transferred to said vehicles, said detector means being operatively connected to actuator means for said coupling means so as to effectively provide coupling together of at least two consecutive vehicles in response to said detector means detecting the length of an articles under transfer from the feeding station to exceed the length of the platform of a single vehicle.

3,662,907
DEVICE FOR ACTUATING A SWINGABLE BOOM
Toshihiro Nakajo, Tokyo, Japan, assignor to Unic Corporation, Tokyo, Japan
Filed Apr. 17, 1970, Ser. No. 29,573
Int. Cl. B60p 1/48
U.S. Cl. 214—77 R **3 Claims**



A device for actuating the swingable boom of a truck crane. The boom is swingably supported at the top of a hollow post secured to a crane truck. A pair of series connected hydraulic cylinders are disposed between the boom and the hollow post, while guiding the movement of the hydraulic cylinders by the hollow space of the post. Thereby, when the boom is actuated by the hydraulic cylinders, the hydraulic cylinders are prevented from moving toward a baggage frame of the crane truck and from reducing the effective floor space of the baggage frame.

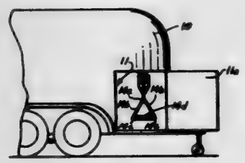
3,662,908
VEHICLE LOADER
Robert A. Boda, Oshkosh, Wis., assignor to Leach Company, Oshkosh, Wis.
Filed June 5, 1970, Ser. No. 43,935
Int. Cl. B65f 3/00
U.S. Cl. 214—83.3 **11 Claims**



A refuse loader adapted for use with a refuse collection vehicle and including a packer plate movement mechanism

of an improved, simplified construction. The mechanism includes a packer plate which is pivotally mounted on a reciprocable carrier so as to be able to move while extended with the carrier to a position for engaging a load of refuse, then be swung through an arc to collect and compact the refuse and thereafter be moved with the carrier to discharge portion of the loader. The same cycle may thereafter be repeated as desired. The improved design provides, by means of an improved link, cylinder, packer plate, and carrier arrangement, a mechanism having improved flexibility in relation to known mechanisms previously used in counterparts of the loading mechanism of the invention, and also having improved reliability and simplicity. The function previously achieved with four hydraulic cylinders is now accomplished using only two. In addition, the unit has inherent safety features not heretofore available in such units. In addition to providing a novel mechanism and operating cycle, the unit affords a compact design which enables an associated refuse collection vehicle body to be shortened, for increasing the effective load able to be handled by the truck and improving the maneuverability thereof.

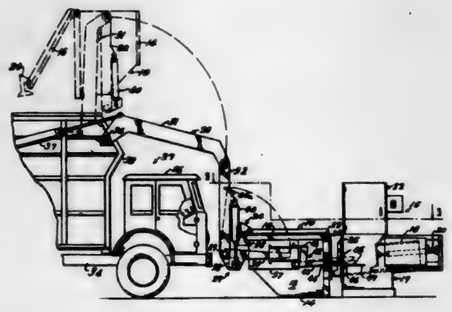
3,662,909
SADDLE RACK FOR HORSE TRAILER
Harold R. Cherry, 1901 Meadowlark, Harrisonville, Mo.
Filed Mar. 11, 1970, Ser. No. 18,648
Int. Cl. B60p *3/00*
U.S. Cl. 214—83.24 3 Claims



A saddle rack carrier is mountable in the storage compartment of a horse trailer by fore and aft swingable hinges which support a track structure and includes a combination carrier bar and saddle frame which is selectively and movably mounted thereon. To accomplish a selective movable mount, yoke members are fixedly attached to each end portion of the frame and have roller members thereon which engage with the upper surface of the track structure. A flexible support is removably connected with the track and fixedly attached to the central portion of the carrier bar. The outer yoke is fixedly located by a safety ring. In this manner, the outer yoke is removable from the track thereby permitting the carrier bar-frame combination to be moved outwardly on the above-mentioned rollers and a saddle either removed from the frame or placed thereon. The further detaching of the centrally located flexible support permits the saddle frame to be completely removed from the track or to be moved outwardly to an easily accessible location for a user standing exteriorly of the horse trailer.

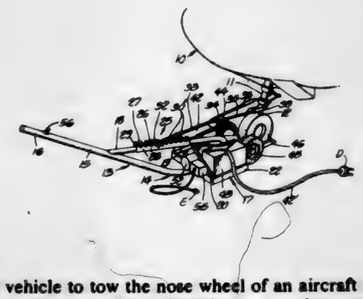
3,662,910
REFUSE CONTAINER FOR STATIONARY PACKER
William A. Herpich; Charles R. Cooley, and Loren A. Shoup, all of Galion, Ohio, assignors to Peabody Galion Corporation, Galion, Ohio
Filed Aug. 6, 1970, Ser. No. 61,539
Int. Cl. B65f *3/02*
U.S. Cl. 214—302 10 Claims

A container for a refuse compacting machine which has an openable top lid and an open end through which the machine pushes the refuse into the container. The container has sleeves on the outer sides of its end walls in which the fork of a refuse truck can be engaged for lifting ad dumping the container; a catch for the lid which can be both locked and unlocked by vertical movement of the fork and a latch assembly which engages a part of the compacting machine and which retains the container in refuse receiving position adjacent the compacting machine. Without leaving the cab of the truck,



and by causing the fork to move in the proper sequence, the driver can release the lid catch, disengage the latch assembly, pick up the container and dump the same, replace the container in refuse receiving position, close the lid catch, and reengage the latch assembly to retain the container on the compacting machine.

3,662,911
TOWING DEVICE
Donald A. Harman, 41614 - 102nd Street, East Lancaster, Calif.
Filed Mar. 20, 1970, Ser. No. 21,288
Int. Cl. B60p *3/06*
U.S. Cl. 214—334 3 Claims

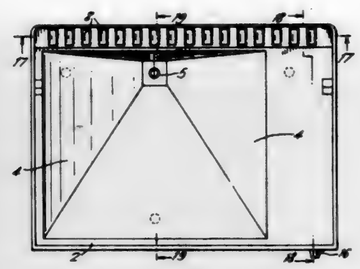


A land vehicle to tow the nose wheel of an aircraft having a tricycle landing gear. The vehicle is a powered two-wheeled vehicle. The wheels are parallel. A hand-carried tongue extends in one direction from the wheel axis. A scoop extends in the opposite direction. The scoop is motor driven by the wheels. Loading is accomplished by driving the scoop underneath the aircraft wheel. An adjustable towline is used for balance during towing.

3,662,912
DRIP TRAY FOR REFRIGERATORS
Jose Luis Rodriguez Calle, Mitarte No. 2, Guipuzcoa, Spain
Filed Oct. 30, 1970, Ser. No. 85,656
Int. Cl. B65d *25/18*
U.S. Cl. 220—9 R 5 Claims

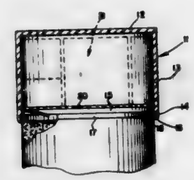
A drip tray for a refrigerator has upper and lower panels with an insulating panel between them. The upper and lower

panels slope towards a water outlet orifice provided in the



tray. Along a side of the tray there are several apertures for the passage of air.

3,662,913
DUAL OVERCAP
Carmen T. Mascia, Westchester, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Mar. 11, 1970, Ser. No. 18,432
Int. Cl. B65d *1/24, 1/36*
U.S. Cl. 220—23 5 Claims



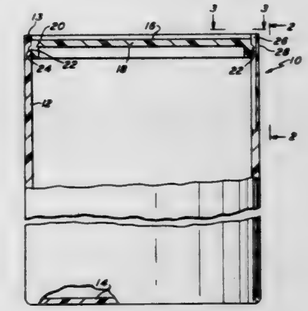
The overcap comprises a receptacle adapted for snap fit over a can bead. The receptacle is provided with a snap-in cover, so held that the latter is retained during application or removal of the overcap.

3,662,914
CAN END WITH REMOVABLE TAB CLOSURE
William J. Slade, Moorestown, N.J., assignor to Campbell Soup Company, Camden, N.J.
Filed Oct. 26, 1970, Ser. No. 83,805
Int. Cl. B65d *39/00, 41/00, 43/00*
U.S. Cl. 220—24 A 7 Claims



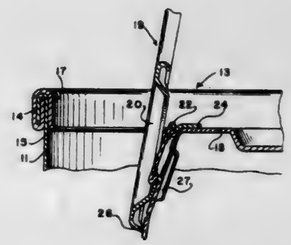
A can end has a pouring aperture and a smaller venting aperture both of which are covered and sealed by an elongated removable tab having integral rivet portions corresponding to the size and configuration of the apertures in the can and positioned within the apertures. The integral rivet portions are riveted to compress a gasket between the tab and the top of the can but the formation of the rivet is incomplete so that the tab may be manually removed from the can end by pulling the rivet portions of the tab out of engagement with the apertures in the can end. A finger grip is provided on the tab remote from the pouring aperture, and the tab is constructed to bend along a line transverse to and between the rivet portions so that the rivet engaged within the vent aperture is withdrawn from the vent aperture before the other rivet portion is withdrawn from the pouring aperture. A portion of the can end at the side of each aperture closest to the finger grip is weakened by the score lines permitting the can to distend upon upward displacement of the finger grip to reduce the pulling force required to remove the integral rivets from the apertures.

3,662,915
TAMPER PROOF PACKAGE
Howard L. Destler, Jr., Warminster, Pa., assignor to Dougherty Brothers Co., Bensa, N.J.
Filed Oct. 8, 1970, Ser. No. 79,152
Int. Cl. B65d *17/00*
U.S. Cl. 220—27 5 Claims



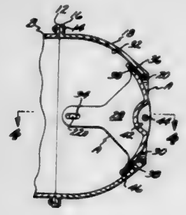
A container structurally interrelated so as to provide telltale evidence if the container contents have been tampered with. A tab defined by a recess on the ID of a container is broken away when entry is made into the container. The container and its cover are made from brittle polymer plastic.

3,662,916
EASY OPENING CONTAINER
Albert J. Holk, Jr., Frankfort, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Nov. 23, 1970, Ser. No. 91,645
Int. Cl. B65d *17/24*
U.S. Cl. 220—54 4 Claims



A full panel type of easy opening container having means for increasing the initial opening arc of the score line during upward tilting of the pull tab. The rigidifying means comprises beads arranged to form a rigid panel portion at the rivet so that a bend line occurs behind the rivet upon penetration of the pull tab nose into the container.

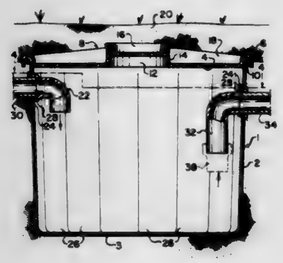
3,662,917
PRESSURE DIFFERENTIAL ACTUATED SEALING MEMBER
Derek D. Hardingham, 1030 Crest View Drive, Seal Beach, Calif.
Filed June 15, 1970, Ser. No. 46,335
Int. Cl. A47j 27/08; B65d 43/26
U.S. Cl. 220—55.3 2 Claims



A movable pressure differential actuated sealing member in the form of a convex-concave rigid shell that has two laterally spaced and aligned arms projecting therefrom that support said shell for pivotal and longitudinal movement relative to the interior face of a rigid spherical sector that is truncated to define an opening therein.

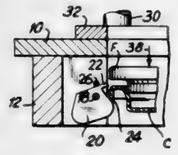
The shell on the surface thereof most adjacent the sector supports a resilient ring. When the opening in the sector and the shell are longitudinally aligned, the ring occupies an encircling position relative to said opening. Upon a substantial pressure differential being established between the interior and exterior of the sector that tends to move the shell towards the sector, the resilient ring is compressed, and the shell acts as a door to seal the opening.

3,662,918
REINFORCED SEPTIC TANK
David D. Crawford, 1601 North Oak Street, and John W. Elvington, 605 Mesquite, both of Mineral Wells, Tex.
Filed Aug. 24, 1970, Ser. No. 66,264
Int. Cl. B65d 87/10
U.S. Cl. 220—85 R 8 Claims



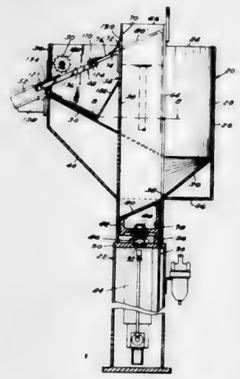
A septic tank, which may be converted into a grease trap. The tank is preferably made of plastic reinforced with fiber glass and it is further reinforced due to the construction. The tank is light weight, therefore easy to install, is durable and resistant to corrosion due to ground moisture, and will not deteriorate because of exposure to acids and alkalies. The cover of the present tank interfits with the tank in fluid tight relation. It is readily converted into a grease trap by the addition of an extension onto the outlet pipe which extends downward into the tank.

3,662,919
METHOD AND APPARATUS FOR BOTTOM DISPENSING STACKED ARTICLES HAVING UNDERCUT PERIPHERAL PORTIONS
Zvi Shmerling, Kiron, Israel, and Robert Lee Merold, Ramsey, N.J., assignors to American Can Company, New York, N.Y.
Filed Apr. 6, 1970, Ser. No. 25,868
Int. Cl. B65g 59/06
U.S. Cl. 221—251 4 Claims



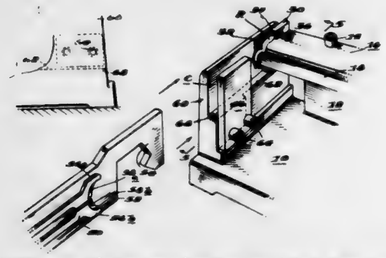
A method of and apparatus for bottom dispensing stacked articles, such as cups or lids, wherein the article stack is supported by fingers having support surfaces engaged with the lowermost article of the stack, the support surfaces projecting into relatively undercut peripheral portions of the article. Subsequent elevation of the stack by manual or mechanical means causes the supporting finger surfaces to retract automatically to permit descent of the stack and withdrawal of the lowermost article. Stack descent effects direct engagement of camming surfaces on the fingers with the articles, causing the supporting surfaces to reengage the next lowermost article and to again support the stack.

3,662,920
PARTS FEEDER AND METHOD
Arnold I. Lubin, 8485 Woodcrest Drive, Apt. 4, Westland, Mich.
Filed May 13, 1970, Ser. No. 36,844
Int. Cl. B23q 7/12
U.S. Cl. 221—162 7 Claims



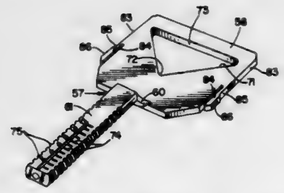
Disclosed is a method of and apparatus for feeding small parts in a pre-determined orientation from a hopper containing an unoriented mass of the parts wherein the hopper is stationary and has downwardly sloping bottom walls for gravity feeding the parts to the lowest point of the hopper and with an elevator tube extending upwardly through the hopper from such lowest point to the upper end of a downwardly and outwardly sloping parts orienter, and in which the tube opens laterally through a slot into the hopper along one side and opens laterally on the other side at its upper end toward the orienter, and with an elevator reciprocable in the tube and having a sloping parts elevating platform and a gate depending from the platform to close the slot upon ascent of the elevator and with the platform shiftable along the tube from a position at the lowest point of the hopper, where parts gravity flows into the tube above the platform, upwardly to a position for gravity discharging parts through the lateral opening at the upper end of the tube toward the orienter.

3,662,921
APPLICATOR-OPERATED DISPENSER FOR DISPENSING CLIP-TYPE EXTERNAL SPRING RETAINING RINGS
Gustav Janecka, Jackson Heights, N.Y., assignor to Waldes Kohinoor, Inc., Long Island City, N.Y.
Filed Sept. 23, 1970, Ser. No. 74,779
Int. Cl. B65g 59/00
U.S. Cl. 221—312 A 6 Claims



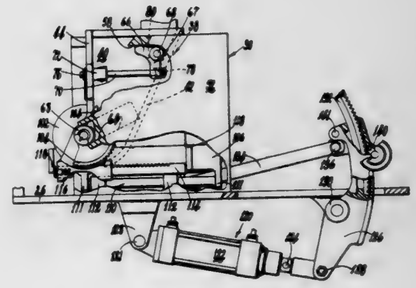
A dispenser for external spring retaining rings, particularly but not exclusively clip-type retaining rings of the form thereof disclosed and claimed in copending Wurzel application Ser. No. 852,866, filed Aug. 25, 1969, now U.S. Pat. No. 3,595,123, dated July 27, 1971, capable of being operated by a leverage-advantage type applicator as disclosed in my concurrently filed application for letters patent thereon entitled "A Hand Applicator for Assembling External Retaining Rings in Their Grooves by Radial Application," Ser. No. 74,780, with "operated" meaning the acts or operations of picking off, one at a time, the endmost ring of a spring-loaded supply thereof maintained in face engagement and in stack or column formation or a magazine rail provided by the dispenser and thereupon of withdrawing said ring for assembly in its groove.

3,662,922
GRANULAR CHEMICAL APPLICATOR WITH SLIDABLE METERING MEANS
Augustyn M. Gesior, Clarendon Hills, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed June 19, 1970, Ser. No. 47,856
Int. Cl. B67d 5/22
U.S. Cl. 222—46 1 Claim



A dispenser including metering mechanism for dispensing granular chemicals and like materials in agricultural operations wherein the dispenser has a concave bottom in which is mounted a vaned wheel for delivering material to a discharge outlet, and a valve is linearly slidable against the bottom and has a metering opening registrable with the outlet for regulating the rate of flow of material therefrom, the valve having an external portion with indicia, and wherein means are provided for adjusting the valve.

3,662,923
FEEDING PARTICULATE MATERIAL
Robert George Spanton; Gordon Cecil John Wakefield; Robert Charles Quarmby, and Terence James Leonard Clarke, all of Leicester, England, assignors to The British United Shoe Machinery Company Limited, Leicester, England
Filed Nov. 27, 1970, Ser. No. 93,217
Claims priority, application Great Britain, Dec. 3, 1969, 58,961/69
Int. Cl. G01f 11/00
U.S. Cl. 222—55 10 Claims

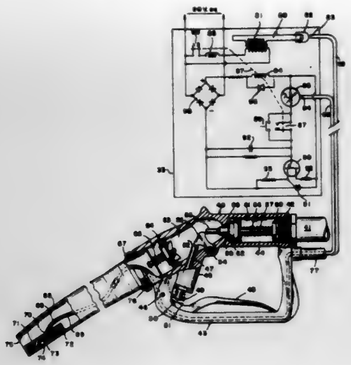


The invention relates to feeding particulate material, especially a machine for and method of feeding particulate material wherein a conveying surface and an opening from a hopper containing particulate material to be metered are first moved relatively, the conveying surface moving relatively forward, at a comparatively slow speed commensurate with the rate of flow of material from the hopper onto the surface to spread a layer of particulate material on the surface, the layer having a thickness controlled by the spacing of control means from the conveying surface, and then again relatively moved, the conveying surface being moved rearwardly relative the opening and the layer being prevented, or substantially from moving rearwardly so that particulate material falls from the front edge of the surface. The length of stroke of the conveying surface is adjusted so that the amount of particulate material falling from the front edge of the conveying surface is the same for each forward and rearward cycle of the surface.

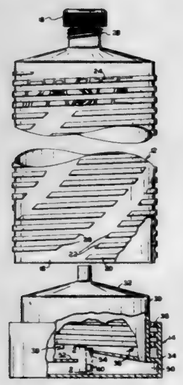
3,662,924
LIGHT-CONTROLLED FLUID DISPENSER
Stanley C. Crandall; Billy J. Harris, and Richard L. Nelson, all of Greensboro, N.C., assignors to Gilbert & Barker Manufacturing Company, New York, N.Y.
Continuation of application Ser. No. 790,963, Jan. 14, 1969, now abandoned. This application Feb. 26, 1971, Ser. No. 119,351
Int. Cl. B67d 5/08
U.S. Cl. 222—64 11 Claims

A fluid sensing device for controlling the dispensing of a liquid into a container in which a light beam is transmitted from a remote source to a predetermined location of fluid

discharge and the light beam is reflected to a light responsive control circuit during fluid flow whereby upon light beam interruption or modification fluid flow may be terminated or re-initiated, manually or automatically.



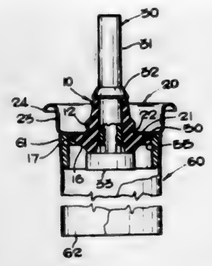
3,662,925
DIMINISHING CONTAINERS
Leland V. Hall, Riddle, Oreg., assignor to Oasis Electronics, Riddle, Oreg.
Filed Dec. 23, 1969, Ser. No. 887,528
Int. Cl. B67b 7/36
U.S. Cl. 222—80 1 Claim



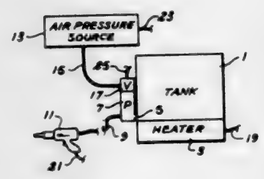
Plastic cylindrical containers having threaded bodies are adapted to be screwed into cupped rams, which carry staples having sharp edges serving to shave the lower edges of the containers. One container has an external thread which is interrupted to form a design and indicia and which forms a ratchet to define an anti-reverse structure with pawl portions of the ram. Another container has an internal buttress thread.

3,662,926
VALVE AND BAG ASSEMBLY FOR PRESSURE DISPENSING
Herbert R. Umstead, Budd Lake, N.J., assignor to Clayton Corporation, St. Louis, Mo.
Filed Jan. 19, 1971, Ser. No. 107,666
Int. Cl. B65d 35/28
U.S. Cl. 222—95 8 Claims

For dispensing from a pressurized container without aeration, a bag for containing a pasty product is suspended beneath a container top by a ring member having a tapered, inward extending rim. The ring member is supported by the flexible outer part of the flange of a conventional elastic seal at whose center is located a conventional valve stem. The tapered rim fits the configuration of the downward deflected outer part of the seal flange, while the radially inner part of the seal flange seals against the undersurface of the container top.

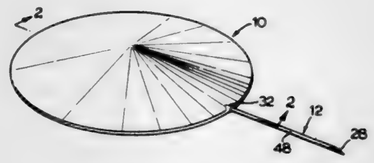


3,662,927
HOT-MELT ADHESIVE SYSTEMS
Eric H. Cocks, 21 Crane Avenue, West Caldwell, N.J.
Filed Jan. 21, 1970, Ser. No. 4,501
Int. Cl. B67d 5/62
U.S. Cl. 222—146 HE 5 Claims



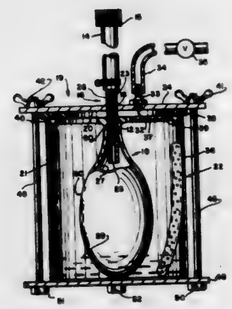
An apparatus for applying hot-melt adhesives comprises a heated tank which supplies fluid adhesive by gravity to an air-operated pump for distribution to a hand-held dispensing gun. The gun and pump are energized simultaneously or in such predetermined fashion as to facilitate accurate dispensing of the adhesive.

3,662,928
FLUID SAMPLING DEVICE
Louis A. Pogorski, and Ernest M. Reimer, both of Toronto, Ontario, Canada, assignors to Louis August Pogorski, Toronto, Ontario, Canada
Filed Apr. 6, 1970, Ser. No. 25,736
Int. Cl. B65d 37/00
U.S. Cl. 222—211 12 Claims



A device for the collection, storage or transfer of fluids comprising two thin, metallic inherently stable shells each of like shallow dome-shape contour joined at their basal abutting edges to define in internal cavity isolated from the atmosphere, at least one of said shells having an inherent spring-like flexibility such that under the application of an externally applied force it is displaceable without rupture from the cavity defining relation of maximum volume to a second stable position of an inverse uniformly dome-shaped contour with the other of said shells in cavity defining relation of minimum volume, and reversely, and passage means integral with at least one of said shells for establishing fluid communication with said internal cavity.

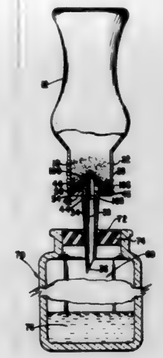
3,662,929
DEVICE FOR DISPLACING A SUBSTANCE IN RESPONSE TO FORCES GENERATED BY A FLUID UNDER PRESSURE
Samuel Francis Sims, 1515 A South Ninth Street, Alhambra, Calif.
Filed June 29, 1970, Ser. No. 50,834
Int. Cl. B67d 5/54
U.S. Cl. 222—386.5 3 Claims



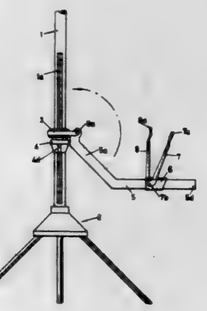
A device for forcing a substance to be displaced from a containing enclosure using the forces generated by a fluid under pressure. The fluid under pressure enters an enclosure, a portion of whose surface is formed by a flexible membrane. The flexible membrane forms a common surface between the enclosure in which the fluid under pressure is held and the containing enclosure in which the substance to be displaced is held so that forces generated on the membrane by the fluid under pressure are applied to the substance to be displaced. As the fluid under pressure flows into the enclosure the membrane deflects and forces the substance to be displaced from the containing enclosure. An embodiment of this invention is disclosed in which the flexible membrane expands within the interior of a rigid container thus forcing the substance within the container to be displaced. Another embodiment of this invention is disclosed in which the fluid under pressure enters a rigid container and causes the flexible membrane within the container to collapse thus forcing the substance to be displaced out of the containing enclosure a portion of whose surface is formed by the flexible membrane.

3,662,930
DISPENSER FOR POWDERED MEDICAMENTS
Eugene J. Meierhoefer, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.
Filed June 30, 1970, Ser. No. 51,088
Int. Cl. B67d 3/00
U.S. Cl. 222—564 6 Claims

The disclosure is directed to an improvement in a dispensing package for adding a supplemental medicine to a parenteral solution container which is characterized by a plug disposed between the medicament reservoir and the discharge conduit. The plug has a labyrinth through which solid medicament must pass on discharge. The function of the labyrinth is to prevent the additive powder from being spilled or misdistributed out of the package as the package is being brought into functional engagement with an intravenous solution bottle.



3,662,931
HEMLINE GAUGE
Eric Richard Arthur, 94 Boston Road, Hayes, and Oliver Robert Clemesha, 13 Eastdown Park, London, both of England
Filed Oct. 9, 1970, Ser. No. 79,486
Claims priority, application Great Britain, Oct. 10, 1969, 49,905/69
Int. Cl. A41h 31/00, 9/00
U.S. Cl. 223—1.1 1 Claim

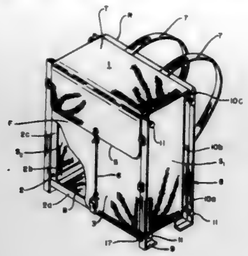


A hemline gauge adapted to be fitted to a center tube of a dress form which can be set at a required height on said tube and is rotatable about the axis thereof, and fitted with elements which can be gripped about a hem to form vertical pleats through which pins can be passed to maintain the formed hem when the elements are opened apart and released.

3,662,932
PACK CONVERTIBLE TO STOOL
Ralph C. Kerschner, Star Route, Mohrsville, Pa.
Filed June 1, 1970, Ser. No. 41,964
Int. Cl. A45f 4/02
U.S. Cl. 224—9 7 Claims

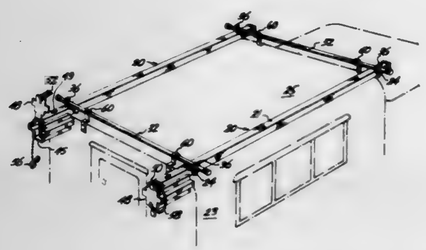
A back-carried pack convertible into a four-legged stool includes a nonrigid sack element supported by a rigid frame. A cushioned surface is disposed on one side of the pack unit.

Stool leg members are detachably mounted on opposed sides of the pack unit and are secured by fastening elements that



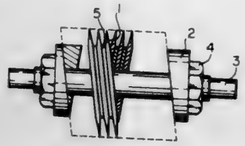
also serve to secure the legs to the frame when the legs are in an extended position.

3,662,933
CARRIER FOR FISHING POLES AND REELS READY TO USE
John Michal, P. O. Box 7, South Prairie, Wash.
Filed June 3, 1970, Ser. No. 43,025
Int. Cl. B60r 9/04
U.S. Cl. 224—42.1 E **1 Claim**



A fully enclosable carrier or container receives one or more fishing poles with reels attached and fully rigged ready for fishing. During storage and travel the carrier protects the fishing equipment fully rigged from damage or theft. Also the carrier is adaptable for convenient mounting anywhere and especially to vehicles.

3,662,934
SPLITTER FOR SYNTHETIC RESIN FILM
Takasi Nara, and Isao Nakao, both of Nara-shi, Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Jan. 29, 1970, Ser. No. 6,734
Claims priority, application Japan, Feb. 1, 1969, 44/8846
Int. Cl. B26d 1/28
U.S. Cl. 225—97 **4 Claims**



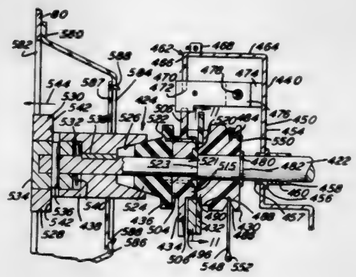
A novel splitter to be used to split synthetic resin film into a network of continuous fibrous strands. The splitter comprises a shaft, a plurality of blade disks, and a pair of supports each having on one side of it a protuberance. The blade disks fitted on the shaft are pressed by the supports and are assembled as a whole in a helical form along inclined planes of the protuberances.

3,662,935
APPARATUS FOR FIBRILLATING UNIAXIALLY ORIENTED FILM
Masahide Yazawa; Tokio Okada, Tokyo, and Kazue Yamano, Urawashi, all of Japan, assignors to Polymer Processing Research Institute Ltd., Tokyo, Japan
Filed Nov. 3, 1969, Ser. No. 873,451
Claims priority, application Japan, Nov. 18, 1968, 43/84655
Int. Cl. B26f 3/02
U.S. Cl. 225—97 **1 Claim**



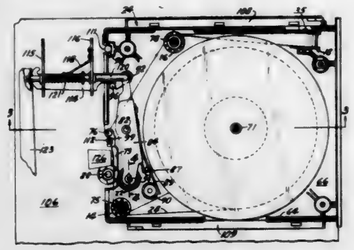
A web of small continuous fibers having a reticulated structure is prepared by slide-rubbing a uniaxially oriented film of a polymer, under a tension over a revolving bar like means having a coarse surface revolving around an axis in a longitudinal direction at a higher peripheral speed than the travelling speed of the film, in a direction perpendicular to the revolving axis of the revolving means. The revolving means is provided on its surface with a plurality of small roof-type projections formed by multiple screw threads having sharp crests and scraped grooves, intersecting with the said threads.

3,662,936
FILM ADVANCE MECHANISM FOR COMBINATION VISUAL AND SOUND APPARATUS
Donald A. Youngblood, Chalfont, Pa., assignor to Optisonics Corporation, Montgomeryville, Pa.
Original application June 14, 1968, Ser. No. 739,909, now abandoned, which is a continuation of application Ser. No. 535,149, Mar. 17, 1966, now abandoned. Divided and this application Apr. 6, 1970, Ser. No. 31,072
Int. Cl. G03b 1/24
U.S. Cl. 226—51 **6 Claims**



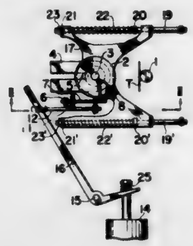
A driving mechanism is operatively connected to a sprocket wheel for rotating the wheel and advancing the frames of a film. An adjusting knob is further provided, which enables manual rotation of the sprocket for fine adjustment of the frame location.

3,662,937
MAGNETIC TAPE PRESSURE ROLLER
Maynard P. Borman, Falcon Heights, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Mar. 6, 1970, Ser. No. 17,218
Int. Cl. B65h 17/20
U.S. Cl. 226—89 **4 Claims**



A magnetic tape cartridge including a self-aligning pressure roller comprising a tape engaging member formed with a resilient cylindrical peripheral tape engaging surface and supported for rotation about a fixed point on its axis to permit the roller to align with a rotatable capstan shaft in a recording and/or reproducing machine to uniformly press the length of magnetic tape in the cartridge the peripheral tape engaging surface between, and the capstan shaft.

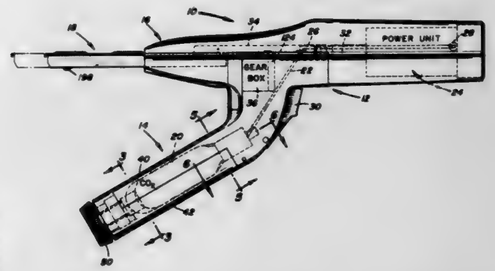
3,662,938
DEVICE FOR MOVING A PINCH ROLLER
Yukio Hagiwara, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed June 1, 1970, Ser. No. 42,443
Claims priority, application Japan, May 31, 1969, 44/50087
Int. Cl. G11b 15/66
U.S. Cl. 226—90 **4 Claims**



A device for pressing a capstan against a pinch roller in a magnetic tape recorder/reproducer perpendicularly elevates a supporting shaft of the pinch roller parallel with the capstan by a lever which converts the movement of a plunger to an elevational movement. Simultaneously the supporting shaft of the pinch roller is moved horizontally into parallel contact with the capstan by pressing the supporting shaft or bearing of the supporting shaft by movement of the same lever.

3,662,939
SURGICAL STAPLER FOR SKIN AND FASCIA
Graham W. Bryan, Ridgefield, Conn., assignor to United States Surgical Corporation, Baltimore, Md.
Filed Feb. 26, 1970, Ser. No. 14,614
Int. Cl. B25c 5/02
U.S. Cl. 227—19 **38 Claims**

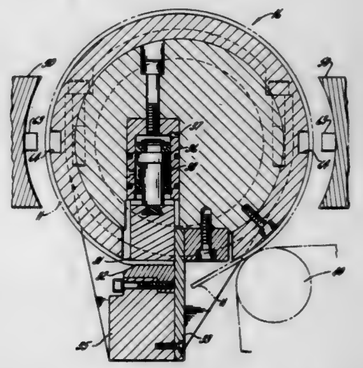
An instrument for applying surgical staples to effect the joining of disunited skin or fascia. The instrument of the present invention is powered by a gas under pressure originating from a gas filled tank, positioned within a housing and adapted to ensure that the introduction of the tank and removal thereof may be easily and quietly accomplished without danger of injury to the operator. The surgical staples are carried in one of two types of cartridge assemblies, the first and smaller being designed for the application of staples to external skin and the second and larger being designed for the application of staples to the more tender internal fascia. The cartridge is held in the body of the instrument by means



of a spring which greatly facilitates the introduction of the cartridge. The instrument is further provided with means for preventing more than one driving operation per trigger activation, means for returning the staple-driving mechanisms to their pre-stapling positions, and a novel power unit.

Staple cartridges are also disclosed which ensure proper initial phasing between staple-advancing screws, proper alignment of the screws before insertion into the instrument, and means for preventing accidental ejection of staples during transit.

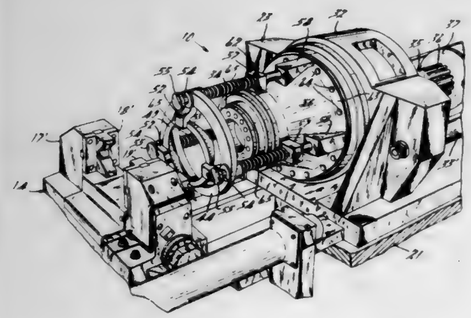
3,662,940
METHOD AND APPARATUS FOR FORMING CYLINDERS FROM STRIP MATERIAL
Christian H. Stettler, Northbrook, Ill., assignor to Grotnes Machine Works, Inc., Chicago, Ill.
Filed May 13, 1969, Ser. No. 824,206
Int. Cl. B23k 1/20
U.S. Cl. 228—15 **9 Claims**



A cylinder-forming method and apparatus is disclosed in which a pre-cut blank of strip material is positioned against a locating abutment and clamped within a rotatable mandrel. As the mandrel is rotated, first and second guide means form the blank to the periphery of the mandrel with flattened end portions being formed on the blank adjacent an end gap.

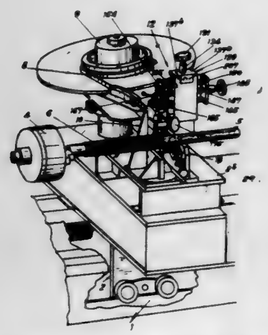
Gripping means seize the blank before unclamping the mandrel, and thereafter transfer the formed blank with its gap in a known predetermined position into the jaws of an electric flash welder wherein the ends of the blank are joined by welding.

3,662,941
APPARATUS FOR REMOVING A WELD UPSET
Arthur Gage, Warren, Mich., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed June 18, 1970, Ser. No. 47,289
Int. Cl. B23k 27/00
U.S. Cl. 228—2 **12 Claims**



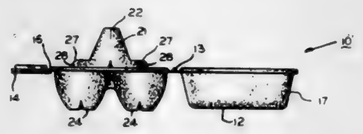
A method and apparatus for automatically removing a weld upset formed between a pair of coaxial workpieces butt welded into an integral article by friction welding or the like. The method and apparatus include a shearing device positioned closely adjacent the abutting surfaces of the workpieces during welding and automatically drawn through the weld upset upon completion of welding to remove the upset.

3,662,942
APPARATUS FOR THE MANUFACTURE OF GILLED TUBES
Edmond Pignal, Thonon-les-Bains, France, assignor to Societe des Fabrications Biraghi-Entrepose, Paris, France
Filed Oct. 23, 1968, Ser. No. 769,824
Claims priority, application France, Oct. 23, 1967, 125455
Int. Cl. B23k 1/00, 5/00
U.S. Cl. 228—25 **19 Claims**



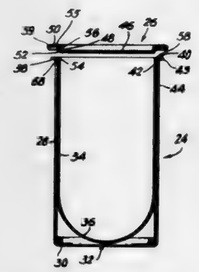
A machine for winding and welding a metal strip around a sealed exchanger tube to form a helical fin, using a welding electrode positioned in the angle between the strip and the tube surface. The tube is rotated while the strip is applied, the strip and electrode being supported on a longitudinally movable carriage. The support for the welding electrode is adjustable vertically, horizontally parallel to the axis of the tube, and also lengthwise along the axis of a sleeve pivotally attached to the support on a horizontal adjusting axis.

3,662,943
MOLDED CONTAINER
David Donaldson, Wilmington, Del., assignor to Container Corporation of America, Chicago, Ill.
Filed Feb. 11, 1970, Ser. No. 10,406
Int. Cl. B65d 1/36
U.S. Cl. 229—2.5 **1 Claim**



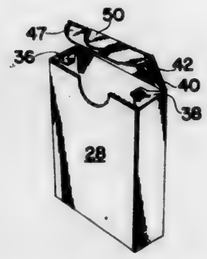
A molded container, particularly for the packaging of frangible articles, such as eggs. The container is characterized by a tray having a plurality of cup-shaped cells formed therein, each receiving one of a number of similar articles, which may vary slightly in size and contour, but each having a transverse cross-section which is essentially circular. Contiguous ones of the cells are separated by a post having essentially vertical webs extending transversely of the long dimension of the carton and outward of the longitudinal planes connecting the center lines of the cells. These webs effectively separate the eggs at their greatest dimension, and they fair downward into generally horizontal webs giving the loaded carton good beam strength longitudinally thereof. Generally horizontally extending webs are provided between the posts and provide good beam strength to the loaded carton in directions transversely thereof.

3,662,944
COMPOSITE CONTAINER AND PACKAGE
Richard Leo Joosten, Sr., Westfield, N.J., assignor to American Can Company, New York, N.Y.
Filed Oct. 23, 1969, Ser. No. 868,880
Int. Cl. B65d 5/56
U.S. Cl. 229—14 B **1 Claim**



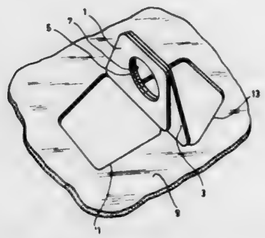
A composite container that may be used for packaging a fluent product, such as a carbonated beverage, has a rigid outer tube, which may be made of fiber, firmly supporting a plastic cup inserted therein and a metal end closure wherein the fiber tube, cup and metal closure are seamed together. An annular flange on the metal closure overlies an annular flange on the plastic cup and is interfolded therewith to form a seam which seals the metal closure to the fiber tube.

3,662,945
CARTON END CLOSURE
Thomas W. Foster, Palo Alto, and George Schafer, Santa Cruz, both of Calif., assignors to Fibreboard Corporation, San Francisco, Calif.
Filed Aug. 3, 1970, Ser. No. 60,341
Int. Cl. B65d 5/02
U.S. Cl. 229—38 **17 Claims**



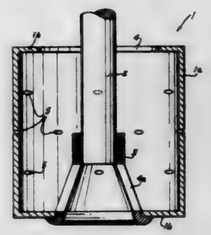
An end closure for a carton comprises adhesively treated major flaps and minor flaps hingedly connected to side and end walls of the carton, respectively. The inner major flap has cutouts formed at the ends thereof to at least substantially accommodate the minor flaps in substantial coplanar relationship therewith when the flaps are folded and sealed together. The outer major flap is adhesively secured over the other flaps and releasably attached to the carton by suitably arranged perforated tear lines to provide an easy opening feature on the carton. A tuck tab is hingedly connected to a free end of the inner major flap to provide means for fully reclosing the carton.

3,662,946
PACKAGE WITH CARRYING HANDLE
Jan Philippus Cornelis Mariniesen, and Frederik Alexander Nicolaas Gerardus Arnold, both of Groningen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 22, 1970, Ser. No. 30,647
Claims priority, application Netherlands, May 3, 1969, 6906798
Int. Cl. B65d 5/46, 25/22
U.S. Cl. 229—52 B **5 Claims**



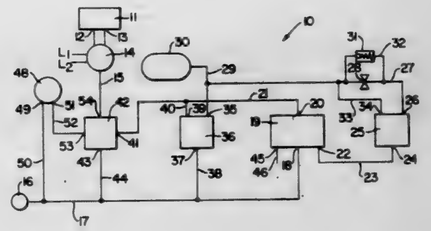
A package with a carrying handle in which lugs are provided in one of the side walls of the package. The lugs are cut out and can be folded out of the plane of the wall about a base to a position at right angles to the plane and in the folded position form a handle. The bases are parallel to each other and are offset with respect to each other in the longitudinal direction.

3,662,947
CENTRIFUGE DRUM WITH DISCHARGE OPENINGS
Kurt Passe, Zederstrasse 13, Grevenbroich, Germany
Filed Mar. 27, 1970, Ser. No. 23,337
Claims priority, application Germany, Feb. 27, 1970, P 19 16 280.2
Int. Cl. B04b 11/00
U.S. Cl. 233—47 R **5 Claims**



A drum for centrifuges processing substances of relatively high viscosity. The drum has a peripheral wall concentric with its axis of rotation and opposite axial end walls. Outlets are provided in the region of the opposite axial end walls. A plurality of outlet openings are provided in the peripheral wall and each of these has the configuration of a geometric ellipse with the longer axis of the ellipse being normal to the axis of rotation of the drum. A method of making such a drum is disclosed also.

3,662,948
CONTROL SYSTEM AND METHOD FOR OPERATING HEAT EXCHANGER MEANS AND THE LIKE
Louis M. Puster, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Jan. 21, 1970, Ser. No. 4,616
Int. Cl. F23n 5/20; G05d 23/00
U.S. Cl. 236—46 **27 Claims**

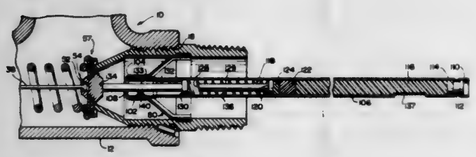


A pneumatically operated actuator having a first condition for maintaining an on-off heat exchanger means in an off condition thereof as long as a pneumatic signal thereto is in a first magnitude range and having a second condition for maintaining the heat exchanger means in an on condition thereof as long as the pneumatic signal thereto is in a second magnitude range, and means for automatically creating and directing to the actuator a pneumatic signal that varies in magnitude over each predetermined time period in a repeating cycle of said time periods so that the first condition and second condition of the actuator will be both variable in relation to each other from approximately 0 to 100 percent of the time in each time period depending upon the magnitude range of the pneumatic signal in each time period.

3,662,949
PRESSURE TEMPERATURE RELIEF VALVE

Harold A. McIntosh, South Pasadena; Theodore J. Dykzeul, Rolling Hills; Gordon K. Slocum, Downey; William D. Rattan, Paramount, and Donald K. Murrell, La Mirada, all of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 6, 1970, Ser. No. 61,557
Int. Cl. G05d 27/00, 23/275
U.S. Cl. 236—92 25 Claims

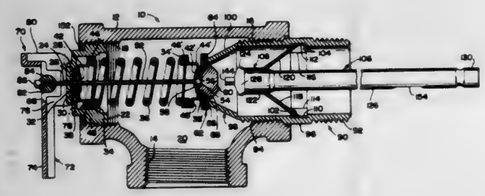


A relief valve including a T-shaped casing having a first port with an insert member secured therein having a conical wall forming a valve seat in a chamber communicating with the first port and a second outlet port, a valve member cooperating with the valve seat and loosely attached with a valve stem extending through a third port axially aligned with the first port, a thermostat assembly, and a retainer for holding the thermostat assembly and including clips engageable with a register groove and shoulder in the insert member.

3,662,950
PRESSURE AND TEMPERATURE RELIEF VALVE

Harold A. McIntosh, 517 Floral Park Terrace, South Pasadena, Calif.; Gordon K. Slocum, 7733 Corey Street, Downey, Calif., and William D. Rattan, 14124 Oriza BA, Paramount, Calif.

Filed Aug. 6, 1970, Ser. No. 61,577
Int. Cl. G05d 27/00
U.S. Cl. 236—92 9 Claims

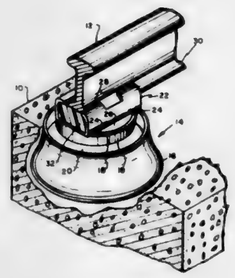


A pressure and temperature relief valve including a T-shaped casing having an inlet port with an insert member secured therein having a conical wall forming a valve seat in a chamber communicating with the inlet port and an outlet port, a valve member cooperating with the valve seat and loosely attached with a valve stem extending through another port axially aligned with the inlet port, a bias spring mounted in compression between first and second retaining cups with the first retaining cup engaging an adjustment plug in the other port and the second retaining cup engaging the valve member, and a ball and swivel lever mechanism engaging the valve stem and the adjustment plug to permit manual opening of the pressure and temperature relief valve.

3,662,951
ADJUSTABLE RAIL FASTENER WITH MELTABLE FILLER

Webster D. Smith, Lomita, and William I. Berks, Manhattan Beach, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed July 28, 1970, Ser. No. 58,849
Int. Cl. E01b 9/66
U.S. Cl. 238—281 10 Claims

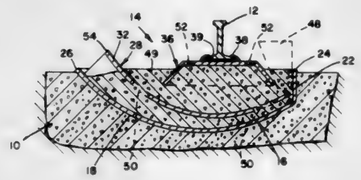


An easily adjustable and readjustable rail support includes two annularly spaced pot-like members that are separated by a readily meltable solid filler material. The outer member is embedded in a concrete or other rigid roadbed. The rim of the inner member supports a channel element which clamps the rail.

3,662,952
ADJUSTABLE RAIL FASTENER DESIGN WITH TAPERED KEY AND CHANNEL MEMBERS

William I. Berks, Manhattan Beach, and Webster D. Smith, Lomita, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Oct. 9, 1970, Ser. No. 79,438
Int. Cl. E01b 21/00, 9/02
U.S. Cl. 238—310 3 Claims

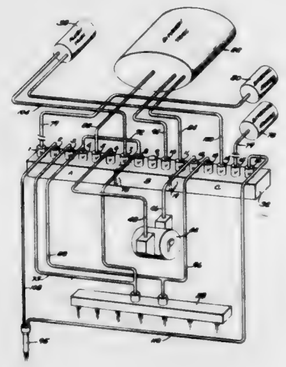


A readjustable rail fastener includes a channel member fixed in a rigid roadbed, a tapered key member inserted within the channel member, and a rail support member positioned above the key member. The rail is clamped to the rail support member, and after it is positioned in its proper location by means of a jig, it is fixed in position by concrete poured between the three members. The rail is readily relocated by breaking the key member loose, knocking away the old potting concrete, replacing the key member, positioning the rail in its new location, and pouring fresh potting concrete.

3,662,953
BITUMEN SPRAY AND TRANSFER WITH MASTER CONTROL

John M. Wiens, Wales, Wis., assignor to Wales Metal Products, Inc., Wales, Wis.

Filed July 30, 1970, Ser. No. 59,626
Int. Cl. B05b 15/02
U.S. Cl. 239—112 12 Claims

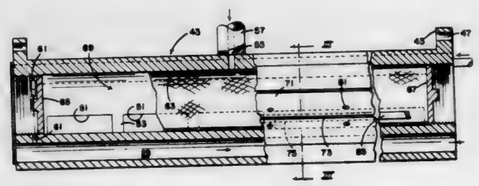


A generally conventional tank truck with heater and spray bar is equipped with valve manifolds and valves and a flush tank and external coupling connections and has a master control with valve actuating means which are preferably operated in desired bitumen circuit combinations by fluid pressure to perform a variety of operations other than merely spraying bitumen through the spray bar onto a highway.

3,662,954
SHEET MATERIAL HEATING AND HUMIDIFYING DEVICE

Carl R. Pepmeier, Fredericksburg, Va., assignor to FMC Corporation, Philadelphia, Pa.

Original application June 5, 1969, Ser. No. 830,667, now Patent No. 3,591,908. Divided and this application Jan. 19, 1971, Ser. No. 107,686
Int. Cl. B05b 1/24
U.S. Cl. 239—134 4 Claims

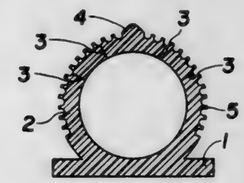


A steam chest for use in a laminating apparatus for concomitantly heating and humidifying traveling sheet materials immediately prior to laminating of the same.

3,662,955
LENGTH OF WATERING HOSE FOR CULTIVATING PLANTS

Michinobu Takanashi, 5, 9-banchi, 2-chome Sakae-cho, Higashi, Murayama-shi, Tokyo-to, Japan

Filed Mar. 10, 1970, Ser. No. 18,163
Claims priority, application Japan, Nov. 18, 1969, 44/108921; June 6, 1969, 44/52427
Int. Cl. A01g 27/00
U.S. Cl. 239—145 2 Claims

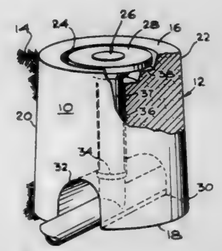


A length of hose made of a flexible and weather-proof material having high elasticity e.g., a suitable synthetic resin, or plastics or a co-polymer of ethylene vinyl acetate resin, having a plurality of incisions formed in the wall of the hose from inside to outside at proper portion thereof, and comprising a strengthening means such as a longitudinal cross shaped press-back means made of polyethylene or a co-polymer of acrylo nitrile ethylene or ethylene vinyl acetate inserted into the hose; the hose may instead be provided with longitudinal stiffening ribs on the surface thereof; longer lengths of the hose may be formed by joining shorter lengths of the hose by means of adaptors.

3,662,956
SPRINKLER PROTECTOR

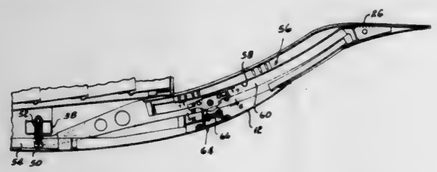
Ernest L. Hedman, 3414 Culver Street, Bakersfield, Calif.

Filed Aug. 6, 1970, Ser. No. 61,728
Int. Cl. B05b 15/06
U.S. Cl. 239—201 10 Claims



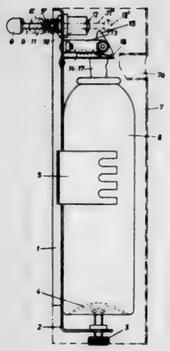
An improved sprinkler protector comprises a rigid, self-supporting body having an upper recess to wholly enclose a sprinkler head, a transverse lower aperture to enclose a sprinkler connector and a small diameter central standpipe passageway interconnecting the recess and aperture. Detent means are provided in the area of the recess to prevent substantial depression of the sprinkler head and rupture of the sprinkler system adjacent the connector. Reinforcing means and anchoring means for the protector body may also be provided.

3,662,957
LOW FRICTION TRACK BEARING ASSEMBLY
James C. Pinto, Hartford, and Ransom S. Thompson, Middle Haddam, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Oct. 28, 1970, Ser. No. 84,719
Int. Cl. B64c *15/06*
U.S. Cl. 239—265.39 9 Claims



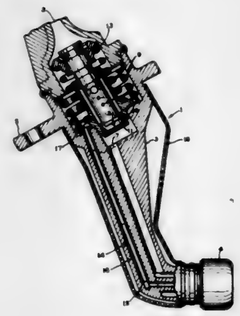
A low friction track bearing assembly which is supported on a stationary member such as a jet engine housing for movement around an axis which is perpendicular to the axis of rotation of the first bearings, which are adapted to engage the cam track base of a guide channel in a member such as an iris nozzle section driven in a linear direction through a pivotal connection constraining the member to move around an axis perpendicular to the direction of drive, and parallel to the axes of bearings offset from the first bearings and adapted to engage the straight sides of the channel to permit the member to be driven in the desired linear direction without undue resistance owing to misalignment between the bearing assembly and the channel.

3,662,958
SPRAYING DEVICE OF AEROSOL CONTAINED IN A REMOVABLE TANK
Paul German, 71 Chemin du Levant, 1006 Lausanne, Switzerland
Filed July 21, 1970, Ser. No. 56,800
Claims priority, application Switzerland, July 15, 1969, 11.423/69
Int. Cl. A62c *31/28*; B05b *15/00*; B62d *137/50*
U.S. Cl. 239—274 3 Claims



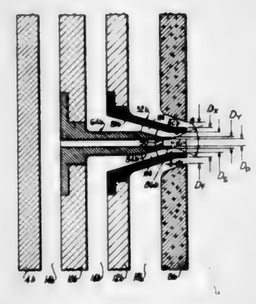
The device provides means for actuating an aerosol spray tank removably mounted on a door, door frame or wall of a bathroom, for example, when the door is shut. The actuating means comprises a rotatable cam member which is urged against the valve of the aerosol spray tank to open the same by a spring controlled plunger. The cam member and plunger are supported on a mounting plate which includes means for supporting the aerosol spray tank and adjusting the position thereof.

3,662,959
FUEL INJECTION NOZZLE
Harry Sample, Jr., Novelty, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Aug. 7, 1970, Ser. No. 61,969
Int. Cl. B05b *1/30*
U.S. Cl. 239—533 5 Claims



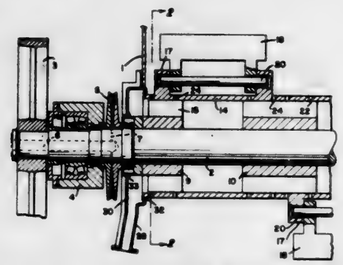
A fuel injection nozzle of the dual orifice type characterized in that the elongated primary fuel passage in the nozzle housing is constituted by a length of tube which is thermally isolated from the housing whereby the flow of fuel through the tube maintains the interior wall thereof at a temperature below that at which carbonizing of the fuel would occur.

3,662,960
INJECTOR HEAD
James P. Mitchell, and Bruce T. Brown, both of North Palm Beach, Fla., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Nov. 21, 1966, Ser. No. 596,393
Int. Cl. B05b *7/10*
U.S. Cl. 239—400 13 Claims



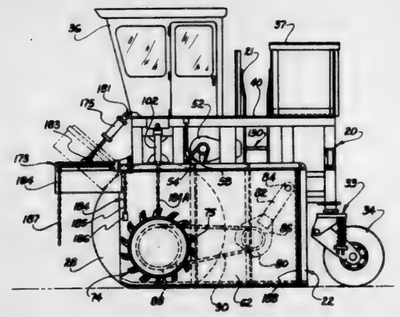
An injector head having a plurality of manifolds formed by plates spaced rearwardly of the face plate. The second plate spaced adjacent said fact plate having a first projection which extends into an opening through the face plate. The third plate positioned rearwardly of said second plate having a second projection which extends into an opening which passes through the first projection of said second plate. An opening passes through said second projection. A back plate is located behind the third plate. Said projections having tapered sections to provide for a desired pressure drop.

3,662,961
BREAKER FOR HOT MATERIAL
Paul Walkowiak, Hamburg, Germany, assignor to Claudius Peters Aktiengesellschaft
Filed Jan. 6, 1971, Ser. No. 104,375
Claims priority, application Germany, Jan. 31, 1970, P 20 04 385.0
Int. Cl. B02c *13/04*, *13/288*
U.S. Cl. 241—56 5 Claims



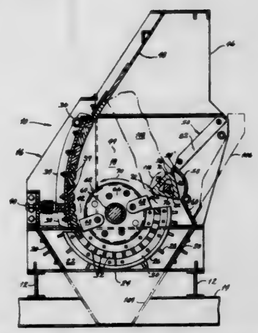
A breaker for hot material which includes a main shaft mounted for rotation about its longitudinal axis. A plurality of spaced apart discs each having a plurality of circumferentially spaced passages therethrough are mounted on the main shaft. A sleeve interconnects the spaced apart discs to define a plurality of passages along the length of the breaker. A plurality of circumferentially spaced hammers are mounted on the breaker externally of the sleeve. Cooling fluid such as air is supplied to each of the passages. Openings in the sleeve discharge cooling fluid from the passages to the area of the hammers. The main shaft is mounted in bearings and a fan arrangements cools these bearings.

3,662,962
MACHINE FOR TREATING REFUSE
Herbert T. Cobey, Galion, Ohio, assignor to Imco, Inc., Crestline, Ohio
Filed Mar. 13, 1969, Ser. No. 806,864
Int. Cl. B02c *19/12*; A01d *57/30*
U.S. Cl. 241—101 M 9 Claims



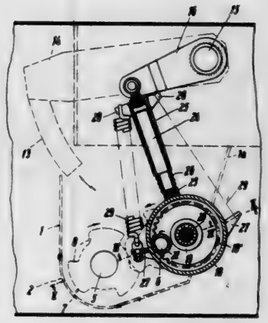
A machine for treating refuse disposed in windrows characterized by a longitudinally extending tunnel and means for effectively confining and treating the refuse within said tunnel while a machine progresses thereover. The machine is further characterized by a main frame and an auxiliary frame supported by the main frame and defining an open ended tunnel. A rotary member is extended transversely of the tunnel for impacting refuse against the top wall of the tunnel. The machine is further characterized by a forwardly extending guide means mounted on said main frame adjacent the top of the tunnel with said guide means being adjustable with respect to its angle of inclination so as to most effectively treat windows of refuse of various heights.

3,662,963
ROCK CRUSHER
Orly Bob McClure, 25 Ellsworth Lane, Ladue, Mo.
Filed June 24, 1970, Ser. No. 49,274
Int. Cl. B02c *13/286*, *23/02*
U.S. Cl. 241—186 R 26 Claims



This invention is an improvement in a rock crusher having a crushing chamber with an opening therein, a rotor rotatably mounted in the chamber, hammers carried adjacent the outer radial edge of the rotor, and a feeder chute having its lower end adjacent the opening. The improvement includes an elongated member rotatably mounted within the chamber between the lower end of the chute and the hammer tip circles defined by the hammers as the rotor rotates. The elongated member has a polygonal cross-sectional configuration which is preferably triangular. It is adapted to be rotated selectively for dislodging rocks which become jammed in the chute.

3,662,964
COMMINUTING MACHINE
Kurt Roesler, Beim, Germany, assignor to Bohumter Maschinenfabrik GmbH & Co. K G., Brockstrasse, Bohmte Kreis Osnabruck, Germany
Filed Dec. 2, 1970, Ser. No. 94,418
Claims priority, application Germany, Dec. 10, 1969, P 19 61 820.3; Oct. 7, 1970, P 20 49 124.1
Int. Cl. B02c *7/04*, *18/40*, *13/20*
U.S. Cl. 241—222 24 Claims



A comminuting machine for metallic, plastic, vitreous, textile, ligneous or other scrap has a pair of horizontal shafts

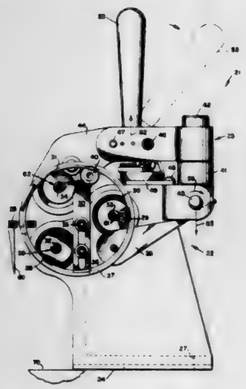
mounted in a housing below a material-admitting inlet and carrying stacks of ring-shaped frustoconical comminuting members provided with alternating tooth spaces and teeth which entrain and fragmentize the material during passage between the shafts. The larger diameter ends of the comminuting members have polished end faces surrounded by cutting edges, and the comminuting members of one of the stacks are inverted with reference to comminuting members of the other stack. The cutting edges of comminuting members of one of the stacks slightly overlap the cutting edges on comminuting members of the other stack. The teeth of comminuting members in each stack form one or more helices. The shafts are driven at the same speed but in opposite directions so as to rotate the comminuting members from above through and below the space between the shafts. The comminuted material passes through the slots of a removable grate which is secured to the housing below the shafts.

3,662,965

TOROIDAL COIL WINDING MACHINE

Vilmos Havasi, and Gene R. Bailey, both of Danbury, Conn., assignors to The Jovil Manufacturing Co., Inc., Danbury, Conn.

Filed Jan. 5, 1970, Ser. No. 713
Int. Cl. H01f *41/08*
U.S. Cl. 242—4 B **11 Claims**



A toroidal coil winding machine comprising a head assembly constructed to support and rotate about its own axis a ring-shaped, wire-carrying shuttle interlinked with a core, which can readily be adjusted to accommodate a large range of shuttle diameters and which provides for rapid removal and replacement of shuttles. The ring-shaped, wire-carrying shuttle is driven by means of three supporting sheaves, two of said sheaves having variable axis positions relative to the third, resulting in coarse and fine position adjustments and providing for the accommodation of variable shuttle sizes. Core removal and replacement are effected by simultaneous upward and lateral movement of one of the supporting sheaves so as to effectively open and twist the shuttle for easy core removal, actuated by a convenient handle readily moved by a single stroke of the operator's hand.

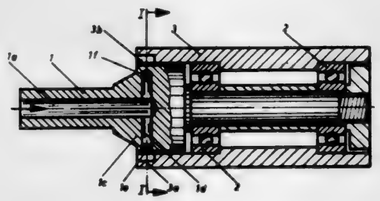
3,662,966

ROLLER DRIVE

Karl-Heinz Baumann, Karlsruhe, Germany, assignor to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft, Karlsruhe, Germany

Filed Aug. 27, 1970, Ser. No. 67,423
Claims priority, application Germany, Sept. 6, 1969, G 69 35 171.9
Int. Cl. B65h *51/00*
U.S. Cl. 242—47.01 **1 Claim**

A thread transfer roller used in chemistry or textile fiber machines is provided on the inner circumference of its tubular roller body with a plurality uniformly circumferentially spaced pockets of uniform size. The stationary spindle on which said tubular body is rotatably supported is provided with an enlargement having therein radial channels or a chamber connected with an axial channel in the spindle,



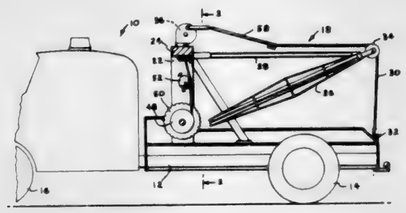
whereby the radial channels of the chamber are in communication with inclined branch channels which when a pressure medium, such as compressed air, is introduced from an exterior source into said channels will be discharged into said pockets and cause said tubular roller body to rotate.

3,662,967

LEVEL WINDER AND TENSIONER

Charles P. Nowell, 7305 El, Buena Park, Calif., and Aubry S. Nowell, 8320 Felicidad, Anaheim, Calif.

Filed July 1, 1970, Ser. No. 51,510
Int. Cl. B65h *75/00*
U.S. Cl. 242—54 **8 Claims**



Between a drum and a pulley which feeds cable to the drum, the level winder is positioned to place an axial stress on the cable so that the cable naturally level-winds. The level winder is a bulbous guide which converts cable tension to axial force as related to the axial position of winding on the drum. A tensioner at the guide pulley maintains tension on the level winder, even when the outer end of the cable is slack, so that level winding proceeds.

3,662,968

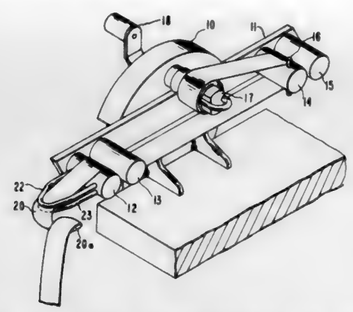
TAPE GUIDE FOR WINDING MACHINES

Gunnar Wennerberg, 1641 Poppy Way, San Jose, Calif.

Filed Apr. 1, 1970, Ser. No. 24,595
Int. Cl. B65h *27/00*
U.S. Cl. 242—76 **7 Claims**

A device for use in removing curls, loops, twists or snags from tapes being wound comprises a spindle suitable for being mounted on a tape winder, with two substantially U-shaped jaws protruding from the spindle. Each jaw contains a curved point at the bottom of the U. Tape to be wound is passed between the two jaws and then between the two legs of one jaw and partially around the spindle. The curved point

of one jaw prevents irregularities in the tape from passing between the jaws, while the two legs of the jaw through



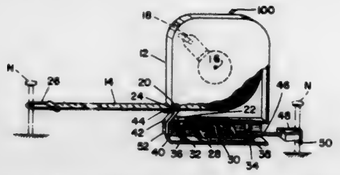
which the tape is passed prevent the tape from slithering from side to side during winding.

3,662,969

MEASURING TAPE TIGHTENER

Harold M. King, Jarrettsville Pike, Phoenix, Md.

Filed Jan. 21, 1970, Ser. No. 4,526
Int. Cl. G01b *3/10*
U.S. Cl. 242—84.8 **15 Claims**



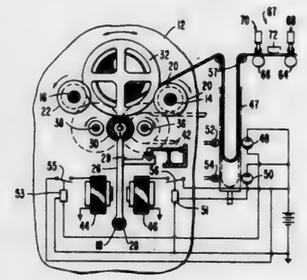
A measuring tape tightener for tensioning reel-type tapes between two arbitrary points, as between a nail at the free end of the tape and a nail at the case end of the tape, comprising a tape-brake movably attached to the case of the tape, and a spring mounted anchor adapted to attach the case to a nail or the like under spring tension, with the spring tension actuating the brake to prevent the tape from further unreeling.

3,662,970

TAPE CONTROL MECHANISM

Paul R. Hoffman, Farmington, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 21, 1970, Ser. No. 65,925
Int. Cl. G03b *1/04*; G11b *15/32*
U.S. Cl. 242—180 **13 Claims**



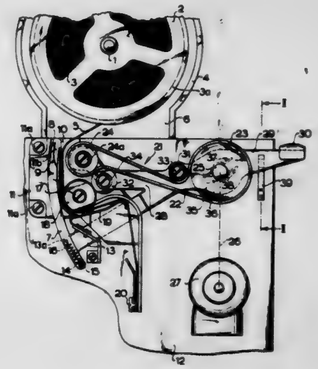
Apparatus for use in tape handling equipment comprising a plurality of laterally positioned tape reels arranged with their rim peripheries normally spaced from a pair of oppositely rotating driven shafts, the shafts spanning all of the reels axially thereof. Each of the reels is individually cradled on its rim by a set of three spaced apart roller bearings, and at least one of the rollers of each set is shiftable to effect rotation of selected ones of the reels by one or the other of the oppositely rotating shafts.

3,662,971

FILM THREADING AND TRANSPORTING MECHANISM FOR USE IN CINEMATOGRAPHIC APPARATUS

Wolfgang Riedel, Winnenden, Germany, assignor to Silma S.p.A., Rivoli Torinese, Italy

Filed Jan. 18, 1971, Ser. No. 107,363
Claims priority, application Germany, Jan. 29, 1970, P 20 03 957.0
Int. Cl. G03b *1/58*
U.S. Cl. 242—192 **14 Claims**



A film threading and transporting mechanism for use in motion picture projectors wherein the supply reel is rotatable by a drive to pay out the film and wherein the leader of the film is deflected into a channel to advance toward the pull-down. A film transporting wheel is mounted adjacent to the channel and is rotated by the drive when the latter ceases to rotate the supply reel. The drive has a torque transmitting unit mounted on a carrier which is pivotable between a first position wherein a first rotary element of the torque transmitting unit rotates the supply reel in a direction to pay out the film and a second position wherein a second rotary element of the torque transmitting unit drives the film transporting member which then overcomes friction between the supply reel and its spindle and/or between the marginal portion of convoluted film and the flanges of the supply reel to prevent undue tensioning of film by the pull-down. The carrier tends to assume its second position when the first rotary element of the torque transmitting unit rotates in a direction to drive the supply reel so that the latter pays out the film, and is movable from such second position in response to the application of finger pressure which must overcome the resistance of an elastic follower mounted in the housing of the motion picture projector.

3,662,972

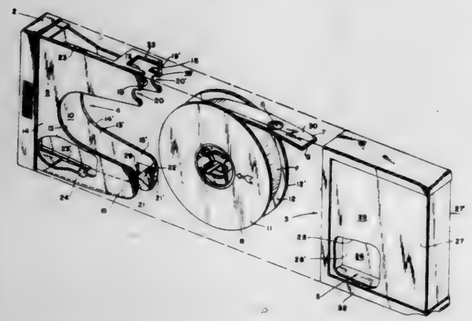
MAGAZINE FOR A REEL OF FILM OR THE LIKE

John F. Egan, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 8, 1970, Ser. No. 35,803
Int. Cl. G03b *1/04*; G11b *15/32*, *23/04*
U.S. Cl. 242—197 **11 Claims**

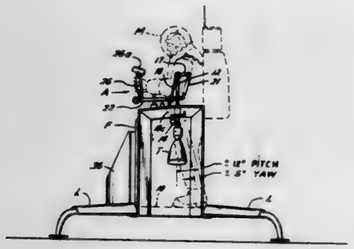
A cartridge for a reeled strip of web material is inserted into a container to form therewith a light-tight magazine. The

cartridge includes a flexible boss for removably retaining a web reel within the cartridge interior, a projection cooperable with the container to restrain such a retained web reel against movement, a strip engaging finger and barb for disposing the free end of the reeled strip in a position for



contact for an automatic strip feeding mechanism of apparatus into which the cartridge is insertable for utilization of the strip material, and abutment edges and notches which prevent improper insertion of the cartridge into the apparatus.

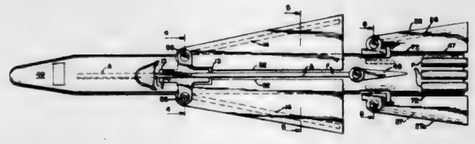
3,662,973
FLIGHT CONTROL SYSTEM
Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and William A. Collins, 2691 Park Boulevard, Tonawanda, N.Y.
Filed July 31, 1970, Ser. No. 59,966
Int. Cl. B64c *29/00*
U.S. Cl. 244—23 A **16 Claims**



Thrust control apparatus for a spacially movable object such as an air or spacecraft, wherein the roll movements of the craft are controlled through differential throttling of a plurality of thrust engines, and wherein the pitch and yaw movements of the craft are controlled by pivotable movements of the thrust engines. Such apparatus is relatively simple in terms of hardware and operational usage, and it is especially suitable for manned lunar flying and landing in the exploration of the moon after the initial lunar landings from "Apollo" type space vehicles.

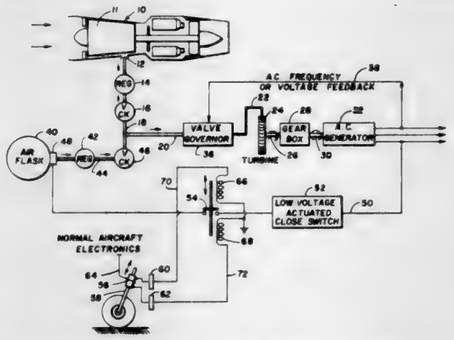
The apparatus has a trimming mechanism to handle a variety of loading conditions on the spacecraft, without changing the position of the operator's controllers.

3,662,974
AIRCRAFT STRUCTURE UNIT AND WING STRUCTURE
Adolphe C. Peterson, 4623 Bruce Avenue South, Minneapolis, Minn.
Filed Sept. 12, 1967, Ser. No. 667,222
Int. Cl. B64c *3/40*
U.S. Cl. 244—46 **7 Claims**



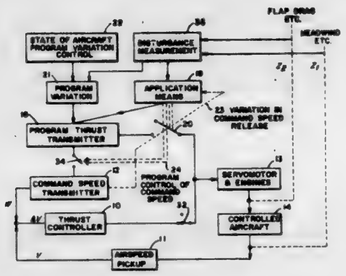
This is an aircraft having variable wing formation of novel form, one formation for landing and take-off performance and another formation for cruising speeds. A novel form of wing actuation for such formation and a form of control for actuation is included. A novel form of structure of the aircraft especially for this means is a part of the structure, and a novel form of airfoil formation for flight control is a part of this aircraft.

3,662,975
AUXILIARY ELECTRICAL GENERATING SYSTEM FOR JET AIRCRAFT
Robert E. Driskill, 4702 Highland Terrace, Humble, Tex.
Filed Sept. 21, 1970, Ser. No. 73,968
Int. Cl. B64d *41/00*
U.S. Cl. 244—58 **3 Claims**



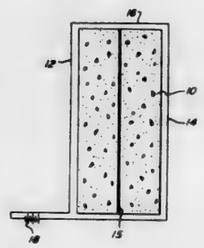
An auxiliary electrical generating system for jet aircraft wherein compressed air is withdrawn from a jet engine and used to operate a pneumatic turbine which in turn drives a generator. An ancillary gas source may be included for supplying compressed gas to the turbine in the event of engine failure. This abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to scope of the invention in any way.

3,662,976
SPEED CONTROLLER FOR AIRCRAFT
Hans G. Gesler, Neveradorf, Germany, assignor to Bodenseewerk Geratetechnik, Uberlingen (Bodensee), Germany
Filed May 7, 1969, Ser. No. 822,650
Int. Cl. B64c *19/00*
U.S. Cl. 244—77 D **16 Claims**



An aircraft speed controller includes a program transmitter which provides a predetermined control program for application to a speed regulating means of the flight control and means for applying the control program to the regulating means upon the occurrence of a disturbance.

3,662,977
AIRCRAFT TAXI GUIDANCE SYSTEM
James A. Shannon, 2923 Q Street, N.W., Washington, D.C.
Filed May 7, 1969, Ser. No. 822,472
Int. Cl. B64f *1/00*
U.S. Cl. 244—114 R **1 Claim**



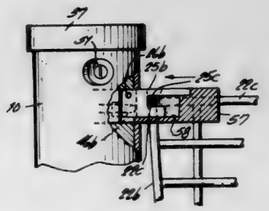
An aircraft taxi guidance system in which a controlled magnetic field is set up along the runway-taxiway and a dip needle in the aircraft takes up an equilibrium position which depends on the distance and direction of the aircraft from the center of the runway. When the aircraft is at the center of the runway the dip needle points straight up. When the aircraft is off from the center of the runway, the dip needle will be inclined from vertical at an angle depending on the distance from the center of the runway. Thus, the position of the dip needle indicates the position of the aircraft with respect to the center of the runway.

3,662,978
AIRCRAFT EJECTION SEAT VEHICLE STOWED ROTOR
Richard H. Hollrock, Simsbury, Conn., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.
Filed Oct. 22, 1970, Ser. No. 82,902
Int. Cl. B64d *25/10*
U.S. Cl. 244—122 A **13 Claims**



A rocket powered aircraft ejection seat is equipped with a stowed helicopter type rotor, and with a stowed anti-torque tail plane, both of which can be deployed after the seat, together with its occupant, has been ejected from a disabled aircraft. The rotor blades are conventionally mounted on a rotor hub, which hub is pivotally mounted to a mast. The mast is movably mounted to the back of the seat so that the hub and blades are movable from a stowed position behind the seat to a deployed position wherein the rotor hub is disposed above and forwardly of the head of the seat occupant. A small drogue or pilot chute is connected to the rotor hub, and when released from its stowed position between the blades serves to swing the rotor hub and blades from their respective stowed positions to intermediate or trail positions wherein the blades can be allowed to rotate and to unfold by centrifugal force. A first actuator moves the mast to its deployed position, and the rotor is positioned for gliding flight with an associated control column being automatically moved into position between the pilots knees to control the cylic pitch of the rotor blades through a suitable control linkage. The tail plane structure includes a pair of parallel booms each of which carries a stabilizer fin, and these booms are stowed, one on either side of the back of the seat, with these fins being conveniently stowed on either side of the seat portion of the overall structure. A second actuator is drivingly connected to a rock shaft at the upper end of the seat back, which rock shaft is pivotally mounted on the seat for rotatably supporting the booms for rearward and upward movement to deploy the tail plane in response to operation of the second actuator. A small gas turbine engine is stowed in the back of the seat between these booms, and is moved to its deployed position by the second actuator through a collapsible engine mount linkage.

3,662,979
LITTER BASKET MOUNTING AND LOCKING MEANS
Ciro J. Lucci, 402 Foster Avenue, Brooklyn, N.Y.
Continuation-in-part of application Ser. No. 765,065, Oct. 4, 1968, now Patent No. 3,568,966. This application Aug. 4, 1970, Ser. No. 60,892
Int. Cl. F16n *13/00*
U.S. Cl. 248—154 **2 Claims**



A wire or mesh screen litter basket with or without upper and lower flanges is mounted by its top and bottom on a sup-

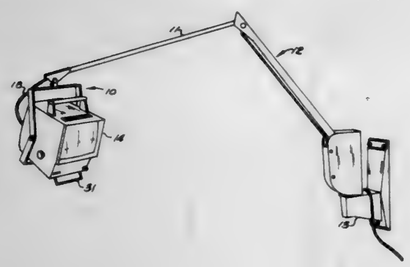
porting post adapted to be anchored in the ground in such manner that the litter basket is maintained above ground level and can be locked in supported position from which it can be released only by unlocking with the proper key.

3,662,980
DISPLAY BASE
Seymour Milton Kantor, 9 Erroll Place, and Bertram Lincoln Kantor, 1273 North Avenue, both of New Rochelle, N.Y.
Filed Apr. 6, 1970, Ser. No. 25,894
Int. Cl. F16m
U.S. Cl. 248—161 8 Claims



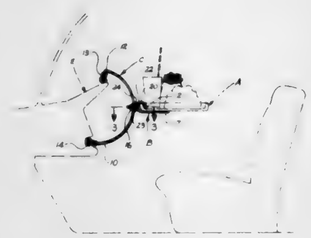
A knocked-down pedestal display base capable of being set up with one securing means including a central member, two pairs of similar legs, each leg including a vertically disposed section and an outwardly extending foot section, the vertically disposed section of one pair of legs being adapted to be secured to the central member and aligned in the same plane, the second pair of legs including lugs adapted for securing one end of the vertically disposed sections of the second pair of legs to the central member and securing means for securing the other end of the vertically disposed sections of the second pair of legs to the central member.

3,662,981
ARTICULATED CARRYING FRAME
Herbert C. Hogrebe, St. Louis, Mo., assignor to Dazor Manufacturing Corp., St. Louis, Mo.
Filed Oct. 24, 1969, Ser. No. 869,004
Int. Cl. A47g 29/00
U.S. Cl. 248—278 1 Claim



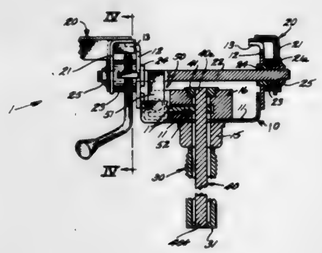
This carrying frame includes upper and lower pivotally interconnected U-shaped members. The lower member is adapted to mount an article thereon and the upper member is adapted to be connected by a swivel member to an adjustable bracket or similar support. The axis of rotation of the pivotal connection between the upper and lower members is so chosen as to pass through or near the center of gravity of the carried article so that a minimum of effort is required to relocate the carried object and so that the article will maintain its relocated position.

3,662,982
COLLAPSIBLE SUPPORT FOR SERVING TRAYS
John I. Antonius, 3848 S.W. 36th Place, Portland, Oreg.
Filed Oct. 14, 1970, Ser. No. 80,625
Int. Cl. A47b 37/00
U.S. Cl. 248—309 1 Claim



The invention utilizes a duality of similar attaching elements, curved, terminally hooked support arm slidably bolted to a smaller 'c' shaped arcuately curved tray clamp. The tray clap has a flat segment to support a serving tray, a curved segment slidably bolted to the support arm, and vertically arcuately rotable around said bolt, and a hooked end which clamps onto the marginal rim of a tray. The support arms are 'c' shaped with a hook at one end, and their elastic structure allows the unit to clamp on an instrument panel of a car or to suspend by means of the terminal hook, the opposite end of the arm resting against a remote area of said instrument panel or such other object as said arm is attached to.

3,662,983
CHAIR CONTROL
Richard H. Wolters, East Grand Rapids, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed Sept. 25, 1970, Ser. No. 75,448
Int. Cl. A47c 7/00
U.S. Cl. 248—373 14 Claims



The chair control includes a seat support rotatably mounted on a housing, and a hollow spindle connected to the housing and depending downwardly therefrom. A torsion rod is mounted vertically within the spindle and has one end fixed against rotation at the bottom of the spindle. The seat support is connected for simultaneous rotation with an axle, which is rotatably mounted in the housing. A cam lever is secured to and extends downwardly from the axle and engages a follower lever which is operably connected to the free end of the torsion rod. A ball bearing is positioned between the abutting portions of the cam lever and follower lever to minimize friction.

3,662,984
SIX-WAY SEAT TRACK
David S. Robinson, Detroit, and James A. Gavagan, Center Line, both of Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.
Filed Oct. 6, 1969, Ser. No. 864,000
Int. Cl. A47c 3/20
U.S. Cl. 248—394 8 Claims



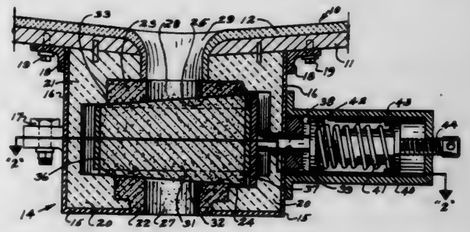
An adjustable seat assembly including a base, a seat frame and means for independently adjusting the vertical elevation of the front and rear portions of the seat frame relative to the base, including on each side of the assembly a pair of links which are pivotally connected between the base and the front and the rear of the frame for rotation between various angular positions to determine the vertical elevation between the front and rear of the seat frame and the base. Each link has connected thereto a latch member which is longitudinally displaced in accordance with the pivotal movement of the associated link. The frame carries catch means including horizontal portions having a plurality of longitudinally spaced slots which are selectively engaged by the respective latch members. A spring biases the latch members into the slots. An actuator means in the form of a manually operated handle is employed to selectively disengage either of the latch members from the catch means thereby to permit independent elevation of the front or rear of the seat frame relative to the base. The rear elevation adjustment is spring assisted.

3,662,985
REUSABLE CONCRETE FORM ALIGNMENT DEVICE
Lonnie E. Parker, 2021 West Cheryl Drive, Glendale, Ariz.
Filed May 13, 1970, Ser. No. 36,928
Int. Cl. E04g 17/14
U.S. Cl. 249—219 R 5 Claims



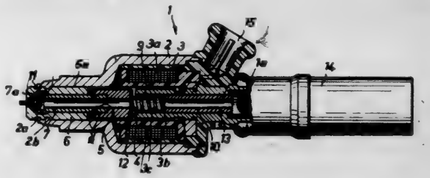
A portable, reusable aligning and retention device for use with stem panels in the forming of the stem portion of concrete foundations for residential structures and other small buildings is shown. The device employs spaced channels with cross-bracing. The channels fit over the top edges of the stem panels, which are plywood panels deployed in verticle position to form the sides of a concrete stem projecting upwardly from a concrete footing. The use of the device on the stem panels dispenses with the necessity for using nails and wooden bracing to hold the stem panels in the proper attitude of use. A ruled standard for use in conjunction with sighting lines is also provided to assist in the alignment of the stem panels.

3,662,986
STOPPER BLOCK
Raymond J. Domulewicz, Sr., 693 Bauernschmit Drive, Baltimore, Md.
Filed Feb. 25, 1970, Ser. No. 13,899
Int. Cl. F16k 5/00
U.S. Cl. 251—144 1 Claim



A valve for high temperature liquids, such as molten metals, having both valve member and valve seat composed of heat resistant material such as ceramic, and having the valve member shiftable in a tapered seat positioned laterally of the flow of the liquid through the valve with spring means to urge the valve member into wedging engagement with the seat to maintain close engagement between these members in all positions and prevent leakage of the liquid between the valve member and seat.

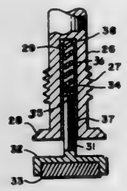
3,662,987
INJECTOR VALVE
Walter Schlagmuller, Buetthard, and Rudolf Babitzka, Ludwigsburg-Hoheneck, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Feb. 24, 1970, Ser. No. 13,617
Claims priority, application Germany, Feb. 28, 1969, P 19 10 113.4
Int. Cl. F16k 31/06
U.S. Cl. 251—139 1 Claim



An outer valve jacket having an open end accommodates an electromagnetic actuator inwards of the open end. The electromagnetic actuator comprises a solenoid-energized iron core and an armature reciprocable towards and away from the open end, the latter enclosing at least part of a valve

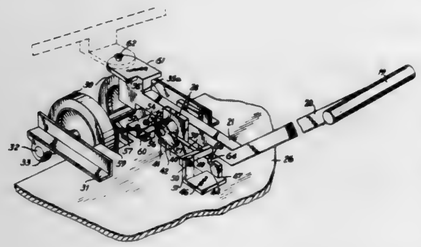
housing and a valve needle in the valve housing. The valve needle is coaxially reciprocably connected with the armature and axially movable in the valve housing between a valve opening and a valve closing position. The valve housing is secured in the open end of the outer jacket in such a way that a circumferential portion of the jacket is radially inwardly upset and accommodated in at least one circumferential groove in the valve housing, the latter having an outer diameter substantially equal to the inner diameter of the outer jacket.

3,662,988
ANTI-REVERSE FLOW AND SYPHON BREAKER VALVE ASSEMBLY
John L. Gibbs, 14820 Miami Lakeway East, and James W. Gibbs, 8027 West 14th Avenue, both of Hialeah, Fla.
Filed June 8, 1970, Ser. No. 44,079
Int. Cl. F16k *31/50*
U.S. Cl. 251—276 **1 Claim**



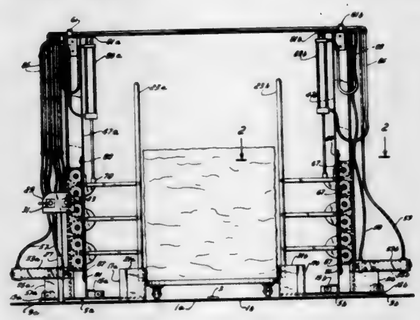
An anti-reverse flow and syphon breaker valve assembly as a replacement for the valve and valve stem assembly of the conventional bibcock, hose bibs and faucets having a pair of telescopically mounted valve stems, one valve stem having a bore forming a guide for the main valve stem and the bore receiving a relatively light coil spring yieldingly urging the main valve to seat on the valve seat whereby upon threading the main valve to its open position, the pressure of water slides the main valve against the spring pressure to its open position and upon loss of water pressure or upon creation of a syphon effect the main valve is brought to its closed position instantaneously to prevent a reverse flow of water.

3,662,989
TOWING MACHINE
Ronald D. Swinson, El Paso, Tex., assignor to Farah Manufacturing Company, Inc., El Paso, Tex.
Filed Dec. 11, 1970, Ser. No. 97,101
Int. Cl. B60p *1/48*
U.S. Cl. 254—8 R **11 Claims**



A device has been provided for moving and maneuvering a cart or a skid carrying thereon a load which is desired to be moved. This device comprises a means for propelling manually the device independently of the cart or, when engaged to the cart, propelling it under power, means for engaging and disengaging the cart, and means for holding the cart in an engaged position for maneuvering of the cart and moving it in a desired direction. Further, the device comprises a plate having affixed thereto four wheels and an idle or secondary wheel which idle wheel may be used to disengage two of the wheels from the surface, i.e. floor, over which the cart and the device is being moved. The means for engaging and disengaging the cart are activated merely by appropriate lowering and raising of a handle through a single arc, whereby a number of cooperating cams, cam slides, latches, springs, etc. provide for easy, maintenance-free operation of the device.

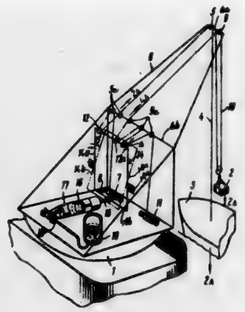
3,662,990
MECHANICAL BREAK HORSE
Joseph Barnett, Wilson, N.C., and John D. Smith, Richmond, Va., assignors to Export Leaf Tobacco Company, Richmond, Va.
Filed Dec. 21, 1970, Ser. No. 99,786
Int. Cl. B66f *3/24*
U.S. Cl. 254—93 R **18 Claims**



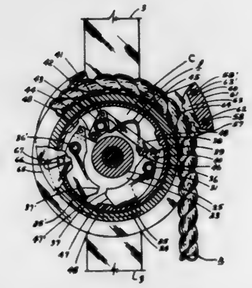
Three vertically arranged pairs of inwardly directed probe assemblies are mounted on movable opposed vertical track members. The probes on each track member are linked to one another by a lifting rod so as to sequentially rise when air is supplied to pneumatic cylinders. In use, the probes are first directed into a hogshead of tobacco from opposite sides and then the probes are sequentially lifted, thereby completely separating the hogshead between each point of penetration to allow efficient inspection of the interior.

3,662,991
CRANE DEVICE FOR PREVENTING COLLISION OF LOAD WITH SEACRAFT IN ROUGH WEATHER
Rostislav Ivanovich Lakiza, ulitsa Tolstogo, 20, kv. 14; Petr Ivanovich Soloviev, ulitsa Batumskaya, 13; Vasily Maximovich Dukov, ulitsa Nadezhdy Ostrovskoi, 15, kv. 49, and Grigory Rakhmielevich Baron, ulitsa Partizanskaya, 5, kv. II, all of Sevastopol, U.S.S.R.
Filed Apr. 7, 1970, Ser. No. 26,319
Int. Cl. B66d *1/50*
U.S. Cl. 254—172 **2 Claims**

A device mounted on a crane particularly a floating crane for preventing collision of a load with a seacraft being loaded in rough weather in which one end of a follow-up rope is secured to the seacraft and the rope is reeved around blocks mounted on the boom with the other end being connected to a winch drum for changing the length of the rope to suit the changing distance between the crane and the seacraft. A load supporting rope is reeved around other blocks on the boom and blocks on a crosspiece connected with a mechanism for simultaneously tensioning of both ropes to compensate for changes in distance between the crane and seacraft. Such mechanism includes a two-arm lever mounted in the frame with one arm being connected to the crosspiece and the other arm articulated to a power cylinder-piston unit on the crane serving to turn the lever with a force required to prevent collision of the load with the seacraft.



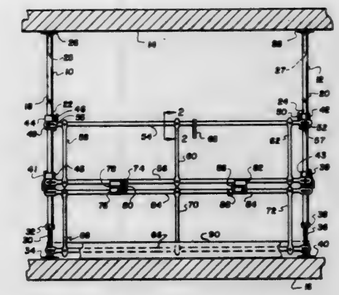
3,662,992
TACKLE BLOCK
Murray B. Vittert, 7566 Wellington Way, Clayton, Mo.
Filed May 28, 1970, Ser. No. 41,321
Int. Cl. B66d *1/36*
U.S. Cl. 254—192 **11 Claims**



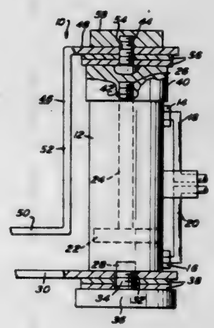
A tackle block incorporating a sheave with a rope or other flexible member extending thereover comprising a movable brake shoe presented radially outwardly of the rope receiving portion of said sheave and being carried upon rocker arms adapted for swingable movement about an axis parallel to, but radially outwardly of, the sheave rotation axis. A clutch mechanism carried within said sheave and operably engageable with said rocker arms; said clutch being actuated responsive to centrifugal force whereby upon excessive sheave speed said rocker arms will be swung to bring the brake shoe into engagement with said rope for clamping same against the sheave.

3,662,993
PROTECTIVE GUARD FIXTURE
Anthony Lionetto, 19 Hill Crest Avenue, Fort Lee, N.J.
Filed Apr. 7, 1971, Ser. No. 132,005
Int. Cl. E04h *17/16*
U.S. Cl. 256—65 **10 Claims**

A convertible protective guard fixture for open work areas in building construction having two vertical posts which support a barrier frame member. The vertical posts having movable collars with a first locking means attatched to each collar in vertical positioning of the collar on the vertical post and a second locking means attatched to each collar used for supporting and retaining the barrier frame member. The barrier frame member also having a foldable and detachable section to provide convertibility.



3,662,994
PUSH-PULL JACK APPARATUS
Melvin Johns, 1401 North 8th Street, Philadelphia, Pa.
Filed Aug. 12, 1970, Ser. No. 63,181
Int. Cl. B66f *3/24*
U.S. Cl. 254—93 R **10 Claims**



A push-pull jack for use in either pushing apart or pulling together two rigid members. The jack includes a cylinder, a piston in the cylinder and means for admitting air or a fluid under pressure into the cylinder to move the piston in either direction in the cylinder. A flat jaw is secured to one end of the cylinder, and a Z-shaped jaw is secured to the end of a piston rod extending from the other end of the cylinder. The Z-shaped jaw is mounted on the piston rod so that it can be positioned either with its working arm being adjacent to the cylinder and closely spaced from the other jaw or with its working arm being spaced from the end of the cylinder and greatly spaced from the other jaw.

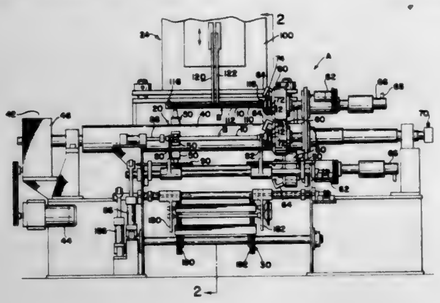
ERRATUM

For Class 256—65 see:
Patent No. 3,662,993

ERRATUM

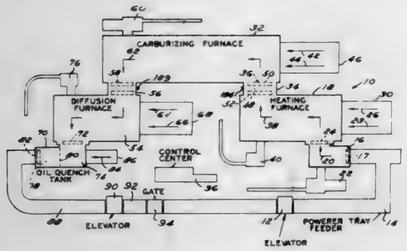
For Class 259—2 see:
Patent No. 3,662,806

3,662,995
METHOD AND APPARATUS FOR INDUCTIVELY HEATING AND QUENCH HARDENING AN ELONGATED WORKPIECE
Robert G. Armstrong, Chardon, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio
Filed Mar. 5, 1970, Ser. No. 16,710
Int. Cl. C21d 1/66
U.S. Cl. 266—4 E **6 Claims**



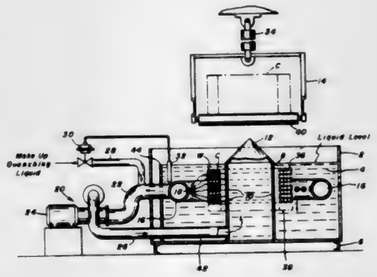
A device for inductively heating and quench hardening an elongated workpiece including a heating station having single-turn inductor extending the length of the workpiece for heating the total workpiece simultaneously and as it is rotated; a quenching station having an elongated quench body for quenching the total workpiece simultaneously and as it is rotated; a movable member at the quenching station for bending the workpiece from one side while the workpiece is being rotated whereby the various portions of the workpiece are alternately flexed between compression and tension; and, means for gradually retracting the member from the workpiece so that the amplitude of flexing is decreased until this amplitude is zero. In this manner, the workpiece is straightened as it is quench hardened.

3,662,996
MULTI-CHAMBER CARBURIZING APPARATUS
Donald J. Schwalm, Northville, and Edward C. Bayer, Dearborn, both of Mich., assignors to Holcroft & Company, Livonia, Mich.
Filed Mar. 23, 1970, Ser. No. 22,501
Int. Cl. C21d 1/78
U.S. Cl. 266—4 A **17 Claims**



The multi-chamber carburizing apparatus results in a continuous process including a heating furnace having inlet door means through which, when open, work is fed into the furnace, a carburizing furnace connected thereto, interconnecting double door means between the heating furnace and the carburizing furnace through which, when open, work is fed from the heating furnace into the carburizing furnace, a diffusion furnace, interconnecting double door means between the carburizing furnace and diffusion furnace through which, when open, work is fed from the carburizing furnace into the diffusion furnace, and a cooling chamber which may be a water cooled section or an oil quench tank having inlet door means through which, when open, work is fed from the diffusion furnace into the cooling chamber, or quench tank. The double door means have a space therebetween which may be filled with a neutral or other gas to act as a barrier between the furnaces. Gas passageways are provided beneath the various door means for flow of gas from the various furnaces at a controlled rate.

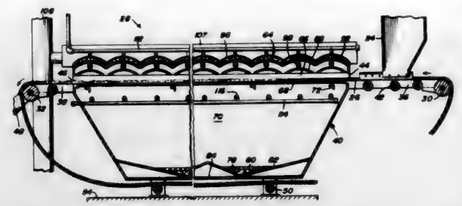
3,662,997
APPARATUS FOR QUENCHING COILS
William M. Bloom, Pittsburgh, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.
Filed Mar. 23, 1970, Ser. No. 21,735
Int. Cl. C21d 1/62
U.S. Cl. 266—6 R **6 Claims**



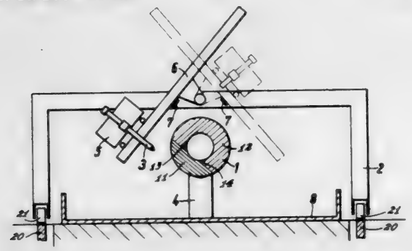
Apparatus for rapidly and uniformly quenching coils of steel rod, tube or the like from an annealing temperature to a quench temperature by establishing a flow of quenching liquid from the inside of the coil about the wraps to the outside of the coil at a flow rate sufficient that the quenching liquid is maintained in its liquid state. The apparatus includes a quenching bath, means for lowering the coils into the bath, quenching liquid supply means disposed within the central open portion of the coils when lowered in the bath in quenching position, means to collet quenching liquid from around the outside diameter of the coils when in quenching position, and circulating means for providing a forced flow of quenching liquid from the supply means through the wraps of the coil to the collecting means. Preferred embodiments include a means for recirculating the quenching liquid, means for removing heat picked up from the coil wraps and means for controlling the temperature of the bath.

3,662,998
MERCURY, VAPOR TYPE ORE REDUCTION APPARATUS AND METHOD
Edwin F. Stratton, Boise, Idaho, assignor to Mercury Processors, Inc.
Filed Mar. 16, 1970, Ser. No. 19,782
Int. Cl. F27d 17/00
U.S. Cl. 266—16 **10 Claims**

A crushed ore is conveyed through a series of roasting chambers located below associated heat generating zones. Mercury vapors released from the ore descend from the roasting chambers into a condensing chamber and pass through cooling sprays of water. The liquefied mercury and water is collected at the bottom while non-condensible gases are withdrawn through flue outlets.

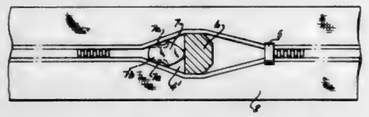


3,662,999
APPARATUS FOR CUTTING THICK-WALLED TUBULAR ELEMENTS
Herbert Meyer, Oberhausen-Sterkrade, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany
Filed Oct. 23, 1970, Ser. No. 83,490
Claims priority, application Germany, Oct. 29, 1969, P 19 55 395.8
Int. Cl. B23k 7/04
U.S. Cl. 266—23 NN **3 Claims**



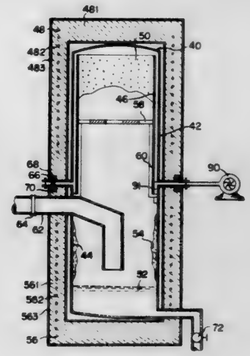
A cutting torch is mounted on a carriage which, in turn, is mounted on an arm pivoting on an axis parallel to the axis of a pipe to be cut. Cutting is carried out in a plane, and from two different pivot positions along correspondingly different directions to obtain two merging kerfs.

3,663,000
METHOD AND APPARATUS FOR ATTACHING SLIDERS TO A SLIDE FASTENER CHAIN
Morris Perlman, 1664 51st Street, Brooklyn, N.Y.
Filed Feb. 18, 1970, Ser. No. 12,264
Int. Cl. B23p 19/04, 11/00
U.S. Cl. 29—207.5 SL **19 Claims**



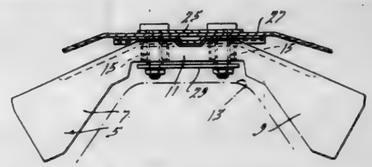
A method and apparatus for attaching sliders to a slide fastener chain having longitudinally spaced gaps free of coupling elements, in which, while the chain is held in taut condition, a gap at an assembly station is spread in transverse direction, a slider is placed in the spread gap, and then the chain pulled under tension in longitudinal direction in such a manner that the adjacent side edges of the stringers of the chain are forced into the slider channel to thus attach the slider to the chain. The chain is then moved together with the slider attached thereto in longitudinal direction until the next gap is at the assembly station, whereafter the cycle is repeated.

3,663,001
VACUUM SEPARATOR
Hiroshi Ishizuka, 19-2 Ebara, 6-chome, Shinagava-ku, Tokyo, Japan
Filed Apr. 16, 1969, Ser. No. 816,610
Claims priority, application Japan, Apr. 18, 1968, 43/26074
Int. Cl. C21c 7/10
U.S. Cl. 266—34 V **5 Claims**



A vacuum separator of metal for separating impurities from half-refined metal prepared by reducing a metal chloride by a metallic reducing agent. The impurities include the surplus or unreacted metallic reducing agent and reaction by-products. The vacuum separator comprises a body and a heating furnace. The body accommodates an inner cylindrical member with a carrier means carrying reduced half-refined metal to be treated. The body includes an upper portion holding the inner cylindrical member, and a lower portion receiving the surplus or unreacted reducing agent and the reaction by-products. The furnace includes a conduit connected to a vacuum pump to reduce the inner pressure of the body, a first portion heating the inner cylindrical member held by the upper portion of the body, and a second portion heating the lower portion of the body. The second portion of the furnace melts away crusts deposited in the vessel as solid substance firmly adhered to the wall of the lower portion of the body.

3,663,002
DYNAMIC DAMPER
Robert G. Gergle, Troy, and Zdravko D. Dobrasevic, Detroit, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Aug. 31, 1970, Ser. No. 68,702
Int. Cl. F16f 1/36
U.S. Cl. 267—136 **4 Claims**

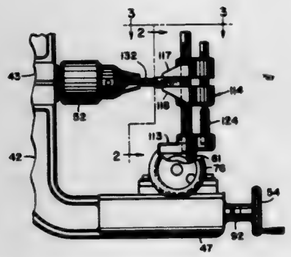


Tuned mass adapted to be connected to vehicle body to dampen body vibrations.

3,663,003
MILLING VISE

Glenn B. Morse, 321 Fountain Street, N.E., Apt. 1, Grand Rapids, Mich.

Continuation-in-part of application Ser. No. 618,216, Feb. 23, 1967, now Patent No. 3,470,789. This application July 17, 1969, Ser. No. 842,676
Int. Cl. B23q 3/18; B25b 5/16
U.S. Cl. 269—60 10 Claims

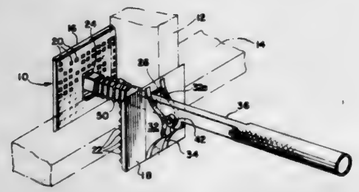


This milling device has a clamping screw engaging a pair of jaws mounted for sliding movement along a guideway. An adjusting screw engages one of the jaws rotatively in restrained axial relationship, and also engages a base in the same manner (at least one of these being in threaded engagement). The adjusting screw is rotatably and axially free with respect to the other jaw member.

3,663,004
CLAMPING DEVICE

Adam Hupert, 50 Harbor Road, Port Tobacco, Md.

Filed Oct. 15, 1970, Ser. No. 80,958
Int. Cl. B25b 5/02, 5/08
U.S. Cl. 269—157 10 Claims



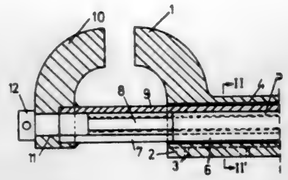
A clamping device wherein an actuating lever is pivotally mounted to a first clamping plate and extends to a second clamping plate disposed parallel to the first plate. The lever engages the second plate in a manner to force the plates together into a clamping position upon movement of the lever.

3,663,005
HEADSTOCK

Carl Ulrich Peddinghaus, Strasse 268, Wuppertal-Barmen, Germany

Filed Sept. 22, 1969, Ser. No. 859,814
Claims priority, application Germany, Sept. 23, 1968, P 17 28 292.7; Mar. 10, 1969, P 19 12 001.5
Int. Cl. B25b 1/10
U.S. Cl. 269—247 11 Claims

A headstock with jaws guided parallel to one another, and with a spindle which engages the movable jaw by means of a drivable head, and which engages in a spindle nut which is stationary in relation to the fixed jaw, the spindle being enclosed or surrounded by a guiding tube formed with a longitudinal slot in its under side, in which a web attached to the spindle nut engages, the flanks of this web forming guides for the slides of the slot in the guiding tube.

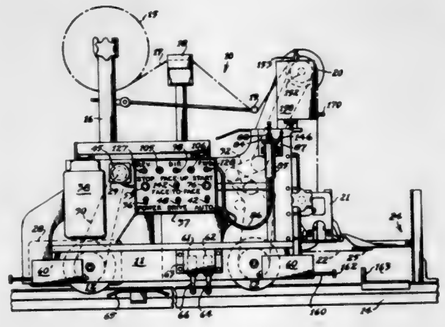


The guiding tube may be of circular cross-section, or may be of angular cross-section, with a horizontal web at the top and two lateral vertical flanges.

3,663,006
ELECTRICALLY CONTROLLED CLOTH SPREADING MACHINE

Robert W. Benson; James Ronald Chapman; Robert G. Reed, and Hoyt L. Smith, all of Nashville, Tenn., assignors to Cutters Machine Company, Inc., Nashville, Tenn.

Filed Sept. 12, 1969, Ser. No. 857,509
Int. Cl. B65h 29/46
U.S. Cl. 270—31 7 Claims



An electrically driven and controlled cloth spreading machine including means for reversing the travel of the machine, means for controlling the high and low speeds of the machine, means for causing the machine to fail safe at low speed upon power failure and open circuit conditions caused by different changes in function of the machine.

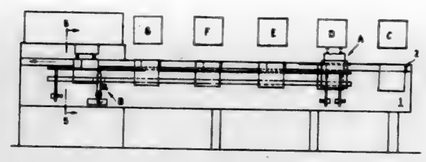
The machine is also provided with various selective controls for manual, semi-automatic and automatic operation of the machine, and for spreading cloth face-to-face, face-up or face-down.

3,663,007
TIPPING APPARATUS FOR A SIGNATURE GATHERING MACHINE

Alfred Preiter, Augsburg, Germany, assignor to Grapha Maschinenfabrik Hans Muller AG, Zofingen, Germany

Filed May 7, 1970, Ser. No. 35,447
Int. Cl. B65h 5/30
U.S. Cl. 270—55 9 Claims

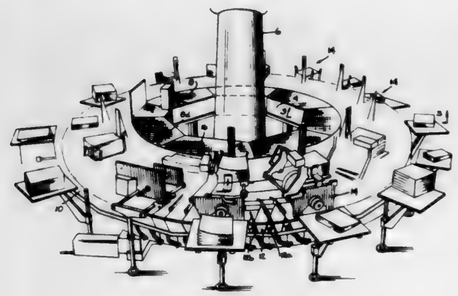
Apparatus for the tipping of inserts or supplements onto a plurality of signatures on a signature gathering device. The apparatus includes a transport device for conveying the signatures, a plurality of signature feeding devices, an insert feeding device, ad a device for adjusting the position of each insert relative to the assembled signatures.



3,663,008
STUFFING MACHINE FOR ASSEMBLING NEWSPAPERS OR THE LIKE

Rehn Claus Peterson, Bethlehem; Robert Alexander St. Denis, and Douglas Thomas Steckel, both of Easton, all of Pa., assignors to Harris-Intertype Corp., Cleveland, Ohio

Filed Oct. 14, 1969, Ser. No. 866,258
Int. Cl. B65h 5/30
U.S. Cl. 270—55 21 Claims



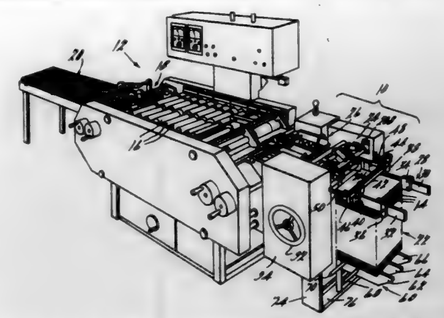
A newspaper stuffing machine for assembling the sections of a newspaper, which includes a generally toroidal rotor carrying an endless series of carrier pockets past a series of feeding stations. The feeding stations feed sections of the newspaper into each pocket as it moves past the stations. The rotor is rotatably mounted upon a frame with both the rotor and the frame having generally aligned, vertically extending, central openings of sufficient size to enable the stuffing machine to be assembled about an obstruction, such as a building column.

3,663,009
SHEET FEEDING APPARATUS

Joe Scott, Southfield, Mich., assignor to Scott Equipment Company, Inc., Detroit, Mich.

Filed Mar. 23, 1970, Ser. No. 21,893
Int. Cl. B65h 3/10
U.S. Cl. 271—11 54 Claims

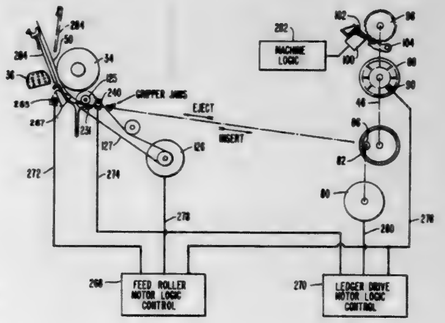
An apparatus for feeding successive sheets of workstock from a stack or pile thereof and including a sheet storage assembly adapted to operatively support a stack or plurality of sheets of workstock, a delivery assembly for conveying successive sheets of workstock to an associated machine or other operative destination where the workstock sheets are to have some operation performed thereon, and a transfer mechanism for individually transferring successive workstock sheets from the stack thereof to the delivery assembly, the transfer mechanism including at least one vacuum pickup element and means supporting the element for compound movement about rotational and pivotal axes extending transversely of the path of movement of the workstock sheets through the apparatus.



3,663,010
DOCUMENT TRANSPORT SYSTEM

Harold M. Frederick, Birmingham, and Edward A. Nicol, Farmington, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed July 6, 1970, Ser. No. 52,612
Int. Cl. B65h 5/10
U.S. Cl. 271—14 40 Claims



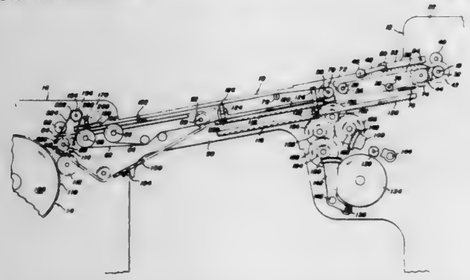
This invention applies to a document transport system for rapid and precise movement and positioning of sheet material and particularly to such a system adapted for use in business machines. The system includes reciprocating sheet gripping means for moving and positioning a document having machine readable and human readable portions thereon. The document gripper provision includes a pair of jaw assemblies for gripping the leading edge portion of a document inserted into the throat of the machine. Each jaw is individually mounted on a support arm or rail for mutual travel in a bi-directional fashion perpendicular to the document inserting throat. A reversely rotatable drive shaft is coupled to the jaw assemblies, such as by elongated flexible members, for imparting precise bi-directional movements to the jaw assemblies concurrently in the same direction and at relatively high speeds along their respective rails and for accurately stopping the document in different positions in the machine. The gripper jaws are normally biased to a closed position but are activated to open condition only when the jaws are at their terminal position adjacent to the throat for receiving the leading edge of an inserted document or for releasing a document already handled by the machine. The pull and push action of the document gripping mechanisms are assisted by document engaging rollers adjacent to the throat of the machine whose speed and direction of rotation is controlled

so as to impose a tension on the document at all times while it is in the machine. The movement and positioning of the document is under the control of mechanism which senses the machine readable portion of the document and governs the direction and distance of rotation of the drive shaft and the sheet engaging rollers thereby precisely moving and positioning the document as machine operations are performed.

3,663,011
PRINTING PRESS NONSTOP SIDE REGISTER MECHANISM

Harry E. Mowry; Guy V. Carricato, and Louis A. Ricardo, all of Pittsburgh, Pa., assignors to Miller Printing Machinery Co., Pittsburgh, Pa.

Filed Dec. 1, 1969, Ser. No. 881,018
Int. Cl. B65h *9/10*
U.S. Cl. 271—49 **18 Claims**



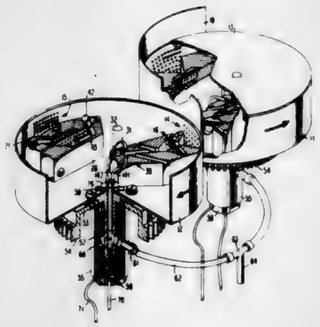
The side register mechanism is positioned between a sheet feeder mechanism and the feed rolls of the press and includes a plurality of spaced parallel endless tapes reeved around spaced pulleys mounted on a feed board. The tapes are parallel to the longitudinal axis of the press and are driven by certain of the pulleys to convey separate sheets from the feeder to the press. There are a plurality of parallel suction device guide members positioned below the upper run of the tapes and suction heads are arranged to move reciprocally in the guides. The guides are positioned at an acute angle to the tapes and the suction devices in the guides engage the sheet adjacent the leading edge and direct the sheet laterally toward a side of the feed board as the sheet is conveyed toward the press feed rolls by the tapes. The lateral movement of the sheet moves the side edge of the sheet beneath a rotating brush member that urges the sheet side edge against a moving vertical endless side guide tape. The rotating brush member urges the sheet side edge against and maintains the sheet side edge in abutting relation with the side guide tape. The sheet is thus brought into and maintained in side register and conveyed in side register to the feed rolls. Endless driven chains with stop members move at a slightly lower linear velocity than the main conveying tape so that the front edge of the sheet is maintained in abutting relation with the stops. The suction devices are arranged in pairs and are retracted as they move rearwardly toward the feeder.

3,663,012
DOCUMENT HANDLING DEVICE PROVIDED WITH A NUMBER OF ROTATABLE HOLLOW DRUMS WITH SUCTION OPENINGS

Taco H. Van Den Honert, Laren, N.H., Netherlands, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 3, 1969, Ser. No. 881,798
Claims priority, application Netherlands, Feb. 10, 1969, 6902032
Int. Cl. B65h *5/12*
U.S. Cl. 271—51 **7 Claims**

Suction openings in a rotating drum are alternately connected to or disconnected from the vacuum maintained inside the drum, when this is necessary to grip and transport a document, and to release it, respectively. Activation of a group of suction openings is effected by a diaphragm valve, supported by the drum in the interior thereof, with associated pneumatic logical switching means to operate the valve. The switching means have ports, connected to the high and low pneumatic feed levels, existing outside and inside the drum,

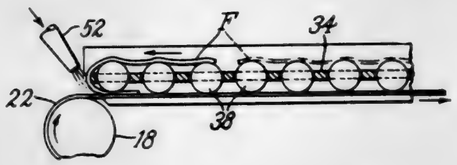


respectively, and to a pneumatic signal line, providing a connection, insensitive to the drum rotation, with an external, fixed source of control signals for document transport. Other control signals may be generated by the presence or absence of a document on the drum. Various drums of this kind, rotating in opposite directions, are disposed closely together to form a high speed selective document transport system.

3,663,013
WORK POSITIONING DEVICES

Francis A. Wickers, Beverly, Mass., assignor to USM Corporation, Boston, Mass.

Filed June 15, 1970, Ser. No. 46,212
Int. Cl. B65h *7/10, 9/16*
U.S. Cl. 271—59 **2 Claims**



A bottom feeding mechanism, comprised of a plurality of caged balls and an endless belt in frictional driving contact therewith, is provided with an edge gage for uniformly positioning work pieces, especially flexible sheet material such as fabric, fed onto the balls. In addition to adjustably determining a selected marginal position and/or a line of feeding, for instance as required for hemming and/or stitching machines, the device is adaptable for turning over successive work pieces and aligning them in uniform manner.

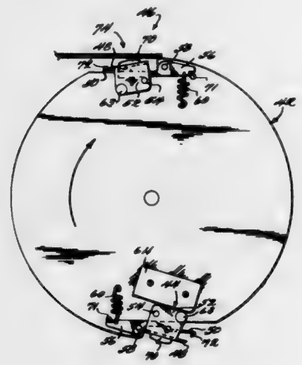
3,663,014
RETRACTABLE CARD GRIPPER

William J. Wasylenko, Philadelphia, Pa., assignor to Control Data Corporation, Minneapolis, Minn.

Filed June 5, 1970, Ser. No. 43,964
Int. Cl. B65h *29/06*
U.S. Cl. 271—82 **4 Claims**

An improvement in a card transporting device of the type including a pair of coaxially mounted, continuously rotating discs, each having a number of card gripper assemblies, each

cooperating with an assembly on the disc for receiving a card, transporting it to the bottom of a stack of cards and placing it there. Each assembly includes an upper jaw mounted on a member which is pivotably attached to the disc and urged about the pivot in a first direction by a spring, a lower jaw similarly mounted on another member also pivotably attached to the disc and urged about its pivot in the opposite direction so as to normally close the jaws with sufficient force to grasp a card. A cam follower is mounted on the upper jaw member and cooperates with a cam mounted stationary with respect to the disc for rotating that member against the force of its spring and opening the jaws to receive

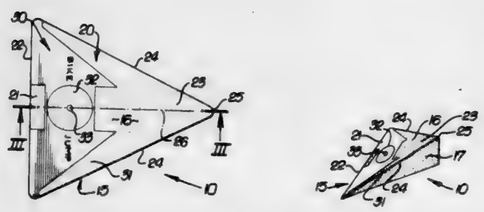


the card. A wiper member is further mounted on the upper jaw member for frictionally engaging and pulling into proper position the bottom card on the stack at the same time or before the grasped card is stripped from the jaws by frictional engagement with the stack bottom. According to the improvement, the lower jaw has a hook on its end so that when a card is being grasped the upper jaw member is in a position such that the wiper frictionally engages and positions the bottom card, but, when no card is being grasped, the upper jaw member is in a position such that the wiper misses the bottom card, thus avoiding unnecessary card wear and stack vibration.

3,663,015
BIKE JUMP

Samuel Fred Bynder, and Milton T. Swimmer, both of 10609 Gothic Street, Granada Hills, Calif.

Filed Dec. 17, 1970, Ser. No. 99,059
Int. Cl. A63g *31/00*
U.S. Cl. 272—1 R **6 Claims**

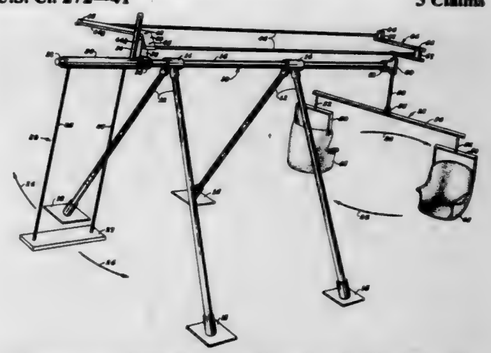


The bike jump has a generally wedge shaped body with upwardly inclined top surface having a wide lower entrance zone and a pointed jump departure zone from which the bike departs for maximum leap distance for a selected bike speed.

3,663,016
SWING APPARATUS

Earl R. Morris, 560 South Cole Street, Indianapolis, Ind.

Filed Dec. 8, 1969, Ser. No. 883,118
Int. Cl. A63g *9/12, 1/20*
U.S. Cl. 272—41 **3 Claims**

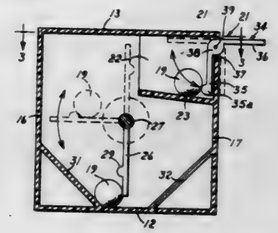


A swing set apparatus, providing that the pendulum-type swinging movement of a swing also provides the power for the revolving movement of a seat assembly on other portions of the apparatus.

3,663,017
GAME APPARATUS AND ALPHABET TEACHING DEVICE

Joseph G. Lopez, 3210 West 65th Avenue, Denver, Colo.

Filed Nov. 12, 1970, Ser. No. 88,832
Int. Cl. A63b *63/00*
U.S. Cl. 273—1 R **8 Claims**



A game device particularly suitable for teaching purposes includes a hollow body containing a plurality of movable objects, preferably balls, each marked with distinctive indicia. A plurality of compartments are arranged longitudinally of an upper portion of the body. A manually operable flap, contained within the body, is swingably mounted to sweep the movable objects upwardly from the bottom of the body into the compartments in a single upstroke and return means return movable objects to the bottom of the body. As an alphabet toy each compartment has alphabet indicia corresponding to alphabet indicia of one of the movable objects and in the play those objects which are not in a corresponding compartment are returned to the bottom of the body and the procedure is repeated until all of the movable objects are in a corresponding compartment.

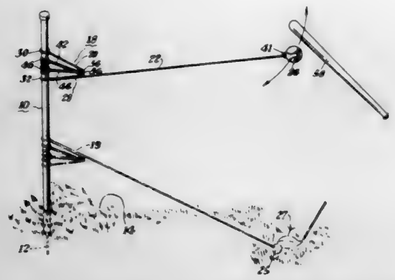
3,663,018
BATTING PRACTICE TETHERED BALL

Robert E. O'Leary, McKeesport, Pa., assignor to Olos Corporation, Monroeville, Pa.

Filed July 23, 1969, Ser. No. 844,215
Int. Cl. A63b *69/40*
U.S. Cl. 273—26 A **9 Claims**

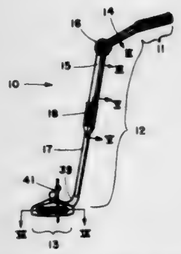
I disclose a batting practice device comprising a support, a relatively rigid arm structure rotatably mounted on said sup-

port and having a practice ball or similar projectile mounted adjacent its outward free end, and biasing means non-rotatably secured to said support and to said arm structure at



a point remote from said support for storing at least a portion of the kinetic energy of said ball as said arm structure rotates after said ball is struck by a user of said device.

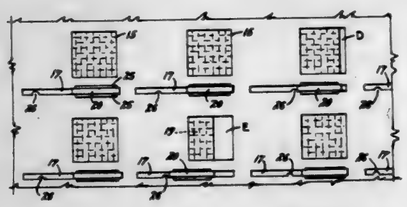
3,663,019
ADJUSTABLE GOLF PUTTER
John J. Palotzee, J. P. Putter & Guide Company, Box 1225, Youngstown, Ohio
Filed Jan. 28, 1970, Ser. No. 6,471
Int. Cl. A63b *53/16*
U.S. Cl. 273—81.3 **1 Claim**



A golf putter having a telescoping shaft and a swivel connection permitting the upper portions of the shaft and the grip to be angled relative to the main portion of the shaft and the putter head.

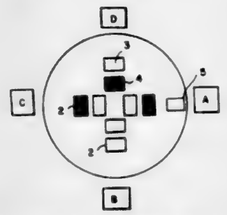
The swivel connection allows the upper portion of the shaft to pivot in a plane parallel to the ball-striking face.

3,663,020
BINGO GAME BOARDS
James F. Moore, Jr., Englewood, Colo., assignor to Moore & Hansen Mfg. Co., Englewood, Colo.
Filed Mar. 13, 1970, Ser. No. 19,353
Int. Cl. A63f *3/06*
U.S. Cl. 273—135 B **1 Claim**



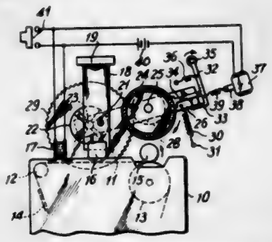
A bingo board of the type shown in prior U.S. Pat. No. 2,778,642 provided with guide slots positioned below windows in a front board with finger grips slidably mounted in said slots for shifting number-covering tabs across said windows and having a protuberance positioned in each guide slot to be engaged by the tab of the slot for frictionally limiting and controlling the movement of the finger grip therein. The protuberances are positioned at different selected positions along their guide slots and are out of vertical alignment. A resetting sheet is mounted behind the front board which when laterally shifted shifts all of the tabs to open position.

3,663,021
METHOD OF PLAYING A BINARY CARD GAME
Walt Whippo, 110 Sunset Drive, Cocoa Beach, Fla.
Filed Oct. 6, 1970, Ser. No. 78,464
Int. Cl. A63f *1/00, 1/04*
U.S. Cl. 273—152.2 **1 Claim**



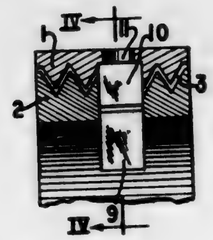
A binary game apparatus consisting of a plurality of playing pieces each of which are identical and each of which has first and second distinguishing characters which are respectively assigned the numbers 0 and one comprising the numbers in the binary system having base 2. The playing pieces may be cards, and each card may have one white face representing the number 0 and an opposite black face representing the number 1. When such cards are arranged adjacent, those displaying upward the character representing the number 1 have the following values; the one farthest to the right has the value 1, the next to the left the value 2, the next to the left the value 4, the next to the left the value 8, and continuing if desired with each such card representing the binary number one placed next to the left doubling in value. The cards or other playing pieces displaying upward the character representing the number 0 have the value of 0 regardless of their position. The total value of a row of adjacent playing pieces is determined by adding together the values so represented by the displayed characters of each piece, whereby a variety of number games may be played.

3,663,022
APPARATUS FOR SHIFTING MAGNETIC HEAD IN MULTI-TRACK TAPE PLAYER
Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan
Filed June 22, 1970, Ser. No. 48,008
Claims priority, application Japan, June 23, 1969, 44/58505; 44/58506
Int. Cl. G11b *21/08*
U.S. Cl. 274—4 A **7 Claims**



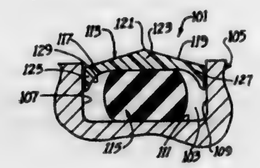
An apparatus for shifting a magnetic head in multi-track magnetic tape player comprising cam means for positioning the magnetic head when rotated in a manner of corresponding to a plurality of discrete and separate recordtrack on the tape, a frictional wheel rotatable by selective abutment against a rotary capstan for driving the tape, a mechanism for controlling abutment of the frictional wheel with the capstan, a gearing for reducing rotation of the wheel to impart this rotation to the cam means, and a brake member adapted to abut against the wheel at the periphery thereof to brake rotation of the wheel at a point where the magnetic head is moved by one step by the cam means.

3,663,023
LABYRINTH GAP SEAL
Reinhold Leidenfrost, Schwabacherstrasse 28, Birkenstrafe, 101, Germany
Continuation-in-part of application Ser. No. 748,681, July 30, 1968, now abandoned. This application Dec. 4, 1970, Ser. No. 95,160
Claims priority, application Germany, Aug. 11, 1967, P 16 50 083.7
Int. Cl. F16j *15/44*
U.S. Cl. 277—56 **3 Claims**



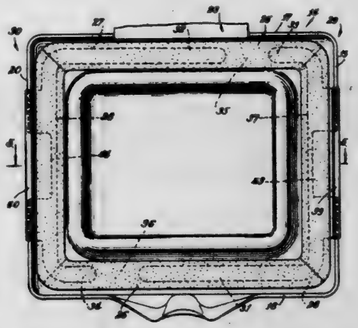
A gap seal having a labyrinth interface between two concentric rings having a means for expelling foreign matter which penetrates said interface and process for the production of said gap seals.

3,663,024
SEALING ASSEMBLY
Henry A. Traub, Pacific Palisades, Calif., assignor to W. S. Shamban & Co., Los Angeles, Calif.
Filed July 2, 1970, Ser. No. 51,950
Int. Cl. F16j *15/24*
U.S. Cl. 277—165 **9 Claims**



A sealing assembly including a slipper seal and an elastomeric seal with one of the seals circumscribing the other of the seals. The slipper seal includes first and second end portions separated by a central portion with the central portion having a circumferential surface adapted to slidingly and sealingly engage a member. The circumferential surface is generally flat in axial cross section and the first and second end portions taper radially away from such member so that they do not engage such member.

3,663,025
SEALING ASSEMBLY FOR RAILWAY CAR JOURNAL BOX LID
Rudolph E. Nadherny, Naperville, and Edward Payson Smith, Winnetka, both of Ill., assignors to Illinois Railway Equipment Company, Chicago, Ill.
Filed Feb. 16, 1971, Ser. No. 115,531
Int. Cl. F16j *15/06*
U.S. Cl. 277—189 **8 Claims**

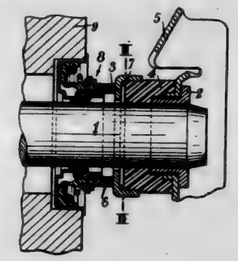


A rectangular neoprene foam gasket for application to the inside of a journal box lid has generally U-shaped aluminum frame members embedded therein with the arms spaced apart and intermediate sections along the sides having channel shaped extensions for overlying the respective inturned edge portions of the lid. The arms of the frame members are of different lengths with the shorter arms spaced from the longer arms. The gasket comprises two pairs of generally L-shaped oppositely disposed sections overlying each other and adhesively secured to opposite sides of the frame members. Tabs extend from the outer flange of each channel section and they have lengthwise extending ribs to facilitate retention in bent over position on the outer surface of the lid.

ERRATUM

For Class 277—140 see:
Patent No. 3,663,030

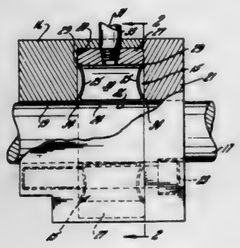
3,663,026
IMPELLER FOR SMALL-SIZE PUMPS
Antonio Mincuzzi, Midland, Italy, assignor to Societe Internationale De Mecanique Industrielle S.A., Luxembourg, Luxembourg
Filed July 9, 1970, Ser. No. 53,528
Claims priority, application France, July 29, 1969, 6925889
Int. Cl. F16j *15/34*
U.S. Cl. 277—237 **4 Claims**



An impeller of the type broadly set forth hereinafter which is capable of transmitting electric current between the im-

peller shaft and the friction disk frictionally engaged by shaft seal or packing. Now this possibility is particularly advantageous when it is contemplated to control an electromagnetic device rigid with the shaft. In this case, the electric control current must flow to the shaft via the packing and the friction ring supported by the resilient member consisting generally of insulating material.

3,663,027
FLUID ACTUATED CLAMP
James L. Klipping, Rockford, Ill., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.
Filed Sept. 14, 1970, Ser. No. 71,914
Int. Cl. B23b *31/30*; F16b *1/00, 2/02*
U.S. Cl. 279—4 **21 Claims**



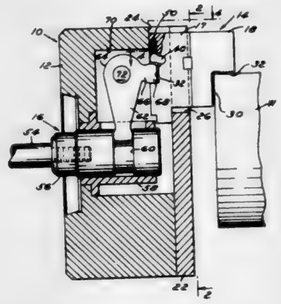
A bowed web of resiliently flexible material is deflected toward a straightened condition by pressure fluid and creates a clamping force with a toggle action to lock first and second parts against relative sliding and/or rotation.

3,663,028
TOOL HOLDER WITH SPRING OPERATED NUT
John L. King, Jr., and Roland G. Koch, both of Frankenmuth, Mich., assignors to Houdaille Industries, Inc., Buffalo, N.Y.
Continuation-in-part of application Ser. No. 55,759, July 17, 1970, now abandoned. This application Sept. 21, 1970, Ser. No. 74,003
Int. Cl. B23b *31/06*
U.S. Cl. 279—91 **22 Claims**



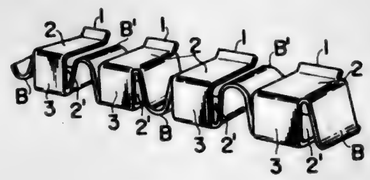
A tool holder includes a hollow supporting member on which there is threaded a locking ring which is urged to its locked position by a spring, there being a combined latch and release pin for holding the locking ring in the unlocked position, and responsive to the reception of a tool adapter to be automatically released for automatically tightening the locking ring. In one embodiment, the spring is a compression spring and includes a spring retainer for keeping the same in the locking ring.

3,663,029
CHUCK JAW LOCKING MECHANISM
William R. Dexter, Royal Oak, Mich., assignor to Verstand Engineering, Inc., Madison Heights, Mich.
Filed Apr. 16, 1970, Ser. No. 29,112
Int. Cl. B23b *31/16*
U.S. Cl. 279—119 **1 Claim**



A rotating chuck having circumferentially spaced jaws and pivoted clamping levers for moving the jaws radially inwardly to clamp a workpiece. A wedge is associated with each jaw to hold the same against outward movement due to centrifugal force. Springs are provided to urge the wedges in a wedging direction. The levers release the wedges when retracting the jaws.

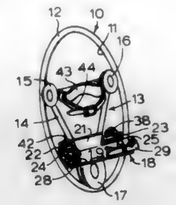
3,663,030
SPACER EXPANDER AND PROCESS OF MANUFACTURE OF SAME
Mikio Miyamoto, Omiya, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan
Filed July 13, 1970, Ser. No. 54,279
Claims priority, application Japan, July 12, 1969, 44/54831
Int. Cl. F02f *5/00*; F16j *9/06*
U.S. Cl. 277—140 **1 Claim**



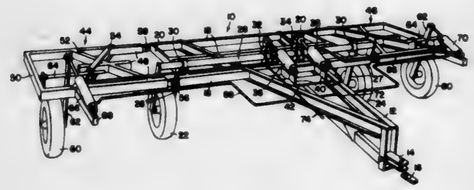
A spacer expander is of U shape in radial cross section and has upper and lower pressure supporting surfaces which have projections for urging side rails radially. Intermediate curved portions extend between adjacent pairs of upper and pairs of lower pressure supporting surfaces for circumferentially connecting the same.

3,663,031
SPORTING APPARATUS
William E. L. Young, 731 S. Remington Rd., Columbus, Ohio
Filed Feb. 25, 1970, Ser. No. 13,907
Int. Cl. A63c *17/08*
U.S. Cl. 280—11.24 **10 Claims**

Unique sporting apparatus comprising skate-like devices attaching not only to the feet but to the legs of the user. Such devices feature a single large diameter wheel which is revolvable relative a bearingly mounted frame embodying a laterally projecting foot support. On applying a pair of such devices to the feet, the wearer is elevated a significant distance from ground surface and may glide with exciting physical sensations over a variety of ground surface.



3,663,032
HYDRAULIC DEPTH CONTROL FOR AGRICULTURAL IMPLEMENTS
Richard Wayne Hook, Des Moines, and Virgil Dean Haverdink, Ankeny, both of Iowa, assignors to Deere & Company, Moline, Ill.
Filed Nov. 2, 1970, Ser. No. 85,996
Int. Cl. B62d *21/18*
U.S. Cl. 280—43.23 **22 Claims**



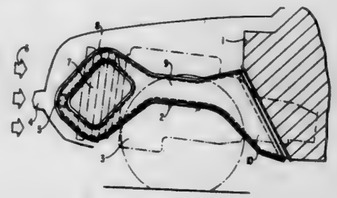
An implement including pivotally interconnected and wheel supported main and outrigger frames which can be raised and lowered on the wheels by a plurality of hydraulic cylinders, there being a single cylinder connected between each outrigger frame and its respective wheel and a pair of cylinders connected between the main frame and its wheels with the single cylinders and one of the pair of cylinders being hydraulically connected in series and the pair of cylinders being hydraulically connected in parallel. By employing the pair of parallel cylinders, lift capacity is increased since one of the pair of cylinders operates to raise the main frame while the other of the pair of parallel cylinders passes fluid pressure onto the single cylinders to raise the outrigger frames.

3,663,033
HANDLE ON HAND TRUCK
Thomas Story, Portland, Oreg., assignor to Harco Products, Inc., Portland, Oreg.
Filed Nov. 20, 1970, Ser. No. 91,502
Int. Cl. B62b *5/06*
U.S. Cl. 280—47.27 **4 Claims**

A separate handle part has a jaw portion overlying a cross bar portion of the truck frame. A socket fitting on the upper end of a central upright tubular member of the frame has a jaw portion underlying the cross bar. The two jaw members are clamped on the cross bar by a screw having threaded engagement with a plug in the upper end of the central frame member. The plug and upper end of the central frame member are tapered to fit in a tapered socket in the socket fitting whereby the screw holds all the parts securely together.

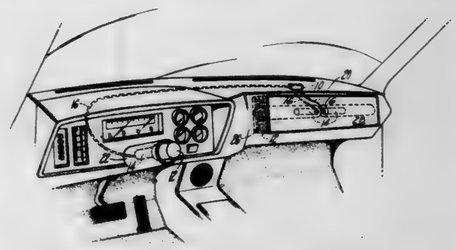


3,663,034
SAFETY FRAME STRUCTURE FOR MOTOR VEHICLES, ESPECIALLY PASSENGER MOTOR VEHICLES
Bela Barenyi, Maichingen; Bruno Sacco, Sindelfingen, and Hermann Renner, Boblingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Oct. 1, 1969, Ser. No. 862,892
Claims priority, application Germany, Oct. 3, 1968, P 18 00 779.9
Int. Cl. B62d *21/00*
U.S. Cl. 280—106 **17 Claims**



A safety frame structure for motor vehicles in which the outer ends of the longitudinal lateral bearers which extend from a rather form-rigid center section of the vehicle containing the passenger space to corresponding vehicle ends, are constructed as preferably closed loop-shaped parts.

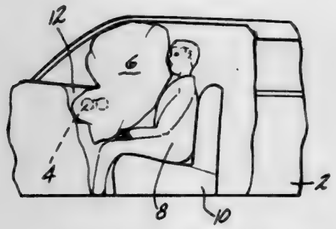
3,663,035
SELF-CONTAINED PASSENGER RESTRAINING SYSTEM
Thomas W. Norton, Simsbury, Conn., assignor to The Ensign-Bickford Company, Simsbury, Conn.
Filed Jan. 27, 1970, Ser. No. 6,111
Int. Cl. B60c *21/10*
U.S. Cl. 280—150 AB **11 Claims**



An inflatable self-contained passenger restraining system independent of the electrical system of the vehicle is pro-

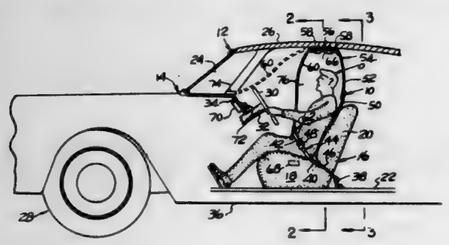
vided for restraining movement of an occupant upon rapid deceleration or impact of the vehicle. The system comprises an inflatable bag movable between a collapsed deflated position and an expanded deployed position, a pyrotechnic gas generator operatively associated with the bag for inflation thereof, the generator containing solid, granular, gas-generating charges in a multistage arrangement. An inertia sensing device responsive to impact force above about 4 g triggers an explosive signal transmission cord for actuating the pyrotechnic gas generation of the inflating gas.

3,663,036
VEHICLE SAFETY DEVICE HAVING AN INFLATABLE CONFINEMENT
James T. Johnson, Herrin, Ill., assignor to Olin Corporation
Filed June 16, 1970, Ser. No. 46,612
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB **16 Claims**



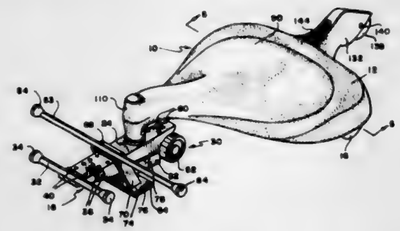
An apparatus for use in a safety system utilizing an inflatable confinement means, stored fluid under pressure, and a propellant charge for the generation of a hot gas. Means are provided for storing fluid under pressure which has a fluid outlet. A propellant chamber is provided for receiving an ignitable hot-gas generating charge of propellant. Means are provided to seal said chamber from said stored fluid. The arrangement is such that upon development of a predetermined chamber pressure after ignition of propellant, the chamber is unsealed and the fluid outlet is opened to permit the stored fluid and hot gas from the burning of the propellant to exit through the outlet. Means are provided between the chamber and the fluid outlet to deflect the hot gas upon exit from the chamber in a direction away from the fluid outlet to mix with the fluid prior to exit.

3,663,037
OCCUPANT SAFETY RETAINING DEVICE FOR VEHICLES
Mary Wohn-Machowski, 841 Greendale Drive, Windsor, Ontario, Canada
Filed Jan. 6, 1971, Ser. No. 104,321
Int. Cl. B60r *21/04*
U.S. Cl. 280—150 B **7 Claims**



Detachably connected to the conventional floor-anchored vehicle seat belt is an occupant-retaining device consisting of an inverted U-shaped occupant-retaining shield of flexible transparent material detachably securable at its forward end to the conventional seat belt, anchored at its uppermost portion to the vehicle roof structure, and secured at its rearward end to the upper ends of flexible straps, the lower ends of which are anchored to the vehicle chassis or floor structure. The device creates a flexible transparent-walled chamber wherein, during a collision, the forward portion of the shield retains the upper portion of the body of the occupant within the shield chamber and prevents it from being thrown through or against the windshield while the rearward portion of the shield prevents backlash, and both prevent the occupant's ejection from the chamber. When not in use, the forward end of the shield is detached from the seat belt and is secured to a convenient point on the vehicle body.

3,663,038
VEHICLE WITH COMBINATION STEERING, BRAKING AND PROPULSION MEANS
William E. Hendricks, Wichita, Kans.
Filed Apr. 6, 1970, Ser. No. 25,762
Int. Cl. B62m *29/00*
U.S. Cl. 280—218 **38 Claims**

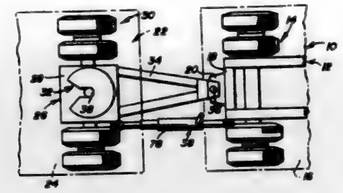


A vehicle of a very low profile and very high stability, wherein an integral seat constitutes the vehicle frame. A pair of laterally spaced wheels are mounted on the rear of the seat, and an elongated arm is pivoted intermediate its ends to the front of the seat about a vertical axis, and a dirigible wheel is mounted on the arm rearwardly of the vertical axis. A footrest is secured to the arm forwardly of the vertical axis, whereby a rider can swing the arm to steer the vehicle and also cause propulsion thereof. A brake is pivotally mounted on the arm, with handle actuating means being provided therefor which can be employed to control the brakes and/or swinging movement of the arm. Alternate movement of the arms, legs, and body to the right and left of the desired steering direction coupled with twisting movement of the body results in effecting propulsion of the vehicle in a manner somewhat analogous to the propulsion of a boat by a sculling oar. One version of the vehicle includes a single U-shaped bar to constitute a footrest and handles, and this version includes provision for releasably latching the brake from its breaking condition.

3,663,039
CONVERTER LOCK BAR
Charles W. Morgan, Albuquerque, N. Mex., assignor to M M & W., Inc.
Filed Oct. 24, 1969, Ser. No. 869,055
Int. Cl. B62d *53/00*
U.S. Cl. 280—408 **7 Claims**

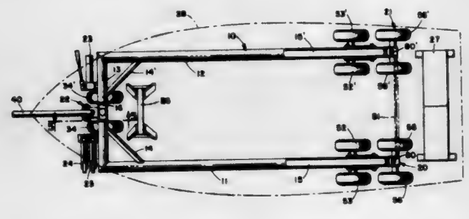
A telescoping arm assembly for connection between the rear end of a vehicle and a wheeled dolly trailed behind the vehicle. The arm assembly may be secured in predetermined extended position to prevent angular displacement of the dolly about an upstanding axis relative to the vehicle while the vehicle is being backed and the telescoping arm assembly may be subsequently released for ready telescoping during turning movement of the vehicle relative to the dolly or

disconnected from the vehicle and supported from the dolly



when the vehicle is to be moved in a forward direction and trailed as a trailer.

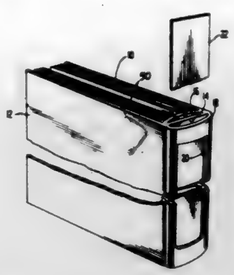
3,663,040
SMALL BOAT CARRIER
Chester H. Weaver, 184 Kingston Park Road, Baltimore, Md., and Charles C. Hoffberger, Apt. 59, 200 Cross Keys Rd., Baltimore, Md.
Filed June 18, 1970, Ser. No. 47,183
Int. Cl. B62d *53/00*
U.S. Cl. 280—414 R **7 Claims**



The invention is a small boat carrier or straddle-type trailer for boat yard use. The carrier is characterized by a single unitary open-ended horizontal U-frame which rides upon a pair of independent opposing multiple wheeled truck units disposed beneath the port and starboard after ends of the U-frame. The forward or closed end of the U-frame rides upon a free-wheeling swivel-mounted dolly unit which can be coupled to a tow truck or small tractor. The U-frame can be raised or lowered by one or more hydraulic rams which comprise extensible frame supporting means interposed between the truck units and the superjacent U-frame. Being devoid of load-bearing cross-members, the U-frame alone constitutes the sole structure which supports the hull of the boat to be moved. To operate, the carrier is backed into position beneath a boat and straddling the fixed support upon which the boat rests. The U-frame is hydraulically elevated to lift the boat clear of the fixed support, and the entire assembly is then ready for towing to another location.

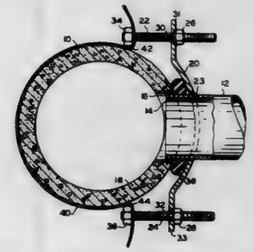
3,663,041
BINDER
James C. White, P. O. Box 5495, Station B, Greenville, S.C.
Filed Mar. 16, 1970, Ser. No. 19,922
Int. Cl. B42f *11/02*
U.S. Cl. 281—46 **3 Claims**

A binder for magazines and the like is extruded from plastic material to include a spine assembly including a main spine strip and at least a bowed inner anchoring strip joined to the spine strip. An outer bowed strip may also be formed opposite the anchoring strip, the outer strip having a window, or outer flanges may be formed along the opposite edges of the anchoring strip, the window or the flanges receiving identification strips. Resilient wire retaining elements are



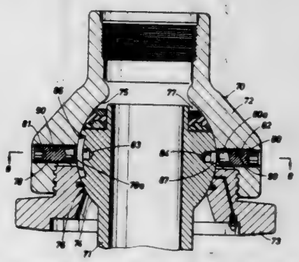
hooked over the upper and lower edges of the anchoring strip to secure a magazine or the like within the binder.

3,663,042
SEWER TAP
Dwight W. Fowler, 705 S.W. 206th St., Aloha, Oreg.
Filed Apr. 22, 1970, Ser. No. 30,766
Int. Cl. F16l *41/00*
U.S. Cl. 285—199 **11 Claims**



A sewer tap for a main sewer line includes a branch pipe extending into a drilled aperture in the sewer line through an annular clamping plate disposed in spaced relation to the side of the sewer line. An O-ring seal is located between the clamping plate and the side of the sewer line, while a pair of studs provided at ends of a cable passing around the sewer line are engaged by nuts for tightening the clamping plate against the O-ring seal.

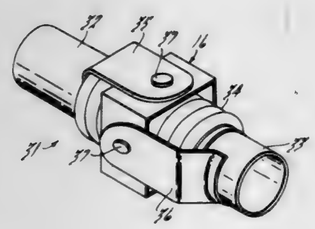
3,663,043
BALL AND SOCKET JOINT FOR PIPELINES
George W. Walton, 8903 Devonshire Drive, Dallas, Tex.
Continuation-in-part of application Ser. No. 861,399, Sept. 26, 1969, now abandoned. This application Jan. 2, 1970, Ser. No. 128
Int. Cl. F16l *17/00*
U.S. Cl. 285—113 **14 Claims**



A ball and socket joint is disclosed that has a pressure energized seal that can seal against pressure differentials in

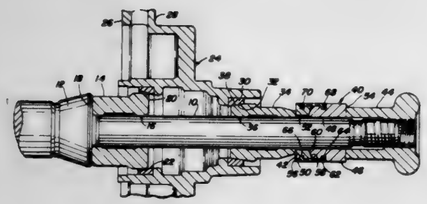
either direction. In one embodiment, the ball portion is supported on roller bearings for ease of movement of the ball and socket members relative to each other. In another embodiment, the ball is engaged by trunnions that allow the rotation of the ball relative to the socket to be limited to a variety of axes or rotation.

3,663,044
UNIVERSAL JOINT
Gilbert E. Contreras, Los Angeles, and Robert W. Graves, Woodland Hills, both of Calif., assignors to Aeroquip Corporation, Jackson, Mich.
Filed May 4, 1970, Ser. No. 34,160
Int. Cl. F16l 21/00
U.S. Cl. 285—226 8 Claims



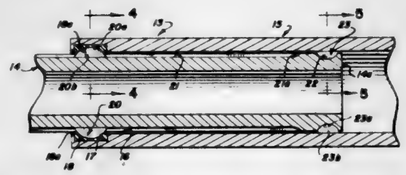
A universal joint used in conjunction with flexible bellows duct connections to restrain axial loading. Two sleeves connected by the bellows have pairs of diametrically opposed lugs pivoted to a gimbal ring. This ring is of non-circular shape, and in particular has four uncurved sides connected to the lugs, these sides being joined in one version of the invention by square corners and another by rounded corners.

3,663,045
SPACER ASSEMBLY
Wallace F. Mitchell, Arlington Heights, Ill., assignor to Ammco Tools, Inc., North Chicago, Ill.
Filed Aug. 24, 1970, Ser. No. 66,530
Int. Cl. F16d 1/06
U.S. Cl. 287—52.07 5 Claims



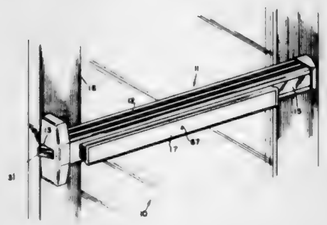
A self-aligning spacer assembly includes a pair of sleeves having end faces held in mutually abutting relationship by a resilient collar. One of the abutting end faces has a convex spherical shape and the other is conical to provide substantial line contact between the faces. One of the sleeves has an internal diameter such that it fits snugly on a shaft or arbor on which the spacer assembly is mounted, an the internal diameter of the other sleeve is slightly greater so that it can rock on the arbor to a limited extent relative to the other sleeve.

3,663,046
LOAD DISTRIBUTION AND ANTI-ROTATION MECHANISM
Thomas Reiner, Palos Verdes, and Edward Dobyns, Valinda, both of Calif., assignors to William S. Pine Inc., Los Angeles, Calif.
Filed Mar. 22, 1971, Ser. No. 126,453
Int. Cl. F16b 7/10
U.S. Cl. 287—58 CT 9 Claims



A load distribution and anti-rotation mechanism is provided which is adapted to withstand heavy and repeated transverse loads applied thereto. The mechanism includes first and second members arranged in telescoping relation. The first member is provided with an elongated bore in which the second member is slidably disposed. The bore surface carries a plurality of keys of substantially circular segment configuration which are arranged in angularly spaced relation and are disposed adjacent to but spaced from the open end of the bore. Portions of the keys project into the bore and are slidably disposed within elongated longitudinally extending grooves formed in the exterior of the second member. The second member also carries adjacent its inner end a plurality of keys of substantially circular segment configuration. The latter keys are in slidable contact with the bore surface.

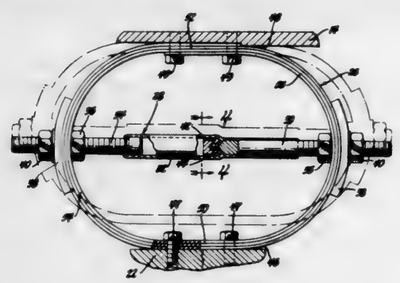
3,663,047
RIGHT-LINE MOVEMENT PANIC EXIT DEVICE
George Z. Zawadzki, Indianpolis, Ind., assignor to Von Duprin, Inc., Indianapolis, Ind.
Continuation-in-part of application Ser. No. 32,971, Apr. 29, 1970, now abandoned. This application Aug. 5, 1970, Ser. No. 61,110
Int. Cl. E05c 3/16
U.S. Cl. 292—92 21 Claims



A latch and actuator assembly, primarily intended for use as a panic exit device, in which a push bar substantially spanning the width of a hinged closure is mounted for bodily rectilinear movement in the closure-opening direction and perpendicularly toward the closure, one or more toggle-like linkages being interposed between the push bar and an actuator, mounted for movement transversely of the closure and operatively connected to a movable latch bolt, the actuator being biased toward bolt-projected position and being moved to bolt-retracted position by the elongation of the toggle-like linkages upon such movement of the push bar. In one form of the invention, the apices of two such toggle-like linkages are joined by a rigid stretcher; while in another and preferred

form, a guide lip engages the roller at the apex of each toggle to confine that roller in contact with the inner surface of the push bar.

3,663,048
VEHICLE BUMPER INSTALLATION
Wilbur J. Zimmerle, Bellbrook, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 3, 1970, Ser. No. 25,360
Int. Cl. B60r 19/08
U.S. Cl. 293—84 3 Claims



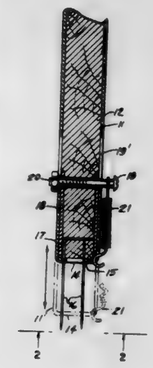
An energy dissipating bumper installation for vehicles includes a transversely extending bumper bar mounted to the vehicle frame at transversely spaced locations on the cross member thereof by energy dissipating bumper mounted assemblies, each assembly including a generally elliptically shaped spring unit attached at opposite sides thereof along its minor axis to the cross member and to the bumper and having attached across its major axis an irreversible energy dissipating tension strut adapted to provide controlled resistance to flattening tendencies of the spring unit under impact forces applied to the bumper bar.

3,663,049
GOLF BALL RETRIEVAL AND STORAGE DEVICE
Clifford Neil James, 300 West Bagley Rd., Berea, Ohio
Filed Aug. 25, 1970, Ser. No. 66,685
Int. Cl. A47f 13/06
U.S. Cl. 294—19 A 5 Claims



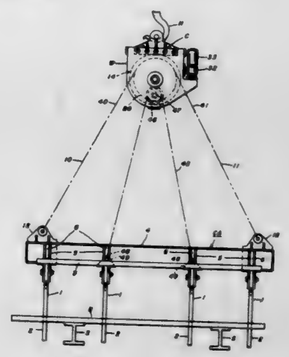
An improved golf ball retrieval and storage device comprised of an elongated handle, a rigid loop mounted at one end of the handle, a bag mounted on the loop, the bag having a narrow open mouth mounted on and held open by the rigid loop, the bag also having an enlarged storage portion and a restricted neck between the mouth and enlarged storage portion, an arm rest provided on the upper end of the elongated handle, the handle being detachable and in sections small enough to fit into the bag, the rigid loop being stirrup-shaped with the flat side locating opposite the loop's connection to the elongated handle, the flat side of the loop having a length several times the diameter of a U.S. golf ball.

3,663,050
WEED REMOVING TOOL
Alfred Fuchs, 238 Oakland Ave., Central Islip, N.Y.
Filed Jan. 28, 1971, Ser. No. 110,411
Int. Cl. A01k 81/04
U.S. Cl. 294—50 1 Claim



A device for removing crab grass, dandelions, and the like. This device includes a sleeve having prongs extended therefrom for engaging the plant in order to pull it out of the ground with the roots.

3,663,051
C-HOOK LEVELING DEVICE FOR BILLET HANDLING
Quin Shea Yu, Forest Hills Borough, Pa., assignor to United States Steel Corporation
Filed Oct. 14, 1970, Ser. No. 80,542
Int. Cl. B66c 1/16
U.S. Cl. 294—67 A 3 Claims



A winch for supporting blooms, billets, rod, pipe, and other elongated product on a C-hook assembly that includes a spreader beam, the spreader beam being suspended from the winch by a pair of cables connected to opposite ends of the spreader beam, and the winch being operable to inversely change the lengths of the suspension cables and thus move the C-hook assembly to a horizontal position when an unbalanced load of elongated product is supported thereon. A second cable restrains tilting movement of the C-hook assembly about a longitudinal axis extending through the points at which the suspension cables are connected to the spreader beam, the second cable having a turnbuckle for adjusting its

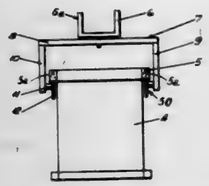
length, and being trained over a sheave rotatably supported on a housing for the winch with its axis parallel to the winch axis.

3,663,052

APPARATUS FOR PIVOTABLY MOUNTING A LOAD CONTAINER AT A TRAVELLING CARRIAGE OF OVERHEAD CONVEYORS OR THE LIKE

Eugen Schurch, Geriafingen, Switzerland, assignor to Von Roll AG, Geriafingen, Switzerland

Filed May 5, 1970, Ser. No. 34,757
Claims priority, application Switzerland, May 9, 1959, 7172/69
Int. Cl. B65d *51/00*
U.S. Cl. 294—73 **9 Claims**



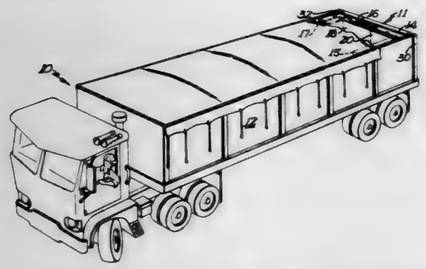
An apparatus for the pivotable mounting of a load container at a travelling carriage or similar mechanism of overhead conveyors or the like such that the load container always is suspended vertically or perpendicularly independent of the position of the travelling carriage. The inventive apparatus embodies two support holders arranged at the load container and two swivel or hinge joint devices arranged at the suspension mechanism of the travelling carriage. Each swivel or hinge joint mechanism embodies at least two components which are rotatable relative to one another, wherein one component is fixed with the suspension mechanism of the traveling carriage and the other free component is at least partially enclosed by the associated support holder. These components of each swivel joint mechanism and the associated support holder are constructed in such a way that the suspended load container is centered with respect to the suspension mechanism in two directions which are approximately perpendicular to one another.

3,663,053

SPLIT HEADER FOR OPEN TOP TRUCKS

Andrew Ambli, 2376 North Hamline, St. Paul, Minn.

Filed Aug. 7, 1970, Ser. No. 62,026
Int. Cl. B60r *27/00*
U.S. Cl. 296—40 **3 Claims**



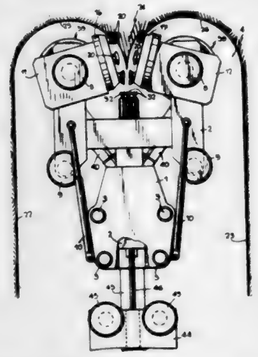
A split header assembly to enable a man standing on the floor of a truck to draw inward and interconnect the upper rear sides of a high open top truck so the truck's rear doors can be closed, aligned, and locked. A latch mechanism mounted on two header sections which are swingably mounted to the rear corner posts of the truck sides, has a lever arranged for upward and downward swinging movement. The lever moves a pair of latch bars on one header section into and out of locking engagement with a pair of keepers on the other header section to draw the header sections inward and retain them.

3,663,054

MACHINE FOR DIGGING UNDERGROUND GALLERIES

Michel A. Dubois, 70, rue Hamoir, La Louviere, Belgium

Filed Mar. 24, 1970, Ser. No. 22,287
Claims priority, application Great Britain, Mar. 25, 1969, 15,687/69
Int. Cl. E01g *3/04*; **E21c** *29/02*
U.S. Cl. 299—18 **12 Claims**



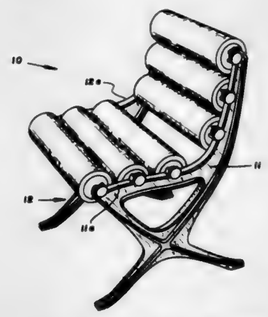
The invention relates to a machine for digging underground galleries. This machine comprises a framework displaceable in the gallery, at least a pair of homologous arms connected to this framework and adapted for swinging movements respectively about two substantially parallel axis, a toolholder on each arm and cutting tools on each toolholder, adapted to cut through a cutting face of the gallery. In this machine, each arm and the position of the latter of its toolholder are adapted for a swinging movement of this arm greater than 90° from a position in which the said arm is directed towards a lateral wall of the gallery, as far as a position in which the arm is directed towards the other lateral wall, while passing through a position in which the arm is parallel to the gallery's axial plane, the cutting tools passing continuously along the cutting face of the gallery.

3,663,055

CHAIR WITH ADJUSTABLE SEATING PORTIONS

John A. Gale, Wayzata, Minn., assignor to Monsanto Company, St. Louis, Mo.

Filed July 10, 1970, Ser. No. 53,908
Int. Cl. A47c *7/00*
U.S. Cl. 297—283 **10 Claims**



A chair or similar article of seating furniture having a pair of side members which provide the vertical support elements

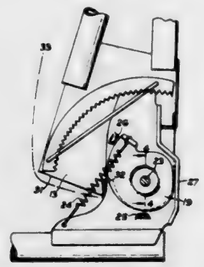
for the article and which are provided with slat receiving elements on the upper or seat defining portions thereof and a plurality of slat elements to extend transversely between the side members providing the transverse support for the article and the slats being positionable within the receiving elements to provide an adjustable occupant receiving area.

3,663,056

VEHICLE SEAT FRAMES AND MECHANISMS

Harold Roy Turner, Walsall, England, assignor to H. R. Turner (Willenhall) Limited, Walsall, England

Filed Sept. 2, 1969, Ser. No. 854,619
Claims priority, application Great Britain, June 8, 1968, 27,360/68
Int. Cl. A47c *3/00*; **B60n** *1/02*
U.S. Cl. 297—369 **5 Claims**



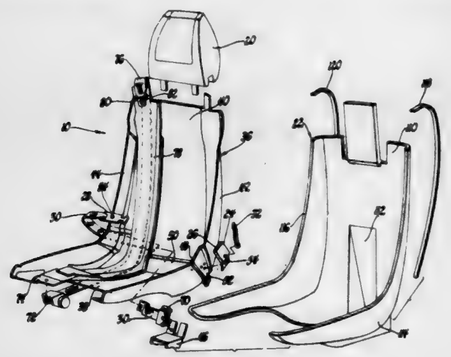
The invention provides a mechanism for adjusting the angle of the seat back to the seat base in which toothed members are provided on parts secured to the seat back and seat base at both sides of the seat, and in disengaging the teeth for angular adjustment one plate at each side is lifted bodily with respect to the other plate at each side to take the teeth out of mesh.

3,663,057

VEHICLE SEAT HAVING RESTRAINT SYSTEM WITHIN TRIM

Thomas E. Lohr, Warren, and Robert L. Stephenson, Sterling Heights, both of Mich., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Jan. 19, 1970, Ser. No. 3,815
Int. Cl. A62b *35/00*
U.S. Cl. 297—388 **1 Claim**



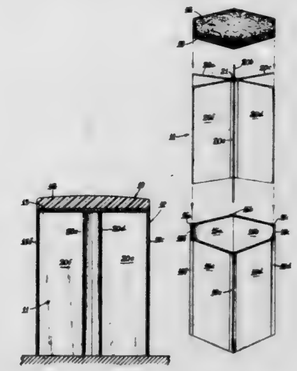
A self-contained seat and restraint system including a semirigid seat shell having a channel about the rear and sides thereof, a fixed, beltless buckle in one side of the channel, and a retractable lap belt guided through and by the other side of the channel. A shoulder belt system is also carried by the shell. The shell is trimmed both front and back to fully enclose both the shell and the restraint system mounted thereon.

3,663,058

COLLAPSIBLE STOOL

Irving C. Hirsch, 4212 W. Golf, Skokie, Ill.

Filed Aug. 6, 1970, Ser. No. 61,579
Int. Cl. A47c *9/12*, *3/00*
U.S. Cl. 297—439 **3 Claims**



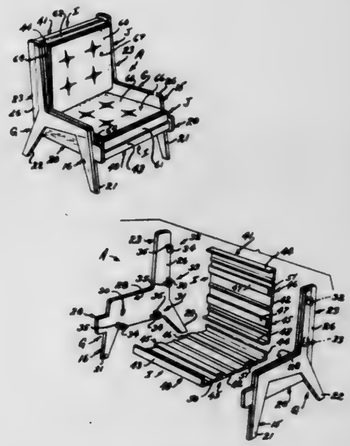
A collapsible stool is disclosed including an outer side wall which is expandable to form a shell for receiving a central brace in the form of a number of leaves bound together along a central line. A cushion fits into an upper recess. When collapsed, the three members are compact and easily carried.

3,663,059

FURNITURE CONSTRUCTION

Donald E. Omlie, 8698 E. Robinwood Cr., Utica, Mich.

Filed Sept. 23, 1970, Ser. No. 74,630
Int. Cl. A47c *7/00*, *7/20*, *4/02*
U.S. Cl. 297—440 **2 Claims**



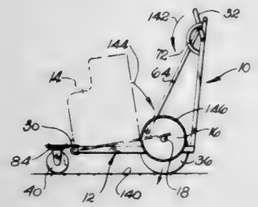
An article of furniture having a pair of end sections, cushion support means removably mounted between said end sections and supporting the end sections in a spaced-apart

relation, and cushion means removably received by the cushion support means.

3,663,060
WHEELED SAW

Donald G. Shatwell, Wilmington, and Lester F. Kuzmick, Palos Verdes Estates, both of Calif., assignors to Cushion Cut, Inc.

Filed Mar. 4, 1970, Ser. No. 16,424
Int. Cl. E01c 23/09
U.S. Cl. 299—39 9 Claims

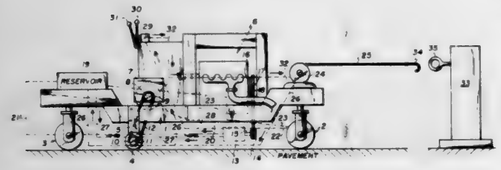


A wheeled saw for making random cuts in which a rotary saw blade is mounted between the spaced rear wheels of a carriage and having a pivotal forward wheel whereby relatively large movements of the front of the carriage effects relatively small movements of the saw blade enabling the blade to follow random cracks such as would appear in concrete and asphalt. An engine for operating the saw blade is mounted on the carriage and is vertically movable to raise or lower the saw blade from or to a cutting position and to bear on the blade when it is in a cutting position.

3,663,061
PAVEMENT GROOVING MACHINE WITH HYDRAULIC WINCH

Harold C. Miller, Chicago, Ill., assignor to Super-Cut Inc., Chicago, Ill.

Filed Nov. 2, 1970, Ser. No. 85,991
Int. Cl. E01c 23/09; E21c 29/10
U.S. Cl. 299—39 3 Claims

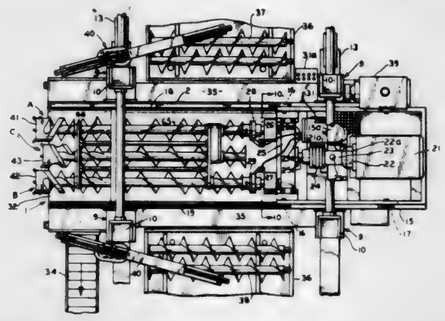


A pavement grooving machine comprising a frame having front and rear wheel means mounted thereon and carrying depending therefrom a rotary pavement cutter means mounted between the wheel means transversely of the frame and contactable with a pavement surface traversed by the machine. The frame has mounted thereon a power means for driving at least one of the front and rear wheel means, the cutter means, and also a winch means mounted on the machine. The winch means carries a cable connectable to an anchor means located forwardly of the machine whereby the machine is capable of being both self-propelled and towed along the pavement surface while the pavement is being grooved by the rotary cutter means.

3,663,062
DRIVE FOR PLURAL AUGER MINING MACHINE

William G. Young, and Frederick G. Horning, both of Salem, Ohio, assignors to The Salem Tool Company, Salem, Ohio

Filed Aug. 20, 1969, Ser. No. 851,696
Int. Cl. E21c 27/22, 35/20
U.S. Cl. 299—57 35 Claims



Auger apparatus, such as a coal mining machine, adapted to utilize one or more augers of a diameter falling in a wide range. Apparatus is disclosed embodying three augers in which two side augers are driven from a power source, and an intermediate auger is located between, and driven from one of, the side augers; the means driving the side auger driving the intermediate auger is substantially free of the load of conveying mined material cut by the cutting head of the intermediate auger but has the load of driving two augers while the other side auger is free of the load of driving the intermediate auger but has substantially all of the load of conveying material cut by the cutting heads of such side auger and the intermediate auger. Apparatus is also disclosed having a cutting head assembly comprising three or more augers and longitudinal tie bars extending between adjacent augers and fixed to cross members rotatably supporting the cutting heads, to provide a rigid assembly. Also disclosed is apparatus having a main gearbox connected to adjustable or removable auxiliary gearboxes, so that the apparatus can be adapted to drive one or more augers from a main gearbox. Preferably, the auger power system embodies two clutches the first of which, preferably a mechanical clutch, is located between the engine and the transmission and is used to disconnect the transmission from the engine to permit shifting of transmission gears, and the other of which clutches, a non-mechanical clutch such as an air clutch, is located between the transmission and the auger or augers and is used as the operating clutch. Also disclosed is a pendant control system for a hoist for handling auger sections.

3,663,063
TRENCHING IMPLEMENT

Hillard E. Johnmeyer, Sr., Rolla National Airport, Vichy, Mo.

Filed Dec. 21, 1970, Ser. No. 100,041
Int. Cl. E02f 5/08
U.S. Cl. 299—86 5 Claims

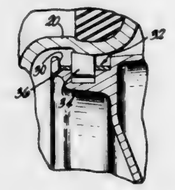
A trenching implement adapted for cutting a narrow trench in rock or frozen ground comprising a wheel which is mounted for rotation in a power trenching vehicle and which has a plurality of cutting bit holders spaced at equal intervals around its periphery with a cutting bit rotatably and removably mounted in each bit holder. The bit holders are mounted in such positions on the wheel as to hold all the cutting bits at the same positive rake angle, certain of the bit holders holding the respective cutting bits in the plane of the wheel, others holding the respective bits at skew angles with respect to the plane of the wheel with the respective bits extending out at one side of the wheel, and other holders holding their respective bits at skew angles with respect to the plane of the wheel with the respective bits extending out at the other side of the wheel.



3,663,064
WHEEL COVER

Raymond A. McCarroll, Grosse Pointe, Mich., assignor to Acme Precision Products, Inc., Detroit, Mich.

Filed Jan. 27, 1970, Ser. No. 6,263
Int. Cl. B60b 7/06
U.S. Cl. 301—37 R 11 Claims



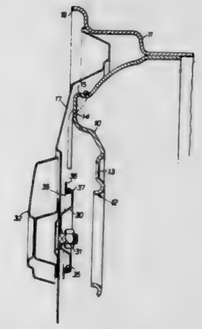
A vehicle wheel cover disposed over the side of a wheel having a drop center type rim, said cover including a disc portion with an axially inwardly extending annular flange that is telescoped into an axial flange of the drop center rim. The annular flange contains a groove in its outer surface in which is seated a radially expansible annulus which when expanded will center and lock the cover in place on the wheel. The expansible annulus can be of a type that is mechanically, hydraulically or pneumatically expanded and contracted for this purpose. The disc and annular flange portions of the cover can be formed by molding of plastic or by die casting of lightweight metals such as aluminum and zinc.

3,663,065
WHEEL TRIMS OR WHEEL COVERS

Geoffrey Crompton, Alderminster, near Stratford-upon-Avon, England, assignor to Pressweld Limited, Gloucester, England

Filed Aug. 1, 1969, Ser. No. 846,906
Claims priority, application Great Britain, Aug. 6, 1968, 37,532/68; Nov. 1, 1968, 51,779/68
Int. Cl. B60b 7/06
U.S. Cl. 301—37 R 7 Claims

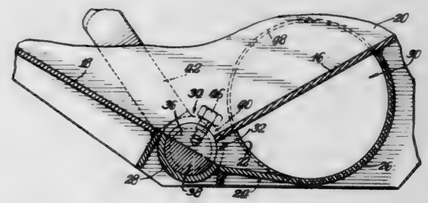
A detachable wheel trim for a vehicle wheel, having anchorage hooks for attachment to the wheel, operable from the external side of the trim. In one form three anchorage hooks are connected to a triangular arrangement of three resilient steel links fitting over a triangular cam connected to a rotary knob on the external surface of the trim, so that by rotating the knob and the cam the three links are bent outwardly to cause a resilient inward force to be applied to each hook, alternatively the three links may be combined into a continuous hoop, and the rotary triangular cam may be replaced by an axially movable cam. Two or more pairs of parallel links may be used instead of a triangular system and in place of a cam the links may be operated by levers connected to a rotary or axially movable central shaft connected to the external knob.



3,663,066
HOPPER DISCHARGE ASSEMBLY

Robert T. Fischer, Harvey, and Byron W. Martin, Kankakee, both of Ill., assignors to Miner Enterprises Inc., Chicago, Ill.

Filed Jan. 19, 1970, Ser. No. 3,672
Int. Cl. B65g 53/46
U.S. Cl. 302—42 5 Claims



A housing having inclined side walls and a pair of end walls, a plenum chamber adjacent the lower end of the housing with one or two longitudinal lading inlets, and a rotatable valve along each of the lading inlets for controlling the flow of lading into the plenum chamber.

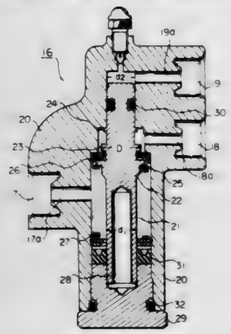
3,663,067
VEHICULAR HYDRAULIC BRAKE SYSTEM

Keiichiro Yabuta, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 18, 1970, Ser. No. 12,280
Claims priority, application Japan, Feb. 22, 1969, 44/12911
Int. Cl. B60t 8/26
U.S. Cl. 303—6 C 3 Claims

A vehicular hydraulic brake system of tandem type having split master cylinders connected, for instance, to the front and rear brake units through independent fluid circuits, which system has a fluid pressure modulator valve con-

structed to transmit an unmodulated fluid pressure to the brake cylinder when a fluid pressure built up in the master cylinders is lower than a predetermined level and to transmit a modulated fluid pressure to the rear brake cylinders when the fluid pressure in the master cylinders exceeds the predetermined level, the modulated pressure being proportional to the input pressure from the rear brake master cylinder. In the event a failure takes place in the front brake fluid circuit, the valve transmits to the rear brake cylinders either an unmodulated fluid pressure or a pressure which is modulated to be higher than the fluid pressure modulated when the input fluid pressure is higher than the above mentioned predetermined level.



3,663,068

ANTI-LOCK BRAKE SYSTEMS

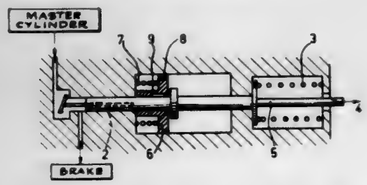
Denis Sharp, Sussex, England, assignor to U.S. Philips Corporation, N.Y., N.Y.

Continuation of application Ser. No. 771,591, Oct. 29, 1968, now abandoned. This application Dec. 14, 1970, Ser. No. 98,159

Claims priority, application Great Britain, Nov. 1, 1967, 49,705/67

Int. Cl. B60t *8/06*

U.S. Cl. 303—21 F **6 Claims**



An anti-lock brake system for a wheeled vehicle which includes a control element for varying brake pressure and a damper piston arranged in a fluid cavity and coacting with the control element for regulating the movement of the control element during the anti-lock cycle. The dampened motion of the control element will effectuate a rapid initial and more gradual final rate of re-application of the brake pressure.

3,663,069

SKID CONTROL SYSTEM

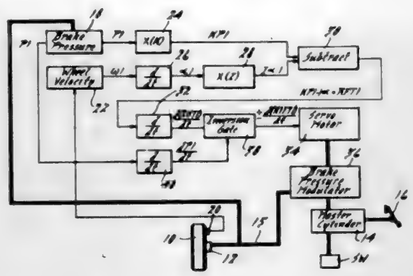
Charles C. Perry, Ann Arbor, and Andre L. De Villiers, Whitmore Lake, both of Mich., assignors to Kelsey-Hayes Company, Romulus, Mich.

Continuation of application Ser. No. 769,033, Oct. 21, 1968, now abandoned. This application Oct. 7, 1970, Ser. No. 78,994

Int. Cl. B60t *8/08*

U.S. Cl. 303—21 P **16 Claims**

A skid control system in which the retarding force on the vehicle is maximized as a function of one characteristic of the brake pressure and includes apparatus for sensing the magnitude and sign of the rate of change of the brake pressure.



3,663,070

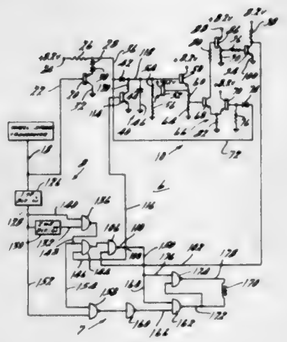
SKID CONTROL SYSTEM

Ronald S. Scharlack, San Antonio, Tex., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Nov. 10, 1969, Ser. No. 875,412

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 P **13 Claims**



A control system and force motor assembly for controlling the skidding of a vehicle under braked conditions when the control system provides a signal for controlling the position of an armature or fluid pressure controlling device in one of three conditions; the first condition being the "dump" mode of operation when the force motor is controlled to preclude braking pressure from being supplied to the wheels of the vehicle, the "hold" mode of operation when the braking force presented at the time the system goes into the "hold" mode of operation is maintained, and the "return" mode of operation when full applied braking pressure is returned to the vehicle wheels.

The control system is effectively responsive to a critical slip signal, the signal being generated in response to a sensed difference between a hypothetical vehicle deceleration, as approximated by a decreasing ramp signal, and the vehicle wheel speed. This comparison is made on a differential basis to provide an output signal which is utilized in controlling an output gate. The gate is also responsive to the sensing of a positive wheel acceleration signal and a change in sign of the rate of change of wheel acceleration. The signal from the output gate is fed to an output logic circuit, the output logic circuit also being rendered responsive to the first derivative of the wheel velocity signal and a combination of first and second derivative of the wheel velocity signal.

The output signals are utilized in the output logic circuit to generate one of three signal conditions across the solenoid coil of the force motor actuator assembly. In the return mode of operation, the polarity of the output signals generated across the solenoid coil are of the same polarity to cause zero current to flow through the solenoid coil. In the dump mode of operation, the coil is provided with current flow in a first direction and in the hold mode of operation the solenoid coil is supplied with current flowing in a second direction opposite to the first direction. The force motor is fabricated with a three positioned armature which is adapted to be placed either in the return or deactuated position, where no signals are provided from the control circuit; a dump mode of operation which connects the manually actuated brake cylinder hydraulically to the wheel cylinders to provide full braking pressure; and the hold position which maintains the pressure being fed to the wheels at the time the hold position is achieved.

3,663,071

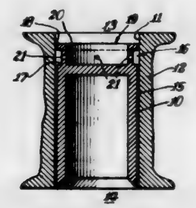
PRESSURE-BALANCED PISTON AND THE LIKE

Willard A. Kates, Deerfield, Ill., assignor to The W. A. Kates Company

Continuation of application Ser. No. 771,551, Oct. 29, 1968, now abandoned. This application Apr. 23, 1971, Ser. No. 137,010

Int. Cl. F16c *1/24, 33/10*

U.S. Cl. 308—5 **13 Claims**



A pressure-balanced system wherein a cylindrical member such as a piston, a shaft, or the like, is movably received in a cylinder bore. Means are provided for balancing the cylindrical member so as to reduce friction between the cylindrical member and the wall of the cylinder bore as may result from a flow of fluid under pressure from an adjacent high-pressure space to an adjacent low-pressure space through the cylinder bore. The balancing means illustratively comprises an annular groove opening to the clearance space between the cylindrical member and the wall of the cylinder bore. In one form, the annular groove is disposed in the cylinder. In another form, the annular groove is disposed in the wall of the cylinder bore. The balancing means may be provided at the end of the clearance space adjacent the high-pressure space, the low-pressure space, or both as desired. Means are provided for causing direct communication between the annular groove and the adjacent pressure space. The communication means illustratively comprises passages in the member in which the annular groove is provided. The illustrated passages comprise bores or laterally opening grooves.

3,663,072

BEARING ASSEMBLY AND MACHINE USING SAME

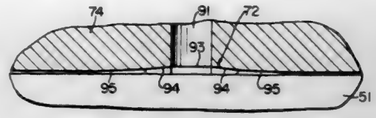
Daniel S. Cvacho, Chesterfield, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed July 24, 1969, Ser. No. 844,523

Int. Cl. F16c *33/10*

U.S. Cl. 308—5 R **9 Claims**

A substantially annular volume is provided between a pair of structures which are relatively movable along a longitudinal axis with one of the structures having an annular groove defining an enlargement in the annular volume. Fluid under pressure is supplied directly to the enlargement so that upon relatively axially moving the structures additional fluid from the enlargement is urged toward the annular volume to perform a wedging action which precisely centers one of the structures relative to the longitudinal axis and simultaneously enables the one structure to carry a greater load in a direction transverse such longitudinal axis.



3,663,073

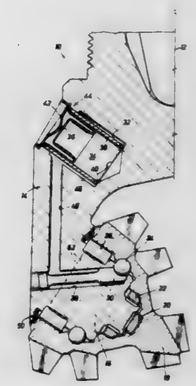
SEALED BEARING EARTH BORING BIT

Charles L. Bronson, Dallas, Tex., assignor to Varel Manufacturing Company, Dallas, Tex.

Filed Apr. 16, 1970, Ser. No. 29,009

Int. Cl. F16c *19/00*

U.S. Cl. 308—8.2 **36 Claims**



A sealed bearing earth boring bit of the rolling cutter type in which a tapered first axially extending flange at the inner periphery of the annular seal is wedged in and bonded to a correspondingly tapered axially extending groove in the leg of the bit thereby positively fixedly securing the seal to the leg in a fluidly sealed relationship, and a method of making same. At the outer periphery of the seal, a second axially extending flange, which is resiliently urged against and in fluidly sealed engagement with the cutter, is provided with a plurality of radially extending cavities in fluid communication with the lubricant proximate the bearings to promote circulation of the lubricant, enchance cooling, and reduce friction and resulting wear of both the seal face and the mating surface of the cutter.

3,663,074

ARRANGEMENT IN SPIRAL GROOVE BEARINGS

Lars Martin Ingemar Fernlund, Hindas, and Erik Magnus Kellstrom, Partille, both of Sweden, assignors to SKF Industrial Trading and Development Company N.V., Amsterdam, Netherlands

Filed May 27, 1970, Ser. No. 40,969

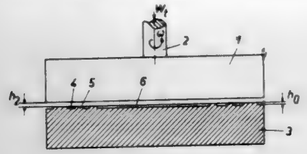
Claims priority, application Sweden, May 27, 1969, 7407/69

Int. Cl. F16c *17/04*

U.S. Cl. 308—9 **1 Claim**

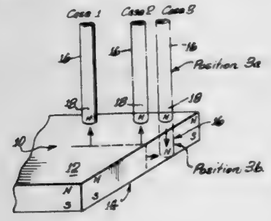
A bearing system lubricated with oil has been developed to carry heavy axial loads at high speeds on vertical spindles. At low speeds the spindle is supported by a ball bearing,

whereas the axial load is taken over by a flat spiral groove bearing when the speed exceeds a predetermined value



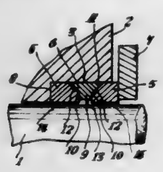
wherein the spiral groove bearing is given an optimum groove pattern by way of analysis.

3,663,075
SELF-CENTERING PERMANENT MAGNET BEARING
Klaus J. Kronenberg, Claremont, Calif., assignor to General Dynamics Corporation
Filed Feb. 18, 1971, Ser. No. 116,355
Int. Cl. F16c *39/06*
U.S. Cl. 308—10 **24 Claims**



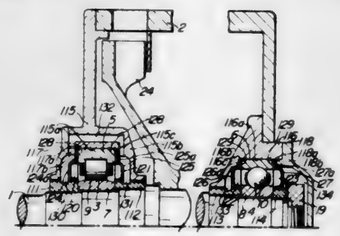
The attracting and repelling forces of a permanent magnet having high coercivity and minimal self-demagnetization are utilized in combination with similar or other types of magnets to provide holding forces to hold or to assist in holding together a permanent magnet bearing assembly utilizing the magnets and to simultaneously provide spacing functions within the assembly for clearance or for centering purposes. The magnets may be linearly or rotatably moved relative to one another or a combination of both movements may be used.

3,663,076
GLAND SEAL ASSEMBLIES
Peter Reginald Valente, London, England, assignor to Hallite Holdings Limited, Middlesex, England
Filed Mar. 9, 1971, Ser. No. 122,474
Claims priority, application Great Britain, Apr. 1, 1970, 1,543,670/70
Int. Cl. F16c *33/78*; F16j *15/24*
U.S. Cl. 308—36.1 **10 Claims**



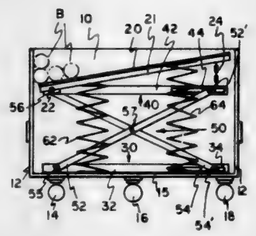
A gland seal assembly is made up of three rings arranged side-by-side. The two outer rings are hard but the intermediate one is elastomeric. At one radial periphery (either inner or outer) the rings have abutting planar faces so that axial moving together of the hard rings compresses part of the intermediate ring between them. This part, bounded by the planar faces, is, in its uncompressed state, of a peripheral radius different from that of the hard rings so that it is set back from them but when axial compression is applied to it it is squeezed so that it projects radially and effects the desired sealing effect. This part of the intermediate ring is narrower then the remainder of the ring so that the peripheral radius of the remainder part is less affected by the compression.

3,663,077
BALL OR ROLLER BEARING ASSEMBLY
Toshio Nakamura; Hidetoshi Arii; Shozo Tatekawa, and Sadaharu Kawai, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of application Ser. No. 795,226, Jan. 30, 1969, now abandoned. This application Apr. 22, 1971, Ser. No. 136,549
Int. Cl. F16c *33/66*
U.S. Cl. 308—187 **25 Claims**



An antifriction bearing assembly and more particularly a ball or roller bearing assembly in which a pair of annular grease chambers are provided axially adjacent to an annular space formed between outer and inner rings and annular air chambers are further provided axially adjacent to the annular grease chambers, wherein the annular grease chambers are opened only to the annular space and the annular air chambers are communicated with each other by a passage bypassing the grease chambers.

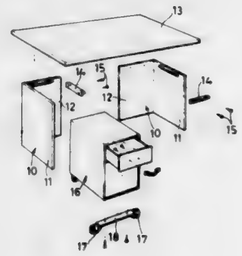
3,663,078
RECEPTACLE AND IMPROVED FLOATING PLATFORM THEREFOR
William C. Moore, and Alfred J. Boos, both of Spartanburg, S.C., assignors to Insulating Fabricators, Inc., Spartanburg, S.C.
Filed Oct. 19, 1970, Ser. No. 81,920
Int. Cl. A47f *1/00*
U.S. Cl. 312—71 **17 Claims**



A doff truck having an improved floating platform is disclosed herein. The floating platform positioned within the doff truck or other type work receptacle is spring loaded to maintain the working surface of the platform at a convenient level for an operator who is utilizing the contents from the truck or receptacle. The platform is supported by a scissors type collapsible structure having spring means associated therewith. The platform, per se, is pivotally connected at one end to the supporting structure whereby, the spring means acting on the platform and the structure biases the platform around its pivotal connection to an inclined position. The inclined surface of the floating platform permits articles thereon to roll down the incline and collect at one end of the receptacle, whereby an operator may work from the one end only. Various pivotal connections and spring arrangements for providing the inclined floating platform are disclosed.

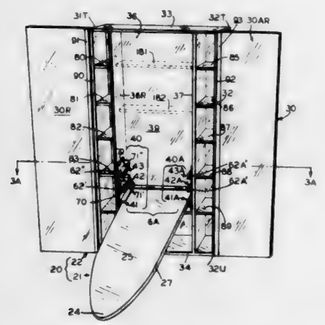
Once the platform receives a sufficient amount of weight produced by articles placed thereon, the weight of the articles overcomes the bias of the spring means and the platform assumes a horizontal attitude. After the addition of further articles onto the platform, the platform, while maintaining the horizontal attitude, moves downwardly within the receptacle as the added weight gradually overcomes the force of the spring means.

3,663,079
MODULAR ELEMENTS FOR PIECES OF FURNITURE AND PIECES OF FURNITURE OBTAINED THEREBY
Osvaldo Borsani, Varedo (Milan), and Eugenio Gerli, Milan, both of Italy, assignors to Tecono S.p.A., Milan, Italy
Filed Oct. 20, 1969, Ser. No. 867,672
Claims priority, application Italy, Oct. 22, 1968, 22835 A/68
Int. Cl. A47b *17/00, 19/00, 27/00*
U.S. Cl. 312—195 **2 Claims**



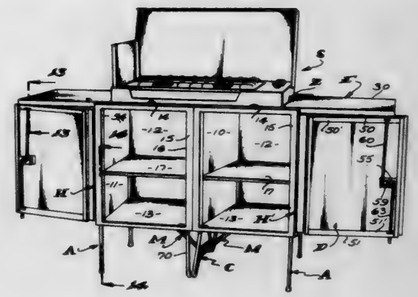
An assembly of modular elements for making up pieces of furniture is disclosed, which essentially comprises at least two angularly shaped uprights and a planar element, all of these modular elements being assembled by means of ledges and self-tapping screws. A filing cabinet can also be provided and removably connected to the piece of furniture if desired.

3,663,080
HIDE-AWAY DECOR IRONING CENTER
Oma Merle Ayers, 4905 Yale, Amarilla, Tex.
Filed Feb. 12, 1970, Ser. No. 10,867
Int. Cl. A47b *83/00, 67/02, 3/00*
U.S. Cl. 312—237 **4 Claims**



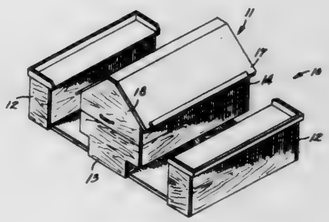
Combination of folding ironing board and cabinet therefor hung from a wall, formed from cooperating thin elements providing adjustable height of board and great mechanical stability in operation yet with low space requirements.

3,663,081
CAMP-STOVE CABINET
Stanley J. Williams, 7955 Haskell Ave., Van Nuys, Calif.
Filed Dec. 17, 1970, Ser. No. 99,089
Int. Cl. A47b *77/08*; A47f *3/04*
U.S. Cl. 312—236 **8 Claims**



A portable, break-down storage and camp-stove supporting cabinet comprising a pair of similar storage box-units with open fronts, means releasably securing inner opposing side walls of the units together, the tops of said units having longitudinally extending, aligned channels, extension shelves slidably engaged in the channels and shiftable longitudinally outward to project from the outer oppositely disposed ends of the related units to cooperate with the channels and with each other to define an upwardly opening camp-stove receiving well or recess; doors pivotally mounted to the forward outer corners of the units to shift from overlying engagement over the open fronts of the units to supporting engagement below the forward outer corners of their related extended shelves, manually operable latch means to selectively releasably latch the doors in their related units and to their related shelves and adjustable support means comprising foldably support legs of predetermined vertical extent depending from the inner opposing end portions of the units and vertically adjustable leveling legs depending from the outer end portions of the units.

3,663,082
PLAY CHEST
Lynn S. Geddes, P.O. Box 133, Stanton, N.Y.
Filed July 21, 1970, Ser. No. 56,805
Int. Cl. A47b *83/00, 39/00*
U.S. Cl. 312—235 **3 Claims**

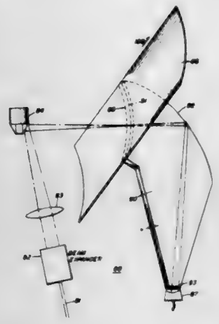


A toy chest is provided having an upper and a lower storage area. Access to the lower storage area is obtained by lifting the two covers. Each cover in its lowered position provides a desk surface and when supported in a raised position provides a table. A bench is associated with each desk and is attached to the toy chest to form a single unitary unit.

3,663,083
LIGHT DIRECTING DEVICE HAVING AN ELLIPTICAL REFLECTING FACE

Jerrold Friedman, and Robert Walker, both of Stamford, Conn., assignors to Columbia Broadcasting Systems, Inc.

Filed Sept. 15, 1970, Ser. No. 72,308
Int. Cl. G02b 5/14, 17/00
U.S. Cl. 350—96 R 5 Claims



A light directing device adapted for use in a film scanning apparatus in which a beam is scanned about a rotation axis and converges to a focus at a circular arc at which a film is positioned. The device comprises a transparent body having an entrance face, a reflecting face, and an exit face. The entrance face has a circular shape and is adapted to be positioned behind the film so as to receive the light beam transmitted through the film. The reflecting face has an elliptical shape and is angularly oriented with respect to the entrance face such that it reflects the light beam substantially perpendicularly and toward the exit face. The light beam leaving the exit face is confined to a small enough area to be received by a single photodetector.

3,663,084
HOLLOW RETROREFLECTORS

Morton S. Lipkins, 3 Nemeth St., Malverne, N.Y.

Filed June 18, 1970, Ser. No. 47,245
Int. Cl. G02b 5/12
U.S. Cl. 350—102 12 Claims

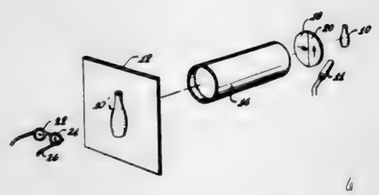


In one form, a hollow retroreflector is here made of three plates joined together at right angles to each other with only one edge of each plate bonded to a reflecting face of another plate, thereby making non-critical the relationships between the edges of any one of the plates. In another form, one of the three plates has two edges that intersect at a slight obtuse angle that is non-critical, the length of one edge abutting the reflecting face of another plate while the other edge contacts the remaining plate only at a location remote from the common corner of the retroreflector, again involving non-critical edge relationships as to each of the plates of the retroreflector. For stability of the optically flat faces, the plates are made relatively thick and accordingly have relatively wide edges that abut others of the plates. The abutment edges are joined to related reflecting faces by bonding material restricted to a zone that is narrow relative to the width of the abutment edge. The plates have individual corners remote from the common corner of the retroreflector, and a common glass plate is bonded to those individual corners so as to resist deforming stresses that may be imposed on the plates.

3,663,085
STEREOSCOPIC VIEWING APPARATUS WITH SINGLE-AXIS OPTICAL SYSTEM WITH CONVENTIONAL OBJECT LENS

Allen V. C. Davis, 5600 Alta Canyada, La Canada, Calif.

Continuation-in-part of application Ser. No. 773,897, Nov. 6, 1968, now abandoned. This application Oct. 1, 1970, Ser. No. 77,273
Int. Cl. G02b 27/26; G03b 35/22
U.S. Cl. 350—132 1 Claim

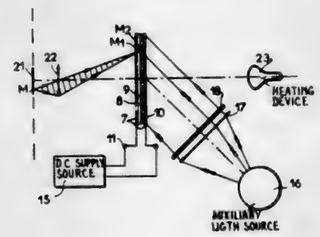


For an illuminated object projected onto a screen through an optical system having a single object lens, light reflected from the object reaches the object lens through right and left polarizers and wherein the polarizing crystals in each are oriented at right angles to those in the other. The projected image is viewed through a second pair of right and left polarizers, shown as eyepieces in frames to be worn as glasses. Due to the combined effects of the polarizers, the image seen through the eyepieces appears three dimensional.

3,663,086
OPTICAL INFORMATION STORING SYSTEM

George Assouline; Eugene Leiba, and Erich Spitz, all of Paris, France, assignors to Thomson-CSF

Filed June 23, 1970, Ser. No. 49,012
Claims priority, application France, July 2, 1969, 6922335
Int. Cl. G02f 1/18
U.S. Cl. 350—150 4 Claims

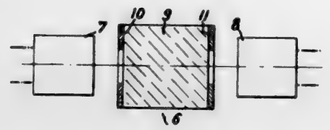


An optical information storing system comprises a thin photoconductive film and a thin film of a mixture of nematic liquid crystal and dichroic dye, placed side by side between two transparent electrodes. A direct voltage V is applied between said electrodes. The data to be stored are projected optically onto the photoconductive film with a radiation to which the photoconductor is sensitive. The mixture film is illuminated by an auxiliary radiation which is rectilinearly polarized and has a wavelength corresponding to an optical absorption line of the dichroic dye, the photoconductor being sensitive to this radiation.

3,663,087
DEVICE FOR IMPROVING THE HOMOGENEITY OF A LASER BEAM

Hubert Guillet; Louis Jacob, both of Saint Germain les Arpajon; Jacques Mouchart, L' Hay les Roses, and Bernard Sturel, Saint Michel sur Orge, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 16, 1970, Ser. No. 3,465
Claims priority, application France, Jan. 28, 1969, 6901702; Mar. 19, 1969, 6907825
Int. Cl. G02f 1/20
U.S. Cl. 350—150 12 Claims

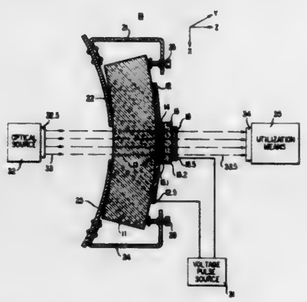


The device for improving the homogeneity of a light beam and especially a laser beam comprises an element having radially variable rotatory power and two polarizers placed on each side of said element on the path of the beam.

3,663,088
STRAIN-BIASED FINE GRAIN ELECTROOPTIC CERAMIC DEVICE FOR CONTROLLING OPTICAL PHASE RETARDATION

Juan Ramon Maldonado, Berkeley Heights, and Allen Henry Meitzler, Morristown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 10, 1970, Ser. No. 62,358
Int. Cl. G02f 1/20
U.S. Cl. 350—150 10 Claims

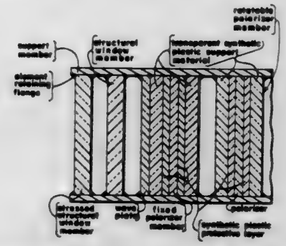


A controllable optical phase retardation device includes a fine grain electrooptic ceramic plate, such as lanthanum doped lead zirconate-lead titanate. The plate is subjected to a constant and uniform strain with a tension axis in the plane of the plate, while a beam of optical radiation traverses the thickness of the plate. By applying voltages to a pair of transparent electrode layers located on opposed major surfaces of the plate, the degree of birefringence is controlled, that is, the relative optical phase retardation of the extraordinary and ordinary rays in the optical beam propagating through the plate is controllably varied by the electric fields perpendicular to the surfaces of the plate. This control over the phase retardation can be converted into optical intensity modulation or optical beam deflection by means of a conventional polarizer together with an optical analyzer or a doubly refracting prism.

3,663,089
HIGH ORDER WAVE PLATE CORRECTION OF POLARISCOPIC EFFECTS IN WINDOWS HAVING INFRARED FILTERING

Albert S. Makas, Medford, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 771,970, Oct. 30, 1968, now Patent No. 3,528,722, which is a continuation-in-part of application Ser. No. 697,113, Jan. 11, 1968, now abandoned. This application July 1, 1970, Ser. No. 51,593.
The portion of the term of the patent subsequent to Sept. 15, 1987, has been disclaimed.
Int. Cl. G02b 5/30
U.S. Cl. 350—147 40 Claims

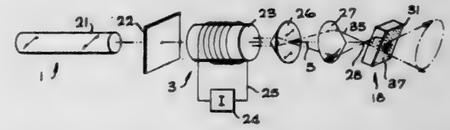


A light-transmitting window apparatus including a system which impedes the transmission of infrared radiation and comprises a light-polarizing element and a high order wave plate.

3,663,090
LIGHT DEFLECTION BY EXTERNAL CONICAL REFRACTION

Wendell S. Miller, 1341 Comstock Avenue, Los Angeles, Calif.

Filed July 10, 1970, Ser. No. 53,902
Int. Cl. G02f 1/26
U.S. Cl. 350—150 3 Claims

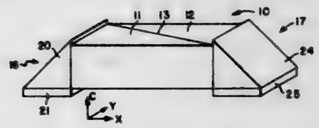


A system for producing continuously variable displacement either spacially or angularly of a beam of linearly polarized light of appropriate collimation as specified comprising a source of linearly polarized light, a polarization rotater and an appropriately oriented optically biaxial crystal. A novel electro-optic continuous polarization rotater is provided.

3,663,091
ACOUSTIC RESONANCE DAMPING APPARATUS

Tzou-Chang Lee, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

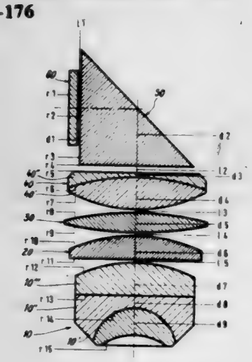
Filed Dec. 17, 1969, Ser. No. 885,795
Int. Cl. G02f 1/20
U.S. Cl. 350—160 4 Claims



Apparatus is disclosed which utilizes an acoustic impedance matching technique to substantially reduce the oc-

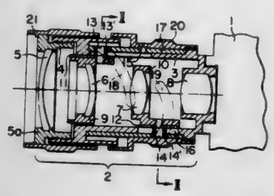
currence of acoustic resonances in an electro-optic crystal. In one embodiment, the acoustic resonance damping apparatus is adapted to apply an electric field to the electro-optic crystal. Several additional embodiments are disclosed.

3,663,092
ELBOW MAGNIFYING LENS
Franz Schlegel, Munich, Germany, assignor to Optische Werke G. Rodenstock, Munich, Germany
Filed July 27, 1970, Ser. No. 58,632
Claims priority, application Germany, July 25, 1969, P 19 37 797.0
Int. Cl. G02b *1/00, 17/00*
U.S. Cl. 350—176 **5 Claims**



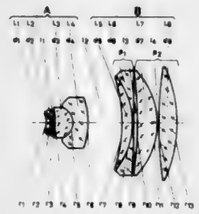
A four element magnifier with right angle prism which includes, in the direction from the eye to the object, a three-component lens with two cemented surfaces, two single collecting lens and a further two-component collecting lens with one cemented surface which is adjoined by a right angle prism.

3,663,093
VARIFOCAL LENS MOUNT WITH DEFORMABLE ANTI-FRICTION COATINGS
Yozo Iida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed July 29, 1970, Ser. No. 59,144
Claims priority, application Japan, Aug. 8, 1969, 44/74826
Int. Cl. G02b *7/10*
U.S. Cl. 350—187 **6 Claims**



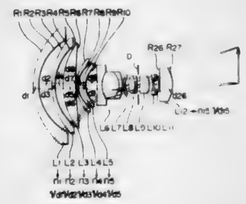
A varifocal lens including a cam cylinder rotatably mounted on a stationary housing, and lenses held in lens barrels slideably positioned within the stationary housing to vary the focal length of the varifocal lens. Cam followers to position the lens barrels extend from the lens barrels to guide grooves in the stationary housing and cam grooves in the cam cylinders. The sliding surfaces of the lens barrels and the cam followers are provided with a layer of resilient material having a low coefficient of friction. The dimensions of the lens barrel sliding surfaces and the cam followers are made larger than the dimensions of the members which they contact, so that the resilient material will be slightly deformed and thereby take up the play between the lens barrels and cam followers and their respective coacting members.

3,663,094
GALILEAN-TYPE TELESCOPE SYSTEM
Ludwig Bertele, Heerbrugg, Switzerland, assignor to Firma Wild Heerbrugg AG, Heerbrugg, Switzerland
Filed Aug. 10, 1970, Ser. No. 62,510
Int. Cl. G02b *9/60, 9/62, 23/00*
U.S. Cl. 350—212 **7 Claims**



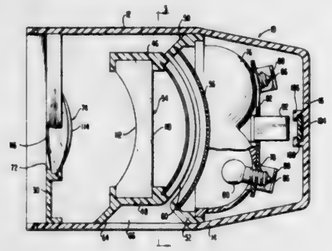
A Galilean-type telescope system comprising a negative system component and a positive system component. The negative system component embodies at least two air-spaced lens members and the positive system component embodies at least two air-spaced lens members, with the lens member disposed closer to the eye having negative refractive power and the following members having positive refractive power.

3,663,095
RETROFOCUS TYPE SUPER-WIDE ANGLE OBJECTIVE LENS
Ikuo Mori, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Aug. 26, 1970, Ser. No. 67,042
Claims priority, application Japan, June 5, 1970, 45/47925
Int. Cl. G02b
U.S. Cl. 350—214 **7 Claims**



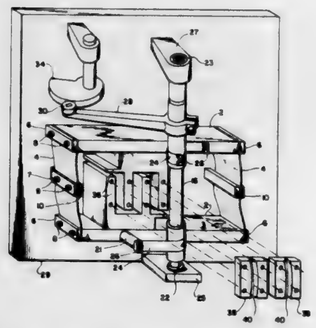
A retrofocus type super-wide angle objective lens system usable with a single-lens reflex camera includes a divergent group forming the forward part of the lens system, a quasi-symmetric group disposed behind the divergent group having a diaphragm disposed intermediately thereof, and a convergent group forming the rearward part of the lens system. The satisfactory correction is made both of the negative distortional aberration inherent to the retrofocus type lens and the curvature of meridional plane resulting from the correction of said negative distortional aberration, thereby providing an angle of field ranging from 100° to 110° and a relative aperture of F/5.6 or higher brightness.

3,663,096
WIDE ANGLE VIEWER
David L. Fuller, Atlanta, Ga., assignor to Scripto, Inc., Atlanta, Ga.
Continuation of application Ser. No. 794,890, Jan. 29, 1969, now abandoned. This application Sept. 22, 1970, Ser. No. 74,531
Int. Cl. G02b *27/02, 3/06, 5/10*
U.S. Cl. 350—238 **7 Claims**



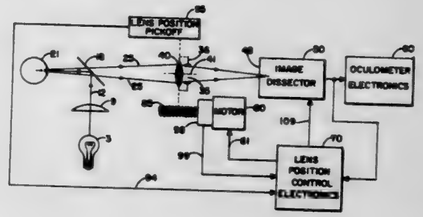
A non-distorted image of a panoramic negative is presented to the eye in a viewer having an arcuate film gate and a magnifying system formed of at least one non-spherical lens.

3,663,097
RESILIENT MOUNTING STRUCTURE FOR MOVING AT LEAST TWO OPTICAL ELEMENTS IN PRECISE OPTICAL ALIGNMENT
Roy W. Aday, Jr., La Habra, and Maoyeh Lu, Fullerton, both of Calif., assignors to Beckman Instruments, Inc.
Filed Feb. 27, 1970, Ser. No. 15,154
Int. Cl. G02f *1/30*
U.S. Cl. 350—271 **1 Claim**



There is disclosed a flexible mounting structure, rigidly supported at only two locations, for providing opposed precision motion of at least two mounting surfaces oppositely disposed upon the mounting structure in response to a force coupled symmetrically applied to the mounting structure. A pair of resilient connecting members, each having one of the two locations for support, and a pair of rigid mounting rails, each rail having at least one of the mounting surfaces disposed thereon, are connected to form a parallelogram whereby the mounting surfaces are substantially parallel. A rotatable shaft is disposed at right angles and adjacent to the rigid mounting rails. A drive tape is connected between the rotatable shaft and each of the rigid mounting rails in such a manner that as the shaft is rotated, each drive tape wraps around the shaft to provide the symmetrical force couple which moves the mounting rails. A cam follower arm is attached to the rotatable shaft and a cam roller bearing attached to the arm rides on a rotatable cam. Optical elements attached to the mounting surfaces transverse a precision path in accordance with the motion of the mounting rails.

3,663,098
AUTOMATIC FOCUSING FOR OCULOMETERS
John Merchant, Needham, Mass., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Jan. 11, 1971, Ser. No. 105,525
Int. Cl. A61b *3/10;* **G01j** *1/00;* **H01j** *3/14*
U.S. Cl. 351—6 **10 Claims**



An automatic focusing apparatus for oculometers wherein a reflected corneal image is projected by a lens through an aperture of non-circular outline onto a detector. The detector circularly scans the periphery of the projected image and produces an output indicative of the magnitude and sense of an out of focus condition. The detector output is combined with a lens position signal and a lens position rate signal and controls a servo to position the lens so that a focused condition is achieved and maintained.

3,663,099
EYEGLASS FRAME WITH CAVITIES FOR STORING CONTACT LENSES
Jacob A. Saffir, Los Angeles, Calif., assignor to Dentsply International Inc., York, Pa.
Filed June 12, 1970, Ser. No. 45,650
Int. Cl. G02c *1/00*
U.S. Cl. 351—158 **7 Claims**

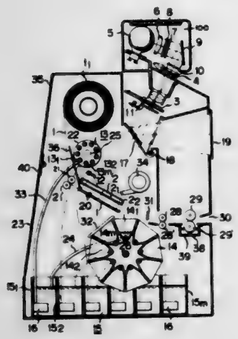


This invention pertains to several embodiments of an eyeglass frame having means to support conventional ophthalmic lenses and, in addition, having compartment means adapted to retain contact lenses for the wearer, which are to be substituted periodically for the conventional ophthalmic lenses.

3,663,100
ELECTROPHOTOGRAPHIC APPARATUS
Yoshio Itoh, and Hiroshi Tanaka, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 29, 1969, Ser. No. 828,959
Claims priority, application Japan, June 7, 1968, 43/39225
Int. Cl. G03g *15/22, 15/10*
U.S. Cl. 355—4 **11 Claims**

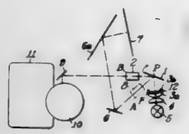
Electrophotographic printing apparatus wherein a photosensitive member is maintained in stationary tilted position throughout multi-color image-forming and development.

Ejector and receptor elements are selectively rotated into operative position relative to the photo-sensitive member



respectively for cascading treating solutions thereover and for collecting dispensed treating solutions.

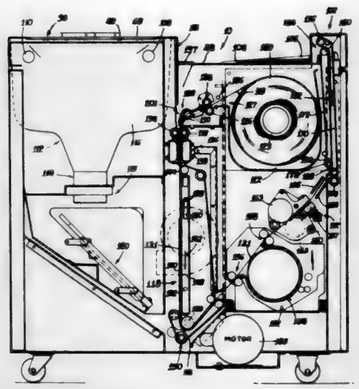
3,663,101
MICROFILM VIEWER-PRINTER
Walther Vor Grabe, Koenigstein, Germany, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Apr. 30, 1969, Ser. No. 820,583
Claims priority, application Japan, Apr. 30, 1968, 43/29032
Int. Cl. G03b *13/28*
U.S. Cl. 355—45 **2 Claims**



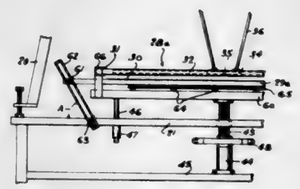
A film projection system for directing an image through a rotatable reflecting mirror and an objective lens in selective paths. One path includes fixed reflecting mirrors and a screen to provide a complete projection. The other path which is determined by the rotation of the reflecting mirror provides a slit projection on a rotatable drum.

3,663,102
HIGH SPEED PHOTOELECTROSTATIC COPYING MACHINE
Arthur S. Zerfahs, Elk Grove, Ill., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.
Filed Dec. 31, 1969, Ser. No. 889,594
Int. Cl. G03g *15/00*
U.S. Cl. 355—14 **5 Claims**

A counter controls the processing of multiple copies of an original in a high-speed, roll fed copying machine. Timer circuitry operated in the multiple copy mode provides signals to initiate the feeding of copy material from the roll for successive copies. A movable length sensor in the path of the copy material discontinues the feeding of copy material and actuates a cutter to sever a preselected length of copy material. The time period between signals is variable in accordance with the selected copy length so as to provide a corresponding spacing between successive lengths of severed copy material.



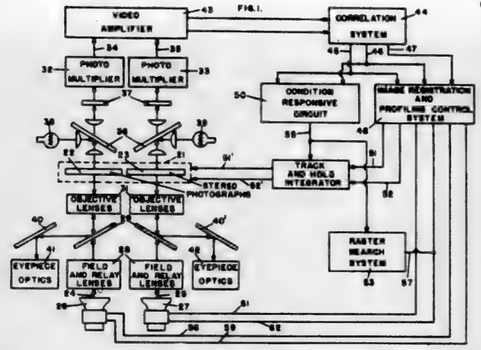
3,663,103
PRODUCTION OF A MODIFIED ORTHOPHOTOGRAPH
Stanley Hoover Collins, Guelph, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
Continuation-in-part of application Ser. No. 665,521, Sept. 5, 1967. This application Sept. 15, 1970, Ser. No. 72,487
Int. Cl. G03b *27/44, 27/68*
U.S. Cl. 355—22 **19 Claims**



A three-dimensional optical model is created from a stereo-pair of aerial photographs by projecting the photographs by means of two projectors, and a moving aperture scans the optical model. A photosensitive film is exposed to one of these beams and is shifted in a direction perpendicular to the plane of the film so that the portion of film that is being exposed intersects the optical model. Superimposed on the vertical shift motion of the film is a displacement tangential to the plane of the film, the amount of displacement being in a preselected relationship to the extent of the vertical shift, such preselected relationship preferably being a logarithmic one.

3,663,104
AUTOMATIC STEREOPLOTTING APPARATUS
John Montgomery Godfrey, Camberley, England, assignor to Itek Corporation, Lexington, Mass.
Filed May 19, 1970, Ser. No. 38,809
Int. Cl. G01c *11/12*
U.S. Cl. 356—2 **16 Claims**

Disclosed in an automatic stereoplotter in which terrain elevation indicating *x*-parallax corrections are held in response to the absence of a given minimum level of correlatable image detail. This prevents inaccurate, noise responsive *x*-parallax corrections when traversing image areas such as water bodies having low correlatable information content. To insure a timely restoration of normal operations, a search system responds to a hold of *x*-parallax correction by systematically searching the stereo model in the *x*-direction for image areas retaining a sufficient level of correlatable image detail.



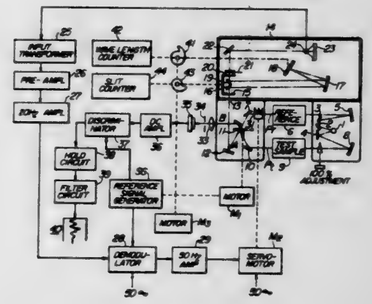
3,663,105
METHOD AND APPARATUS FOR MEASURING RANGE UTILIZING SUPERIMPOSITION OR ALIGNMENT OF IMAGES
Alton D. Anderson, 2360 Ridge Drive, Northbrook, Ill.
Filed June 28, 1967, Ser. No. 649,520
Int. Cl. G01c *3/08*
U.S. Cl. 356—4 **12 Claims**



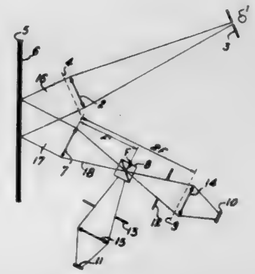
There is provided an apparatus and method for automatically reading out the range as determined by dual image optical range finders. Such dual image optical range finders produce a pair of misaligned images when the set range of the range finder differs from the actual range of a distant object, and the images are superimposed or aligned when the set range and actual range correspond. Passing the projected image of the range finder through one or more moving slits to shutter the projected image will form image pulses, the separation of which represents the error between the set and actual range of the range finder. A light detector, such as photoelectric cells, converts the image pulses into electrical pulses and an electrical circuit system is provided to detect the differences between the conditions of exact image alignment and the alignment error.

3,663,106
OPTICAL NULL METHOD SPECTROPHOTOMETERS
Shigeo Minami, Ashiya, and Kenji Fukuda, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 26, 1970, Ser. No. 40,513
Claims priority, application Japan, May 28, 1969, 44/40964
Int. Cl. G01j *3/42*; G01n *21/34*
U.S. Cl. 356—89 **14 Claims**

An optical null method spectrophotometer with which the difference between the intensity of a test sample beam representing the quantity of light transmitted through a test sample and the intensity of a reference sample beam representing the quantity of light transmitted through a reference sample is detected and amplified to drive a servo mechanism to thereby displace an optical attenuator inserted in the path of the reference beam, so as to vary the reference sample beam until the test sample beam and the reference sample beam are balanced with each other to thereby obtain transmission spectra or absorption spectra of the test sample, characterized in that separate means is provided for producing an electrical signal proportional to the variation in the reference sample beam resulting from the displacement of the optical attenuator and that the electrical signal produced by the separate means is recorded by a recorder.

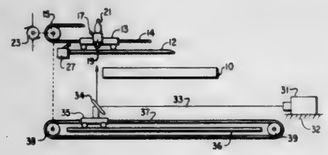


3,663,107
NONDESTRUCTIVE METHOD FOR MEASURING STATES OF SURFACE AND APPARATUS FOR CARRYING OUT SAID METHOD
Pierre M. Denis, 4 place Paul Mistral, 38 Grenoble, and Roger H. Guicherd, Rue du Mail, 38 Saint-Egreve, both of France
Filed Jan. 5, 1971, Ser. No. 103,994
Claims priority, application France, Jan. 6, 1970, 7000205
Int. Cl. G01b *11/30*
U.S. Cl. 356—120 **2 Claims**



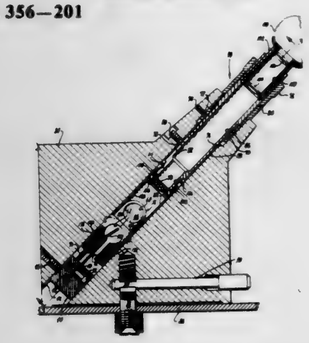
A beam of parallel rays which emerges from a perpendicular object-grid is reflected from a mirror surface and transmitted through a centered optical system to a Lummer dividing cube located at the image focal point of said system so as to produce a direct beam which is focused onto a photoelectric cell after passing through an image-grid and a beam which is deflected at right-angles and focused onto a second photoelectric cell. The image-grid is displaced transversely so as to stop light from the object-grid and the mirror surface is replaced by the surface to be studied. The quotient of the indications given by the two balanced photoelectric cells is characteristic of a given state of surface. The indication given by the deflected-beam cell provides the albedo of a given surface state and color.

3,663,108
APPARATUS FOR MEASURING THE DIMENSIONS OF OBJECTS WHICH INCLUDES A CARRIER WHICH TRAVELS ACROSS THE OBJECTS TO BE MEASURED
Hiroshi Yamamuro, Yokohama; Akira Kawase, Tokyo, and Akio Sakai, Kawasaki, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Apr. 16, 1970, Ser. No. 29,230
Claims priority, application Japan, Apr. 16, 1969, 44/28959
Int. Cl. G01b 11/04, 13/08
U.S. Cl. 356—160 4 Claims



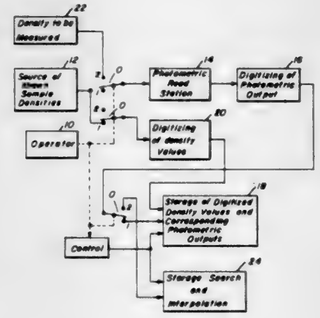
An apparatus for measuring the width of a web material includes a carrier which travels across the web. The carrier has mounted thereon a photoelectric transducer and a magnetic induction type pulse generator for enabling exact detection of the opposite edge portions of the web. An elongated magnetically recorded fixed scale extends through the entire travel span of the carrier and is magnetically coupled to the pulse generator. The scale includes finely distributed magnetically recorded marks on the magnetic base thereof, along the lengthwise direction of said scale. A counter counts the pulses which emanate from the pulse generator in the absence of a detected electric signal from the photoelectric transducer, the absence indicating the presence of the web such that the opposite edge portions of the web are readily detected and measurement of the web width made.

3,663,109
VIEWING APPARATUS FOR USE IN A PHOTOMETER
Thomas D. Sharples, Atherton, Calif., assignor to Beckman Instruments, Inc.
Filed Apr. 13, 1967, Ser. No. 630,563
Int. Cl. G01n 21/24
U.S. Cl. 356—201 7 Claims



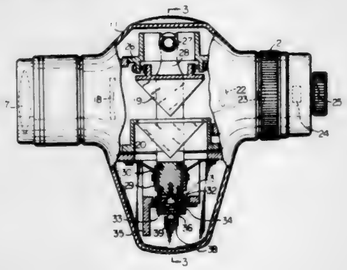
A low power microscope is optically coupled by a partial reflector to the output light beam passed through a region of a photometer containing a sample of material being investigated. The microscope provides an observable image encompassing the region and is adjustable to bring various portions of the region into sharp focus. The reflector is carried on a base coupled to the end of the microscope so that extreme positions of the latter cause the base to move between a lowered position in which the reflector intercepts a portion of the output light beam and a raised position out of the path of the light beam. In the raised position a portion of the base serves to block the optical path through the viewer to thereby exclude stray light.

3,663,110
APPARATUS RESPONSIVE TO OPTICAL DENSITY WHEREIN AN UNKNOWN SAMPLE DENSITY IS COMPARED TO A STORED VALUE
Bradley D. Rising, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 5, 1971, Ser. No. 131,324
Int. Cl. G01n 21/22
U.S. Cl. 356—203 6 Claims



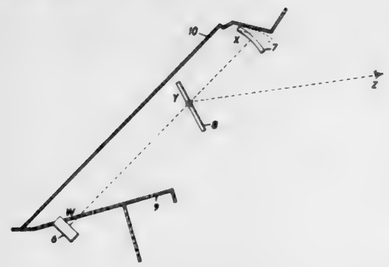
A set of digitized values of a density-dependent variable are stored in computer memory. A corresponding set of digitized photoelectric signals, produced from a set of reference densities, are also stored in computer memory. An unknown sample density is photoelectrically examined, the resultant signal being digitized and searched for within the computer memory, thereby to gate out of memory the digitized value of the density-dependent variable that corresponds to the digitized photoelectric signal of the sample.

3,663,111
SELF LEVELING TRANSIT LEVEL HAVING NOVEL LOCKING MECHANISM
Shozo Tsuda, and Masanori Nozaki, both of Tokyo, Japan, assignors to Fuji Koki Kabushiki Kaisha, Kawasaki-shi, Japan
Filed July 17, 1970, Ser. No. 55,683
Claims priority, application Japan, July 31, 1969, 44/59997
Int. Cl. G01c 9/12
U.S. Cl. 356—250 4 Claims



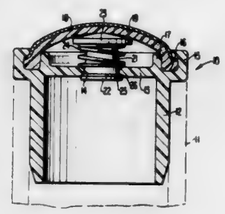
A self leveling transit level including a telescope means incorporating therein automatic level line compensator means and means for locking the swinging portion of the compensator means, whereby the telescope may be adapted for use as a transit when the lock means is operative to lock the swinging portion and for use as a level when the lock means is not in operation.

3,663,112
HEAD-UP DISPLAY SYSTEM INCLUDING A CONCAVE REFLECTOR AND A MOVABLE COMBINING MIRROR
Patrick Ludlow Fleming Jones, Windsor, and Robert Watson, Sandhurst, both of England, assignors to Sperry Rand Limited, London, England
Filed Aug. 10, 1970, Ser. No. 62,396
Claims priority, application Great Britain, Aug. 21, 1969, 41,664/69
Int. Cl. G02b 23/10
U.S. Cl. 356—251 3 Claims



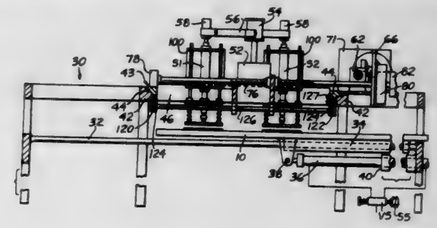
An optical "head-up" display system for use in aircraft comprises an information display formed by an illuminated fiber optic bundle in a graticule box mounted below the windscreen of the aircraft. An optical projection system comprising a spherical mirror mounted above the windscreen and a semi-reflecting mirror reflect the display to be seen by the pilot superimposed on his view through the windscreen. The display is stabilized in roll by rotating the graticule, and is stabilized in pitch either by moving the semi-reflecting mirror or by moving the relevant part of the graticule.

3,663,113
FLUID APPLICATOR ASSEMBLY
John J. Frain, 517 B. 137 St., Belle Harbor, N.Y., and Frank T. Brunner, 418 B. 131 St., Rockaway Park, N.Y.
Filed Aug. 14, 1970, Ser. No. 63,779
Int. Cl. B43k 5/00
U.S. Cl. 401—206 2 Claims



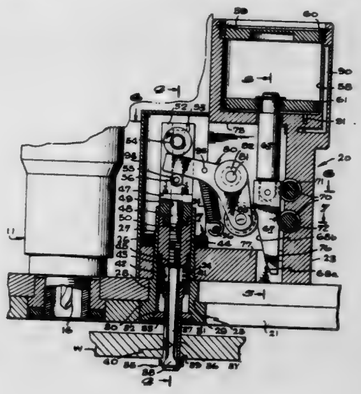
A fluid applicator assembly including a retainer ring adapted to be snugly fitted within the open end of a container, the ring having at one end an inwardly extending peripheral web member having a valve opening therein, a cover means secured to the forward end of the retainer, a valve stem extending through the valve opening and having an abutment at one end lying against a cover means for the assembly and a valve head at its other end lying against the underside of the web, and a coil spring urging the valve stem in a forward direction, the wall of the web opening being inclined forwardly so as to define a valve seat and the wall of the web opening being further inclined inwardly so as to permit easy snap-in insertion of the valve stem through the opening.

3,663,114
TAPE CONTROLLED AUTOMATIC MACHINE, ESPECIALLY FOR PRINTED CIRCUIT BOARDS
Alan B. Welsh, and Roger T. West, both of Jasper, Ind., assignors to Jasper Electronic Mfg. Corp, Jasper, Ind.
Filed Mar. 24, 1970, Ser. No. 22,253
Int. Cl. B23b 39/08
U.S. Cl. 408—3 12 Claims



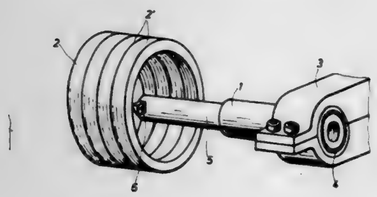
A drilling machine, especially for drilling printed circuit boards wherein the circuit boards to be drilled are mounted on a table over which is positioned a drilling spindle for each circuit board. The drilling spindles are mounted on a carriage which moves in steps at right angles to each other so as to be able to align the spindles with any hole to be drilled in the entire area of the board. A tape controlled circuit is provided which controls the movement of the carriage and the advancing and retracting of the spindles during a drilling operation. Advantageously, the table supporting the boards to be drilled can be shuttled between two opposite end positions so that while one set of boards is being drilled, another set can be mounted on the table preparatory to drilling.

3,663,115
PORTABLE DRILL WITH POWER DRAWBAR CLAMPING DEVICE
Pierre G. Vindez, Redondo Beach, and Luis A. Bohorquez, Inglewood, both of Calif., assignors to Zephyr Manufacturing Co., Inc., Manufacturing Division, Inglewood, Calif.
Filed Apr. 20, 1970, Ser. No. 30,027
Int. Cl. B23b 45/14; B23q 3/14
U.S. Cl. 408—79 8 Claims



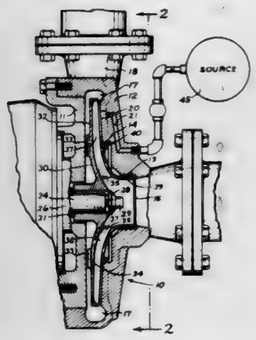
A pneumatically operated work sheet clamp attached to a portable power drill and utilizing a cam moved by a piston to operate the pilot of a collet assembly through an intermediate bell crank lever and drawbar means.

3,663,116
CANTILEVERED MACHINE PART
Theo Muller, Pattscheid, and Otto Feller, Burscheid, both of Germany, assignors to Goetzewerke Friedrich Goetze AG, Burscheid, Germany
Filed Apr. 22, 1970, Ser. No. 30,860
Claims priority, application Germany, Apr. 23, 1969, P 19 20 598.2
Int. Cl. B23b *29/03*
U.S. Cl. 408—143 13 Claims



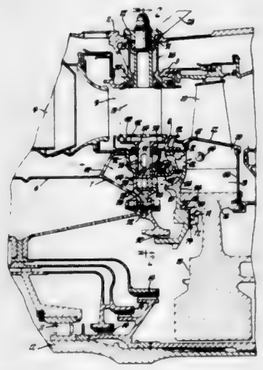
A boring bar inherently damping torsional vibrations and having an elongated outer jacket and a core arranged within the jacket, there being an energy-consuming material arranged between the inner surface of the jacket and the outer surface of the core for damping torsional displacement between the jacket and the core.

3,663,117
AERATION PUMP
Clinton C. Warren, Vancouver, Wash., assignor to Cornell Manufacturing Company, Portland, Oreg.
Filed Jan. 21, 1970, Ser. No. 4,686
Int. Cl. F04d *31/00*; F04b *13/02*
U.S. Cl. 415—116 4 Claims



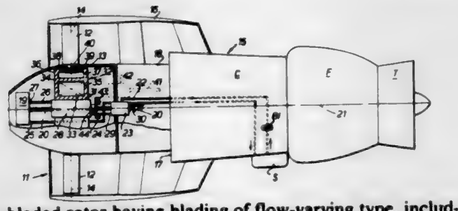
A centrifugal pump for use in aerating liquids. A disc-shaped impeller is confined within a pump housing which includes an inlet port adjacent the center of the impeller and an outlet port formed in a volute chamber which surrounds the outer periphery of the impeller. The impeller is conventionally mounted on a drive shaft supported by bearings in the housing and includes radially extending, partially closed curved vanes on an outer side thereof. The impeller also includes short, radially extending auxiliary vanes on an inner side. The periphery of the impeller is notched between the vanes to substantially the depth of the closed portions of the vanes. At least one air inlet is provided in the pump housing near the outer ends of the impeller vanes to permit the injection of air under pressure for aerating the liquid being pumped.

3,663,118
TURBINE COOLING CONTROL
Douglas Johnson, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed June 1, 1970, Ser. No. 42,351
Int. Cl. F01d *25/12*; F04d *27/00*
U.S. Cl. 415—116 7 Claims



The turbine of a gas turbine engine has a nozzle with variable stagger angle vanes including stems which rotate with the vanes. Cooling air is supplied to the turbine from the compressor of the engine through a ring of rotary plug valves of which the movable valve members are on the vane stems. The cooling air is impelled by a fan on the turbine rotor forward face and the discharge from the fan is divided between the nozzle vanes and the turbine blades.

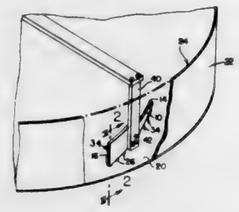
3,663,119
BLADED ROTORS
Ivor Harold Brooking, Wotton, and John Alfred Chilman, Painswick, both of England, assignors to Dowty Rotol Limited, Gloucester, England
Filed Apr. 7, 1970, Ser. No. 26,215
Claims priority, application Great Britain, May 3, 1969, 22,681/69
Int. Cl. B64c *11/38*
U.S. Cl. 416—157 10 Claims



A bladed rotor having blading of flow-varying type, including, carried within its hub, a pump operable upon rotor rotation and valve means for controlling the flow of pressure fluid from the pump to a fluid-pressure-operable actuator for adjusting the blading. Conduit means, provided for conducting fluid to the pump inlet, are connectable to a source external of the rotor.

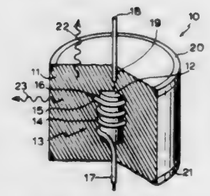
3,663,120
PLOW TOOL
Anthony C. Fortunski, Grosse Pointe Park, Mich., assignor to Fargo Machine & Tool Company, Detroit, Mich.
Filed July 2, 1970, Ser. No. 51,936
Int. Cl. B01f *7/24*
U.S. Cl. 416—224 17 Claims

The invention provides for plows or plow-type tools which are attached to supporting members and positioned for rotation in operative spaced relationship to interior surfaces of a mixing chamber. The plows are provided with attached edges or spacer portions of a destructible material whereby when the plow is operative the edge is destroyed and intermixes with the material in the chamber that is stirred and moved by the plow. The plow is positioned for operative movement and secured to its supporting member(s) by first setting the plow with its destructible edging or spacer portions directly upon the surfaces to which the plow movement is related. Although it is desirable to have the spacer material or edging



of a character and kind that will not contaminate the material to be moved and mixed by the plow, this feature is not necessarily a limiting requirement of the invention. Upon destruction and removal of the edging or spacer portions, the operative structure of the plow is left in properly spaced relationship to the interior surfaces of the chamber in which the plow functions. Alternatively, the spacer material may be of paper or paperboard adhesively secured to the edges of the plow and removed therefrom by peeling the paperboard away after the plow has been secured in spaced relationship in the mixing chamber.

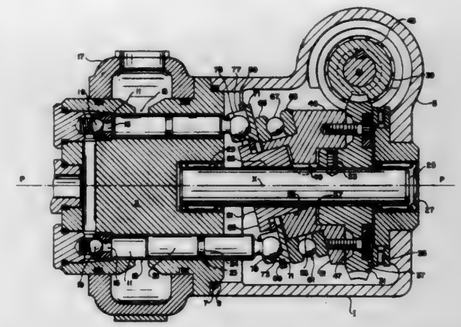
3,663,121
GENERATION OF METAL VAPORS
Paolo Della Porta; Mario Zucchinelli; Elio Rabusin, and Carlo Emili, all of Milan, Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy
Filed May 20, 1970, Ser. No. 39,120
Claims priority, application Italy, May 24, 1969, 17304 A/69
Int. Cl. F04b *37/02*; F04f *11/00*
U.S. Cl. 417—48 4 Claims



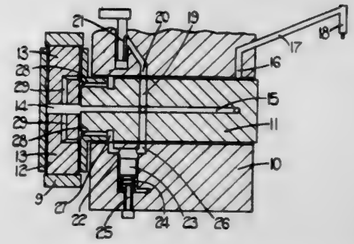
A particle free device for releasing a metal vapor, such as cesium or mercury, which comprises a vapor permeable particle free envelope and a metal vapor releasing substance within the envelope. This substance can be a mixture of a metal compound and reducing agent for the compound, or can be a material such as a metal oxide which releases its metal upon heating. The devices can have a resistance heating unit in thermal proximity to the metal vapor releasing substance. These devices are useful for the introduction of metal vapors into vessels such as electron tubes.

3,663,122
AXIAL PLUNGER PUMP
Clarence E. Kitchen, St. Louis, Mo., assignor to McNeil Corporation, Akron, Ohio
Filed Nov. 25, 1970, Ser. No. 92,590
Int. Cl. F04b *1/14*, *1/02*
U.S. Cl. 417—269 6 Claims

An axial plunger pump of the class having a plurality of axial plungers reciprocated by a rotating wobble cam acting through a non-rotary cam follower means, and having an improved and simplified mode of assembly of the cam follower with respect to the wobble cam.



3,663,123
LIQUID FUEL INJECTION PUMPING APPARATUS
Ivor Fenne, Greenford, England, assignor to C. A. V. Limited, Birmingham, England
Filed Aug. 11, 1970, Ser. No. 62,972
Claims priority, application Great Britain, Aug. 11, 1969, 40,010/69
Int. Cl. F04b *49/00*
U.S. Cl. 417—284 5 Claims

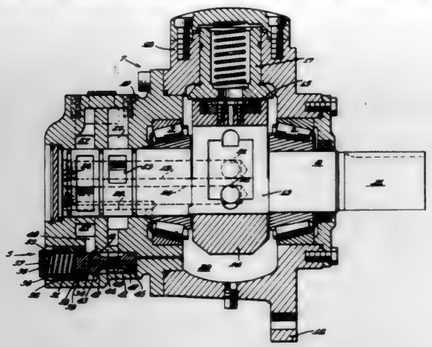


A liquid fuel pumping apparatus for internal combustion engines and which includes a bore which accommodates a reciprocable pumping plunger and which defines a pumping chamber from which extends an outlet. The apparatus also includes a cylinder in which is located a resiliently loaded piston, one end of the cylinder being arranged to be brought into communication with the pumping chamber after the plunger has attained a predetermined position during its injection stroke. In this manner further flow of fuel through the outlet is prevented and relief of the pressure in any apparatus associated with the outlet is obtained.

3,663,124
DUAL CROSSOVER RELIEF AND CASE SURGE VALVE FOR HYDRAULIC MOTORS AND PUMPS
John Clayson Schultz, Buffalo, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.
Filed Mar. 2, 1970, Ser. No. 15,778
Int. Cl. F04b *49/00*; F16k *17/26*
U.S. Cl. 417—291 9 Claims

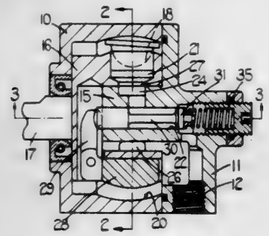
A valve assembly is provided which will automatically respond to relieve overload hydraulic pressures in a hydraulic operating device such as a motor or pump, being mounted directly in the housing of the device and operatively commu-

nicating with the hydraulic operating circuit to bypass hydraulic pressure automatically when an overload in the



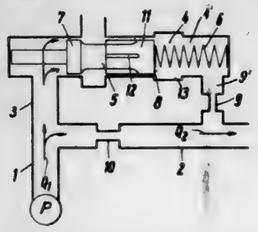
device is sensed by the valve assembly. This may include reversible line pressure and also case pressure.

3,663,125
HYDRAULIC PUMP
Frank George Freeman, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Nov. 23, 1970, Ser. No. 92,041
Int. Cl. F04b 49/02
U.S. Cl. 417—294 6 Claims



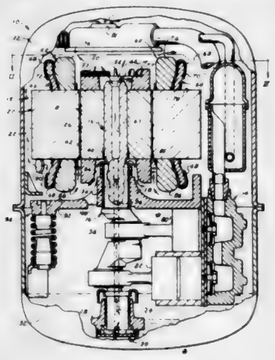
A radial-piston hydraulic pump has its inlet and outlet interconnected by a valve. A closure member for the valve is rotated with the pump rotor and is urged open against a biasing spring by a part of the rotor which acts as a governor. The valve opens when the pump speed exceeds a predetermined value.

3,663,126
FLUID CONTROL SYSTEMS
Otto Paul Ferdinand Langoech, Camberg, Germany, assignor to Firma Vickers GmbH, Frolingstrasse, Bad Homburg v.d.H., Germany
Filed Dec. 5, 1969, Ser. No. 882,704
Claims priority, application Germany, Dec. 9, 1968, P 18 13 500.7
Int. Cl. F04b 49/00
U.S. Cl. 417—300 4 Claims



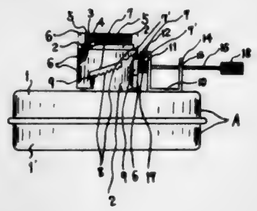
A flow splitting relief valve is connected with the main output flow for tapping fluid from it for influencing the output characteristic.

3,663,127
HERMETIC COMPRESSOR OIL COOLING SYSTEM
Robert J. Cheers, Tecumseh, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.
Filed Nov. 30, 1970, Ser. No. 93,550
Int. Cl. F04b 17/00, 35/00, 39/02; H02k 9/00, 9/20
U.S. Cl. 417—372 7 Claims



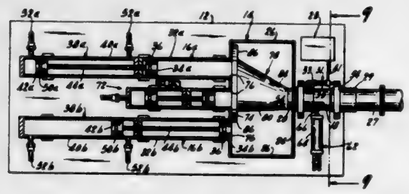
A hermetic motor-compressor unit of the vertical shaft type having an electric motor mounted above and driving the gas pump of the unit. The motor has its main stator winding wound radially inwardly of the auxiliary or start winding so that the end turns of the main winding are directly in the path of the lubricating oil which is flung from the outlet or outlets of a crankshaft oil passage fed from an oil pump in the sump of the compressor. The relatively cool oil thus directly impinges against and drains downwardly along the main winding to thereby effect more efficient cooling of the motor.

3,663,128
FLAME ADJUSTING DEVICE IN A BURNER FOR ALCOHOL, OIL OR THE LIKE
Zenjiro Yasuda, 4-98 Matsuzoh, Abeno-ku, Osaka, Japan
Filed Nov. 16, 1970, Ser. No. 89,820
Claims priority, application Japan, June 29, 1970, 45/64835
Int. Cl. F23d 3/32
U.S. Cl. 431—307 3 Claims



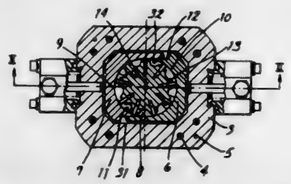
A device for adjusting the height of flame in a liquid fuel burner having an open top cylindrical wick holder around which an adjusting cylinder member is telescopically mounted for vertical and rotary movement, with a helical rib extending outwardly from said adjusting cylindrical member and having rack teeth on its under surface where the rack teeth cooperating with a pinion mounted on a shaft extending radially from the adjusting cylindrical member and mounted for rotation with a handle at the outer end, the mounting for the rotary shaft having a lug engaging the upper edge of the helical rib so that the adjusting cylindrical member will be positively moved in both vertical directions to control the flame.

3,663,129
CONCRETE PUMP
Leon A. Antosh, Rural Route, Erie, Ill.
Filed Sept. 18, 1970, Ser. No. 73,449
Int. Cl. F04b 7/00, 15/02
U.S. Cl. 417—516 18 Claims



A constant flow concrete pump having a number of hydraulically actuated concrete pump assemblies connected to inlet openings in one wall of a semi-fluid concrete hopper which has a single discharge opening in the opposite wall, and a valve mounted in the hopper and having an inlet of sufficient length to encompass at least two of the inlet openings in the hopper wall, relative movement is provided between the valves and inlet openings to provide constant flow of concrete through the hopper. The valve can be fixed, oscillated or rotated.

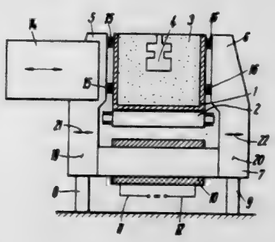
3,663,130
VARIABLE JAWS FOR VANE PUMP
Hans Lincks, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany
Filed Aug. 4, 1970, Ser. No. 60,802
Claims priority, application Germany, Aug. 4, 1969, P 19 39 595.0
Int. Cl. F03c 3/00
U.S. Cl. 418—31 2 Claims



Adjustable housing for a rotary pump. In a rotary pump having radially shiftable blades there is provided an adjustable housing comprising two identical blocks which, when properly related to each other and interfitted, create a housing for the rotor. The two blocks slide with respect to each other to vary the volume of the pump space defined.

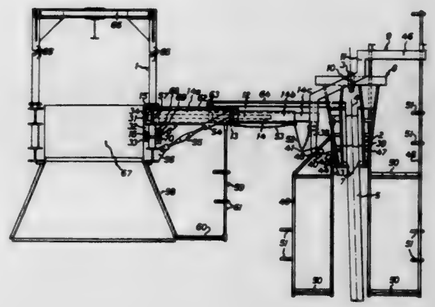
3,663,131
CASTING DEVICE
Fritz Hegewaldt, Herdecke-Kirchende, Germany, assignor to Brown, Boveri & Cie Aktiengesellschaft, Kallstadter Strasse, Mannheim-Kafertal, Germany
Continuation of application Ser. No. 783,920, Dec. 16, 1968, now abandoned. This application Apr. 19, 1971, Ser. No. 135,406
Claims priority, application Germany, Jan. 3, 1968, P 16 08 039.0
Int. Cl. B22c 15/00
U.S. Cl. 425—3 5 Claims

A device is provided for making castings conforming to a mold while leaving the impression of the casting preserved in the mass of particles of the casting material. There is a casting box containing loose magnetizable particles with which non-magnetizable particles may be admixed and the casting is carried out through the action of magnetic forces generated either by electromagnets or permanent magnets and the casting action is continued at least until the casting becomes strong enough to be self-supporting. The source of the magnetic forces for carrying out the casting include at least one permanent magnet or electro-magnet having one or



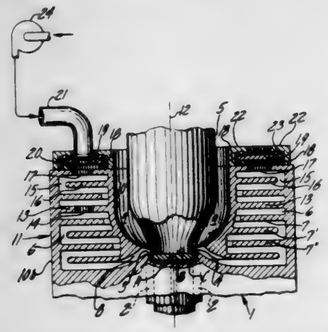
more pole shoes which are adjustable relative to the casting box. Each magnet may be subdivided into a plurality of individual magnets. The casting box is mounted on guides of non-magnetic material which guides may be directly on the casting box or on the magnets or on their pole shoes. Simplified casting is obtained at reduced cost.

3,663,132
ARRANGEMENTS IN SLIDING FORMS
Artur Lennart Andersson, Malmo, Sweden, assignor to Aktiebolaget Armerad Betong, Malmo, Sweden
Filed Apr. 7, 1970, Ser. No. 26,369
Claims priority, application Sweden, Apr. 8, 1969, 4894/69
Int. Cl. B28b 7/04
U.S. Cl. 425—65 15 Claims



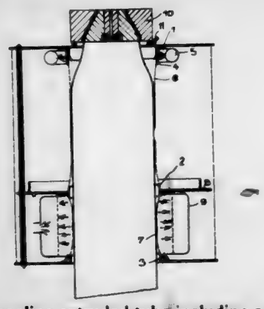
An adjustable sliding form or shuttering for concrete casting of buildings comprises relatively movable form sections to permit contraction and/or enlargement of the sliding form by the action of width regulating means to vary the width of the building, yoke-shaped scaffolding members carrying the sliding form and the scaffolding thereof for vertical movement, and climbing means operating the sliding form and the scaffolding thereof. Each of the movable form sections operable by the width regulating means is freely pivotally mounted in the scaffolding at a point above the form section to permit said form section to freely adapt itself to the width adjustment initiated by the width regulating means at the single mounting point.

3,663,133
GAS EJECTING DEVICE INCLUDING ROTARY COMPONENTS FOR COOLING EXTRUDED TUBING
Guenter Augustin, Ennepetal-Rueggeberg, and Gerd Albrecht, Remscheid-Lennep, both of Germany, assignors to Barmer Maschinenfabrik Aktiengesellschaft, Remscheid-Lennep, Germany
Filed Sept. 18, 1970, Ser. No. 73,484
Claims priority, application Germany, Oct. 22, 1969, P 19 53 113.6
Int. Cl. B29d 23/04
U.S. Cl. 425—72 4 Claims



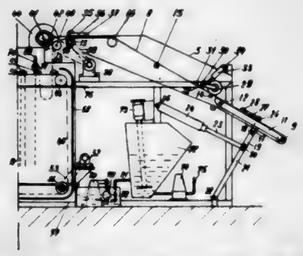
A device for applying cooling gas in an annular stream to the exterior of a tubing of plastic material as it issues from an extruding machine. The device is of generally annular configuration with stream-forming components thereof in sealed rotatable relation with other components of fixed position through which a cooling gas enters the device. The apparatus is interiorly baffled in an essentially radial direction to establish a radially and axially extending zigzag passageway for movement of the gas therethrough. The apparatus is otherwise constructed to establish uniform conditions in the cooling gas and a distribution of any thickness variation resulting from non-uniform cooling along the length of a roll of collected film.

3,663,134
APPARATUS FOR MANUFACTURE OF TUBULAR COMPONENTS FROM PLASTICS MATERIAL
Robert Coquelin, Mazingarbe, France, assignor to Ethylene-Plastique, Paris, France
Filed Oct. 14, 1968, Ser. No. 767,238
Claims priority, application France, Oct. 13, 1967, 124,440; Oct. 1, 1968, 168,309
Int. Cl. B29d 23/04
U.S. Cl. 425—72 4 Claims



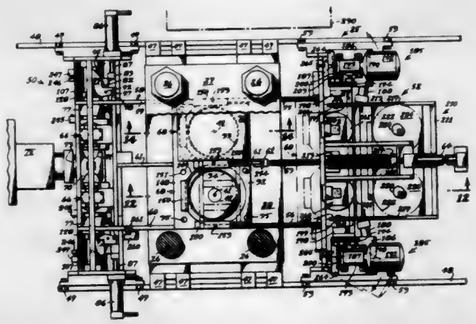
Apparatus for cooling extruded tube including a means for passing said tube through a tensioned, flexible, resilient, liquid permeable sleeve surrounding said tube having a means for applying liquid coolant to the surface of said sleeve and means for wiping said tube after passing said sleeve.

3,663,135
AUTOMATIC MACHINE FOR CUTTING, COOLING, DRYING AND PILING RUBBER SHEETS
Walter Hugo Schlesser, Hortensienstrasse 9, Zurich, Switzerland
Filed June 29, 1970, Ser. No. 50,761
Claims priority, application Switzerland, June 30, 1969, 10020/69
Int. Cl. B29c 15/00
U.S. Cl. 425—73 13 Claims



An automatic machine for cutting, cooling, drying and piling rubber sheets having a separate inlet section, a spray and cooling section and a receiving and piling section joined together so that the three casing sections together form a tunnel open at both ends; conveyor means for the rubber sheet to the inlet section control unit for programming the moving parts of the machine, a trimming device for the sheet, conveying means in the spray and cooling section for conveying transport rods on which the rubber sheets hang, part sprinklers and to a reserve storage for the rods; ventilators for circulating air in the spray and cooling section; conveyor means in the receiving and piling section with hooks extending therefrom adapted to seize a transport rod from said reserve storage and convey it to said piling section; vertically movable receiving means for receiving the sheets, and reciprocating grab assembly means for seizing the sheets as they hang from one of the transport rods and depositing them on the receiving means.

3,663,136
APPARATUS FOR AUTOMATICALLY MAKING PHONOGRAPH RECORDS
William S. Westermann, 1400 Burton Valley Rd., Nashville, Tenn.
Filed Apr. 1, 1970, Ser. No. 24,624
Int. Cl. B29d 17/00
U.S. Cl. 425—116 7 Claims

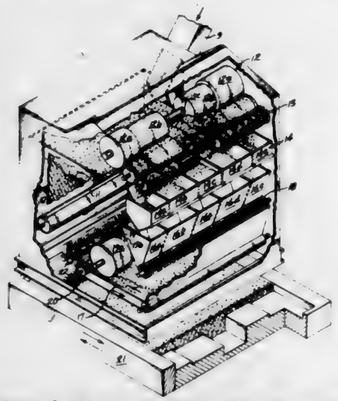


An apparatus for loading and unloading a record press, including means for preforming the mass of plastic record material, transferring the upper and lower record labels from label magazines or supply stacks and positioning the upper label above the mass and the lower label below the mass. The

apparatus further includes means for compressing the labels and mass into a composite unit upon a load carrier, moving the carrier between the pressing dies, ejecting the composite unit upon the dies, removing the completed record from the pressing dies to an unloading station, punching the center hole in the record, trimming the flashing from the record, and removing the record to a deposit station.

This apparatus also includes a single plastic extruder, and duplicates of all the above record processing elements for simultaneously and automatically processing and finishing two records at a time in cooperation with a record press.

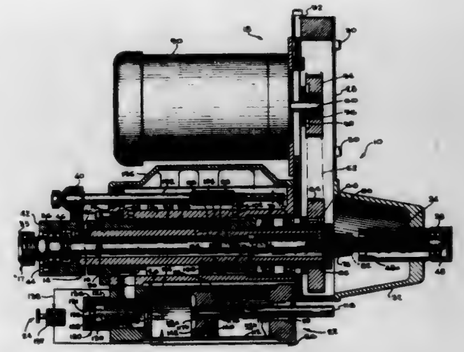
3,663,137
APPARATUS FOR MOLDING ARTICLES OF UNEVEN THICKNESS
Herbert G. Haas; Edmund Munk, both of Oberstenfeld; Alfred Fink, Uhingen, and Erich Klink, Faurndau, all of Germany, assignors to Werzalit-Pressholzwerk J. F. Werz, Jr. KG, Oberstenfeld/Wurttemberg, Germany
Continuation-in-part of application Ser. No. 698,050, Jan. 15, 1968, now abandoned, which is a continuation of application Ser. No. 437,107, Mar. 4, 1965, now abandoned. This application June 30, 1969, Ser. No. 837,649
Claims priority, application Germany, Mar. 7, 1971, P 14 53 386.9
Int. Cl. B29c 5/00
U.S. Cl. 425—148 7 Claims



A method of and apparatus for preforming moldable compositions of fibrous materials and a binder in which the preform had portions along its width having different thicknesses corresponding to different thicknesses of the final molded product. Initially the composition is formed into a mat which has a thickness at least equal to the thickest portion of the preform, and then excess material is removed from across the width of the mat by scalping rolls to develop the contoured preform having different thicknesses. Each section of the mat having a different thickness is weighed separately to insure proper density of that section of the mat. Following the weighing step, the mat is again shaped into the contoured preform and placed into a mold for a subsequent heating and pressing operation.

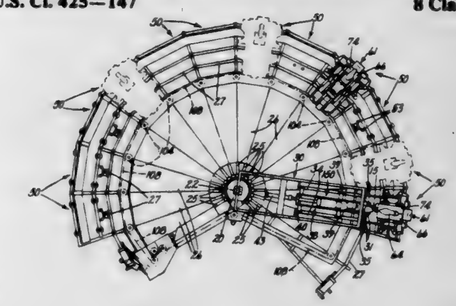
3,663,138
HYDRAULICALLY CONTROLLED DRILL UNIT
Robert J. Petroff, 1703 S. Main St., Lombard, Ill.
Filed Aug. 13, 1970, Ser. No. 63,569
Int. Cl. B23b 47/22
U.S. Cl. 408—130 7 Claims

A drill unit adapted for controlled axial movement of a rotatable drill is hydraulically controlled so that the drill is rapidly advanced to the proximity of the workpiece and gradually fed into the workpiece. Large and small capacity flow control means are provided to regulate the rate of flow of a substantially non-compressible fluid from a quill and spindle assembly to fluid receiving means thereby controlling the rate of movement of the drill. Means are provided for



forming a smooth bottom in the hole prior to retraction of the drill and for preventing intermixture of the substantially non-compressible fluid with compressed gas used in advancing and retracting the drill.

3,663,139
APPARATUS FOR MOLDING PLASTIC ARTICLES
John E. Robbins; William F. Willbond; Kingsley J. Tutt; Dennis S. Hall, and Raymond Hanson, all of Leicester, England, assignors to USM Corporation, Flemington, N.J.
Filed Apr. 20, 1970, Ser. No. 29,879
Int. Cl. B29f 1/10; A43d 35/00
U.S. Cl. 425—147 8 Claims

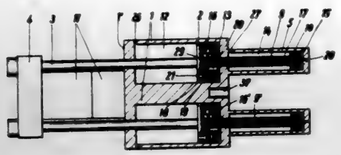


Apparatus for molding articles of plastic material having a signal device on a mold indicating its volume and controlling the volume of material injected into the mold. The volume of material injected is further variable to vary the density of articles formed in the mold.

3,663,140
HYDRAULIC ARRANGEMENT FOR INJECTION-MOLDING APPARATUS
Karl Hehl, Siedlung 183, 7291 Lossburg, Wurttemberg, Germany
Filed Apr. 29, 1969, Ser. No. 820,250
Claims priority, application Germany, June 22, 1968, P 17 78 952.5
Int. Cl. B29f 1/06
U.S. Cl. 425—154 33 Claims

Injection-molding apparatus in which a mold means of two parts is moved between open and closed positions. The molding means is moved by a first hydraulic means. A second hydraulic means is also operatively associated with the mold

means and together with the first hydraulic means forms a single operating unit; such second hydraulic means being for applying a greater force to the mold means to hold it in its



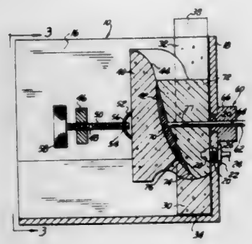
closed position than is capable of being applied by the first hydraulic means. Means are also provided for rendering the second hydraulic means inoperative during operation of the first hydraulic means.

3,663,141

APPARATUS FOR MAKING A MOLDED PROSTHESIS

Alain Clenet, Metamora, and Rudiger Piatkowski, Birmingham, both of Mich., assignors to said Piatkowski, by said Clenet

Filed Feb. 26, 1970, Ser. No. 14,580
Int. Cl. A61c *13/04*
U.S. Cl. 425—175 **5 Claims**



A method and apparatus for making a molded prosthesis such as a denture, a partial, an orthondic appliance, or the like by way of a mold flask permitting the prosthesis to be obtained by means of injection molding. A first half mold is made of a cast of the buccal tissue portion bearing the prosthesis, a wax pattern of the prosthesis is disposed in adhesion to the appropriate portion of the cast and the cast is placed in a flask where it is held in position by appropriate holding means. Investment material is poured between the tissue cast and the side of the flask, and once set forms the second half of the mold. The two halves of the mold are removed from the flask and the wax pattern is removed. The two halves of the mold are returned to the flask and held in appropriate registration, and an appropriate hardenable fluid material is injected into a gate into the cavity resulting from the removal of the prosthesis pattern and the material allowed to set to a solid form, thus providing the molded prosthesis. The molded prosthesis requires very little, if any, finishing work for providing an accurately fitted denture, partial, orthondic appliance, or other prosthetic part.

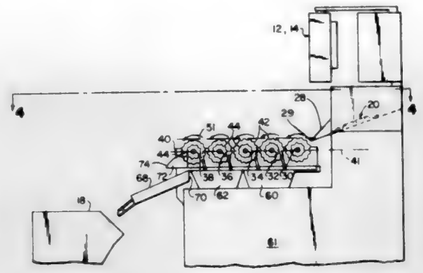
3,663,142

PLASTIC INJECTION MOLDING SYSTEM

Ralph Joseph Cafarelli, Clinton, Mass., assignor to Nylon Products Corp., Clinton, Mass.

Filed Feb. 27, 1970, Ser. No. 14,953
Int. Cl. B29f *1/00*
U.S. Cl. 425—217 **1 Claim**

A plastic injection molding system for molding workpieces with a connecting plastic tree, including a molding runner and with planar dimensions much greater than the workpieces, and for separating the workpieces from the trees employs plastic injection molding means for producing the workpieces and detached trees, discriminating means, with a surface for separating the workpieces from the trees, and



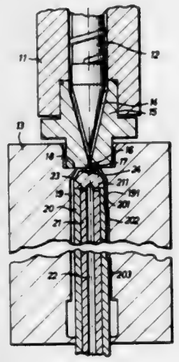
conveying and aligning means for conveying the workpieces and the trees from the molding means to the discriminating means and for aligning the runners with the surface.

3,663,143

APPARATUS FOR MAKING HOLLOW ARTICLES

Stefan Fischer, Lohmar, Bezirk, Cologne, Germany

Filed Jan. 28, 1970, Ser. No. 6,520
Claims priority, application Germany, Jan. 28, 1969, P 19 04 034.7
Int. Cl. B29c *5/06*
U.S. Cl. 425—244 **10 Claims**



This invention relates to a method and an apparatus for the production of hollow articles from thermoplastic synthetic plastic material.

3,663,144

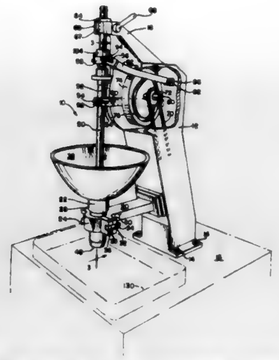
AUTOMATIC PASTRY FORMING APPARATUS

Melvin D. Pendleton, 13607 S.E. 192nd, Renton, and Arthur C. Pendleton, 10766 68th Ave. S., Seattle, both of Wash.

Filed May 12, 1970, Ser. No. 36,635
Int. Cl. A21c *11/16*
U.S. Cl. 425—287 **8 Claims**

Apparatus including a pastry dough storage bowl having a pastry forming cylinder extending downwardly therefrom, and a pair of pistons mounted on concentric piston rods adapted to move in and out of the distal ends of the pastry forming cylinder drawing pastry dough in at one end and extruding out formed pastries at its other end. Cam track and follower means training the movement of the pistons in and out of the pastry forming cylinder such that a partial vacuum is formed within the cylinder which tends to accelerate the movement of pastry dough from the pastry dough storage

bowl into the pastry forming cylinder. Additionally, a spring control is provided to regulate the movement of one of the



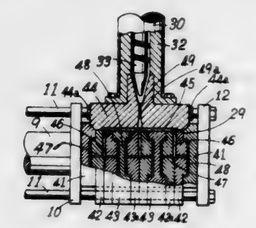
pistons within the pastry forming cylinder to control the size of the individual pastry formed.

3,663,145

SYNTHETIC RESIN INJECTION MOLDING APPARATUS

Shoichi Teraoka, 2 of 3676 Kanmura-cho, Fukuyama, Hioshi Prefecture, Japan

Filed Dec. 26, 1968, Ser. No. 787,087
Int. Cl. B29f *1/00*
U.S. Cl. 425—250 **4 Claims**



An injection molding apparatus comprising mold supporting plates to support molds on both sides, a group of molds having passages for plasticized material leading to cavities arranged on said fixed mold supporting plates, a clamping device provided with a movable mold platen to open and close said molds, and an injection device which may advance and retreat in the direction meeting at right angles with the opening and closing direction of said molds, in which plasticized material is injected into cavities, passing through said runner between said head and said molds and into said mold runner and T gate to said cavities.

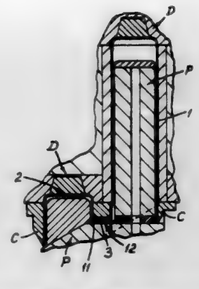
3,663,146

APPARATUS FOR FORMING A PLASTIC CONTAINER

William Arthur Roffey, and Austin Leslie Fox, both of London, England, assignors to Molins Machine Company Limited, London, England

Continuation-in-part of application Ser. No. 532,652, Mar. 8, 1966, now abandoned. This application Nov. 5, 1969, Ser. No. 874,211
Int. Cl. B29c *17/04*, *17/10*
U.S. Cl. 425—301 **8 Claims**

A tool assembly is disclosed for forming a plastic container having a hinged lid which is produced from a single sheet of plastic material. The tool comprises two die members, one of which comprises two cavities over which a plastic sheet is laid and a second die member for cooperation therewith for vacuum forming the two container portions in the conventional manner with a connecting portion of plastic sheet material therebetween. At least one of the die members includes cutting members for separating the formed container



from the remainder of the sheet material and also includes at least one elongated projection for compressing and causing local thinning in the connecting portion to form a hinge as the dies move together.

ERRATUM

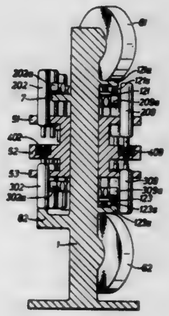
For Class 425—327 see:
Patent No. 3,663,151

3,663,147

ROTARY PRESS-MOLDING APPARATUS

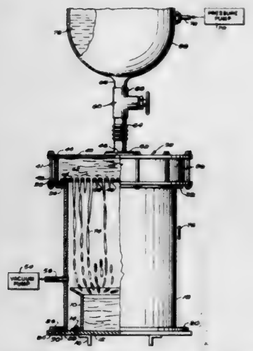
Hideyuki Maekawa, Osaka; Teruo Sakamoto, and Yoshihisa Sagawa, both of Hirakata, all of Japan, assignors to Shionogi & Co., Ltd., Dosho-Machi Higashi-ku Osaka Pref., Japan

Filed June 2, 1970, Ser. No. 42,687
Claims priority, application Japan, June 12, 1969, 44/46583
Int. Cl. B29c *3/02*
U.S. Cl. 425—345 **1 Claim**



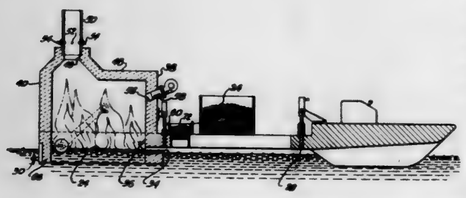
A combination, provided in a conventional punch-and-die type rotary tableting machine, of auxiliary rollers attached to each of the punches or the sheathes thereof, and tracking rails capable of exerting pressure on said punches through said auxiliary rollers with sequential transferring of the punches, serves to cause auxiliary (preparatory and complementary) compacting of material to be molded or of already molded articles resulting in a tableting performance free of capping or lamination.

3,663,148
PRESSURE CASTING APPARATUS
Lloyd A. Walker, Placerville, and Rudolph A. Peterson, Rancho Gordova, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.
Original application Dec. 4, 1967, Ser. No. 687,651, now Patent No. 3,600,486. Divided and this application Apr. 3, 1970, Ser. No. 25,423
Int. Cl. B29c *5/00*
U.S. Cl. 425—405 4 Claims



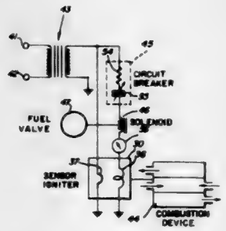
A pressure casting apparatus for casting highly viscous material having a casting mold within a vacuum bell, whereby the vacuum prevents voids in the cast material and reduces the pressurization otherwise required on a transfer pot containing the material to be cast. The transfer pot is operably connected to a pressure casting head having pattern holes in the bottom thereof, which casting head forms the top of the vacuum bell above the casting mold. The casting process is performed by drawing a vacuum in the bell, pressurizing the transfer pot, forcing the material from the transfer pot through the casting head, and dropping the extruded material into the casting mold for curing.

3,663,149
METHOD AND APPARATUS FOR REMOVING A LAYER OF COMBUSTIBLE LIQUID FROM THE SURFACE OF A BODY OF WATER
Richard B. Heagler, Salem Tsp., Westmoreland Co., Pa., assignor to Pittsburgh Corning Corporation, Pittsburgh, Pa.
Filed Nov. 16, 1970, Ser. No. 89,617
Int. Cl. F23q *13/00*
U.S. Cl. 431—2 10 Claims



A generally U-shaped, buoyant, self-propelled vessel floats partially submerged in a body of water and has a longitudinal channel portion with a front opening. The vessel has an open bottom portion beneath the longitudinal channel portion. As the vessel advances into a body of water, a band of water with the layer of combustible liquid floating thereon, enters the channel portion of the vessel. The rate at which the combustible liquid, as a layer, enters the channel portion of the vessel is dependent on the forward speed of the vessel and the speed is controlled so that substantially all of the layer of combustible liquid is removed by burning before the band of water psses under the rear portion of the vessel. As the vessel advances, the band of water with the layer of combustible liquid moves through a mixing chamber within the channel portion where a monolayer of cellular ceramic nodules are positioned on the top surface of the layer of combustible liquid. The layer of combustible liquid with the nodules floating thereon, moves rearwardly with the forward advance of the vessel into a combustion chamber where the layer of combustible liquid is ignited and burned. The nodules within the combustion chamber are recycled to the mixing chamber where they are again positioned as a monolayer on the upper surface of the layer of combustible liquid. Combustion air is provided for the combustion chamber and the combustion gases may be subjected to a secondary burning in the stack to remove the combustible materials in the combustion gases and provide a substantially smoke-free waste gas. Apparatus is provided to seal the combustion chamber and mixing chamber if the burning of the combustible liquid tends to spread beyond the receiver.

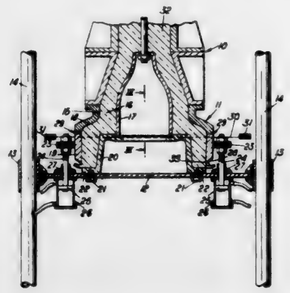
3,663,150
SAFETY IGNITION CONTROL SYSTEM
William H. Hapgood, Brookline, Mass., assignor to Raytheon Company, Lexington, Mass.
Continuation-in-part of application Ser. No. 772,559, Nov. 1, 1968, now abandoned. This application Jan. 23, 1970, Ser. No. 5,439
Int. Cl. F23n *5/14*
U.S. Cl. 431—66 15 Claims



A control system for use in combination with any combustion type heating device to provide a fail-safe safety ignition system. A voltage source, circuit breaker, igniter, electrically actuated fuel source control means and serially connected ignition sensing means, of a material having a high positive temperature coefficient of electrical resistance, are incorporated in the system. The current due to varying resistance of the sensing means will develop from a high initial value to a lower average normal running current value upon satisfactory ignition. The system parameters are selected to automatically disconnect the fuel source in the event of a failure in the combustion cycle. The circuit which includes the sensing means may also include a temperature indicating device.

3,663,151
APPARATUS FOR USE IN FORMING PIPES
Malcolm Sykes, Lanark, England, assignor to London and Russell Limited, Newmains, Wishaw, England
Filed Oct. 30, 1969, Ser. No. 872,488
Claims priority, application Great Britain, Nov. 26, 1968, 55,995/68
Int. Cl. B28b *21/54*
U.S. Cl. 425—327 6 Claims

In an extruder for manufacturing clay pipes, a socketed end portion of each pipe is formed by an annular mould which is positioned at the extruder outlet during moulding and withdrawn after moulding to permit extrusion of the pipe. The shoulder portion of the mould is attached to the extruder mouth, whereas the mould core and the mould side-wall are withdrawable, the side-wall being movable axially relative to the core by means of pneumatic actuators so that a downward movement of the side-wall may be effected for the purpose of shearing off waste clay extruded through a

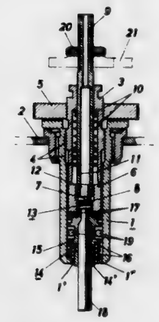


gap between the lower end of the side-wall and an outwardly presented flange on the core. Where the extruder is adapted to produce bends, the rapid withdrawability of the side-wall allows increased production rate in respect of "quick bends." The removal of waste clay extruded through the mould is effected more rapidly than hitherto in the production of both straight pipes and bends.

ERRATUM

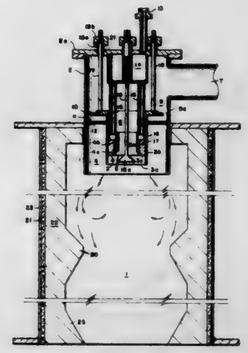
For Class 431—307 see:
Patent No. 3,663,128

3,663,152
AUTOMATIC FLAME ADJUSTING MEANS IN A LIGHTER
Choju Yoshida, Tokyo, Japan, assignor to Zezza Bronica Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 22, 1969, Ser. No. 868,306
Claims priority, application Japan, Oct. 25, 1968, 43/77400
Int. Cl. F23d *13/04*
U.S. Cl. 431—344 5 Claims



In a lighter of the gas fuel type, a resilient porous filter means provided in a fluid passageway connecting a reservoir with a burner nozzle is contracted or expanded by a member automatically actuated towards or against said filter means in response to changes of pressure inside said reservoir, thereby flow of fluid vaporized by the filter means and ejected into the burner nozzle is controlled constant independently of changes of pressure in the reservoir. The density of porosity of said filter means is not only adjustable by said automatically actuated member but also adjustable by a manual operation, if desired.

3,663,153
COMBUSTION DEVICE FOR GASEOUS FUEL
Leonard P.. Bagge, Berkshire, and Robert W. Kear, London, both of England, assignors to Shell Oil Company, New York, N.Y.
Filed Sept. 8, 1970, Ser. No. 70,163
Claims priority, application Great Britain, Sept. 5, 1969, 44,170/69
Int. Cl. F23d *15/00*
U.S. Cl. 431—351 9 Claims



A combustion device for gaseous fuel, such as LPG, of the type having a coaxial burner opening into combustion chamber having an open downstream end. An annular supply for primary air and fuel issues into the bottom of flame chamber which is surrounded by an annular supply for secondary air. Means, such as a baffle are provided for subdividing the combustion air from a single source into determined proportions of primary and secondary air and means are providing for decreasing the velocity of the secondary air stream with respect to the velocity of the primary air stream.

3,663,154
BLOW TORCH BURNER
Joseph K. Locke, DeKalb, Ill., assignor to Bernzomatic Corporation, Rochester, N.Y.
Original application July 29, 1968, Ser. No. 748,436, now Patent No. 3,574,506. Divided and this application June 24, 1970, Ser. No. 59,831
Int. Cl. F23d *15/02*
U.S. Cl. 431—353 6 Claims



A blow torch burner having a section formed as a jet pump which leads into a cylindrical sleeve provided with a flame holder. A gas conduit with a gas flow orifice leads into the inlet section of the jet pump, which is provided with peripheral air inlet ports, the orifice constituting the nozzle of the pump. The flame holder in connection with the construction producing a pencil-type flame has a central axial passage and a peripheral gas flow passage with a greater cross-sectional area at its exit than at its inlet in order to provide a mantle of slower moving gas. In connection with a utility-type flame, the flame holder has a central diverter with peripheral gas flow passages extending therearound.

3,663,155
STAINING PLASTIC SURFACES

Don N. Gray, Okemos, and Bruce M. Mueller, Ottawa Lake, both of Mich., assignors to Owens-Illinois, Inc.

Filed Sept. 30, 1968, Ser. No. 763,937
Int. Cl. D06p *5/04*
U.S. Cl. 8—4 9 Claims

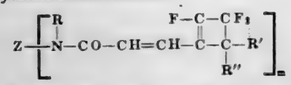
Plastic articles are provided with sub-surface markings which are scuff-proof and resistant to acid, alkali and solvent attack; a staining composition which includes a dye and a sublimable or pyrolyzable carrier is applied to the article and the article is heated whereby the dye penetrates and diffuses into the article and the carrier is volatilized.

3,663,156
FAST DYEING CELLULOSE FIBROUS MATERIALS WITH REACTIVE WATER-SOLUBLE TRIFLUOROCYCLOBUTENYL AZO DYES

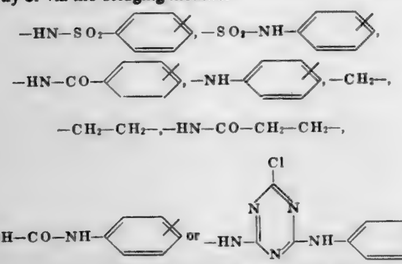
Fritz Meininger, Frankfurt/Main, and Helmold Von Plessen, Hofheim/Taunus, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Aug. 7, 1968, Ser. No. 750,779
Claims priority, application Germany, Aug. 12, 1967, P 16 19 543.0; F53217
Int. Cl. C09b *29/34*; D06p *3/60*
U.S. Cl. 8—54.2 10 Claims

A process for producing fast dyeings or prints on cellulose fibrous materials, which comprises treating the said fibrous materials in any sequence with an alkaline agent and a water-soluble dyestuff of the formula



in which Z represents the radical of a water-soluble organic dyestuff molecule being linked to the identified side grouping directly or via the bridging member



R represents hydrogen or lower alkyl, R′ and R″ represent hydrogen, lower alkyl or phenyl and m represents the integer 1 or 2.

3,663,157
DISPERSE OR MONOSULFONATED ACID DYE PRINTED NYLON RESISTED WITH HYDROXY DIARYL SULFONE-FORMALDEHYDE CONDENSATE

Heinz Gilgien, Riehen; Gerhard Koegel, Reinach, and Melvin Harris, Arlesheim, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Filed May 31, 1967, Ser. No. 642,304
Claims priority, application Switzerland, June 3, 1966, 8088/66
Int. Cl. D06p *5/12*
U.S. Cl. 8—65 10 Claims

A process for printing synthetic nitrogenous fibers with dyestuff that are soluble or dispersible in water is disclosed. The fibers to be printed are pretreated with an aqueous preparation consisting substantially of at least one fiber, substantive water-soluble, anionic resist for synthetic polyamide fibers selected from the group consisting of polycondensates of diarylsulfones containing at least one phenolic hydroxy group with formaldehyde. The fibers so pretreated are then dried and then printed with the printing paste containing the dyestuff.

3,663,158
METHOD OF DEPOSITING AN OXYMETHYLENE POLYMER FROM FORMALDEHYDE IN THE VAPOR FORM ON CELLULOSIC TEXTILES AND THE RESULTING PRODUCT

Walter Brenner, Teaneck, N.J.; Jagadish Chanda Goswami, New York, and Barry A. Rugg, Bronx, both of N.Y., assignors to The United States of America as represented by the Secretary of Agriculture

Filed May 12, 1970, Ser. No. 23,163
Int. Cl. D06m *13/14*, *13/54*, *13/42*
U.S. Cl. 8—116.4 4 Claims

Highly purified anhydrous monomeric formaldehyde vapor was prepared for immediate deposition on the surface of fibers of cotton. The process produced fabrics with enhanced physical properties with the deposition of oxymethylene polymer with molecular weights up to 18,000 and without significant crosslinking of the cellulosic chains. Supplementary treatments were applied to the oxymethylene polymer treated fabrics to further enhance the textiles with various desirable "wash-wear" characteristics.

3,663,159
PRESS-FREE GARMENT PRODUCTION

Alex F. Gordon, Black Mountain, N.C., assignor to United Merchants and Manufacturers, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 542,742, Apr. 15, 1966, now Patent No. 3,458,869. This application Apr. 2, 1969, Ser. No. 812,873
Int. Cl. D06m *15/56*, *15/58*, *15/54*
U.S. Cl. 8—116.3 18 Claims

Press-free garments are produced by treating a fabric with a mixture of (A) an aldehyde donor compound comprising an amine-aldehyde compound and (B) a synergistic catalyst comprising (1) an acid salt of a primary aliphatic amine and (2) a quaternary ammonium salt of the formula:

wherein R is an aliphatic hydrocarbon chain of 12 to 18 carbon atoms, Y is —CONH— or —O—, R^1, R^2 and R^3 are alkyl groups or with the nitrogen atom form a substituted or unsubstituted heterocyclic ring and X^- is a halogen atom or mineral acid radical; or an alkylaryl N-alkyl sulfonamide. The treated fabric is then partially dried, cut, sewn, pressed and/or creased to form the garment and then cured at an elevated temperature; or dried, cured and then cut and sewn into the garment.

3,663,160
TREATMENT OF TEXTILE MATERIALS

Eric William Stone, and Wilfred Arthur Stephen White, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 14, 1967, Ser. No. 690,387
Claims priority, application Great Britain, Dec. 29, 1966, 58,159/66
Int. Cl. B08b *3/08*
U.S. Cl. 8—137 8 Claims

Solvent laden textile materials are passed through a steam chamber and thereafter a hot water bath to remove the solvent therefrom. The combination of steam and hot water, in that sequence of steps, mitigates difficulties heretofore experienced in the art and improves the efficiency of processes for removing solvents from textiles.

3,663,161
PROCESS FOR CONTINUOUS DYEING POLYACRYLONITRILE TEXTILE MATERIAL FOR A HYDROPHOBIC SOLVENT DYEBATH

Alfred Litzler, Itingen; Visvanathan Ramanathan, Basel; Gert Hegar, Schoenenbuch; Eugen Johann Koller, Oberwil, and Branimir Milicevic, Riehen, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland

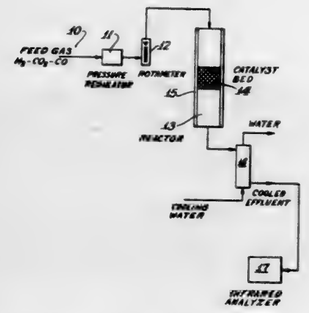
Filed June 30, 1969, Ser. No. 837,926
Claims priority, application Switzerland, July 1, 1968, 9807/68
Int. Cl. D06p *1/68*
U.S. Cl. 8—174 12 Claims

A process for dyeing textile material based on aromatic polyester fibers or acrylic fibers, wherein the textile material is impregnated with a solution containing at least one basic disperse dyestuff in an organic solvent and the dyestuff is fixed on the fiber by heat.

3,663,162
METHOD FOR SELECTIVE METHANATION OF GASEOUS MIXTURE CONTAINING CARBON MONOXIDE

Sarabjit Singh Randhava, Chicago, Ill., assignor to Institute of Gas Technology

Filed June 24, 1969, Ser. No. 836,047
Int. Cl. B01d *53/34*; C01b *1/30*
U.S. Cl. 23—2 S 6 Claims

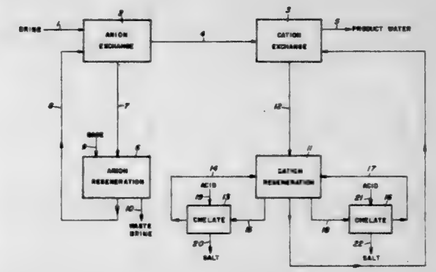


A method for the selective methanation of a gaseous mixture containing hydrogen, carbon dioxide, and carbon monoxide with the carbon monoxide being present in an amount up to about 1 percent, which contemplates the contacting of said gaseous mixture with a Raney-type nickel catalyst containing from about 30–35 percent nickel, 5–18 percent aluminum, and balance $Al_2O_3 \cdot 3H_2O$; at elevated temperatures.

3,663,163
REGENERATION OF CATION EXCHANGE RESINS AND RECOVERY OF SALTS

David O. De Pree, Loomis, and Herman H. Weyland, Folsom, both of Calif., assignors to The United States of America as represented by the Secretary of the Interior

Filed May 18, 1970, Ser. No. 38,244
Int. Cl. B01d *15/04*, *15/06*, *15/08*
U.S. Cl. 23—63 20 Claims



Cation exchange resins are regenerated by contact with selective chelating agents dissolved in an organic solvent. The chelating agents in turn are regenerated by acidification to precipitate a meal salt.

3,663,164
CRYSTALLINE ZEOLITE AND METHOD OF PREPARATION

Richard M. Barrer, Bromley, England; John F. Cole, Amsterdam, Netherlands, and Hans Sticher, Zug, Switzerland, assignors to Air products and Chemicals, Inc., Wayne, Pa.

Filed Oct. 8, 1969, Ser. No. 864,908
Claims priority, application Great Britain, Oct. 11, 1968, 48,309/68
Int. Cl. C01b *33/28*
U.S. Cl. 23—112 2 Claims

Crystalline zeolites are prepared by reacting raw kaolinite with aqueous alkali metal hydroxide solutions at temperatures between 80° to 140° C.

3,663,165
ZEOLITIC CATALYST AND PREPARATION

Walter L. Haden, Jr., Metuchen, and Frank J. Dzierzanowski, Somerset, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Woodbridge, N.J.

Continuation-in-part of application Ser. No. 738,384, June 20, 1968, now Patent No. 3,506,594, and 810,325, Mar. 25, 1969, and 856,458, Sept. 9, 1969; said 738,384, , which is a continuation-in-part of application Ser. No. 698,400, Jan. 17, 1968, now Patent No. 3,503,900, and 416,925, Dec. 8, 1964, now Patent No. 3,391,994. This application Feb. 9, 1970, Ser. No. 10,005. The portion of the term of the patent subsequent to Apr. 14, 1987, has been disclaimed.
Int. Cl. C01b *33/23*; B01j *11/40*
U.S. Cl. 23—112 7 Claims

Preformed coherent microspheres obtained by calcining a spray dried slurry of hydrated kaolin clay at elevated temperature (e.g., 1800° F.) are suspended in an aqueous sodium hydroxide solution together with a small amount of finely divided metakaolin (e.g., kaolin clay calcined at 1350° F.). The suspension is aged and then heated until crystalline sodium faujasite appears in the microspheres and a sodium silicate mother liquor is formed. The crystallized microspheres are ion-exchanged to produce a fluid zeolitic cracking catalyst.

3,663,166
PLATINUM CATALYST FOR THE PRODUCTION OF HYDROXYLAMINE

Johannes Weise, Krefeld-Bockum; Hans Zirngibl, Duisburg, and Heinz Heine, Krefeld-Uerdingen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Original application May 8, 1968, Ser. No. 727,664, now abandoned. Divided and this application July 30, 1970, Ser. No. 59,718
Claims priority, application Germany, May, 13, 1967, F 52 408
Int. Cl. C01g *1/00*; C01c *1/00*; B01j *11/00*
U.S. Cl. 23—117 5 Claims

Improved platinum catalyst with high life period, activity and selectivity for the production of hydroxylammonium salts by the reduction of nitric oxide with hydrogen, the catalyst being obtained by hydrolyzing the water soluble platinum compound at a pH of 4.5 to 9.0 and at a temperature of 20° to 100° C. in the presence of a carrier which is insoluble in strong acids, thereby precipitating platinum oxide hydrate onto said carrier in finely divided form and thereafter reducing the platinum oxide hydrate to metallic platinum.

3,663,167
MANUFACTURE OF HIGH PURITY NITRIC OXIDE

Frank E. De Vry, Greenville, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of application Ser. No. 731,959, May 24, 1968, now abandoned. This application Sept. 21, 1970, Ser. No. 74,076
Int. Cl. C01b *21/26*
U.S. Cl. 23—157 9 Claims

Process, integrated with ammonia air oxidation, for the manufacture of nitric oxide of at least 99 percent purity comprising the steps of (1) effecting the ammonia oxidation, (2) maintaining maximum NO content in the oxidation effluent, and then contacting the effluent with nitric acid to convert the NO to NO_2, (3) cooling the NO_2 containing gas product to condense the NO_2 therefrom as liquid N_2O_4, (4) passing the liquid N_2O_4 into a packed converter tower and therein at least partially vaporizing the liquid; passing resulting vaporization product upwardly through the tower packing and passing water or weak nitric acid into the tower and downwardly through the packing in countercurrent flow reaction contact with the vaporization product, and then into the zone of said vaporization and reaction contact with any unvaporized liquid, and vaporization product — to convert substantially all of the initially added liquid dinitrogen tetroxide to nitric oxide gas product containing minor contaminant amounts of NO_2, HNO_3 and water, (5) water-scrubbing the NO_2 and HNO_3 contaminants from the NO gas product to form resulting water-wet NO gas product containing, on an anhydrous basis, at least 99 percent NO, and (6) dehydrating the water-wet NO gas product to form said NO of at least 99 weight percent purity. Strong nitric acid is formed in the converter tower as by-product.

3,663,168
METHOD OF PRODUCING CONCENTRATED PHOSPHORIC ACID

Allen G. Rubin, Walnut Creek, and Nicholas Kalmar, Berkeley, both of Calif., assignors to B. D. Bohna & Company, Inc., San Francisco, Calif.

Filed July 3, 1969, Ser. No. 838,964
Int. Cl. C01b *15/18, 25/28, 25/22, 25/30*
U.S. Cl. 23—165 7 Claims

Monocalcium phosphate, advantageously in the form of single superphosphate or triple superphosphate, is mixed with sulfuric acid or ammonium bisulfate and methanol. The monocalcium phosphate and the sulfuric acid or ammonium bisulfate react to form phosphoric acid and a precipitate which contains calcium sulfate. The phosphoric acid is substantially entirely dissolved in the methanol. Next the methanol containing the dissolved phosphoric acid is separated from the solid precipitate by decantation, filtration or centrifugation. By evaporation of the methanol a phosphoric acid concentrate is obtained, or by the addition of a base to the methanolic acid solution, the corresponding phosphate salts are formed and precipitated in an easily separatable and dryable form.

3,663,169
METAL SEPARATION

James Barrie Scuffham, Teesside, and George Allan Rowden, Stockton-on-Tees, both of England, assignors to Power-Gas Limited, London, England

Filed May 5, 1970, Ser. No. 34,854
Claims priority, application Great Britain, May 8, 1969, 23419/69
Int. Cl. C01g *49/02*
U.S. Cl. 23—200 9 Claims

In the present process a first metal value of a metal of which the hydroxide is insoluble is separated from a salt of the first metal and a salt of the second metal which forms a soluble ammine. The mixture is passed through an inert liquid barrier into ammonium hydroxide where the first metal is precipitated as its hydroxide and the second remains in solution as an ammine. Preferably the mixture is dripped through the liquid barrier into ammonium hydroxide below it.

3,663,170
MANUFACTURE OF CARBON FILAMENTS

John J. Tatchell, Maidenstone, Kent, England, assignor to Morganite Research & Development Limited, London, England

Filed Jan. 31, 1969, Ser. No. 795,719
Claims priority, application Great Britain, Feb. 21, 1968, 5,354/68
Int. Cl. C01b *31/07*
U.S. Cl. 23—209.4 3 Claims

A process is disclosed for the production of carbon filaments having a very high modulus of elasticity which have utility as structural materials.

The process comprises the carbonization and pyrolysis of a filamentary material capable of carbonization with maintenance of its filamentary structure to temperatures above 900° C in which the filamentary material is a multifilament tow and this is heated up to a temperature of at least about 900° C under conditions of imposed linearity to reduce incidence of kinks in the carbon filaments. The linearity is preferably imposed by imparting a twist to the tow. A preferred raw material is a multifilament tow of a polyacrylonitrile polymer or copolymer containing at least 85% of acrylonitrile. The carbon filaments produced by the process of the invention have a reduced incidence of kinks.

3,663,171
METHOD OF MANUFACTURING UNITARY POROUS CARBON BODIES

Anthony F. Granger, Great Bookham, England, assignor to Coal Industry (Patents) Limited, London, England

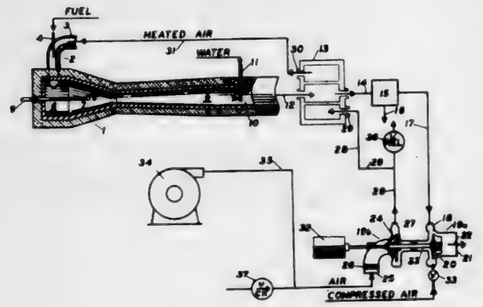
Filed July 24, 1970, Ser. No. 58,151
Claims priority, application Great Britain, Aug. 12, 1969, 40,276/69
Int. Cl. C01b *31/08*; B29c *25/00*
U.S. Cl. 23—209.1 7 Claims

A method for the manufacture of the porous carbon body comprises sintering a particulate pitch-like material, for example an extract or solution of coal, at a temperature below that at which the material melts to produce a green compact, oxidizing the green compact to stabilize the green compact to heat treatment, and carbonizing the stabilized green compact.

3,663,172
CARBON BLACK PRODUCTION PROCESS

Richard Wigmore Foster-Pegg, Warren, Pa., assignor to Cities Service Company, New York, N.Y.

Filed June 29, 1970, Ser. No. 50,533
Int. Cl. C09c *1/48*; C10b *47/00*
U.S. Cl. 23—209.4 13 Claims



A hot aerosol of carbon black is discharged from a furnace into a turbocharger, thus driving the latter. The compressor stage of the turbocharger supplies air to the furnace. The economics of the process are improved because the production rate of carbon black is greatly increased while the energy requirement for supplying air to the furnace is obtained from heat rejected from the process in place of purchased electric power.

3,663,173
PROCESS FOR PRODUCING CARBONIZED FIBROUS PRODUCTS

Stanley E. Ross, Passaic, N.J., assignor to J. P. Stevens & Co., Inc., New York, N.Y.

Filed May 31, 1968, Ser. No. 733,516
Int. Cl. C01b *31/07*
U.S. Cl. 23—209.4 4 Claims

Carbonized textile products having both improved tensile strength and modulus of elasticity properties are produced by heating a cellulosic textile substrate until a first carbonized textile product of at least 50 percent by weight carbon is produced and exposing the carbonized textile product to further heating while applying tension to the product until a second carbonized product having a carbon content of between 60–100 percent by weight carbon is produced.

3,663,174
PROCESS FOR THE MANUFACTURE OF PASSIVATED RED PHOSPHORUS

Franz-Josef Dany, Erftstadt Lechenich; Klaus Komorniczyk, Turnich; Hilmar Roszinski, Kendenich, and Gerhard Kalteyer, Erftstadt Erp, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed Dec. 22, 1970, Ser. No. 100,846
Claims priority, application Germany, Jan. 2, 1970, P 20 00 033.3
Int. Cl. C01b *25/04*
U.S. Cl. 23—223 10 Claims

Production of passivated red phosphorus. Between about 10 and 85 weight percent powdered red phosphorus having a particle size of up to 100 microns is treated with between about 90 and 15 weight percent of molten ε-caprolactam, under inert gas; the resulting homogeneous and phosphorus-containing blend is cooled in a suitable cooler until solid; and solidified material in the form of lumps or scale is removed from the cooler.

3,663,175
METHOD OF DETERMINING HEMOGLOBIN IN BLOOD

Edward L. Depositar, Indianapolis; Robert K. Shipley, Muncie, and David T. Santore, Indianapolis, all of Ind., assignors to Bio-Dynamics, Inc., Indianapolis, Ind.

Filed Oct. 5, 1970, Ser. No. 78,159
Int. Cl. G01a *33/16, 31/22, 21/24*
U.S. Cl. 23—230 B 5 Claims

A method of determining hemoglobin in blood using Drabkin's reagent wherein acetone is added to the reagent as a loss of color inhibitor and to aid in attaining immediate recovery of the peak absorbance of cyanmeth-hemoglobin.

3,663,176
COLORIMETRIC OXYGEN DETECTORS

Glen E. Cagle, and Donald R. Witt, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed July 24, 1969, Ser. No. 844,637
Int. Cl. G01n *21/16*
U.S. Cl. 23—232 R 8 Claims

An oxygen detector which undergoes a color change to indicate the presence of oxygen and certain oxygen-containing compounds in a gas stream in which the oxygen or the oxygen-containing compound can be present in a concentration of less than 1 parts per million which comprises a supported oxide of a metal of group VB or VIB of the periodic table, the metal being in a lower valence state.

3,663,177
RADIOACTIVE BARIUM-137

Hirofumi Arino, Suffern, and Vincent D. Reardon, Harverstraw, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

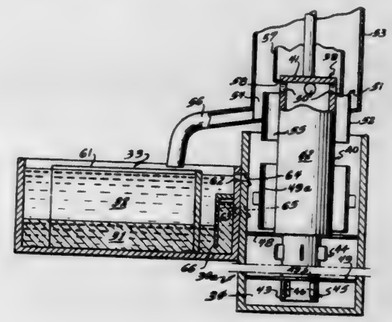
Filed Aug. 28, 1968, Ser. No. 755,820
Int. Cl. B01d *59/30*; A61k *27/04*; C09k *3/00*
U.S. Cl. 23—252 R 7 Claims

Radioactive barium-137m is obtained by eluting a generator comprised of the parent isotope, cesium-137, on a cobalt (II) ferrocyanide substrate.

3,663,178
MIXER-SETTLER APPARATUS

William E. Miller, Naperville; James B. Knighton, Joliet, and George J. Bernstein, Park Forest, all of Ill., assignors to The United States of America as represented by the United States Atomic Energy Commission

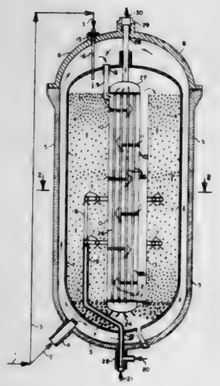
Filed June 3, 1969, Ser. No. 829,945
Int. Cl. B01f *7/00*
U.S. Cl. 23—267 R 4 Claims



Apparatus for simultaneously mixing and separating multiple phase fluids in which one phase is retained as a batch phase and the other phases are continuously flowing. A pump-mixer continuously mixes the fluids and pumps them

into a settling chamber where they settle out and means are provided in the settling chamber for returning one phase to the mixer from which it came and transferring the other phases to another pump-mixer. Apparatus is provided for retaining as a batch or captive phase either heavy or light phases.

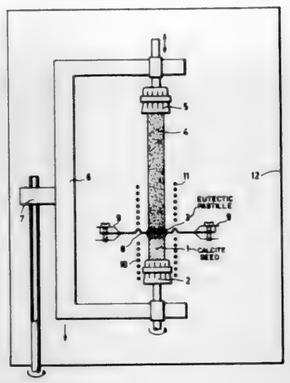
3,663,179
APPARATUS FOR EXOTHERMIC CATALYTIC REACTIONS
Dinshaw D. Mehta, New York, and Edward J. Miller, Woodhaven, both of N.Y., assignors to Chemical Construction Corporation, New York, N.Y.
Filed Apr. 20, 1970, Ser. No. 30,101
Int. Cl. B01j 9/04
U.S. Cl. 23—289 4 Claims



An apparatus is provided for catalytic ammonia or methanol synthesis, or for other exothermic catalytic reactions, in which the catalyst bed is mounted in a basket which is spaced from the wall of the high pressure container. Cold feed gas or other reaction fluid is circulated upwards between the container shell and the basket, to cool the container, then through an internal heat exchanger for further heating to catalysis temperature, and then downwards through the catalyst bed. One or a plurality of horizontal foraminous pipes are provided in the catalyst bed, and a second gas or fluid of lower temperature is passed through the pipes to provide direct quench of the hot reacting process fluid within the catalyst bed. The final hot reacted fluid is passed through the heat exchange for cooling and then removed from the container.

3,663,180
METHOD OF PRODUCING CALCIUM CARBONATE SINGLE CRYSTALS
Jean Jacques Lucien Emile Brissot, Maisons Alfort, France, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 22, 1970, Ser. No. 82,870
Claims priority, application France, Nov. 21, 1969, 6940146
Int. Cl. B01j 17/10, 17/14
U.S. Cl. 23—301 SP 5 Claims

A method of producing calcite single crystals by floating-zone melting of a polycrystalline rod of calcium carbonate and an eutectic mixture, for example, of calcium carbonate and lithium carbonate which is introduced in the form of a pastille in contact with a seed crystal and which is displaced



in the molten state in the direction of length of the rod subject to the action of a moving temperature gradient.

3,663,181
ORTHORHOMBIC PLATINUM-METAL OXIDES OF TYPE PT_3MO_6
Robert D. Shannon, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed June 22, 1970, Ser. No. 48,500
Int. Cl. C01g 55/00
U.S. Cl. 23—315 16 Claims

Disclosed herein are orthorhombic platinum-metal oxides of the type Pt_3MO_6, wherein: M = Mn, Fe, Co, Ni, Cu, Zn, Mg, or Cd; and process for making these oxides which are catalysts for the hydrogenation of ethylene.

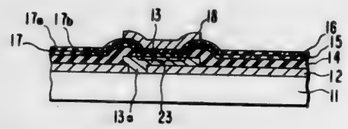
3,663,182
METAL OXIDE FABRICS
Bernard H. Hamling, Warwick, N.Y., assignor to Union Carbide Corporation
Continuation-in-part of application Ser. No. 576,840, Sept. 2, 1966, now Patent No. 3,385,915, which is a continuation-in-part of application Ser No. 320,843, Nov. 1, 1963, now abandoned, and a continuation-in-part of 700,031, Jan. 24, 1968. This application Mar. 29, 1968, Ser. No. 717,367
Int. Cl. C01g 1/00; C10f 1/00
U.S. Cl. 23—355 10 Claims

The specification discloses fabrics that are composed of metal oxides such as zirconia, tantala, and other metal oxides which have not heretofore been available in the form of fabrics. The metal oxide fabrics of this invention are characterized by being relatively flexible and strong, as well as exhibiting the desirable high temperature and chemical resistance properties that are typical of materials such as zirconia and tantala. The metal oxide fabrics of the invention are useful as battery separators, fuel cell separators, in high temperature insulation, and the like.

3,663,183
FLUORINE COMPOUND
James W. Dale, Winchester, Mass., assignor to Monsanto Research Corporation, St. Louis, Mo.
Filed Mar. 30, 1964, Ser. No. 356,356
Int. Cl. C01b 7/00
U.S. Cl. 23—367 1 Claim

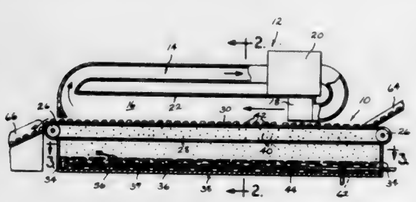
As a new compound, difluorochlorinium hexafluorobismuthate, of the formula ClF_2BiF_6.

3,663,184
SOLDER BUMP METALLIZATION SYSTEM USING A TITANIUM-NICKEL BARRIER LAYER
John Richard Wood, Sunnyvale, and John D. Wright, Mountain View, both of Calif., assignors to Fairchild Camera and Instrument Corp., Mountain View, Calif.
Filed Jan. 23, 1970, Ser. No. 5,445
Int. Cl. B32b 15/00
U.S. Cl. 29—195 4 Claims



Solder bumps, for use in connecting electrically-conductive contacts on a semiconductor die to electrical leads on an underlying substrate, each include a barrier layer of metal adhering to a die contact, a wettable layer of metal placed over the barrier layer of metal, and solder adhering to the wettable layer of metal. In addition, an intermetallic layer is formed between the barrier metal and the wettable metal to increase the strength and diffusion resistance of each bump.

3,663,185
METHOD AND APPARATUS FOR DESENSITIZING CHARCOAL BRIQUETTE FINES
Frederick C. Mennen, Michigan City, Ind., assignor to United States Packaging Corporation, LaPorte, Ind.
Filed Apr. 2, 1970, Ser. No. 25,156
Int. Cl. C10l 5/24
U.S. Cl. 44—2 9 Claims

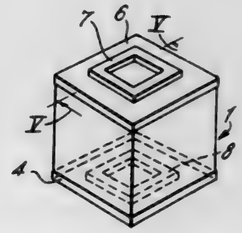


The method and apparatus for desensitizing charcoal briquette fines produced during drying of the briquettes which includes supporting the briquettes during the drying cycle upon means having openings therein through which said fines may fall. Providing a receptacle filled with a material which, upon contact with the fines, causes the desensitizing thereof. Positioning the receptacle under the briquette support means so as to catch the fines as they are dislodged from the briquettes and fall through the openings in the support means.

3,663,186
METHOD OF PRODUCING METALLURGICAL COKE
Platon Nesterovich Dzhaparidze, ulitsa Uplistsikhskaya, 2; Leonid Alexeevich Drakin, ulitsa Kominterna, 39, korpus 26, kv. 45, both of Tbilisi, and Sergei Ivanovich Malyshev, Panfilovsky pereulok, 3, kv. 37, Moscow, all of U.S.S.R.
Filed Jan. 27, 1970, Ser. No. 6,251
Int. Cl. C10l 5/00
U.S. Cl. 44—10 H 5 Claims

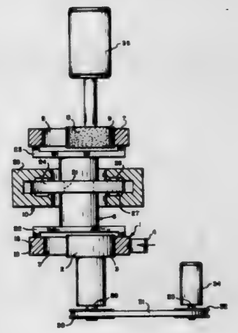
A method of manufacturing metallurgical coke, consisting in that poor-caking coal is ground, then molded at a temperature of 20°–350° C., whereupon the coal briquettes are caked at 450°–600° C. under the pressure of vapor and gaseous products of the coal thermal decomposition, and are then calcined at 750°–950° C.

3,663,187
ORCHARD HEATERS
Edward Barnes, Speldhurst, and Kenneth H. Nance, Bromley, both of England, assignors to BP Chemicals Limited, London, England
Filed July 8, 1970, Ser. No. 53,103
Claims priority, application Great Britain, July 8, 1969, 34,637/69; Sept. 28, 1969, 52,713/69
Int. Cl. A01g 13/06
U.S. Cl. 44—40 10 Claims



An orchard heater has sides of flame retardant material and base and cover of combustible material. The heater is filled with solid combustible composition eg. wax and the base and cover are so shaped that the heaters may be stacked vertically.

3,663,188
CAM CONTROL GRINDING MACHINE
Nils O. Hoglund, Short Hills, N.J., assignor to Tri-Ordinate Corporation, Berkeley Heights, N.J.
Continuation-in-part of application Ser. No. 147,145, May 26, 1971, now abandoned. This application July 20, 1971, Ser. No. 164,406
Int. Cl. B24b 17/02
U.S. Cl. 51—101 R 20 Claims



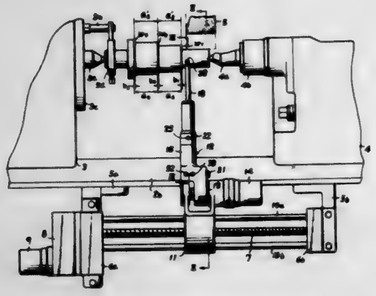
A grinding apparatus having a cam member with a surface corresponding to the surface of the workpiece to be ground, a grinding wheel for grinding the surface of the workpiece, a support for fixing the workpiece for movement with the cam member and drive elements for moving the workpiece

against the grinding wheel and along a path corresponding to the surface of the cam.

3,663,189
AUTOMATIC END SURFACE POSITIONING APPARATUS FOR USE WITH DIGITALLY CONTROLLED MACHINE TOOLS

Tsuyoshi Kolde, Kariya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Mar. 19, 1970, Ser. No. 20,970
Claims priority, application Japan, Mar. 25, 1969, 44/22981
Int. Cl. B24b *49/00*
U.S. Cl. 51—165.8 6 Claims

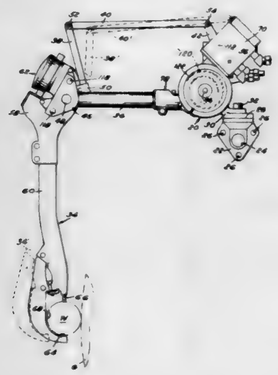


For use with a digitally controlled machine tool wherein a workpiece having a plurality of spaced apart end surfaces to be machined is rotatably supported between a head stock and a tail stock mounted on a table and a tool carriage having a tool thereon is moved toward and away from the workpiece there is provided an automatic end surface positioning apparatus comprising an automatic end surface measuring device mounted upon the bed of the machine tool to be slidable in the same direction as the table, a threaded rod and a pulse motor to slide the automatic end surface measuring device and a control circuit for simultaneously or selectively operating the driving pulse motor for the table and the driving pulse motor for the automatic end surface measuring device in response to the output signal produced thereby.

3,663,190
GAUGE SUPPORT

James C. Fisk, G-3219 East Bristol Rd., Flint, Mich.

Filed Apr. 22, 1970, Ser. No. 30,813
Int. Cl. B24b *49/04*
U.S. Cl. 51—165.74 13 Claims

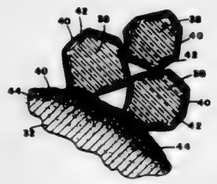


A gauge support or mounting for a gauge which automatically puts the gauge on and removes the gauge from successive workpieces in synchronous relation with the operations of a machine tool on the workpieces. The gauge is held continuously on the workpiece during the grinding or other operation to continuously indicate the progress of such operation. At the conclusion of the machine operation on the workpiece, the machine tool is retracted from the workpiece and the gauge is simultaneously withdrawn from engagement with the workpiece. When a new workpiece is inserted in position on the machine, the tool is shifted into working contact with the workpiece, and the gauge is simultaneously moved into gauging engagement with the workpiece. The movement of the gauge on the support or mounting toward and away from the workpiece is accomplished automatically and in response to the corresponding movements of the machine tool.

3,663,191
DIAMOND TOOL AND METHOD OF MAKING THE SAME

Ernest A. Kroder, Hellam, Pa., assignor to Deutsply International Inc., York, Pa.

Continuation-in-part of application Ser. No. 696,633, Jan. 9, 1968, now abandoned. This application July 23, 1970, Ser. No. 57,802
Int. Cl. C09c *1/68*; B24d *3/02*
U.S. Cl. 51—309 14 Claims



A grinding and cutting tool comprised of diamond particles bonded to a support base member by the process of vapor deposition to form a metal lattice matrix chemically bonded to a surface of the diamond particles and metallurgically bonded to the support base member and the diamonds bonded to each other by inosculation, the reactions greatly enhancing the strength of the bonds.

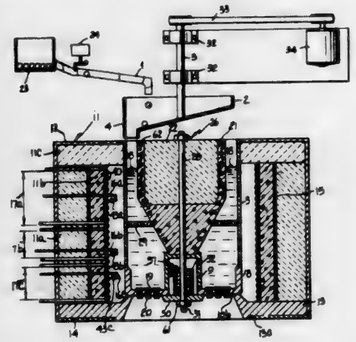
A novel method of vapor deposition, controlled by electrical charges and by said means to impart kinetic energy to the ions of the vapor of sufficient velocity to cause penetration of said ions into the molecular structure of the support base causing a metallurgical reaction and into the molecular structure of the diamond surfaces causing a chemical reaction. In addition, by inducing a secondary electrical field, divergence of said ions can be controlled to cause said ions to be deposited in a predetermined pattern.

3,663,192
GLASS MELTING POT

Walter Merton Perry, Darien, Conn., assignor to Johns-Manville Corporation, New York, N.Y.

Filed Nov. 28, 1969, Ser. No. 880,713
Int. Cl. C03b *37/02*
U.S. Cl. 65—11 R 12 Claims

A circular bushing or glass melting pot assembly of the type which has a multiplicity of apertures in the bottom of the pot to permit the drawing of a multiplicity of continuous glass filaments therefrom. The main body of the pot is made of a high melting point base metal such as nickel, a nickel base alloy, a nickel-chromium base alloy, a cobalt-nickel base alloy, stainless steel or the like, and the pot is preferably heated by one or more spiral electric heating coils disposed around the outside surface of the sidewalls and spaced therefrom. A secondary heating coil may be mounted in the lower central portion of the pot, with a conical metal shell disposed over the secondary heating coil both to enclose the coil and to prevent the accumulation of a stagnant section of somewhat cooler glass in the lower central portion of the pot.

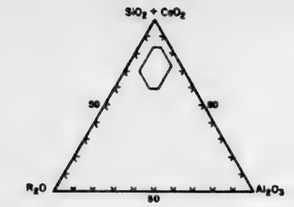


A cylindrical body is preferably positioned in the center of the pot, starting at the top, to confine the melting zone to an outer annular space, and uniform feeding of marbles to this space is provided. For higher production rates, the upper melting zone of the pot is larger in diameter to increase the rate of melting.

3,663,193
STRENGTHENED PHOTOSENSITIVE OPAL GLASS

Lois E. Wilson, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed June 30, 1969, Ser. No. 837,943
Int. Cl. C03c *15/00*; C03b *29/00*
U.S. Cl. 65—30 4 Claims



This invention relates to a method for making a composite opal glass article exhibiting very high mechanical strength and being composed of an interior portion and an integral surface layer containing crystals having a lower coefficient of thermal expansion than the glass such that the surface layer is under compression, the glass falling within the Li_2O–Al_2O_3–SiO_2–CeO_2 composition area and including at least one photosensitive metal selected from the group consisting of copper, silver, and gold.

3,663,194
METHOD FOR MAKING MONOLITHIC OPTO-ELECTRONIC STRUCTURE

Bernard Greenstein, Toledo, Ohio; Perry R. Langston, Jr., Poughkeepsie, N.Y.; Berat Narken, Poughkeepsie, N.Y., and Brian Sumners, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 25, 1970, Ser. No. 40,069
Int. Cl. C03c *29/00*, *27/00*
U.S. Cl. 65—43 6 Claims

Multilayer opto-electronic module structures and their method of fabrication. Alternate layers of light conducting material and light isolating material are formed on a substrate and on each other. Isolating bars are formed in a predetermined pattern within the layers of light conducting

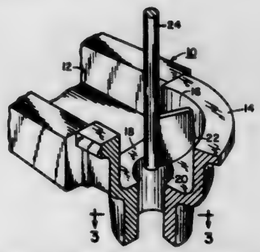


material to define optical channels or chambers. Suitable illuminating and detecting means may be included within the channels using the isolating materials as electrical conductors so as to perform logic, memory and display functions.

3,663,195
APPARATUS FOR AND METHOD OF ORIENTING CORDS IN A MOLTEN GLASS DOWNDRAW BOWL

George D. Lipp, Corning; Villem Rahe, Painted Post, and Lawrence B. Roberts, Big Flats, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 18, 1970, Ser. No. 37,988
Int. Cl. C03b *5/26*
U.S. Cl. 65—132 6 Claims

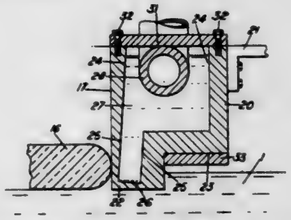


A directional vane is mounted in a predetermined position within the well or bowl of a molten glass delivery unit to intercept and collect surface cord at such predetermined location within the bowl, and deliver the surface cord in a desired orientation within the molten glass discharged from the delivery orifice. As the molten glass enters the bowl area of the delivery unit, the surface portion thereof which has a tendency to form a surface volatility cord in the delivered glass, flows into contact with opposite sides of the oriented vane and flows downwardly therealong exiting from the discharge orifice at the same angular position as the predetermined setting of the vane.

3,663,196
APPARATUS FOR MANUFACTURE OF FLOAT GLASS

George Alfred Dickinson, and Frank Nixon, both of St. Helens, England, assignors to Pilkington Brothers Limited, Liverpool, England

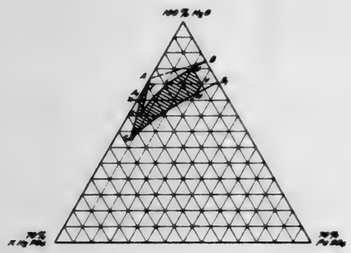
Filed July 28, 1969, Ser. No. 845,214
Claims priority, application Great Britain, Aug. 12, 1968, 38,393/68
Int. Cl. C03b *18/00*
U.S. Cl. 65—182 R 5 Claims



For the manufacture of thick glass by the float process, fenders are provided for defining a channel down the molten

metal bath and each fender comprises a hollow channel member having a flat face which is not wetted by molten glass and which face extends downwardly as a foot for immersion in the bath, there being a groove in the foot near the flat face to facilitate heat extraction from that face when cooling fluid is circulated through the fender.

3,663,197
INCREASED COMPONENT CONCENTRATION OF IRON NUTRIENT SOLUTION
Peter Stanley Backlund, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
Filed Nov. 12, 1969, Ser. No. 875,739
Int. Cl. C05b 7/00
U.S. Cl. 71—34 6 Claims



A solution suitable for application to plants and soil to correct iron deficiencies is described which comprises an aqueous solution of ferrous sulfate and mono-potassium or mono-ammonium hydrogen orthophosphate having an acidic pH value from about 1.5 to about 4, and wherein the components of the solution manifest a mutually increased solubility.

3,663,198
INCREASED COMPONENT CONCENTRATION OF ZINC NUTRIENT SOLUTION
Peter Stanley Backlund, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
Filed Nov. 12, 1969, Ser. No. 875,740
Int. Cl. C05b 7/00
U.S. Cl. 71—34 6 Claims



A solution suitable for application to plants and soil to correct zinc deficiencies is described which comprises an aqueous solution of zinc sulfate and mono-potassium or mono-ammonium hydrogen orthophosphate having an acidic pH value from about 1.5 to about 4, and wherein the components of the solution manifest a mutually increased solubility.

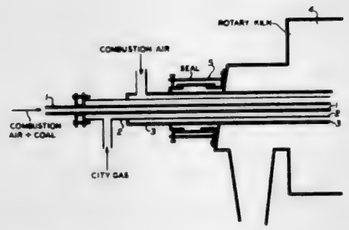
3,663,199
METHOD EMPLOYING A CHEMICAL AID TO IMPROVE THE HARVESTING OF CITRUS
William C. Cooper, Winter Park, Fla., assignor to The United States of America as represented by the Secretary of Agriculture
Filed Oct. 9, 1969, Ser. No. 865,199
Int. Cl. A01n 9/22
U.S. Cl. 71—94 1 Claim

An improved method for harvesting citrus which improved method involves the use of a water-based chemical spray. The improved method is based on the ability of certain chemicals in "plant hormone" quantities (i.e., about from 25 to 100 ppm) to accelerate development of an abscission layer so that the fruit ultimately to be harvested separates cleanly from the tree. Chemical control of the abscission layer development greatly facilitates mechanical harvesting operations.

3,663,200
GRASS SELECTIVE HERBICIDE COMPOSITION
John F. Olin, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.
Continuation-in-part of application Ser. No. 793,567, Jan. 23, 1969, now Patent No. 3,547,620, dated Dec. 15, 1970. This application Sept. 26, 1969, Ser. No. 861,444
Int. Cl. A01n 9/20
U.S. Cl. 71—118 5 Claims

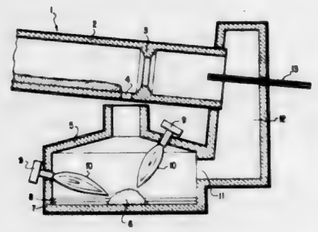
Control of grasses, especially barnyard grass in the presence of rice utilizing a selective herbicidal effective amount of N-butoxymethyl-2',6'-diethyl-2-chloroacetanilide and/or N-butoxyethyl-2',6'-diethyl-2-chloroacetanilide.

3,663,201
PROCESS FOR PRODUCTION OF SPONGE IRON
Gunter Heitmann, Frankfurt am Main-Niederrad, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt, Main, Germany and The Steel Company of Canada Limited, Hamilton, Ontario, Canada
Continuation of application Ser. No. 525,452, Feb. 7, 1966, now abandoned. This application Nov. 17, 1969, Ser. No. 871,681
Claims priority, application Germany, Feb. 5, 1965, M 64055
Int. Cl. C21b 13/08
U.S. Cl. 75—33 2 Claims



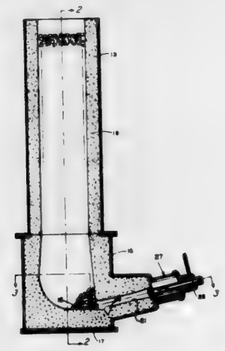
Process for production of sponge iron by direct reduction of iron ore wherein iron ore admixed with a carbonaceous reducing agent is passed through a rotary kiln countercurrent to a gas stream, and wherein granular coking high volatile coal is injected co-current to said gas stream as a solid reducing agent by means of oxygen containing gases through an inlet pipe, and said solid reducing agent becomes admixed with the iron ore, and travels countercurrent to said gas stream through the kiln. The process includes the characterizing step of passing gas over the outside of said inlet pipe cocurrent with said injected granular coal and into the kiln. This effects cooling of the inlet pipe, and reduces the tendency of the coal to form a cake on the inlet pipe.

3,663,202
PROCESS FOR MANUFACTURE OF PIG IRON OR STEEL
Hermann Ruter, deceased, late of Ludwigshafen, Rhine, Germany (by Elisbeth Ruter and Edla Ruter, heirs); Egon Cherdon, Limburgerhof/Palatenate; Manfred Haerter, Ludwigshafen/Rhine, and Gerhard Bayer, Ludwigshafen-Rheingonheim, all of Germany, assignors to Gebr, Giulini G.m.b.H., Ludwigshafen/Rhine, Germany
Continuation-in-part of application Ser. No. 599,409, Dec. 6, 1966, now abandoned. This application Nov. 25, 1969, Ser. No. 879,830
Int. Cl. C21b 13/14, 13/10
U.S. Cl. 75—38 10 Claims



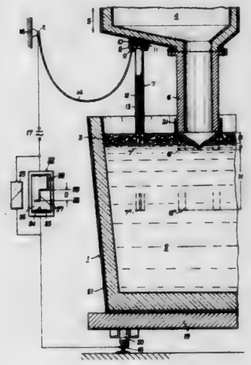
A two-stage method for the reduction of iron-oxide-containing raw materials wherein the iron oxide is reduced by means of solid carbonaceous material in a first stage carried out in a rotary kiln. The raw materials issue from the kiln in the form of a partially reduced sinter containing at least 5 percent free carbon. Reduction is completed in a second state carried out in a direct-fired smelting furnace, where a part of the free carbon in the sinter is burned by hot, oxygen-containing exhaust gases of the direct-fired smelting furnace to effect a temperature rise to smelt the sinter from the first stage.

3,663,203
MELTING OF FUSIBLE MATERIALS
James A. Davis, Worthington; Sherwood G. Talbert; Herbert R. Hazard, both of Columbus, and William A. Gibeaut, Worthington, all of Ohio, assignors to Columbia Gas System Service Corporation, New York, N.Y.
Filed Apr. 1, 1969, Ser. No. 812,062
Int. Cl. C21c 5/00
U.S. Cl. 75—43 12 Claims



The melting of fusible materials wherein the materials are fed into the top of a shaft-type furnace and melted by a jet of gaseous combustion products introduced at the bottom of the furnace. The charge feeds countercurrent to the flow of the combustion products and the melted fusible materials are continuously removed before a pool of molten material forms within the furnace shaft.

3,663,204
METHOD OF MEASURING THE THICKNESS OF A SLAG LAYER ON METAL BATHS
Adalbert Jungwirth, Linz, Austria, assignor to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria
Filed Apr. 6, 1970, Ser. No. 25,992
Claims priority, application Austria, Apr. 15, 1969, A 3609/69
Int. Cl. C21c 7/10; G01f 23/26; G01r 27/26
U.S. Cl. 75—49 1 Claim



The invention relates to a method for measuring the thickness of a slag layer on metal baths in which a probe connected to an electrical circuit and whose front surface is electrically conductive is lowered with constant speed through the slag layer into the metal bath, the electrical conductivities of the slag and the bath, or their electrical resistances respectively, being recorded in dependence on the speed with which the probe is lowered. Thus, when e.g. melts are to be degassed by vacuum treatment by means of a degassing vessel immersing with a tube into the slag-covered bath and which is periodically lifted and lowered, it is no longer necessary to maintain a great safety distance between the upper dead point and the metal surface. It is advantageous to provide for the upper dead point close to the metal surface because thus the lift height is increased which in turn affords a more rapid throughput of the metal.

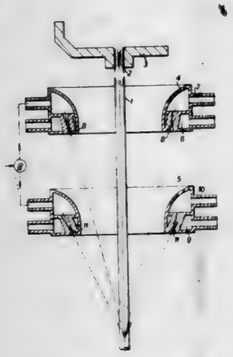
3,663,205
METHOD OF REFINING FERROUS METALS
David Arthur Whetton, Worksop, England, assignor to The British Iron and Steel Research Association
Original application Sept. 20, 1967, Ser. No. 669,022, now Patent No. 3,558,120. Divided and this application Sept. 8, 1970, Ser. No. 70,078
Claims priority, application Great Britain, Sept. 23, 1966, 42,550/66
Int. Cl. C21c 5/00, 7/00
U.S. Cl. 75—60 7 Claims

Method for refining molten metal includes the steps of adjusting the distance between a stream of molten metal and the nozzles which direct a stream of oxidizing gas against said stream to shatter it.

3,663,206
TREATMENT OF MOLTEN MATERIAL

Hope Lubanska, London, England, assignor to The British Iron and Steel Association

Filed Nov. 24, 1969, Ser. No. 879,405
Claims priority, application Great Britain, Nov. 27, 1968, 56,250/68
Int. Cl. C21c 5/00, 7/00; B22d 23/08
U.S. Cl. 75—60 28 Claims



A method of shattering a freely falling liquid stream by means of downwardly directed jets which strike the stream at a common impact zone. The jets issue from two or more nozzle systems, the flow from one system striking the stream at an angle different from that at which the flow from at least one other system strikes. Each nozzle system comprises one or more nozzles and the nozzle or nozzles of one system may be located at a level different from that at which the nozzle or nozzles or another system are located.

3,663,207
DIRECT PROCESS FOR SMELTING OF LEAD SULPHIDE CONCENTRATES TO LEAD

Nickolas J. Themelis, Beaconsfield, Quebec, and John R. Rawling, Lively, Ontario, both of Canada, assignors to Noranda Mines Limited

Filed Apr. 21, 1970, Ser. No. 30,557
Claims priority, application Canada, Oct. 27, 1969, 065897
Int. Cl. C22b 13/02
U.S. Cl. 75—77 10 Claims

A process for continuously smelting and converting lead sulphide concentrates to molten lead or bullion in a furnace comprises introducing pelletized lead sulphide concentrate onto the surface of a molten bath in the furnace and smelting the same therein, introducing oxidizing gas into the furnace to convert the lead sulphide concentrates to molten lead, tapping off molten metallic lead, treating the slag in a slag fuming zone to reduce zinc oxide in the slag to zinc vapor, introducing an oxidizing gas above the slag in the slag fuming zone to oxidize the zinc vapor to zinc oxide fume, passing the fume to a fume collecting area and thereafter withdrawing substantially zinc free slag.

3,663,208
CHROMIUM-NICKEL ALLOY STEEL CONTAINING COPPER

Henry William Kirby, and Arthur Hogg, both of Sheffield, England, assignors to Firth Brown Limited, Sheffield, England

Filed June 19, 1969, Ser. No. 834,878
Claims priority, application Great Britain, June 20, 1968, 29,473/68
Int. Cl. C22c 39/54, 39/20
U.S. Cl. 75—125 12 Claims

An alloy steel for high temperature applications, such as for compressor and turbine discs in gas turbines consists essentially of: 0.02–0.25 percent carbon, 0.05–1.5 percent silicon, 0.1–1.5 percent manganese, 7.0–12.0 percent chromium, 0.2–4.0 percent nickel, 0.2–5.0 percent molybdenum, 0.10–0.60 percent vanadium, 0.05–0.70 percent niobium, up to 7.0 percent cobalt, up to 5.0 percent copper, 0.002–0.03 percent boron, at least 0.010 percent but less than 0.050 percent nitrogen, the balance, apart from incidental impurities being iron.

3,663,209
LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING AS A STABILIZER A HYDROIMIDAZO-S-TRIAZINE

Shui Sato; Tomio Nakajima; Masayuki Shono, all of Tokyo, and Teruo Kagami, Irimi-shi, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1969, Ser. No. 882,311
Claims priority, application Japan, Dec. 4, 1968, 43/88338
Int. Cl. G03c 1/34
U.S. Cl. 96—109 3 Claims

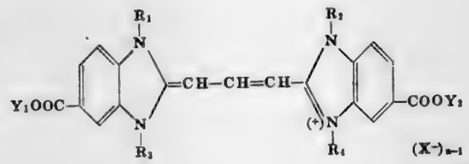
A light-sensitive silver halide photographic material containing in at least one of its photographic layers a hydroimidazo-s-triazine compound as a stabilizer.

3,663,210
LIGHT-SENSITIVE SILVER HALIDE SUPERSENSITIZED PHOTOGRAPHIC MATERIAL

Shui Sato, Tokyo; Eiichi Sakamoto, Hanno; Shizuo Saito, Tokyo; Kaiichiro Sakazume, Tokyo, and Tokuzo Kaneko, Tokyo, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

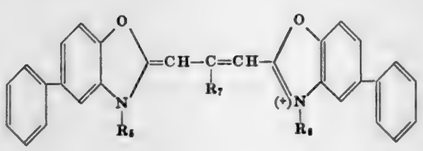
Filed Apr. 15, 1970, Ser. No. 28,711
Claims priority, application Japan, Apr. 19, 1969, 44/30086
Int. Cl. G03c 1/14
U.S. Cl. 96—124 3 Claims

A light-sensitive silver halide photographic material which contains at least one layer of silver halide emulsion including a combination of at least one benzimidazolo-carbocyanine dye represented by the general formula



(I)

$-(CH_2)_2O(CH_2)_2OH$; R_3 and R_4 are individually a C_1 to C_4-alkyl, hydroxyalkyl, or sulfoalkyl group; Y_1 and Y_2 are individually a C_1 to C_4-alkyl group, ethoxyethyl group or an aryl group; X^- is a negative group; and n is 1 or 2; and at least one benzoxazolo-carbocyanine dye represented by the general formula



(II)

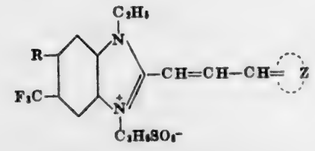
wherein R_5 and R_6 are individually a C_1 to C_4-alkyl or sulfoalkyl group; R_7 is a C_1 to C_4-alkyl group; X^- is a negative group; and n is 1 or 2.

3,663,211
SILVER HALIDE EMULSIONS CONTAINING UNSYMMETRICAL TRIMETHINE SENSITIZING DYES

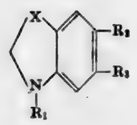
Shi-Kuang Yao, Binghampton, N.Y., assignor to GAF Corporation, New York, N.Y.

Filed July 2, 1969, Ser. No. 838,709
Int. Cl. G03c 1/10
U.S. Cl. 96—138 14 Claims

The instant invention is directed to carbocyanines having the following formula:



wherein R represents halogen, hydrogen or cyano and Z represents the following radicals





in which X is selected from the group consisting of oxygen and sulphur atoms, R_1 and R_4 represent lower alkyl radicals or benzyl, and R_2 and R_3 represent lower alkyl radicals, halogen radicals, or hydrogen. In addition the instant invention is directed to the use of the above dyestuffs for second order sensitization of photographic emulsions.

3,663,212
NODULAR IRONS AND METHOD FOR CONTROLLING SAME

Richard W. Heine, and Carl R. Loper, Jr., both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed July 18, 1969, Ser. No. 843,186
Int. Cl. C22c 37/04
U.S. Cl. 75—123 CB 7 Claims

Method for controlling number of nodules per unit volume in malleable and ductile irons by the incorporation of both titanium and tellurium as essential components in the range of 0.003 to 0.05 percent by weight titanium with the tellurium being present in the ratio of 1 part by weight tellurium to 10 to 50 parts by weight titanium. Titanium may be replaced in whole or in part with equivalent amounts of niobium, vanadium, or aluminum. Tellurium may be replaced in whole or in part with equivalent amounts of antimony or rare earth metals.

3,663,213
NICKEL-CHROMIUM-IRON ALLOY

Herbert Louis Eiselstein, and Edward Frederick Clatworthy, both of Huntington, W. Va., assignors to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 10,004, Feb. 9, 1970, which is a continuation-in-part of application Ser. No. 766,611, Oct. 10, 1968. This application May 11, 1970, Ser. No. 36,420
Int. Cl. C22c 39/20
U.S. Cl. 75—124 7 Claims

A strongly age-hardenable alloy having low annealed base hardness, high strength in the aged condition, excellent weldability and unexpectedly good machinability contains about 35 percent to about 46 percent nickel, about 12 percent to about 20 percent chromium, about 1.25 percent to about 2.5 percent titanium, about 2.25 percent to about 3.5 percent columbium, up to about 0.08 percent carbon, about 0.0005 percent to about 0.006 percent boron, about 0.05 percent to about 1 percent aluminum and the balance essentially iron.

3,663,214
ABRASION RESISTANT CAST IRON

William H. Moore, Meadow Lane, Purchase, N.Y., and Harry H. Kessler, 7 Dromara Rd., Ladue, Mo.

Filed Feb. 16, 1970, Ser. No. 11,491
Int. Cl. C22c 39/16, 39/32
U.S. Cl. 75—126 A 2 Claims

A wear and abrasion resistant white iron having a composition as follows:

Total Carbon	3.0% to 4.0%
Silicon	0.0% to 2.5%
Manganese	7.0% to 15.0%
Chromium	8.0% to 15.0%
Other alloying constituents	0.0% to 5.0%

and having a microstructure of predominantly chunky or needle carbides in a matrix predominantly austenitic.

3,663,215
WEAR-RESISTANT STAINLESS STEEL

Harry Tanczyn, Baltimore, Md., assignor to Armco Steel Corporation, Middletown, Ohio

Filed Aug. 13, 1969, Ser. No. 849,861
Int. Cl. C22c 13/20
U.S. Cl. 75—128 C 9 Claims

Austenitic stainless steel characterized by workability, weldability and resistance to wear. The steel contains the three essential ingredients chromium, nickel and silicon, with one or more of molybdenum, tungsten, vanadium, columbium/tantalum and titanium, and remainder iron. The chromium amounts to about 10 percent to 22 percent, nickel about 14 percent to 25 percent, silicon about 5 percent to 12 percent especially about 7 percent to 11 percent, together with about 3 percent to 12 percent of the group consisting of molybdenum up to 10 percent, tungsten up to 8 percent, vanadium up to 5 percent, columbium/tantalum up to 5 percent and titanium up to 5 percent. The carbon content should not exceed about 0.15 percent. Copper may be present in amounts up to 5 percent. The steel is particularly suited to applications in the food-processing, the petrochemical and the nuclear industries, where sliding or relatively moving parts are encountered. It also is suited to the production of cutting tools and surgical instruments.

3,663,216
ALUMINUM ELECTRICAL CONDUCTOR
Harold Y. Hunsicker, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 889,314, Dec. 30, 1969, now abandoned. This application Aug. 10, 1970, Ser. No. 62,633
Int. Cl. C22c 21/00; C22f 1/04
U.S. Cl. 75—142 7 Claims

Aluminum conductor containing 0.25 to 0.5% Cu and 0.05 to 0.20% Mg and having good tensile strength and a minimum electrical conductivity of 60 percent IACS together with good bendability and improved connector conduction stability. A preferred fabrication method contemplates working at temperatures that retain the Cu and Mg is solid solution but also impart strain hardening, a drastic cold reduction to produce a severely strain hardened conductor product followed by a controlled thermal treatment to relax a certain amount of the strain and precipitate a portion of the Cu and Mg.

3,663,217
BRAZING ALLOY FOR ELEVATED TEMPERATURE SERVICE
John Henry Olson, Franklin Lakes, and Raymond Francis Vines, Chatham, both of N.J., assignors to The International Nickel Company, Inc., New York, N.Y.
Filed Aug. 7, 1970, Ser. No. 62,133
Int. Cl. C22c 5/00
U.S. Cl. 75—165 4 Claims

Brazing alloy of composition containing gold, nickel, palladium, silver and copper has satisfactory flow characteristics for brazing at a temperature not exceeding 1,900° F. and provides brazed bonds having good strength and oxidation resistance at elevated temperatures such as 1,000° F. or higher.

3,663,218
BURNABLE POISON FOR NUCLEAR REACTOR
William R. Yarlo, West Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Sept. 12, 1969, Ser. No. 868,955
Int. Cl. C22c 15/00
U.S. Cl. 75—177 1 Claim

An alloy for use as a burnable poison in nuclear reactors which consists of 0.5 – 14 weight percent gadolinium and 0 – 4 weight percent tin with the remainder being zirconium.

ERRATUM

For Class 92—57 see:
Patent No. 3,663,226

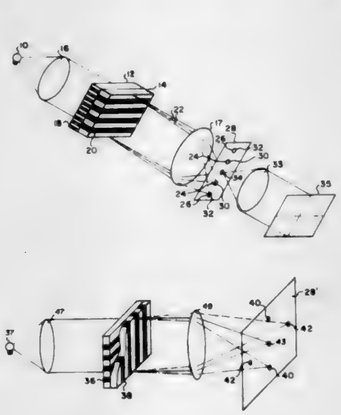
3,663,219
ELECTROPHOTOGRAPHIC PROCESS
Toru Takahashi, Tokyo, Japan, assignor to Canon Camera Kabushiki Kaisha, Tokyo, Japan
Filed May 16, 1968, Ser. No. 729,567
Claims priority, application Japan, June 29, 1967, 42/56049; May 23, 1967, 42/32962
U.S. Cl. 96—1.4 2 Claims

In an electrophotographic process in which the electrostatic latent image on a photosensitive plate is developed by a liquid developer and the resulting toner image is transferred to a copying material, an electric field is applied to the liquid developer squeezing means in order to prevent the disturbance of the toner image caused by the flow of toner particles in a carrier pool formed at the squeezing site. The electric field is applied in such a direction that toner particles are attracted to the photosensitive plate before transferring the toner particles to the copying material and/or toner particles are attracted to the copying material after transferring the toner particles to the copy material.

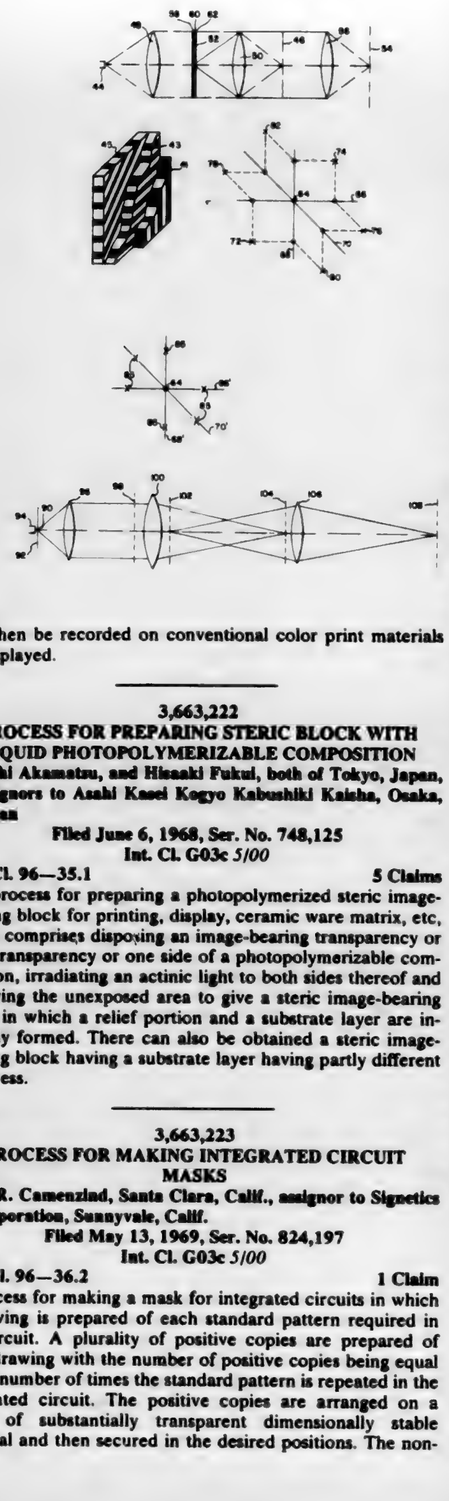
3,663,220
MATERIAL AND A PROCESS FOR THE PRODUCTION OF COLOR CORRECTED REPRODUCTIONS
Ehrhard Hellmig, and Erich Reckziegel, both of Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Apr. 16, 1970, Ser. No. 29,283
Claims priority, application Germany, Apr. 29, 1969, P 19 21 739.1
Int. Cl. G03c 7/18, 5/50
U.S. Cl. 96—6 6 Claims

A process for the production of color duplicates from a multicolored original by a photographic color reversal process comprising the steps of producing a black and white masking image from the color original, registering the black and white masking image with the original, exposing a multilayered color photographic duplicating material through the combination of the color original and the black and white masking image, the said duplicating material comprising a red sensitive silver halide emulsion layer with a color coupler for the production of the cyan partial image, a green sensitive silver halide emulsion layer containing a color coupler for the production of the magenta partial image and a blue sensitive silver halide emulsion layer with a color coupler for the production of the yellow partial image and color reversal processing the exposed material to produce a color duplicate in true colors.

3,663,221
COLOR RECORDING ON PANCHROMATIC SENSITIZED MATERIAL BY ADDITIVE MODULATION OF PRE-EXPOSED GRATINGS
George C. Higgins; Clark N. Kurtz, and Fred C. Eisen, all of Kodak Park Division, Rochester, N.Y.
Filed Sept. 25, 1970, Ser. No. 75,459
Int. Cl. G03c 7/00; G03b 33/00
U.S. Cl. 96—22 15 Claims



Three color components of a scene are recorded on a black-and-white film which has, for example, separate blue, green and red sensitive elements and which has been pre-exposed with blue light, with green light and with red light to a grating or grid pattern. The gratings may be recorded angularly disposed relative to one another, or if of different spatial frequencies, they may be mutually aligned for every pre-exposure. When the pre-exposed film is subsequently exposed in a camera to a visual scene, the additional component scene exposures representative of color components of the visual scenes modulate corresponding grating latent images in accordance with the color and luminance of the component scene elements. After proper processing of the film, a color image can be formed by placing the film in a spatial filtering projection system using color filters. The color image



can then be recorded on conventional color print materials or displayed.

3,663,222
PROCESS FOR PREPARING STERIC BLOCK WITH LIQUID PHOTOPOLYMERIZABLE COMPOSITION
Kiyoshi Akamatsu, and Hisaaki Fukui, both of Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed June 6, 1968, Ser. No. 748,125
Int. Cl. G03c 5/00
U.S. Cl. 96—35.1 5 Claims

A process for preparing a photopolymerized steric image-bearing block for printing, display, ceramic ware matrix, etc, which comprises disposing an image-bearing transparency or semi-transparency or one side of a photopolymerizable composition, irradiating an actinic light to both sides thereof and removing the unexposed area to give a steric image-bearing block in which a relief portion and a substrate layer are integrally formed. There can also be obtained a steric image-bearing block having a substrate layer having partly different thickness.

3,663,223
PROCESS FOR MAKING INTEGRATED CIRCUIT MASKS
Hans R. Camenzind, Santa Clara, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.
Filed May 13, 1969, Ser. No. 824,197
Int. Cl. G03c 5/00
U.S. Cl. 96—36.2 1 Claim

Process for making a mask for integrated circuits in which a drawing is prepared of each standard pattern required in the circuit. A plurality of positive copies are prepared of each drawing with the number of positive copies being equal to the number of times the standard pattern is repeated in the integrated circuit. The positive copies are arranged on a sheet of substantially transparent dimensionally stable material and then secured in the desired positions. The non-standard parts are then drawn onto the sheet for interconnecting the standard patterns to provide a composite pattern for the integrated circuit. The composite pattern is then utilized for producing a negative of the pattern for the integrated circuit. The assembly consists of the substantially transparent, dimensionally stable sheet which has fastened thereto positive copies of the standard patterns with interconnecting circuitry drawn on the sheet.

3,663,224
ELECTRICAL COMPONENTS, ELECTRICAL CIRCUITS, AND THE LIKE, AND METHODS FOR MAKING THE SAME BY MEANS OF RADIATION SENSITIVE ELEMENTS
Robert W. Hallman, Utica, and Gary W. Kurtz, Southfield, both of Mich., assignors to Teeg Research, Inc., Detroit, Mich.
Continuation-in-part of application Ser. No. 646,109, June 6, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 591,711, Nov. 3, 1966, now abandoned. This application Nov. 21, 1969, Ser. No. 878,846
Int. Cl. G03c 5/00, 11/00
U.S. Cl. 96—38.4 12 Claims

Electrical components, such as resistors, capacitors, and the like, and electrical circuits and methods for making the same by means of radiation sensitive elements comprising essentially a metallic layer in proximity with and adhering to a layer of an inorganic material capable, when exposed to electromagnetic actinic radiation, to interreact with the metal or metals of the metallic layer. The electrical components and electrical circuits are, according to the method of the invention, "printed" upon the radiation sensitive element by projecting thereon appropriate patterns, and the electrical characteristics of the components and circuits are determined by the geometrical dimensions of the patterns projected upon the radiation sensitive elements and by the amount of irradiation of the elements.

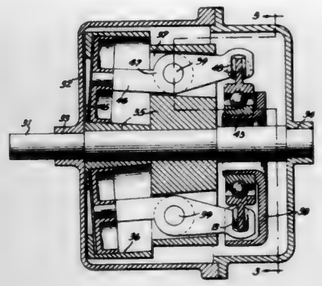
3,663,225
PHOTOGRAPHIC REFLEX PROCESS
Gerald L. McLeod, Lexington, Mass., assignor to Itek Corporation, Lexington, Mass.
Filed Apr. 4, 1969, Ser. No. 813,767
Int. Cl. G03g 1/00, 7/00; G03c 5/74
U.S. Cl. 96—48 9 Claims

This disclosure relates to a method of making a reflex copy of a master by reflex exposing a photosensitive medium comprising a photoconductor sensitized to the reflex light but substantially not sensitive to the light which passes through the said medium from the external light source employed. The photoconductor is rendered chemically reducing when exposed to activating radiation, and is sensitized to the reflex light by uniformly exposing the photoconductor to bandgap light and allowing the activation to decay. Development of the medium after reflex exposure gives a negative image. To obtain a positive image, the developed reflex-exposed medium is used as a master and again reflex exposed using the same process to obtain a positive image.

3,663,226
VARIABLE PISTON-STROKE MECHANISMS
Arnold E. Biermann, Redart, Va.
Filed Apr. 22, 1969, Ser. No. 818,212
Int. Cl. F01b 13/04
U.S. Cl. 92—57 6 Claims

This specification covers variable piston-stroke, revolving cylinder mechanisms in which means are provided for return-

ing the pistons to minimum cylinder-head-clearance position for any piston stroke length and in which counter-balance



means are provided for minimizing piston side thrust as caused by centrifugal forces.

3,663,227

RAPID STABILIZATION PROCESS FOR PHOTOGRAPHIC SILVER HALIDE MATERIALS

Kiaji Ohkubo, and Katsumi Hayashi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Kanagawa, Japan

Filed Nov. 28, 1969, Ser. No. 880,975
Claims priority, application Japan, Nov. 29, 1968, 43/87417
Int. Cl. G03c *5/38, 5/26, 1/06*
U.S. Cl. 96—61 **12 Claims**

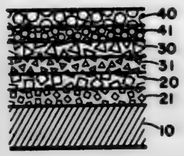
An improved stabilization process for photographic silver halide light-sensitive material comprising adding to a rinsing solution, used in the process, an antioxidant selected from the group recited in claim 1.

3,663,228

COLOR PHOTOGRAPHIC FILM HAVING EXTENDED EXPOSURE-RESPONSE CHARACTERISTICS

Charles W. Wyckoff, Needham, Mass., assignor to Applied Photo Sciences, Inc., Newbury, Mass.

Continuation-in-part of application Ser. No. 445,496, Apr. 5, 1965, now abandoned , which is a continuation-in-part of application Ser. No. 98,176, Mar. 24, 1961, now Patent No. 3,450,536, dated June 17, 1969. This application Nov. 14, 1969, Ser. No. 876,626
Int. Cl. G03c *1/76, 1/84, 3/00*
U.S. Cl. 96—74 **11 Claims**



A color photographic film with extended exposure response characteristics having a plurality of emulsion layers divided into sets, each set having a different photographic speed. The emulsion layers within a set have the same photographic speed but each layer is responsive to a different region of the spectrum. The emulsion layers are arranged either one above the other or side-by-side in a geometric pattern and all have D-log characteristic curves which have substantially equal slopes. The effective speed of one set is adjusted such that it commences responding to impinging light as another set approaches saturation. This is accomplished either by selection of the basic sensitivities of the various emulsions or by the use of auxiliary means such as attenuating filters. Dye-forming couplers may be incorporated during manufacture in all emulsion layers or may be introduced during processing. The invention may also be incorporated into a number of embodiments employing either the diazo or diffusion transfer processes. In addition apparatus employing the principles of the invention is described.

3,663,229

PHOTOGRAPHIC ELEMENTS CONTAINING CARBOXYALKYL POLYGLYCOL ETHERS AND ESTERS

Frans Jan Ville, Mortsel; Jozef Frans Willems, and Hendrir Adolf Pattijn, both of Wilrijk, all of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Filed Sept. 15, 1967, Ser. No. 668,189
Claims priority, application Great Britain, Oct. 12, 1966, 45,670/66
Int. Cl. G03c *1/76*
U.S. Cl. 96—67 **12 Claims**

Photographic silver halide elements comprising a support and a water permeable colloid layer including as a coating aid at least one compound of the general formula:

$$R-(O-C_2H_4)_n-O-A-C(=O)-OM$$

in which

A is a methylene group or an ethylene group,

R is a hydrocarbon radical, or an aliphatic carboxylic acyl radical,

n is an integer up to 40, and

M is hydrogen, an alkali metal atom, ammonium or an organic amine, are described. These photographic elements do not exhibit hydrophobic inclusions which lead to repellency spots or comets.

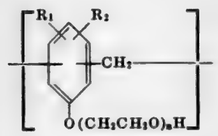
3,663,230

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC EMULSIONS

Shui Sato; Masao Ishihara, both of Tokyo; Eiichi Sakamoto, Hanno-shi; Masayuki Shono, and Osakazu Sugino, both of Tokyo, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed June 11, 1969, Ser. No. 832,478
Claims priority, application Japan, June 12, 1968, 43/39937
Int. Cl. G03c *1/28, 1/34, 1/04*
U.S. Cl. 96—107 **5 Claims**

An ethylene oxide addition polymer of an alkylphenol- formaldehyde condensate, said polymer consisting of the recurrent structural unit of the formula



wherein R_1 is an alkyl group; R_2 is an alkyl group or a hydrogen atom; and *n* is an integer of 1 to 100, and having an average polymerization degree in the range of 2 to 10, has been found effective as a sensitizer for a light-sensitive silver halide photographic emulsion, without causing any adverse effect on photographic properties.

ERRATA

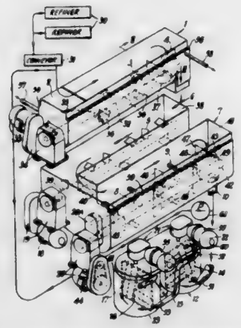
For Classes 96—109 thru 96—138 see:
Patent Nos. 3,663,209 thru 3,663,211

3,663,231

PROCESS OF LIQUIFYING AND CONCHING REFINED CHOCOLATE AND AN APPARATUS FOR PERFORMING THE PROCESS

Alfred George Tourell, Penarwyn, Par, Cornwall, England

Continuation-in-part of application Ser. No. 758,798, Sept. 10, 1968, now abandoned. This application Nov. 17, 1970, Ser. No. 90,298
Int. Cl. A23g *1/14*
U.S. Cl. 99—236 CC **18 Claims**



Chocolate continuously fed from refiners is continuously liquified and conched in an apparatus consisting of a compression stage, a shredding stage, a vibration stage, a blending stage and a final conching stage arranged one after another. Each of the compression, shredding and vibration stages includes a rotary shaft extending in and along a trough and carrying blades appropriate to the function being performed. Each of the blending and final conching stages includes an upright cylindrical vessel containing a rotary gate-type blade rotatable about the axis of the vessel.

3,663,232

MACARONI PRODUCT CONTAINING NONFAT MILK SOLIDS

Elmer F. Glabe, Chicago, Ill., assignor to Milk Research, Inc., Fond du Lac, Wis.

Continuation-in-part of application Ser. No. 432,815, Feb. 15, 1965, now abandoned. This application Jan. 2, 1968, Ser. No. 694,795
Int. Cl. A23l *1/16*
U.S. Cl. 99—85 **1 Claim**

A macaroni product containing less than 0.5 percent by weight fat and 5 percent to 30 percent by weight nonfat milk solids is prepared. In the process nonfat dry milk is used and the preliminary partial drying is effected at a relative humidity of 55 percent to 70 percent and a temperature of 95° F. to 105° F.

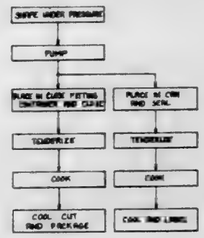
3,663,233

METHOD OF TENDERIZING, CURING AND COOKING A MEAT PRODUCT

Julius L. Kessler, Boston Post Road, Westbrook, Conn.

Continuation-in-part of application Ser. No. 725,326, Apr. 30, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 640,594, May 23, 1967, now abandoned. This application Sept. 28, 1970, Ser. No. 76,172
Int. Cl. A22c *18/00;* **A23b** *1/00*
U.S. Cl. 99—107 **4 Claims**

This invention relates to a process of tenderizing and cooking meat products. A piece of meat is formed to impart thereto a permanent set. The shaped meat has injected or inserted therein a liquid agent and is placed in a close fitting container which is then closed. The container and the meat therein is preheated at a low temperature less than that required for cooking to allow the agent to permeate all through the meat and produce accelerated tenderizing thereof. Subsequently the meat is fully cooked at a higher temperature with minimum weight loss.



3,663,234

METHOD FOR PROCESSING A COMPOSITE FOOD OF FISH MEAT-BEAN CURDS AS AN INSTANT FOODSTUFF

Hitoshi Ichihata, Kannamimachi, Tagata-gun, Shizuoka-Prefecture, Japan, assignor to Morinaga Confectionery Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1968, Ser. No. 700,011
Claims priority, application Japan, Jan. 27, 1967, 42/5306
Int. Cl. A23l *1/325*
U.S. Cl. 99—111 **5 Claims**

Method for processing a composite food of fish meat-soy curds as an instant foodstuff, wherein a homogeneous mixture of refined fish meat with 5.0 per cent or more of soy curds is molded, or a homogeneous coagulated substance that is resulted from adding a coagulating agent to the mixture of the said refined fish meat with 2.5 per cent or more of bean soup or the like, is molded, and then is subjected to conventional processing steps e.g. steam heating, refrigeration, recovery from refrigeration and drying, and then the molded substance is given a spongy structure and if necessary is fried with edible oil.

3,663,235

PROCESS OF PREPARING MARGARINE CONTAINING DIACYGLYCEROPHATIDE

Hans-Udo Menz, Schenefeld/Hamburg; Horst Otto Adolf Trapp, Oftersheim/Ueber, and Theophil Wieske, Hamburg, all of Germany, assignors to Lever Brothers Company, New York, N.Y.

Filed Apr. 13, 1970, Ser. No. 28,035
Int. Cl. A23d *3/00*
U.S. Cl. 99—123 **3 Claims**

Aqueous fat emulsions of improved stability, especially emulsions with milk protein, contain as emulsifying agent a diacylglycerophosphatide of the structure $RCOOCH_2{\cdot}CHOCOCH_2OPO_2H{\cdot}CH_2CH_2R^2$ where RCO and R^1CO are fatty acid acyl groups together containing from eight to 32 carbon atoms, one of them having at least six and the other from two to 12 carbon atoms, and R^2 is a methylamino, dimethylamino, or trimethylammonium group, or an acylamino group whose fatty acid acyl residue has from two to 12 carbon atoms. Margarine is made by phase-inversion of such oil-in-water emulsions of high fat content.

3,663,236
BUTTER FLAVORED COMPOSITION
Milton J. Holloway, Portola Valley, Calif., assignor to Beatrice foods Co., Chicago, Ill.
Filed Feb. 13, 1970, Ser. No. 11,340
Int. Cl. A23g 3/00; A23l 1/26
U.S. Cl. 99—134 10 Claims

A low butterfat, butter flavored composition of sugar, condensed buttermilk, and a vegetable oil cooked together at 300° F for at least 5 min to produce a solid solution.

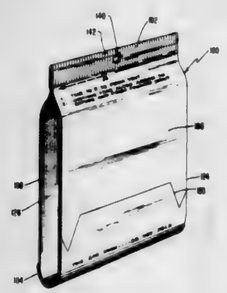
3,663,237
METHOD OF PRODUCING AN AROMA CONCENTRATE AND THE PRODUCTS OBTAINED THEREBY
Hans G. Moller, 345 Holzminden, Hasenrecke 10, Germany
Filed Feb. 16, 1970, Ser. No. 11,881
Claims priority, application Germany, Feb. 22, 1969, P 19 08 900.0
Int. Cl. A23l 1/26
U.S. Cl. 99—140 R 23 Claims

A method of producing aroma concentrates by smoking a meaty substance and then extracting with an organic solvent for the smoke flavor produced.

3,663,238
VANILLA BEAN DRYING AND CURING
Albert J. Karas; Richard L. Hall, and William H. Stahl, all of Baltimore, Md., assignors to McCormick & Company, Incorporated, Baltimore, Md.
Filed Mar. 27, 1968, Ser. No. 716,499
Int. Cl. A23l 1/22
U.S. Cl. 99—140 R 6 Claims

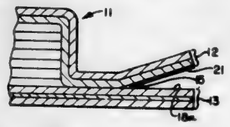
Green vanilla beans are chopped into approximately one-half inch lengths, cured for about 70–78 hours in perforated trays within a closed tank maintained at about 140° F., exudate being returned to the beans; dried in a rotary forced air, hot water jacketed drier at about 140° F. until reduced to about 35–40 percent moisture by weight, transferred to a conditioner and dried more slowly with air at room temperature and humidity until reduced to about 20–25 percent moisture content by weight.

3,663,239
TOASTER PACKAGES HAVING FOUR SPOUTS
James H. Rowe, and Joseph Markus, both of Long Island, N.Y., assignors to Nabisco, Inc.
Filed Apr. 7, 1969, Ser. No. 813,911
Int. Cl. B65d 85/36, 65/42, 5/74
U.S. Cl. 99—171 19 Claims



Packages having pour spouts for storing food and heating the food in a toaster including a top seal having the pour spout incorporated therein in order to permit formation of the pour spout after the packages are vented by tearing through the top seal to enable food to be poured from the packages. A method of forming the packages including folding a sheet of material upon itself to form a top margin, a bottom margin and a longitudinal seam, sealing the longitudinal seam, forming a bottom seal with the bottom margin, filling the package through the top margin with food, and forming a top seal with the pour spout by folding the top margin upon itself twice.

3,663,240
PACKAGE AND METHOD OF MAKING SAME
Oscar E. Selferth; Paul E. Grindrod; Maurice J. Gifford, and Glenn M. Austin, all of Madison, Wis., assignors to Oscar Mayer & Co., Inc.
Filed Mar. 24, 1969, Ser. No. 809,497
Int. Cl. B65d 75/36; B32b 31/20
U.S. Cl. 99—174 13 Claims



A hermetically sealed package material and method of making the same which includes a breakaway or peelable seal formed between first and second layers of packaging materials. The first layer of packaging material includes a backing member, preferably formed from lightweight paper stock, which is bonded to a saran film or coating while in a supercooled state by a suitable adhesive, such as, for example, an adhesive selected from the group consisting of styrene-butadiene latex compounds, vinyl printing inks, ethylene-vinyl acetate latex compounds, acrylonitrile-vinylidene chloride copolymers and other adhesive compounds exhibiting equivalent bonding characteristics with saran type films. The second layer of packaging material is formed from an ethylene-polar monomer copolymer film or coating material, such as, for example, an ethylene-vinyl acetate film, which is bonded to a suitable oxygen barrier material such as, for example, an oxygen barrier saran film. The peelable or breakaway seal is formed between the saran film or coating of the first layer of packaging material and the ethylene-polar monomer copolymer film or coating of the second layer of packaging film.

3,663,241
METALLIZING COMPOSITION CONTAINING NICKEL POWDER
Oliver Alton Short, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed May 20, 1970, Ser. No. 39,152
Int. Cl. C09d 5/24
U.S. Cl. 106—1 5 Claims

A mounting pad for aluminum terminated integrated circuit chips comprising a novel fired metallizing composition which comprises nickel powder coated with a nickel coating wherein said coating contains about from 0.1 to 14 percent by weight phosphorous as nickel phosphide.

3,663,242
STABILIZED ELECTROLESS PLATING SOLUTIONS
Michael Gulla, Newton, and Oleh B. Dutkewych, Medfield, both of Mass., assignors to Shipley Company, Inc., Newton, Mass.
Continuation-in-part of application Ser. No. 785,350, Dec. 19, 1968, now abandoned. This application Sept. 25, 1970, Ser. No. 75,737
Int. Cl. C23c 3/02
U.S. Cl. 106—1 11 Claims

An electroless copper plating solution is characterized by the addition of a small but effective amount of a source of mercury ions for increased bath stability. It is known in the art that solutions for electroless copper plating are unstable and tend to decompose with use. It is also know that decomposition can be retarded and the useful life of a copper solution increased by the addition of various additives, frequently

catalytic poisons, in very small concentrations. In accordance with the present invention, it has been found that the stability of an electroless plating solution can be substantially increased by the addition of a source of mercury ions alone as a primary stabilizer, or preferably, by the addition of the mercury ions as a secondary stabilizer in combination with a prior art stabilizer as primary stabilizer. The combination of stabilizers provides a synergism with stability substantially improved over that obtainable with either component of the combination alone. One characteristic of the present invention is that the co-deposition of mercury in minute amounts with the plating metal.

3,663,243
COMPOSITION UTILIZED IN IMAGE DEVELOPMENT SYSTEM
Frederick J. Stryker, San Jose, and Otto Kornel, Monte Sereno, both of Calif., assignors to The United States of America as represented by the Secretary of the Army
Original application Mar. 26, 1968, Ser. No. 716,236, now Patent No. 3,558,338. Divided and this application May 20, 1970, Ser. No. 38,610
Int. Cl. C09k 3/00
U.S. Cl. 106—14.5 1 Claim

An image developing composition containing an alkali metal iodide salt and a liquid vehicle.

3,663,244
HIGH DURABILITY LEAD TITANATE-CONTAINING ENAMEL FOR GLASS CERAMICS
Francis Willis Martin, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Apr. 28, 1970, Ser. No. 32,563
Int. Cl. C03c 5/02
U.S. Cl. 106—49 2 Claims

This invention relates to a method of making and applying a thermally devitrifiable glass enamel for decorating or protecting glass-ceramic ware which has a high resistance to acid and alkaline attack and improved resistance to impact and abrasion.

3,663,245
FOREHEARTH COLOR CONCENTRATE
Robert O. Bryson, Euclid, Ohio, assignor to Ferro Corporation, Cleveland, Ohio
Filed Oct. 31, 1969, Ser. No. 873,129
Int. Cl. C03c 3/04, 1/00, 1/10
U.S. Cl. 106—52 8 Claims

Forehearth color concentrates for coloring molten clear base glass in a glass furnace forehearth after melting and fining, comprising a non-smelted interspersion of a flux and colorant. Suitable fluxes are those materials which are compatible with the glass and which promote the fusion and dispersion of the colorant. Suitable fluxes include the alkali borates, boric acid, alkali phosphates, orthophosphoric acid, alkali silicates, fluosilic acid, alkali fluorides, alkali salts, alkali hydroxides, mixtures and reaction products of said fluxes. Alkali silicates and particularly sodium silicates are preferred. Suitable colorants include color indicating metals, color inducing metal oxides or compounds which contain a color inducing metal oxide.

3,663,246
GLASS FOR TELEVISION DISPLAY CATHODE-RAY TUBES
Coenraad Maria La Grouw, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 22, 1969, Ser. No. 868,611
Claims priority, application Netherlands, Oct. 28, 1968, 6815397
Int. Cl. C03c 3/04, 3/10; H01j 29/10
U.S. Cl. 106—53 2 Claims

Glass for envelopes of television display cathode-ray tubes, particularly screen glass for color television, which transmits at most 0.5 mr/h of X-ray radiation at an acceleration voltage of 40 to 45 k. volt, and which has a composition in percent by weight:

SiO_2	58–67	PbO	2–7
Li_2O	0–1	MgO	0–3
Na_2O	2–3	Al_2O_3	1–4
K_2O	11–14	$As_2O_3 \pm Sb_2O_3$	0.3–0.7
CaO	3–4.5	CeO_2	0.05–0.6
BaO	11–14		

3,663,247
GLASS
Hendrikus Johan Lodewijk Trap, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 31, 1969, Ser. No. 873,091
Claims priority, application Netherlands, Nov. 9, 1968, 6816004
Int. Cl. C03c 3/04, 3/10; H01j 43/00
U.S. Cl. 106—53 2 Claims

Glass particularly suitable for use in a secondary emission electrode, after adjustment of the surface conductivity by heating in a reducing atmosphere, and having a composition in percent by weight within the range limited as follows:

SiO_2	30–70	PbO	6–30
Al_2O_3	0.5–10	Bi_2O_3	2–45
B_2O_3	≤5	CaO + SrO	≤8
Na_2O	≤6	MgO	0.5–7
K_2O	≤10	Sb_2O_3	≤2.

3,663,248
SINTERED CERAMIC BODY CONTAINING RESIDUAL CARBON, AND PROCESS FOR PREPARING IT
Kaoru Umeya, Sendai-shi; Shunji Tanaka, Ilayama, and Shinpei Goml, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha and Kyushu Taika Renga Kabushiki Kaisha, Tokyo, Japan
Filed June 12, 1969, Ser. No. 832,811
Claims priority, application Japan, June 12, 1968, 43/39899
Int. Cl. C04b 35/04
U.S. Cl. 106—58 4 Claims

A sintered ceramic body containing residual carbon is prepared by adding to a pitch body containing a special petroleum pitch as a fine powder inorganic powder granules, then kneading, pressure molding, and reduction calcinating the thus molded body. If necessary, a liquid tar fraction other than the special pitch can be added. It is higher in mechanical strength and chemical resistance at a high temperature and is very useful as a refractory.

3,663,249
METHOD FOR INSOLUBILIZING SODIUM SILICATE FOAM
Ramesh P. Rao, Sarnia, Ontario, Canada, assignor to Fiberglas Canada Limited, Toronto, Ontario, Canada
Continuation-in-part of application Ser. No. 875,568, Nov. 10, 1969, now abandoned. This application Mar. 24, 1970, Ser. No. 22,373
Int. Cl. C04b 21/00; F16l 59/00
U.S. Cl. 106—75 9 Claims

Insoluble silicate foams which exhibit good permanence and weather resistance for use in structural applications may

be produced by foaming a dry reaction mixture of hydrated silicate and complexing agent which has been prepared by mixing particulate alkali metal or alkaline earth metal silicate and the complexing agent and treating tat mixture with saturated steam at the hydration temperature of the silicate, thereby achieving uniform distribution and penetration of the reactants.

3,663,250
WATER-INSENSITIVE BONDED ASBESTOS STRUCTURES

Stephen A. Gerow, Glen Mills, Pa., and Verne Wesley Weidman, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 1, 1970, Ser. No. 42,557
Int. Cl. C04b *35/16, 43/04*
U.S. Cl. 106—84 **5 Claims**

Water-insensitive, insulating structures of fibrous asbestos bonded by an in situ-produced water-insoluble crystalline reaction product of asbestos and sodium or potassium silicate. Structures are obtained by mixing the fibrous asbestos with an aqueous solution of alkaline ionic silicate to make a damp fibrous mass, compacting the mass into a coherent article, and curing the article under controlled temperature and humidity conditions so as to maintain a water level in the article of at least 10 weight per cent, based on solids, for a period of time sufficient to produce the crystalline binder. After curing, the structures are dried, if necessary, to a water content below 20 percent based on solids.

3,663,251
ADDITIVE FOR CONCRETE AND MORTAR

Rolf Erhard Moren, Alfredshem, and Nils-Erik Ydren, Norrkoping, both of Sweden, assignors to Mo Och Domsjo Aktiebolag, Oraskoldsvik and Skanska Cementaktiebolaget, Malmo, Sweden

Filed July 14, 1969, Ser. No. 842,085
Claims priority, application Sweden, July 15, 1968, 9673
Int. Cl. C04b *7/02*
U.S. Cl. 106—90 **9 Claims**

The invention relates to an additive or mixture for improving the workability and strength and reducing the air content of inorganic binder, and especially hydraulic cement-containing compositions such as concrete and mortar. The additive comprises sulphite waste liquor and certain polyalkylene glycols and their derivatives. The invention also relates to the binder-containing compositions comprising the additive and methods of making the same.

3,663,252
METHOD FOR STABILIZING ALUMINOUS CEMENTS AND CEMENTS OBTAINED

Paul Stiglitz, Buisson; Gerard Sedran, and Henri De Saint-Chamant, both of Paris, all of France, assignors to Societe Anonyme Clements Lafarge, Paris, France

Filed July 24, 1968, Ser. No. 747,100
Claims priority, application France, July 31, 1967, 166377; 166378
Int. Cl. C04f *7/32*
U.S. Cl. 106—104 **5 Claims**

A process for the stabilization of aluminous cements is disclosed wherein a substance is added to the anhydrous cement mixture to prevent the formation of cubic aluminate and free water in the cement. Substances capable of forming alkaline earth carbonates, or hydroxy carbonates or precursors thereof, the natural and synthetic calcium borates, organic complexing agents for aluminum, diamino-benzene, and o-aminophenol and ethers, esters, ammonium salts and anhydrides of the complexing agents, diamino-benzene, and o-aminophenol may be used. The amount of carbonate-containing or carbonate-forming substance which is added should be sufficient to correspond to an addition of alkaline earth carbonate of about 10 percent by weight based upon cement. The amount of calcium borates which may be added ranges from 2 percent to 5 percent and the amount of organic complexing agent, diaminobenzene and o-aminophenol or the respective ether, ester, ammonium salt or anhydride which are added should be about 0.1 percent to 0.5 percent.

3,663,253
DETERRENT COMPOSITIONS

Rufus John Stone, 19 Brunsall Street, London, S.W. 3, England

Continuation-in-part of application Ser. No. 759,216, Sept. 11, 1968, now abandoned. This application Oct. 8, 1969, Ser. No. 864,890
Claims priority, application Great Britain, Oct. 15, 1968, 48,720/68
Int. Cl. C08b *25/00*
U.S. Cl. 106—204 **14 Claims**

An animal deterrent composition comprising a major proportion of a finely divided animal deterrent compound of aluminum together with a minor proportion of one or more of certain specified organic animal deterrent compounds. The invention also consists in a method of deterring animals using the composition of the invention.

3,663,254
AQUEOUS COATING COMPOSITIONS FOR GLASS ARTICLES

Robert C. Wade, Ipswich, Mass., assignor to Ventron Corporation, Beverly, Mass.

Filed Feb. 22, 1971, Ser. No. 117,828
Int. Cl. C08h *9/06;* **C03c** *17/22*
U.S. Cl. 106—271 **3 Claims**

Improved coating compositions of unusual durability for protection of glassware from scratching and which may be applied to the ware by a single application as the ware emerges from the cool end of the annealing lehr are disclosed. The coating compositions are water solutions of ammonium zirconyl carbonate and a colloidally dispersed polyethylene of low molecular weight of between about 1,200 and 2,000.

3,663,255
COMPOSITION CONTAINING CHLORINATED HYDROCARBONS KETONES AND GLYCOL ETHERS, FOR REFLOWING ORGANIC SURFACES

Thomas A. Vivian, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 844,662, July 24, 1969, now abandoned. This application Dec. 1, 1969, Ser. No. 881,284
Int. Cl. C08h *7/22*
U.S. Cl. 106—285 **12 Claims**

Compositions for reflowing organic surfaces, such as paints and polystyrene, have been discovered which contain by volume 50 to 90 percent of a liquid chlorinated aliphatic hydrocarbon, 5 to 30 percent of a liquid ketone or alcohol, 2 to 20 percent of glycol ether alkanoate and 0 to 30 percent of an alkyl alkanoate, all of such components having a boiling point below 200° C.

ERRATA

For Classes 106—279 thru 106—315 see:
Patent Nos. 3,663,281 thru 3,663,287

3,663,256
MARK-FORMING RECORD MATERIAL

Robert E. Miller, and Bruce W. Brockett, both of Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Continuation-in-part of application Ser. No. 744,569, July 12, 1968, now abandoned. This application May 26, 1969, Ser. No. 830,921
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.2 **24 Claims**

This disclosure is directed to mark-forming record material containing two essential color-forming reactants which

produce color upon contact with one another in the presence of a mutual liquid solvent wherein (A) one of said color-forming reactants is a phenolic resin containing at least 70 percent, by weight, of oil-soluble, amorphous, free-hydroxy-group-containing, room-temperature-solid, thermoplastic polymeric condensates of formaldehyde and at least one p-substituted phenol of which at least 10 percent, by weight, is a p-substituted phenol wherein the p-substituent is electron-attracting (for example, a p-halo-substituent), said polymeric condensates containing at least three p-substituted phenol units per molecule, and wherein (B) the other essential color-forming reactant is a basic chromogenic material; for example, Crystal Violet Lactone. The polymeric condensates of (A) may be a mixture of polymer chains, each polymer chain having three or more of the same or different recurring p-substituted phenol units per molecule with methylene



bridges between adjacent p-substituted phenol units. Where the polymer resin of (A) is not entirely composed of condensates having recurring phenolic units bearing p-electron-attracting substituents, the remaining recurring phenolic units bear p-electron-donating substituents; for example, p-alkyl substituents.

A preferred form of mark-forming record material combines in the same polymeric resin, either in the same molecule or in a mixture of molecules, phenolic units bearing electron-attracting and -donating substituents; for example, a phenolic resin having p-halo groups as the electron-attracting substituents and p-alkyl groups as the electron donor substituents. By so blending electron-attracting and -donating groups, a "balanced" condensate (or mixture of condensates) having improved properties as a record material is achieved.

3,663,257
TRANSPARENT HEAT-SENSITIVE FILM

Joseph A. Wiese, Jr., and George Van Dyke Tiers, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 16, 1970, Ser. No. 90,119
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.8 **9 Claims**

A clear transparent film, which gives a color projection image when thermographically heated, contains a protonatable chromogenous dye-forming color progenitor together with a salt of a strong organic acid and a strong base in a transparent heat-decomposable halogen-containing polymeric binder.

3,663,258
HEAT-SENSITIVE COPY-SHEET

Joseph A. Wiese, Jr., and Rex J. Dahnell, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

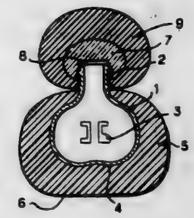
Filed Nov. 16, 1970, Ser. No. 90,120
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.8 **4 Claims**

A coating composition containing a dye, such for example as Genacryl Orange, and tetramethylguanidine trichloroacetate in a solution of inert binder at a pH not higher than 3 is applied to a carrier sheet to form a colored coating which on brief standing becomes colorless and heat-sensitive.

3,663,259
COATED BOTTLES

Jacqueline Barriere, Neuilly sur Seine, France, assignor to Societe dite Courreges Parfums

Filed Mar. 30, 1970, Ser. No. 23,746
Int. Cl. B44d *5/06, 5/00*
U.S. Cl. 117—37 R **10 Claims**



Glass bottle having neck and engraved or relief design on its outer surface is coated with coating of transparent plastic which increases in thickness from the neck to the opposite end of the bottle. The bottle may be closed by a cap made in the same way.

3,663,260
TALC FILLED METALLIZABLE POLYOLEFINS

Wassily Poppe, Lombard, Ill.; Habet M. Kheighatian, Springfield, and Anthony J. Lutz, Jr., Chester, both of Pa., assignors to Standard Oil Company, Chicago, Ill.

Filed July 20, 1970, Ser. No. 56,724
Int. Cl. C23b *5/62*
U.S. Cl. 117—47 A **9 Claims**

Metallizable polyolefin compositions are provided by incorporating into a polyolefin from about 1 percent to about 50 percent by weight, based on the weight of the polyolefin, of a finely-divided talc having a platey (micaceous) or massive (granular) particle shape and having an average particle size of from about 0.4 microns to about 40 microns. The aforementioned talc filled polyolefin compositions may be metallized by electroplating or other metallizing processes to form metallized shaped articles.

3,663,261
METHOD FOR PREPARING PLASTIC IMPREGNATED WOOD BY RADIATION POLYMERIZATION

Jorma Miettinen; Timo Autio, and Juhani Stromberg, all of Helsinki, Finland, assignors to Prof. Jorma Kalervo Miettinen, Helsinki, Finland

Filed Feb. 19, 1968, Ser. No. 706,645
Claims priority, application Finland, Feb. 23, 1967, 548/67
Int. Cl. B27k *3/50;* **B44d** *1/28, 1/50*
U.S. Cl. 117—59 **1 Claim**

The present invention relates to a method for preparing plastic impregnated wood, in which dry wood (moisture content below 10 percent) is impregnated with liquid resin material in a manner prior known per se e.g. the wood is put into a vacuum impregnation vessel, the air is evacuated, the vessel flushed with nitrogen, the liquid resin is introduced in the vessel until the wood is immersed, an atmospheric nitrogen pressure or an overpressure of 1 to 8 atmospheres gauge is applied. The wood is transferred into bags or containers filled with nitrogen, then hermetically sealed, then the impregnated wood is cured utilizing radioactive radiation optionally in the presence of chemical catalyst addition. The resin utilized for the wood impregnation contains commercial unsaturated polyester between 35 and 95 percent and styrene and/or methyl methacrylate. The amount of radiation is between 0.5 and 1.5 Mrad in the case of gamma radiation and between 1 and 5 Mrad if high energy electron radiation is used. As chemical catalyst is used an organic peroxide and

the curing is carried out at a temperature between 40° and 60° C. utilizing as additives when necessary chemical inhibitors such as pinene in an amount of less than 5 percent.

3,663,262
FUGITIVE COLORATION OF SOLID MATERIALS WITH DYES

Jerry A. Cogan, Jr., Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

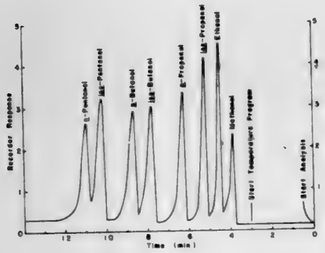
Filed Feb. 12, 1969, Ser. No. 798,815
Int. Cl. B44d *1/44*
U.S. Cl. 117—62.1 14 Claims

A process for repeatedly tinting and changing the color of solid materials which comprises applying a polymeric composition to the material and thereafter contacting the treated material with a dye which has a higher affinity for the polymeric composition than the material. In this manner the dye is temporarily fixed on the material and can be removed by washing in a detergent solution. The dyeing and removing steps can be repeated.

3,663,263
METHOD OF PREPARING CHROMATOGRAPHIC COLUMNS

Robert J. Bodre, and Kirby Allan Pinkerton, both of Texas City, Tex., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 3, 1969, Ser. No. 813,144
Int. Cl. C01n *31/08*
U.S. Cl. 117—63 16 Claims



A method of preparing chromatographic columns of the Golay type having substrates of porous polymeric materials which comprises coating the inside surface of a tubular member with a mixture comprising one or more polymerizable monomers, at least one of which is a polyvinyl monomer, and a solvent which is miscible but nonreactive with said monomer, polymerizing the monomer or monomers and removing any unreacted components.

3,663,264
PROCESS OF MANUFACTURING COATED REINFORCED CAST RESIN AND RESULTANT ARTICLE

Ludwig Wesch, Heidelberg, Germany, assignor to Mancar-Trust, Vaduz, Liechtenstein

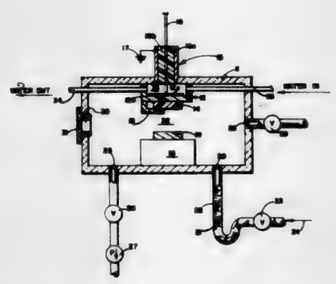
Continuation-in-part of application Ser. No. 651,125, July 5, 1967, now abandoned. This application Jan. 9, 1970, Ser. No. 1,869
Int. Cl. B32b *17/04*, *1/08*; B44d *1/16*
U.S. Cl. 117—68 14 Claims

A reinforced cast resin formed from polyester, epoxide or butadiene-styrene resins and containing curing catalysts and accelerators for the cast resin are coated with a protective coating of a synthetic rubbery polymer selected from polybutadiene, polyacrylonitrile, polystyrene, butadiene-acrylonitrile copolymer, butadiene-styrene copolymer or mixtures thereof which contain curing agents and accelerators for the rubbery polymer. The curing catalysts and accelerators for the cast resin and the curing agents and accelerators for the rubbery polymer are different but selected such that they react and function within the same temperature range, and the cast resin is polymerized and cured simultaneously with the vulcanizing and curing of the synthetic rubbery polymer. The protective coating may be provided on both surfaces of the cast resin with each coating having an additional layer of polyvinyl chloride or polyethylene positioned between the protective coating and the cast resin.

3,663,265
DEPOSITION OF POLYMERIC COATINGS UTILIZING ELECTRICAL EXCITATION

Stuart M. Lee, and William A. Bailey, both of Orange Co., Calif., assignors to North American Rockwell Corporation

Filed Nov. 16, 1970, Ser. No. 89,969
Int. Cl. B44d *1/44*
U.S. Cl. 117—93.1 GD 2 Claims



An electric deposition process providing a glow discharge by virtue of electrical energy fields provided internal to a deposition chamber enables with one step to provide a protective coating of a surface of a substrate material by repolymerizing a polymer solid starting material. A carrier gas such as argon, xenon or krypton is used in the deposition chamber for the energy field to act upon it, provide the glow and cause the glowing gas to volatilize particles of the starting material and be deposited as the protective coating on the substrate.

3,663,266
MOISTURE RESPONSIVE SYNTHETIC MICROPOROUS SHEET MATERIAL

John I. Dye, West Chester, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 21, 1970, Ser. No. 39,531
Int. Cl. D06n *3/00*, *3/08*
U.S. Cl. 117—76 12 Claims

A coriaceous vapor permeable microporous sheet material that absorbs water and expands under moist conditions is the subject of this invention. The novel material is particularly useful for making shoes and boots and provides better comfort and appearance than natural leather. The novel coriaceous material has a coating of a microporous polymer which is in firm adherence to a substrate of a polymer impregnated non-woven synthetic fibrous web. The novel sheet material under high humidity conditions as occur when a shoe or boot is worn has a particular moisture absorption, area expansion, and a decrease in tensile stress and also has a high permeability to water vapors. These particular characteristics provide a high degree of comfort to the wearer of shoes or boots made from the novel sheet material of this invention.

3,663,267
ARTICLE COATED WITH INTUMESCENT UNDERCOAT OF A SYNTHETIC RESIN, INORGANIC FOAM FORMING AGENT AND CARBON FORMING AGENT AND WATER-INSOLUBLE ORGANIC SOLVENT BASED RESIN OVERCOAT

William F. Moran, Randallstown, and Lucian C. Kyrias, Baltimore, both of Md., assignors to Beatrice Foods Co., Chicago, Ill.

Continuation of application Ser. No. 680,343, Nov. 3, 1967, now abandoned. This application Sept. 9, 1970, Ser. No. 70,725
Int. Cl. B44d *1/14*; C08g *37/32*, *51/14*
U.S. Cl. 117—76 P 6 Claims

An article having a fire resistant coating which includes an intumescent undercoat of an aqueous mixture of a synthetic resin, an inorganic foam forming agent and a carbon forming agent. Over the intumescent undercoat there is applied a nonflammable water-insoluble organic solvent based resin. This latter overcoat is essentially incompatible with the intumescent undercoat composition.

3,663,268
PROCESS FOR ADHERING POLYESTER TIRE CORD TO RUBBER

Matthew W. Wilson, Stow, Ohio, assignor to B. F. Goodrich Co., New York N.Y.

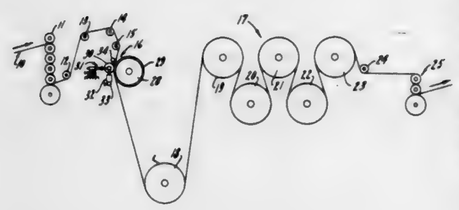
Filed May 25, 1970, Ser. No. 40,381
Int. Cl. B32b *27/36*
U.S. Cl. 117—76 T 6 Claims

Synthetic textile tire cords, particularly polyester tire cords, are adhered to elastomeric tire stocks by a process involving (1) dipping the cords into a noncuring phenol-aldehyde liquid resin (2) heating to accomplish wetting of the outside filaments of the said cords with said resin, (3) dipping the cords into a resorcinol-formaldehyde-latex dip, (4) heating to dry the twice dipped cord and (5) heating the treated cord in contact with the desired elastomeric stock under pressure as the said stock is vulcanized.

3,663,269
SELF RELEASABLE NONMOISTURE ACTIVATED WALL COVERING

Raymond P. Fischer, Wheaton, Ill., and John F. Whalen, Appleton, Wis., assignors to Combined Paper Mills, Inc., Combined Locks, Wis.

Filed May 22, 1968, Ser. No. 731,025
Int. Cl. C09j *7/04*
U.S. Cl. 117—76 A 2 Claims

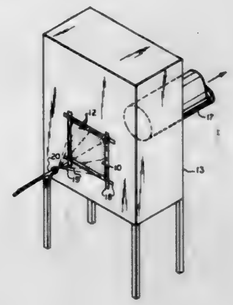


A wall covering, such as wallpaper, having a coating of dry, encapsulated adhesive on the back surface which is made tacky by the application of heat and/or pressure in the absence of moisture, and a method of manufacturing wallpaper which includes applying the encapsulated adhesive in the paper making machine or in a separate coating operation.

3,663,270
BRAZING STOP-OFF TREATMENT OF PERFORATED METAL SHEETS

Winford Blair, La Mesa, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed Apr. 20, 1970, Ser. No. 30,014
Int. Cl. B44d *1/08*, *1/02*
U.S. Cl. 117—98 5 Claims



A thin, perforated, metal sheet, one side of which is to be brazed to another element, has the other side thereof treated to prevent braze alloy from flowing into and through the perforations by spraying said other side of the sheet with a non-runny or thixotropic braze stop-off compound while at the same time maintaining a gentle flow of air or other gas through the perforations in the sheet in the direction of spray flow so as to carry away particles of spray material which pass through the perforations and thereby prevent such spray particles from contaminating the brazing side of the sheet.

3,663,271
SURFACE-MODIFIED ACID CRYSTALS AND PROCESS FOR THEIR PREPARATION

Gerhard Gergely, Vienna, Austria, assignor to Organon Inc., West-Orange, N.J.

Filed Mar. 26, 1970, Ser. No. 23,005
Claims priority, application Germany, Mar. 26, 1969, P 19 15 509.0
Int. Cl. C07c *55/02*
U.S. Cl. 117—100 A 11 Claims

The invention relates to acid crystals the surface of which consists at least partially of a dehydrated water soluble salt. The preparation thereof is characterized in that the acid crystals are mixed with a metal oxide or hydroxide and the obtained mixture is reacted under substantially anhydrous conditions in the presence of traces of water. These modified crystals are very suitable to use as the acidic component in various mixtures, e.g. in effervescent mixtures, as these crystals can absorb some moisture without starting the carbon dioxide development. Tablets containing the acid crystals of the invention are hard when freshly prepared and show the tendency to gain in hardness on exposure to the atmosphere for some days. Moreover they are completely water-soluble with a delayed acid release.

3,663,272
PROCESS FOR KILLING MICROORGANISMS IN AN AQUEOUS TEXTILE FINISH

LeMoyne W. Ptischke, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Filed June 24, 1970, Ser. No. 49,547
Int. Cl. B05c *11/10*
U.S. Cl. 117—102 A 10 Claims

In a system for the application of a liquid aqueous textile finish, the concentration of living microorganisms in the

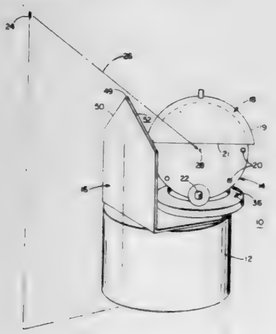
finish can be held below the level necessitating frequent system clean-ups by heating the finish to between 57° C. and about 100° C. for between about 0.1 percent and about 2 percent of the average residence time of the finish in the system.

3,663,273

TILTING VARIABLE SPEED ROTARY SHADOWER

John Halsted Porter, Winooski, and William Alexander Ladd, Burlington, both of Vt., assignors to Ladd Research Industries, Incorporated, Burlington, Vt.

Filed Nov. 16, 1970, Ser. No. 89,575
Int. Cl. C23c *13/02*
U.S. Cl. 117—107.1 **2 Claims**



Method to effect uniform vapor deposition on a specimen by continuously exposing the specimen to a vapor beam while imparting precessional motion to the specimen, including positions wherein the specimen major surface faces said beam at 90° thereto and wherein the specimen edge portions are at 90° to the beam, and while variably shielding the specimen during its precessional motion.

3,663,274

METHOD OF MINIMIZING ACCUMULATION OF ELECTROSTATIC CHARGE ON POLYETHYLENE

Burton P. Block, Wayne; Oliver S. Sprout, Jr., Glenside, and Gerd H. Dahl, King of Prussia, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 3, 1970, Ser. No. 43,178
Int. Cl. B32b *27/32*; D06m *15/62*
U.S. Cl. 117—138.8 E **3 Claims**

Subject disclosure relates to the use of poly (metal phosphinates) as electrostatic discharge agents on polyethylene and other polymeric surface materials. More specifically, zirconium dihydroxy dibutylphosphinate dioctylphosphinate and chromium aquo hydroxy dibutylphosphinate and/or chromium aquo hydroxy methylphenylphosphinate are deposited from a solvent such as chloroform to provide an antistatic coating on the polymeric material.

3,663,275

COATED FILLED REGENERATED CELLULOSE FILM

Daniel Kenyon Owens, Bon Air, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 30, 1970, Ser. No. 51,392
Int. Cl. B32b *23/08, 23/04*; C08j *1/38*
U.S. Cl. 117—144 **3 Claims**

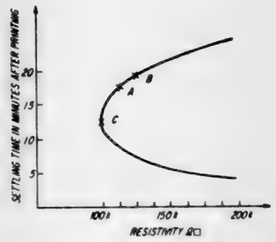
A process for preparing coated regenerated cellulose film in which bentonite clay is admixed in a cellulose xanthate viscose prior to extrusion, followed by preparing a regenerated film from the viscose and applying a polymeric coating to at least one surface of the regenerated film, as well as the resulting coated products, characterized by improved winding properties.

3,663,276

METHOD OF ADJUSTING THE RESISTIVITY OF THICK-FILM SCREEN-PRINTED RESISTORS

Trevor Richard Allington, and James Richard McClellan, both of Indianapolis, Ind., assignors to RCA Corporation

Filed May 25, 1970, Ser. No. 40,091
Int. Cl. B44d *1/18, 1/02*; H01b *1/02*
U.S. Cl. 117—201 **5 Claims**



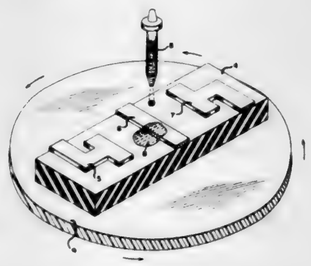
Method of adjusting the resistivity of a thick-film resistor of the type made by screen printing on a substrate a composition comprising metal particles, glass frit, a temporary organic binder and a temporary solvent, drying to remove the solvent, and firing the composition to fuse the glass frit and burn off the binder, said method comprising determining the relationship between the resistivity of the fired composition and the drying time that elapses between screen printing the composition on the substrate and the beginning of the firing cycle, and setting this elapsed time in accordance with a desired resistivity value.

3,663,277

METHOD OF INSULATING MULTILEVEL CONDUCTORS

Ronald L. Koepp, Dayton, Ohio, and Janos Havas, Wappingers Falls, N.Y., assignors to The National Cash Register Company, Dayton, Ohio

Filed Aug. 4, 1969, Ser. No. 847,153
Int. Cl. B44d *1/02*; C23d *5/02*; H01j *1/13*
U.S. Cl. 117—201 **1 Claim**



The present invention relates to a method of forming a thin stratified pinhole-free silicon dioxide insulator layer between multilevel conductors. Silicon dioxide films within the stratified pinhole-free silicon dioxide insulator layer are made from single drops of colloidal silicon dioxide liquid dispersion. These silicon dioxide films are stacked to form a stratified pinhole-free highly insulative silicon dioxide layer between the upper and lower conductors. The thinness of the stratified pinhole-free silicon dioxide insulator layer allows shallow contact windows to be formed therein. A shallow

contact window allows reliable electrical contact therethrough between an upper conductor and a lower conductor.

3,663,278

THERMAL TRANSFER MEDIUM FOR PRODUCING SCRATCH AND SMUDGE RESISTANT MARKS

James H. Blose, Xenia; William F. Pinell, Lebanon, and Shashikant G. Talvalkar, Dayton, all of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Nov. 30, 1970, Ser. No. 93,800
Int. Cl. B41m *5/10*
U.S. Cl. 117—234 **15 Claims**

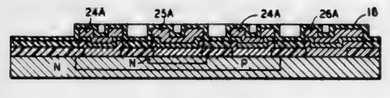
A thermal transfer medium comprising a base having a transferable coating composition thereon. The coating composition comprises about 3 to 40 percent by weight of a cellulosic polymer; about 15 to 70 percent by weight of a thermoplastic aminotriazine-sulfonamidealdehyde resin; about 3 to 40 percent by weight of a plasticizer; and about 1 to 45 percent by weight of a sensible material.

3,663,279

PASSIVATED SEMICONDUCTOR DEVICES

Martin P. Lepselter, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 19, 1969, Ser. No. 878,105
Int. Cl. H01l *7/00*
U.S. Cl. 117—212 **6 Claims**



Coatings of refractory metal oxides are provided over the surface of semiconductor devices for chemical and mechanical passivation. The oxide coatings are formed by depositing a layer of refractory metal and oxidizing in situ. In a specific example, the refractory metal is zirconium.

3,663,280

ELECTRODES FOR ELECTROCHEMICAL PROCESSES

Denis Lee, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Mar. 17, 1969, Ser. No. 807,993
Claims priority, application Great Britain, Apr. 2, 1968, 15,786/68
Int. Cl. B44d *1/18*
U.S. Cl. 117—217 **28 Claims**

A method for the manufacture of an electrode for use in electrochemical processes, which comprises forming on the surface of a support of film-forming metal of the group of titanium, zirconium, niobium, tantalum and tungsten or an alloy principally of one of these metals, a layer of an operative electrode material, applying over the said layer a coating comprising a thermally decomposable organo-compound of a film-forming metal of the group of alkoxides and alkoxy-halides of titanium, zirconium, niobium, tantalum and tungsten wherein the halogen is chlorine, bromine or fluorine in a liquid vehicle and heating the coating to convert the organo-compound of the film-forming metal to an oxide.

3,663,281

ASPHALTIC COMPOSITION

Eugene M. Fauber, 6941 Stateline Avenue, Hammond, Ind.

Continuation-in-part of application Ser. No. 727,075, May 6, 1968, now abandoned. This application Nov. 4, 1970, Ser. No. 86,974
Int. Cl. C08h *13/00, 17/22*; C08l *1/46*
U.S. Cl. 106—279 **8 Claims**

Asphaltic compositions are prepared having suitable softening points, needle penetration and stain values for use in paper laminates. These compositions are prepared by air-blowing a blend of a major amount of asphalt and a minor amount of foots oil derived from slack wax from a medium lubricating oil distillate.

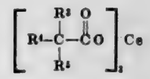
3,663,282

COATING COMPOSITIONS FOR ALKALI SURFACES

Ronald L. Smith, Ballston Lake, N.Y., assignor to General Electric Company

Filed July 1, 1970, Ser. No. 51,731
Int. Cl. C09d *3/82, 3/00*
U.S. Cl. 106—287 **14 Claims**

A primer composition for protecting polysiloxane polymers from alkali material comprising 1.0–10.0 percent by weight of $(RO)_nSiO_{(4-n)/2}$; 15.0–40.0 percent by weight of $(R'O)_4Si$; 1.0–10.0% by weight of $Ti(OR^2)_4$ or $Ti(OR^2)_x$; 1.0–5.0 percent by weight of



and 35–72 percent by weight of a solvent wherein R, R′, R^2, R^3, R^4, and R^5 are monovalent hydrocarbon radicals, x is at least 5 and the value of n may vary from 2.25 to 2.67.

3,663,283

PROCESS AND APPARATUS FOR THE PRODUCTION OF FINELY-DIVIDED METAL OXIDES

Richard A. Hebert, 14 Belmont Drive, Chelmsford, Mass.; Daniel J. Moynihan, 19 Union St., Watertown, Mass.; Donald E. Paul, Davidson Road, Boxboro, Acton, Mass.; Louis J. Petrovic, 7 Captain Parker Arms, Lexington, Mass.; Peter A. Rubel, Annursnac Hill Road, Concord, Mass., and Ralph Seferian, 335 Highland Ave., Winchester, Mass.

Filed Oct. 2, 1969, Ser. No. 863,146
Int. Cl. C08h *17/04*
U.S. Cl. 106—288 **22 Claims**

There is provided an improved process and apparatus for the production of finely-divided metal and metalloid oxides. The invention is generally characterized by the injection of a vaporized metal halide feedstock through a plurality of circumferential orifices and substantially perpendicularly into a plug flow stream comprising heated oxidant gas. Additionally, thin sheeted streams of a purge gas are directed into said oxidant gas stream at loci positioned substantially immediately above and below the locus of the metal halide vapor injection.

3,663,284

TITANIUM DIOXIDE SUSPENSIONS

Dimitri J. Stancioff, Camden, Maine, and Henry J. Witt, Mine Hill, N.J., assignors to Marine Colloids, Inc., Springfield, N.J.

Filed Jan. 9, 1970, Ser. No. 1,870
Int. Cl. C09c *1/36*
U.S. Cl. 106—300 **9 Claims**

For facilitating handling and shipment titanium dioxide pigment is prepared in the form of an aqueous suspension wherein the concentration of the titanium dioxide is from about 40 percent to about 80 percent by weight of the suspension and as an agent which retards settling and packing there is included in the suspension about 0.04 percent to about 0.4 percent by weight of the suspension a water-soluble additive selected from the group of substances consisting of citric acid, tartaric acid, the sodium, potassium and ammonium salts and acid salts of citric and tartaric acids, and mixtures of said substances with each other. Preferably, as an agent which further retards settling, there is included in the suspension a gum that is in an amount not greater than about 0.4 percent by weight of the suspension

and that in the amount used does not induce substantial gelation of the suspension. It likewise is preferable to include in the suspension from about 0.01 percent to about 0.1 percent by weight of the suspension of a sequestering agent for calcium cations.

3,663,285
WETTING AGENT-CONTAINING PIGMENT COMPOSITION

Hans Graf, Niederrodenbach, and Dieter Riffel, Frankfurt, both of Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt Vormals Roessler, Frankfurt am Main, Germany

Filed July 28, 1969, Ser. No. 846,654
Claims priority, application Germany, July 27, 1968, P 17 92 148.1
Int. Cl. C08h *17/04*
U.S. Cl. 106—308 Q **9 Claims**

A wetting agent-containing pigment composition is formed by adding to the composition at least one pyrogenically produced and coagulated metal or non-metal oxide or a co-coagulate of such oxides.

The addition improves the control of the action of the wetting agent, inhibits the tendency to form agglomerates and acts as an aid in grinding the composition.

3,663,286
ADJUVANT COMPOSITION FOR CONCRETES AND MORTARS

Andre De Barrau, Paris, France, assignor to Gerard Henri Jules Leruste, Paris, France, a part interest

Filed Feb. 26, 1970, Ser. No. 14,673
Int. Cl. C04b *13/22*
U.S. Cl. 106—314 **8 Claims**

Adjuvant composition for concretes and mortars adapted to be dissolved in the mixing water. This composition consists basically of an aqueous mixture of at least four inorganic salts, viz, a borate, a sulfite, a nitrate, and a hyposulfite. Particularly, it comprises sodium borate, sodium sulfite, potassium nitrate and sodium hyposulfite. A particular formulation is as follows:

water	500 ml
sodium borate	5 g
sodium sulfite	20 g
potassium nitrate	160 g
sodium hyposulfite	800 g

Applications to the production of mortars, concretes, aggregate, and any constructional material.

3,663,287
CEMENT ADDITIVE COMPRISING CALCIUM SULFO-ALUMINATE, AN ORGANIC ADHESIVE, A FOAMING AGENT, AND A DISPERSING AGENT

Tsutomu Mizunuma, and Tsukuru Azumi, both of Ohmi-Machi, Nishikubiki-gun, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 4, 1970, Ser. No. 69,945
Claims priority, application Japan, Nov. 4, 1969, 44/87627
Int. Cl. C04b *11/08, 11/14, 21/02*
U.S. Cl. 106—315 **5 Claims**

A cement additive consisting of 100 parts by weight of a mineral consisting mainly of calcium sulfo-aluminate, which forms ettringite having a high content of sulfate through hydration, 0.1 to 2.0 parts by weight of an organic adhesive, 0.005 to 0.5 part by weight of a blowing agent and 1.0 to 6.0 parts by weight of a dispersing agent is suitable for grout. This cement additive is preferred to be added with 0.5 to 10.0 parts by weight of an accelerating agent.

3,663,288
PHYSIOLOGICALLY ACCEPTIBLE ELASTOMERIC ARTICLE

Mary Lucy Miller, Alexandria, Va., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sept. 4, 1969, Ser. No. 855,393
Int. Cl. A61m *25/00*
U.S. Cl. 117—7 **6 Claims**

There is provided improved synthetic articles of manufacture which are physiologically acceptable when utilized in warm-blooded animals as medical devices. The articles of manufacture comprise extensible substrates coated with poly(acrylic acid) or poly(methacrylic acid).

3,663,289
PROCESS OF PRODUCING A PLANOGRAPHIC PRINTING PLATE AND RESULTANT ARTICLE

Douglas A. Newman, Glen Cove, N.Y., assignor to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

Continuation-in-part of application Ser. No. 800,414, Feb. 19, 1969, now abandoned. This application Apr. 6, 1970, Ser. No. 26,091
Int. Cl. B44d *1/14;* **B41n** *1/12*
U.S. Cl. 117—4 **7 Claims**



Planographic printing plates and continuous planographic printing forms having a flexible foundation supporting a planographic printing layer and process of making are disclosed. The flexible foundation is an opaque, thin sheet or continuous web or strip of synthetic thermoplastic polymer having uniformly rough, receptive surfaces, the foundation being selected from unicellular foamed film or normally-clear, normally-smooth film treated on both surfaces with volatile organic solvent having a dissolving power therefor. One surface of the film foundation is coated with a thin planographic layer.

3,663,290
TEMPERATURE RESISTANT COATING AND METHOD

James L. Klinge, Indianapolis, Ind., assignor to Klinge Enameling Company, Inc., Indianapolis, Ind.

Filed Dec. 17, 1969, Ser. No. 886,003
Int. Cl. B44d *1/08, 1/14, 1/46*
U.S. Cl. 117—8 **10 Claims**

A member is coated in three coating steps, including first and final coats of a clear solution of an alkali metal silicate, and an intermediate coat of an opaque solution of an alkali metal silicate, each coating followed by a high temperature cure. The concentration of silicate in solution is limited to avoid frosting and discoloration when subjected to heat. The clear solution includes clay and a binder for mar resistance and adhesion. The opaque solution includes a pigment and a binder.

3,663,291
CASCADE DEVELOPMENT

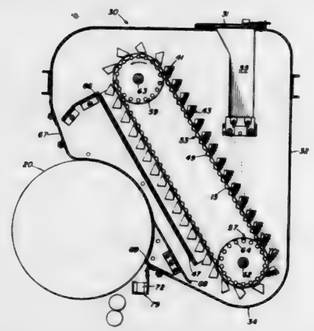
Stephen F. Royka, Fairport, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Oct. 14, 1969, Ser. No. 866,320
Int. Cl. G03g *13/08, 15/08*
U.S. Cl. 117—17.5 **4 Claims**

Processes are provided for improving the mixing efficiency of carrier and toner in electrostatographic apparatus by causing a partial reverse cascade of developer from the buckets

of a bucket-type conveyor in the electrostatographic developing apparatus prior to said developer cascading across the electrostatographic surface whereby developer falls back upon subadjacent buckets and mixes with toner newly deposited therein.

An improvement in electrostatographic development apparatus is obtained by providing the buckets of the bucket-

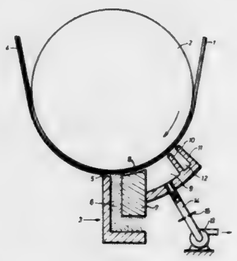


type conveyor of the development apparatus with a plurality of apertures in the posterior wall of each bucket thereby obtaining buckets adapted to allow a partial egress of developer from said apertures prior to said developer cascading across the electrostatographic surface whereby developer falls back upon subadjacent buckets and mixes with fresh toner released from the toner dispenser.

3,663,292
PROCESS FOR COATING STRIP-FORM SUBSTRATES

Peter Herzhoff, Leverkusen; Hans Gref, Cologne-Stammheim; Fritz Muss, Cologne-Flittard; Willi Wasser, Leverkusen; Kurt Browatzki, Opladen; Josef Friedsam, Langenfeld, and Wolfgang Schweicher, Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 10, 1969, Ser. No. 797,800
Int. Cl. B05c *3/12;* **G03c** *1/74*
U.S. Cl. 117—34 **1 Claim**

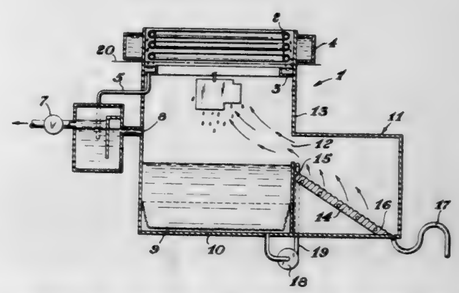


A method of coating a strip of viscous solution on a movable substrate by feeding the coating solution through a narrow gap between coating apparatus which includes feed means and the movable substrate under a static pressure differential between the inlet and the outlet of the gap wherein the gap is part of a coating chamber of the coating apparatus. The gap is wider than the wet formed layer after formation. The coating chamber is connected to a vacuum means at the side of the coating from which the substrate is introduced. A negative pressure is effectuated at the inlet side of the coating apparatus. The vacuum means having a vacuum which seals the inlet end of the narrow gap in the coating apparatus by sucking air from the vacuum means through a diaphragm which withdrawal is at a uniform rate of flow.

3,663,293
VAPOR GENERATING APPARATUS FOR VAPOR DEGREASING PROCESS

Kenneth S. Surprenant, Midland, and Raymond T. Gerard, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of application Ser. No. 741,520, July 1, 1968, now abandoned. This application July 16, 1970, Ser. No. 56,237
Int. Cl. B08b *5/00*
U.S. Cl. 134—11 **2 Claims**



A method and apparatus for continuously producing solvent vapors for degreasing metal parts and simultaneously purifying the solvent by directing liquid solvent which contains high boiling impurities onto a gravity flow heat exchange surface thereby to vaporize the low boiling solvent away from the high boiling impurities as the solvent flows across the heat exchange surface.

3,663,294
BATTERY EMPLOYING AN ALKALI METAL POLYSULFIDE HAVING A LOW ALKALI METAL HYDROXIDE CONTENT

Charles A. Levine, Concord, and George S. Fujioka, Walnut Creek, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 1, 1970, Ser. No. 51,681
Int. Cl. H01m *35/02*
U.S. Cl. 136—6 **4 Claims**

Disclosed is an improved battery cell having a molten alkali metal anode and a molten alkali metal polysulfide catholyte separated by a silicate glass as an alkali metal ion permeable membrane. The improvement involves the use of an alkali metal polysulfide having a low hydroxide content as the catholyte. Use of such a material substantially increases the membrane life.

3,663,295
STORAGE BATTERY ELECTROLYTE

Bernard S. Baker, Chicago, Ill., assignor to Institute of Gas Technology

Filed May 14, 1969, Ser. No. 824,707
Int. Cl. H01m *9/00*
U.S. Cl. 136—6 **9 Claims**

An improved electrolyte phase for use in high temperature primary and secondary batteries of the thermally or electrically regenerative type. The improved electrolyte phase is made up of a support matrix, which is solid or paste-like at the operating conditions for the battery, and the electrolyte for the battery immobilized and incorporated in the support matrix. The support matrix is made up of an inert alkali metal salt such as alkali metal aluminate. The electrolyte may be an alkali metal halide or mixtures of alkali metal halides.

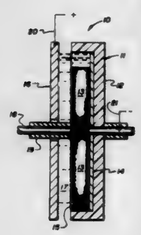
3,663,296
METHOD FOR REMOVAL OF RESIDUAL NITRATE FROM NEGATIVE BATTERY PLATES
Torbjørn Nervik, Selbu, Norway, assignor to ESB Incorporated
Filed Aug. 26, 1970, Ser. No. 67,264
Int. Cl. H01m 43/04
U.S. Cl. 136—24 1 Claim

A process is described for the removal of residual nitrate from battery plaques impregnated with cadmium hydroxide by thermal decomposition of the nitrate after the normal impregnation processing is completed.

3,663,297
PROCESS FOR THE PREPARATION OF SINTERED ZINC POWDER BATTERY ELECTRODES
Richard D. Weller, Laurel, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed June 24, 1970, Ser. No. 49,548
Int. Cl. H01m 41/00
U.S. Cl. 136—30 9 Claims

Sintered zinc powder battery electrodes are prepared by (1) rinsing zinc powder with a solvent that dissolves zinc oxide at a faster rate than it dissolves zinc and which is saturated with a water soluble salt having a higher melting point than zinc; (2) pouring off the solvent; (3) mixing the zinc with the water soluble salt used in step (1); (4) packing the mixture around a metal screen that is made of a metal which is an electrical conductor having a higher melting point than zinc; (5) heating the packed article at a temperature above 419° C but below the melting point of the water soluble salt and the metal screen; (6) cooling the article; and, (7) soaking the article in water to remove the water soluble salt.

3,663,298
ROTATABLE ELECTRODE STRUCTURE WITH CONDUCTIVE PARTICLE BED
Lowell R. McCoy, Woodland Hills, and Laszlo A. Heredy, Canoga Park, both of Calif., assignors to North American Rockwell Corporation
Filed Mar. 3, 1970, Ser. No. 16,203
Int. Cl. H01m 43/02; B01k 3/02
U.S. Cl. 136—31 9 Claims



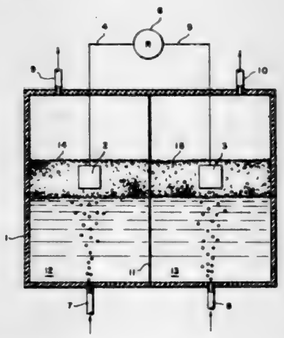
An electrode structure for use with an electrolyte wherein an electrically conductive flowing particle bed stream within a compartment of the electrode structure establishes a plurality of electrochemical reaction sites at the interface of the particles and of the electrolyte.

The flowing particle bed electrode structure finds a preferred application as an electrode in an electrically regenerable system, particularly as a rotatable zinc electrode in zinc-nickel oxide and zinc-air secondary cells.

3,663,299
SOLID STATE ELECTRIC CELL HAVING STABILIZED RESISTANCE
Boone B. Owens, Calabasas, and James E. Oxley, Hollywood, both of Calif., assignors to Gould Sonics, Inc.
Filed Aug. 31, 1970, Ser. No. 68,325
Int. Cl. H01m 11/00, 13/00
U.S. Cl. 136—83 R 12 Claims

A solid state electric cell having a mobile oxidant such as iodine in the cathode, a solid state electrolyte and a suitable anode containing a reductant material such as silver which is capable of reducing the mobile oxidant, wherein at least the anode additionally contains a material which is capable of reacting with the primary reaction product of the mobile oxidant and reductant to form a resulting product in situ that has improved ionic conductivity as compared to the primary reaction product.

3,663,300
FOAM ELECTROLYTE, FUEL CELL, AND METHOD FOR INCREASING EFFECTIVENESS OF FUEL CELLS
Leonard Nanis, 116 Cornell Avenue, Swarthmore, Pa., and Frank R. McLarnon, 766 Elmwood Avenue, Sharon Hill, Pa.
Filed June 12, 1969, Ser. No. 832,704
Int. Cl. H01m 27/00
U.S. Cl. 136—86 E 10 Claims



The introduction of one or more ingredients of a chemical reaction into a foam atmosphere for the purpose of promoting such reaction. With respect to the application of the present invention to fuel cells, the electrolyte in one or both the anode and cathode cabinets of a fuel cell is modified with the addition of a foaming agent so that the electrodes of the cell are in contact with foamed electrolyte.

3,663,301
LEAK-PROOF PRIMARY CELL
Robert E. Ralston, Spring Valley, and Yung Ling Ko, Peekskill, both of N.Y., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.
Filed Apr. 9, 1970, Ser. No. 26,943
Int. Cl. H01m 21/00
U.S. Cl. 136—107 7 Claims

A leak-proof electrochemical cell having a cylindrical can closed on its bottom end, and originally open at its top end, with an internal peripheral bead as a seat for a plastic disc to be seated on the bead to cover the elements within the cell, and to receive the crimped end of the can for closure with the plastic disc constructed to have a central co-axial bore and co-axial hub around the bore to hold an anode collector in the shape of a nail whose head supports one of the terminals of the cell, here specifically the negative cap or terminal, welded to said head, and the plastic disc performs the additional function of closing the usual separator, with no intervening structure between it and the separator, to assure greater confining control of the electrolyte in said separator. The plastic disc top also constructed unitarily of full can diameter, and has an annular border disposed to provide a tight seating fit in the can at the bead as a seat, and is held in place by the crimped edge rim of the can to assure a substantially hermetic seal between the disc border and the can. An external metal jacket surrounds and is insulated from the can and has both ends crimped, with the top crimp holding the negative cap terminal to impress an additional pressure force on the metal crimped onto the plastic disc, to assure a hermetic seal under continuous pressure between those engaging surfaces of said plastic disc border and of said crimped metal at the can top.

3,663,302
BELLOW FOR RESERVE CELL
Gordon E. Kaye, 140 North Broadway, Irvington, N.Y.
Filed Aug. 14, 1970, Ser. No. 63,725
Int. Cl. H01m 21/00
U.S. Cl. 136—114 6 Claims

A reserve cell with indefinite shelf life, in which the structural elements, including the anode, cathode, separator and depolarizer are contained in an insulating housing and the electrolyte is contained in a compressible sealed vessel outside the housing and communicating with said housing, so the electrolyte is kept isolated from the cell until the cell is to be activated, at which time the seal is broken to enable the electrolyte to pass from the sealed vessel into the housing to assume operating position between anode and cathode and render the cell active.

3,663,303
PROCESS OF MAKING A GAS DIFFUSION ELECTRODE
Hermann Dietz, Stuttgart-Giebel, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Apr. 16, 1969, Ser. No. 816,761
Claims priority, application Germany, Apr. 17, 1968, P 17 71 179.4
Int. Cl. H01m 13/04
U.S. Cl. 136—122 18 Claims



A porous gas diffusion electrode which is composed of a gas-permeable support and an electrically conductive catalyst layer of electrocatalytically active metal is made by applying the catalyst layer to the support in the form of a pigmented lacquer containing a metal compound forming a precursor of said catalyst, then drying or hardening the lacquer while on the support so as to adhere it thereto and thereafter subjecting the catalyst precursor compound to an activation treatment to convert the compound to the active metal and to provide the necessary porosity to the layer.

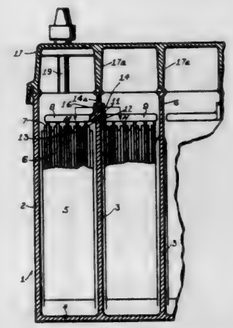
The invention also comprises a diffusion electrode which is composed of a gas-permeable, electrolyte-impermeable porous support and a porous lacquer adhered to the support and, finely distributed through said lacquer layer, a conductive material that is resistant to the conditions of operation and an electrocatalytically active metal.

The electrode of the invention is useful in fuel cells or metal-air cells, in particular as a self-breathing hydrophobic gas electrode, for the electrochemical reaction of reactive gases.

3,663,304
IMMOBILIZED ELECTROLYTES FOR SECONDARY CELLS
Frederick Marsh, and Kirk L. Thompson, both of Minneapolis, Minn., assignors to Gould-National Batteries, Inc., St. Paul, Minn.
Filed July 2, 1969, Ser. No. 838,643
Int. Cl. H01m 9/02
U.S. Cl. 136—157 16 Claims

A water activatable heat treated boron phosphate sulphuric acid gel suitable for use as an electrolyte precursor in a lead acid secondary cell.

3,663,305
METHOD OF MANUFACTURING A STORAGE BATTERY
Hans-Georg Lindenberg, Hannover-Stocken, Germany, assignor to Varta Aktiengesellschaft, Frankfurt am Main, Germany
Filed Oct. 21, 1969, Ser. No. 868,035
Claims priority, application Germany, Oct. 24, 1968, P 18 04 800.5
Int. Cl. H01m 5/00
U.S. Cl. 136—176 8 Claims

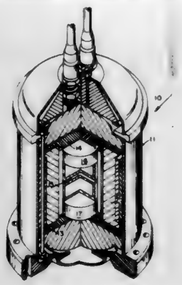


Method of manufacturing a battery in which the cells are initially interconnected by means of a transverse connecting member and are then confined within a battery casing. The cells are separated from each other by a partition wall in the casing which includes a cutout through which the connecting member extends with clearance. This clearance is injection molded with a plastic material and a cover is subsequently bonded to the top of the battery casing.

3,663,306
HIGH PRESSURE RESISTANT COMPACT HOUSING STRUCTURE
Nicholas Howard Des Champs, Reeds Ferry; Kenneth E. Mayo, Nashua; Douglas Arthur Mesnier, Hudson, all of N.H., and Ronald William James, Groton, Mass., assignors to Sanders Nuclear Corporation, Nashua, N.H.
Filed Nov. 6, 1968, Ser. No. 773,782
Int. Cl. G21h 1/10
U.S. Cl. 136—202 8 Claims

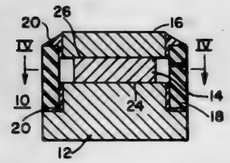
A high pressure resistant compact housing structure is provided which is particularly useful in connection with thermoelectric radioisotope generator constructions. The housing is particularly constructed for use at high external pressures as at great depths in the ocean and is resistant to galvanic corrosion and high pressure. An outer housing shell transfers high pressures to interior structure which absorbs substantially the entire pressure load. Preferably a radioisotope heat source is enclosed in the housing. Heat at both ends of the source is utilized to obtain maximized efficiency of the source in thermoelectric conversion. A novel mounting structure for the heat source and associated thermoelectric con-

version means comprises utility mounting plates and associated radiation shielding preferably incorporating a novel



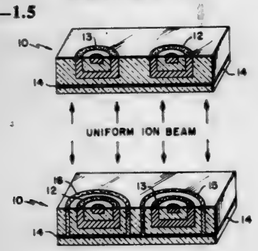
double seal arrangement in accordance with this invention. The construction permits low power-weight ratios in high pressure resistant radioisotope thermoelectric generators.

3,663,307
THERMOELECTRIC DEVICE
Cecil J. Mole, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 14, 1968, Ser. No. 705,507
Int. Cl. H01v *1/32*
U.S. Cl. 136—204 **13 Claims**



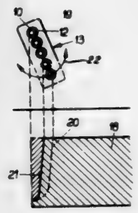
A thermoelectric pellet is disposed between and attached to two metal plates by suitable means, such as metallurgical bonding. A structural member, such as an annulus composed of an epoxy resin having a characteristic of shrinking when cured, surrounds the pellet and is bonded to the metal plates, thereby sealing it from the atmosphere. The structural member is so arranged that the pellet is maintained under a substantial compression load at all times and the complete structure is both rigid and strong.

3,663,308
METHOD OF MAKING ION IMPLANTED DIELECTRIC ENCLOSURES
John Edmund Davey, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy
Filed Nov. 5, 1970, Ser. No. 87,027
Int. Cl. H01l *7/54*
U.S. Cl. 148—1.5 **2 Claims**



A method of producing electrical isolation between semiconductor devices diffused in a substrate by ion implantation of various species of gases around the semiconductor devices, forming insulating dielectric cups.

3,663,309
FLAME CUTTING METHOD
Gerhard Lange, Frankfurt am Main, Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Germany
Continuation of application Ser. No. 765,260, Oct. 4, 1968, now abandoned. This application Sept. 22, 1970, Ser. No. 74,365
Claims priority, application Germany, Oct. 5, 1967, P #16 29 959.5
Int. Cl. B23k *7/00*
U.S. Cl. 148—9 **7 Claims**



A flame cutting torch cuts tulip shaped edges of certain depth with the cutting pressure being adjusted to the cutting depth and reduced by more than 50 percent and with the torch nozzle heated unilaterally at the side disposed toward the work piece.

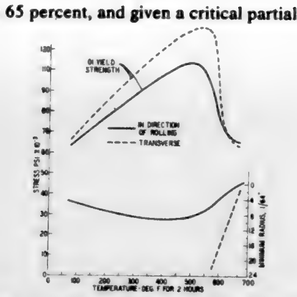
3,663,310
METHOD OF PRODUCING DEEP DRAWING STEEL
Toshio Shiraiwa, Nara-Ken, and Fukunaga Terasaki, Osaka, both of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan
Continuation-in-part of application Ser. No. 18,350, Mar. 10, 1970, now abandoned. This application Nov. 17, 1970, Ser. No. 90,450
Claims priority, application Japan, Mar. 13, 1969, 44/19409
Int. Cl. C21d *9/48*
U.S. Cl. 148—12 **5 Claims**

A ferrous material capable of extremely deep drawing is obtained from rimmed carbon steel containing not more than 0.10 percent C by hot rolling at a finishing temperature of at least 800° C., rapid quenching to less than 500° C., slow further cooling to permit cementite precipitation, cold rolling, and recrystallizing by annealing at 650° to 800° C., the annealing temperature being reached at a heating rate of less than 100° C./hr.

3,663,311
PROCESSING OF COPPER ALLOYS
Gilbert Y. Chin, Murray Hill, and Robert R. Hart, Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.
Continuation-in-part of application Ser. No. 802,438, Feb. 26, 1969, now abandoned. This application May 21, 1969, Ser. No. 826,468
Int. Cl. C22f *1/08*
U.S. Cl. 148—11.5 R **6 Claims**

Phosphor-bronze, nickel-silver, beryllium-copper, and cupro-nickel alloys, when cold worked to an area reduction

of at least 65 percent, and given a critical partial terminal anneal, exhibit higher yield strengths for given amounts of formability than have heretofore been attained.



3,663,312
NITRIDE-STRENGTHENED, STAINLESS STEEL
Lynn E. Kindlimann, Natrona Heights, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.
Filed Mar. 9, 1970, Ser. No. 17,487
Int. Cl. C21d *7/00*; C22c *39/20*, *41/02*
U.S. Cl. 148—12 **25 Claims**



An article comprising at least one layer which consists essentially of a nitride-strengthened, austenitic stainless steel. The steel contains as a dispersoid therein particles of metal nitride having a free energy of formation of greater than than about 10 microns and has a microstructure comprised of elongated primary grains which contain twins and subgrains; wherein a substantial number of said primary grains are greater than 20 microns wide and substantially longer than 40 microns.

A method of forming a nitride-strengthened, austenitic stainless steel having a microstructure comprised of elongated primary grains which contain twins and sub-grains; wherein a substantial number of said primary grains are greater than 20 microns wide and substantially longer than 40 microns. It comprises the steps of: providing a nitride-strengthened, austenitic stainless steel which contains as a dispersoid therein particles of metal nitride having a free energy of formation of greater than −21,000 cal./mole, present at an interparticle spacing of less than about 10 microns; warm working the steel at a temperature below its recrystallization temperature; and annealing the steel at a temperature at or in excess of its germination temperature.

3,663,313
WELDING FLUX COMPOSITION
James E. Oberly, Kearny; Thomas L. Coless, Maplewood, and K. Woodrow Rimer, Plainfield, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.
Filed June 15, 1970, Ser. No. 46,529
Int. Cl. B23k *35/38*
U.S. Cl. 148—23 **2 Claims**

A bonded welding composition or flux for welding or surfacing of metals which is free-peeling, essentially non-hygroscopic. The composition contains calcium carbonate as its major ingredient together with a sodium or potassium silicate binder. The flux is rendered non-hygroscopic by heating the ingredients to a temperature in the range of 1,450° F. to about 1,800° F.

3,663,314
BEARING STEEL COMPOSITION
Kaizo Mouma, 164 Toori-cho, Sendai-shi, Miyagi-ken, and Toshiro Yamamoto, 60-121 Kitahirai, Kagiya, Yokosuka-cho, Chita-gun, Aichi-ken, both of Japan
Continuation-in-part of application Ser. No. 691,868, Dec. 19, 1967, now abandoned. This application Oct. 14, 1970, Ser. No. 80,646
Int. Cl. C21d *1/00*; C22c *39/14*
U.S. Cl. 148—36 **3 Claims**

A bearing steel consisting of 0.55 to 0.78 percent of carbon, 0.50 to 2.00 percent of chromium, 0.10 to 1.15 percent of manganese and 1.00 to 2.00 percent of silicon by weight with the balance iron, said steel having been spheroidized during annealing, and afterward, heated to an austenitizing temperature ranging from about 810° to 870° C. for a period of about 30 minutes to dissolve 0.35 to 0.55 percent by weight of carbon into austenite retaining 3 to 6 percent by weight of undissolved spheroidized iron carbide, liquid quenched and tempered at about 150° C.

3,663,315
GAS CARBURIZATION AND CARBONITRIDING
Maurice F. Hoffman, Whippany, and Abram L. Hodge, Cranford, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.
Filed Mar. 26, 1969, Ser. No. 810,805
Int. Cl. C23c *11/12*, *11/18*
U.S. Cl. 148—16.5 **10 Claims**

The formation of soot is avoided during gas carburization or carbonitriding of steel having a carbon content of from 0.10 – 0.40 percent in an atmosphere of nitrogen and a hydrocarbon gas, such as natrual gas by the use of a barium, calcium or strontium containing inhibitor, for example, barium hydroxide.

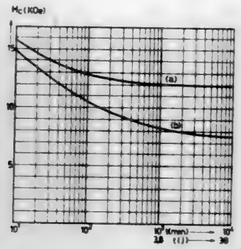
3,663,316
STEEL FOR SAW BLADES
Alfred Kulmburg, Kapfenberg, Austria, assignor to Gebr. Bohler & Co. Aktiengesellschaft, Kapfenberg, Austria
Filed Dec. 30, 1970, Ser. No. 102,913
Claims priority, application Austria, Jan. 9, 1970, A162/70
Int. Cl. C21d *9/24*; C22c *39/20*; B23p *15/28*
U.S. Cl. 148—36 **3 Claims**

A sawblade consisting essentially of 0.6–0.9% C, 0.5–1.0% Si, 0.4–1.0% Mn, 0.4–1.0% Cr, 0.2–0.8% Mo, 0.3–1.0% Ni, at least one element in an amount of up to 0.3% selected from the group consisting of Ti or V, remainder iron and residual impurities; the microstructure of the sawblade being bainitic which has been hardened to a hardness range of 46–54 HR_c.

3,663,317
METHOD OF MAKING A PERMANENT-MAGNETISABLE BODY OF COMPRESSED FINE PARTICLES OF A COMPOUND OF M AND R
Frans Frederik Westendorp, and Antonius Gregorius Rijnbeek, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 18, 1970, Ser. No. 90,512
Claims priority, application Netherlands, Dec. 20, 1969, 6919154
Int. Cl. H01f *7/06*
U.S. Cl. 148—103 **1 Claim**

A method of manufacturing a permanent magnet from compressed M_xR powder (M is, for example, Co, R is a rare

earth or Th). The powder is obtained by grinding castings in oxygen- and water-free environments in an inert gas or an



inert liquid. The resultant magnet exhibits a small ageing effect, while in addition magnets of higher density can be obtained.

3,663,318

PROCESS FOR MAKING FERROMAGNETIC METAL POWDERS

Ernest L. Little, Jr., and Jack D. Wolf, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 5, 1970, Ser. No. 78,182
Int. Cl. H01f 1/06, 1/20; C22b 23/04
U.S. Cl. 148—105 12 Claims

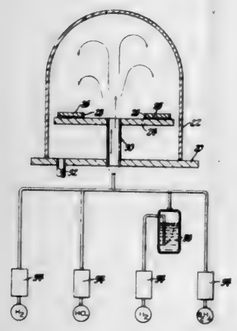
Disclosed herein is a process for making ferromagnetic powders from salts of iron, cobalt, nickel, and from 0 to 35 percent of a chromium salt, by total weight of the salts. The process comprises reacting the metal salt or salts with a reducing agent of (a) an amine-borane and (b) a tetrahydroborate.

3,663,319

MASKING TO PREVENT AUTODOPING OF EPITAXIAL DEPOSITS

John W. Rose, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 20, 1968, Ser. No. 777,368
Int. Cl. H01l 7/36
U.S. Cl. 148—175 3 Claims



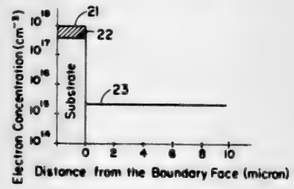
A technique is disclosed for producing extremely high resistivity epitaxial deposits, particularly of P-type conductivity on low resistivity substrates. P-type epitaxial deposits of up to 50 ohm-centimeters on a 0.01 ohm-centimeter P-type substrate can be obtained by masking the back and sides of the epitaxial substrate, leaving exposed only the surface on which the epitaxial deposit is formed.

3,663,320

VAPOR GROWTH PROCESS FOR GALLIUM ARSENIDE

Mitsuhiro Maruyama; Osamu Mizuno, and Sadao Kikuchi, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed July 30, 1969, Ser. No. 846,062
Claims priority, application Japan, Aug. 2, 1968, 43/55672
Int. Cl. H01l 7/36, 7/00; C23c 11/00
U.S. Cl. 148—175 4 Claims



A process is provided for vapor growing a gallium arsenide single crystal layer on a substrate seed-crystal of gallium arsenide having a uniform electron concentration profile in the layer wherein at least two kinds of impurities of the same conductivity type are employed, one which causes autodoping to occur in the vapor-grown crystal, the other which tends to inhibit autodoping.

3,663,321

ALLOY DIODE CHARACTERISTICS CONTROL METHOD

King Lau Hu, Torrance, Calif., assignor to TRW, Inc., Lawndale, Calif.

Filed Nov. 14, 1969, Ser. No. 876,748
Int. Cl. H01l 7/34
U.S. Cl. 148—181 16 Claims



A method for controlling the electrical characteristics of alloy diodes by subjecting the diode to a series of at least two carefully controlled reheat steps in order to result in predictable electrical characteristics for the diode. The first heat step involves heating the diode, after the PN junction has been formed and the device has been brought to room temperature, to a predetermined temperature of from 800° C. to 1,100° C. for from 15 seconds to 1 hour; thereafter and while the device is still at the predetermined temperature, the temperature is varied one or more times by a predetermined amount ΔT. ΔT is in the range from ¼° C. to 30° C.

3,663,322

HYPERGOLIC SOLID FUELS OF HIGH STORAGE STABILITY FOR HYBRID ROCKET ENGINES AND PROCESS FOR MAKING THE SAME

Paula Sartes, Munich, and Winfried Mair, Riemerling, both of Germany, assignors to Messerschmitt-Bolkow, Gesellschaft mit beschrankter Haftung, Ottobrunn near Munich, Germany

Filed Jan. 16, 1969, Ser. No. 791,803
Claims priority, application Germany, Jan. 20, 1968, P 16 46 310.8
Int. Cl. C06d 5/10
U.S. Cl. 149—19 11 Claims

A hypergolic solid fuel of high storage stability for hybrid rocket engines, comprising incorporated in a small amount of a binder a combination of compounds extremely rich in hydrogen and rich in nitrogen as compared to the contents in carbon, said nitrogen being in the form of cyano- or hydrazine groups and capable of releasing high energy upon contact with an oxidizer. The invention also relates to a process for making the fuels.

3,663,323

ENERGETIC PROPELLANT COMPOSITION CONTAINING A DIFLUORAMINO BINDER

Lawrence J. Engel, Green Brook, and John Brooke Gardiner, Mountainside, both of N.J., assignors to The United States of America as represented by the Secretary of the Army

Continuation-in-part of application Ser. No. 671,164, Sept. 27, 1967, now abandoned. This application Apr. 30, 1970, Ser. No. 43,618
Int. Cl. C06b 11/00
U.S. Cl. 149—19 4 Claims

An improved energetic propellant charge, of the solid type useful in rockets and rocket motors, may be formulated with a system of the polymer of tetrakis(difluoramino)amyl acrylate and a large amount of hexakis(difluoramino)propyl ether if trimethylolpropane trimethacrylate and a peroxidic polymerization catalyst such as dichlorobenzoyl peroxide are used to crosslink the tetrakis(difluoramino)amyl acrylate from which the polymer is derived.

3,663,324

LIQUID EXPLOSIVE CONTAINING A NITRAMINE EXPLOSIVE DISSOLVED IN A NITROPARAFFIN

Leonard N. Roberts, Scottsdale, Ariz., assignor to Talley Frac Corporation, Pryor, Okla.

Filed Oct. 27, 1969, Ser. No. 869,883
Int. Cl. C06b 7/00
U.S. Cl. 149—90 10 Claims

A liquid explosive is described which has a small critical diameter, is safe to handle, is capable of use in cold climates and yet is compatible with the higher temperatures commonly present in subterranean formations, which includes a nitroparaffin compound having dissolved therein a nitramine explosive, a ballistic modifier and a detonation aid in such proportions that the critical diameter of the explosive is on the order of one thirty-second inch. Other constituents may also be added for controlling the consistency and ballistic properties as well as the manufacturing and handling properties of the explosive. A thickening or gelling agent is also preferably added to retain the ballistic modifier as well as any other suspended solids in a uniform dispersion. A method of fracturing well formations for enhancing their productivity, using such liquid explosives, is described.

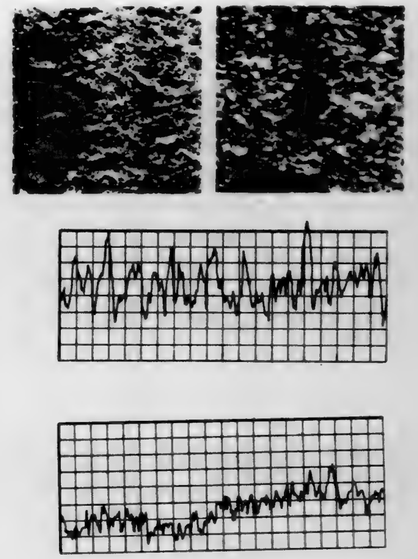
3,663,325

SURFACE TREATING METHOD FOR MOLDINGS OF POLYSTYRENE TYPE RESINS

Kiminori Uda, Yokohama; Hiroya Yamamoto, Tokyo; Naoatu Kasuga, Fujisawa, and Kenzi Fuziyoshi, Yokohama, all of Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed June 11, 1970, Ser. No. 45,337
Int. Cl. C23c 1/00
U.S. Cl. 156—2 12 Claims

A surface treating method for moldings of polystyrene type resins wherein there is dispersed in water a solvent selected from the group consisting of aromatic hydrocarbons, chlorinated hydrocarbons, cycloaliphatic hydrocarbons, ketones and esters using a surface active agent to form an aqueous emulsion containing 0.2 to 30 percent by weight of the solvent; the aqueous emulsion is brought into contact with moldings of polystyrene type resin for treatment of their surfaces; the treated surface of the moldings is further chemically etched using a mixed solution of sulfuric acid and



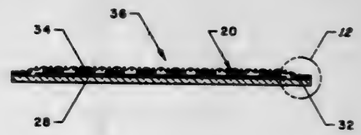
dichromic acid; and, if required, the surface is again treated by heated concentrated sulfuric acid.

3,663,326

ARTICLE HOLDING METHODS AND ASSEMBLAGE

William R. Wanosky, Wescosville, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Jan. 9, 1970, Ser. No. 1,800
Int. Cl. B32b 31/14; C23f 1/00
U.S. Cl. 156—3 12 Claims



Methods involve holding an array of semiconductor devices on a substrate by means of a polyester mesh screen and photoresist material. After the array of devices have been formed by photoresist and etch techniques from a slice waxed to the substrate, the photoresist material is removed from the array but not from the substrate surrounding the array. The polyester mesh screen is placed over and forced against the array and photoresist material while the wax is removed with a solvent. The solvent softens the photoresist material so that the forced screen embeds in the photoresist. Upon removal from the influence of the solvent, the photoresist material rehardens fastening the screen to the substrate with the devices retained between the screen and the substrate in their original orientation and array. The assemblage of substrate, photoresist material and screen permits the devices, no longer waxed to the substrate, to be transported to other operations where the screen is peeled off and the devices removed.

3,663,327
FORMULATION AND METHOD FOR BRIGHTENING ALUMINUM
Jack Henry Ritzi, Cincinnati, Ohio, assignor to Chemed Corporation, Cincinnati, Ohio
Filed Aug. 13, 1969, Ser. No. 849,906
Int. Cl. C23f 3/02
U.S. Cl. 156—21 1 Claim

The present invention is directed to an aluminum brightener formulation which includes water, phosphoric acid, a transition metal compound and a wetting agent. Aluminum may be brightened by a method which includes the step of spraying or brushing an aluminum surface with the present formulation at a moderate temperature.

3,663,328
BALANCED TIRE AND BALANCING METHOD
Alexander Turoczi, Jr., R. D. #1, P. O. Box 113, Bath, Pa.
Filed Dec. 14, 1970, Ser. No. 97,938
Int. Cl. G01m 1/32; B29c 27/10; B32b 31/00
U.S. Cl. 156—75 5 Claims

A tire, balanced with respect to the wheel upon which it is mounted, utilizes a plurality of weights. These weights are in the form of indicia mounted upon the sidewalls of the tire, rather than upon the wheel, and are arcuately distributed to achieve both the required balance and a predetermined, highly visible, identifying and/or decorative effect which makes the tire readily recognizable and easily identifiable. An improved method of balancing a tire in accordance with the invention is also disclosed.

3,663,329
METHOD OF REINFORCING A KNITTED OR WOVEN FABRIC
Rudolf H. Rossmann, Gauting near Munich, Germany, assignor to U.T.I., Inc., Scranton, Pa.
Continuation of application Ser. No. 781,694, Nov. 29, 1968, now abandoned, which is a continuation of application Ser. No. 408,620, Nov. 3, 1963, now abandoned. This application July 15, 1970, Ser. No. 56,223
Claims priority, application Germany, Nov. 5, 1963, Sch 34118
Int. Cl. B32b
U.S. Cl. 156—148 7 Claims

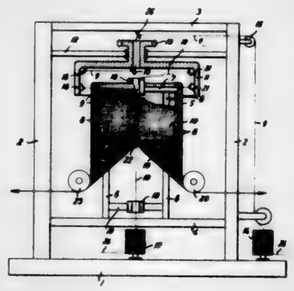
A method of reinforcing woven or knitted fabric of a plurality of threads in which an adhesive having a liquid vehicle is applied to selected threads and the threads are joined together by the adhesive. The threads are dried at the contact point leaving an adhesive substance in particle form. The threads are thereafter entwined in the fabric and the threads are heated at the points where the adhesive substance is applied.

3,663,330
METHOD AND APPARATUS FOR MAKING BIAS-LAID PRODUCTS
Karl E. Sager, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Mar. 31, 1970, Ser. No. 24,216
Int. Cl. B65h 81/04
U.S. Cl. 156—190 11 Claims



Apparatus and method for making a multi-ply web product having at least two plies at different angles with respect to the web. An endless belt is looped helically around a cylindrical mandrel; an optional first ply is laid longitudinally along the belt. As the belt moves a second ply is wrapped helically around the first helix but at a different angle. A third ply is also wrapped around the mandrel, belt, and first ply, and this is at an angle different from the second ply. Finally, the second and third plies are cut by slitting along the edge of the belt.

3,663,331
METHOD AND APPARATUS FOR MANUFACTURING NET MATERIAL AND OTHER NON-WOVEN FABRICS
Erik Selbeck, Vedbaek Strandvej 342, 2950 Vedbaek, Denmark
Filed June 18, 1970, Ser. No. 47,533
Claims priority, application Denmark, Oct. 8, 1969, 5356/69
Int. Cl. D04h 3/12
U.S. Cl. 156—181 6 Claims

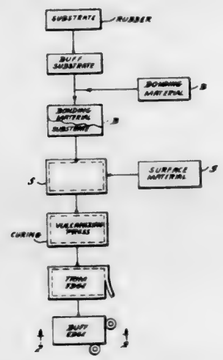


An apparatus for producing and subsequently longitudinal slitting of a hose-like fabric consisting of a plurality of parallel warp threads and two continuous weft threads intersecting the warp threads and bonded thereto at points of intersection, comprises means for advancing the warp threads in the form of a hollow-cylindrical thread layer, and means for advancing a weft thread from each of two stationary weft thread supplies to a respective one of two weft thread guides rotating on a common axis parallel to the axis of the warp thread layer, the weft thread advancing means being arranged so that the weft threads enter the respective thread guides from axially opposite ends of the hollow warp thread layer.

3,663,332
METHOD OF FORMING A GASKET
George E. Gard, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.
Original application Aug. 30, 1966, Ser. No. 576,017, now Patent No. 3,492,011. Divided and this application Jan. 27, 1970, Ser. No. 10,100
Int. Cl. B29d 23/10
U.S. Cl. 156—217 5 Claims

The invention relates to a method of forming resilient gaskets. A resilient elongated rectangular bonded particulate material sheet having a thickness equal to the width of the desired gaskets is formed into a loop and the ends bonded in an abutting relationship. The looped sheet is sized and shaped in a mold under heat and pressure to form a sleeve having a sectional shape and dimensions of the desired gasket. The molded sleeve is then cut transversely to form a plurality of gaskets.

3,663,333
METHOD OF BONDING MATERIAL HAVING A LOW COEFFICIENT OF FRICTION TO A SUBSTRATE
Donald H. Palfreyman, Dedham, Mass., assignor to Fabreeka Products Company, Boston, Mass.
Filed July 18, 1969, Ser. No. 843,086
Int. Cl. B32b 31/12
U.S. Cl. 156—256 5 Claims



Method of bonding sheet material having a very low coefficient of friction to a substrate such as rubber, felt or the like, which comprises providing, as an uncured bonding material, cotton textile fabric impregnated with a thermosetting general purpose phenolic resin; buffing the surface of the substrate; placing thereon a ply of the uncured bonding material; placing the low-coefficient material upon the bonding layer and then vulcanizing the assembly.

3,663,334
LAMINATING METAL TO POLYOLEFIN WITH AN ORGANIC PEROXIDE AND A TERPOLYMER OF ETHYLENE, T-BUTYL ACRYLATE AND ACRYLIC ACID
Heinz Mueller-Tamm, Ludwigshafen, and Alfred Hofmann, Roxheim, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany
Filed May 19, 1969, Ser. No. 825,978
Claims priority, application Germany, May 22, 1968, P 17 69 422.3
Int. Cl. C09j 3/14, 5/06, 7/00
U.S. Cl. 156—309 3 Claims

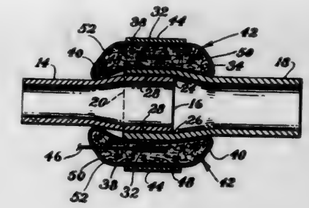
A process for bonding or laminating materials by means of terpolymers of ethylene, an ethylenically unsaturated carboxylic acid and an ester of an ethylenically unsaturated carboxylic acid. It is a characteristic of the process that the terpolymers are used with an addition of an organic peroxide having the general formula $R^1—O—O—R^2$ or $R^1—O—O—X—O—O—R^2$ in which R^1 and R^2 denote hydrogen atoms or alkyl, aryl, aralkyl, alkaryl or acyl radicals and X denotes an aliphatic, aromatic, aromatic-aliphatic or aliphatic-aromatic radical.

3,663,335
INSULATED HEAT PACKS
Richard E. Sheedy, Huntington Sta., N.Y., assignor to Fiberglass Resources Corp., Farmingdale, N.Y.
Filed Nov. 20, 1969, Ser. No. 878,453
Int. Cl. B29c 27/06; B23k 31/00
U.S. Cl. 156—380 2 Claims

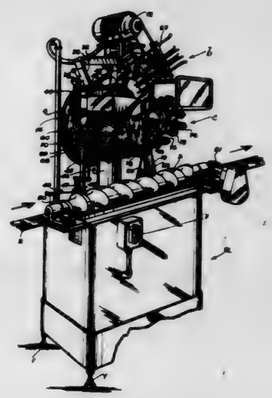
A heat source assembly for use in adhesively joining together thermosetting resin impregnated members.

A heat source consisting of a combustible material is enclosed in a non-combustible insulation which moderates the flow of heat to the joint area and also prevents rapid cooling to maintain uniform heating temperatures.

The aforementioned abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

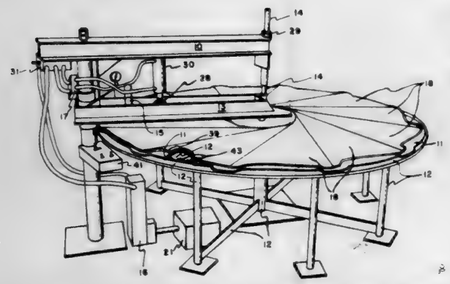


3,663,336
APPARATUS FOR ATTACHING STRIP LABELS TO TOP AND NECK OF A CONTAINER
Jorge Alkalay, and Oton Alkalay, both of Coronel Ramon Lista 5376, Buenos Aires, Argentina
Continuation of application Ser. No. 639,453, May 18, 1967, now abandoned. This application Nov. 6, 1970, Ser. No. 87,646
Int. Cl. B65c 3/12, 3/06
U.S. Cl. 156—485 18 Claims



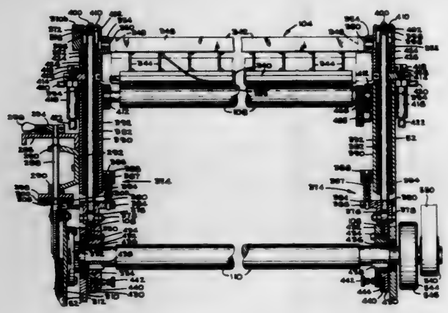
A labeling machine for affixing revenue stamps across the top and down the sides of the neck of a bottle. As bottles continuously are moved along a conveyor, the revenue stamps are placed, adhesive side down, on the bottle top by a clamp. Two rollers simultaneously move down the neck of the bottle and press the stamp securely thereon. The rollers then separate and move off of the bottle neck. Multiple pairs of rollers are on a continuous chain which moves with the speed of the conveyor so that the stamps may be affixed on multiple bottles as the bottles move with the conveyor belt.

3,663,337
METHOD AND APPARATUS FOR MAKING SPIRAL-REEFED PARACHUTES
Stanley C. Hulteen, Chancellor, S. Dak., assignor to The United States of America as represented by the Secretary of the Army
Filed Sept. 2, 1970, Ser. No. 69,075
Int. Cl. B32b *31/00*
U.S. Cl. 156—499 7 Claims



A machine assembly for the fabrication of spiral reefed parachutes includes a main turntable, an overhead operated press plate to seal the gore canopy sections, a heating element in the press plate, a manifold to speed up cooling and a jig to attach eyelets to the canopy.

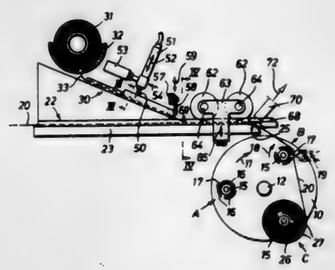
3,663,338
BAG MACHINE
Robert J. Wech, Green Bay, Wis., assignor to FMC Corporation
Filed Sept. 16, 1968, Ser. No. 760,048
Int. Cl. B32b *31/18, 31/20*
U.S. Cl. 156—515 8 Claims



The bag machine of the present disclosure is of the type which can produce bags made of various thermoplastic sheet material and can be adapted to make side weld or bottom weld bags. The following description will, however, be confined to the production of side weld bags.

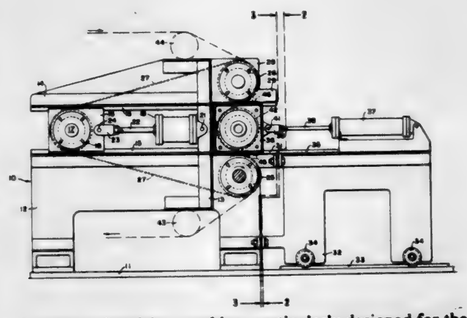
A roll of plastic web is mounted on an unwind stand and traverses a folding board constraining the web to fold along its longitudinal median or along a line spaced from and parallel to the longitudinal median in the event it is desired to produce wicketed bags having lip with a pair of holes in which is inserted a U-shape wire called a wicket. Upstream of the folding board a gusseter is provided to produce a fold which permits greater expansion at the bottom of the bag. The folded and gusseted web thence comes under the influence of a reciprocating transversely disposed seal and cutter bar which divides the web, at longitudinally spaced intervals, to produce individual bags. The bags are then transported to a table which is provided with devices for arranging the bags into a stack.

3,663,339
METHOD AND APPARATUS FOR SECURING SUPERIMPOSED WINDINGS OF A COIL
Helmut Herrmann, Cologne-Braunsfeld, Germany, assignor to Metalloxyd GmbH, Cologne-Braunsfeld, Germany
Filed Apr. 29, 1970, Ser. No. 33,000
Claims priority, application Germany, July 11, 1969, P 19 35 353.8
Int. Cl. B65h *39/16*; B32b *31/10*
U.S. Cl. 156—540 12 Claims



A method and apparatus for adhesively securing two windings at the beginning and end of a wound up band by a tape adhesive on both sides. The tape adheres to a lateral strip portion of a carrier web, which is supplied to the wound up band, and then also adheres to the same. The other lateral strip portion is folded over so that the carrier web becomes stiff. The tape is peeled off the stiff folded carrier web when bent with the wound up band about an edge.

3,663,340
APPARATUS FOR PRODUCTION OF TEXTILE, LETTER PRESS AND PRINTING BLANKETS
William C. Ross, Winchester, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.
Filed June 24, 1970, Ser. No. 49,227
Int. Cl. B31f *5/00*; B30b *3/00*
U.S. Cl. 156—555 4 Claims



A rotary vulcanizing machine, particularly designed for the production of textile, letter-press and screen-print blankets. The compression belt, a glass cord reinforced rubber blanket, operates over small diameter (12 inches) rolls, and is tensioned by the thrust of hydraulic cylinders. The heated curing roll can be withdrawn from the machine and slid onto a

wheeled carriage to move out of the way while a blanket to be cured is being dressed on the machine. The high strength of the compacting belt and its flexiblity while producing the same amount of compacting pressure eliminates the necessity of large diameter curing rolls for stainless steel belts saving cost, size, weight and floor space.

3,663,341
THREE SHEET OVERLAY AND LAMINATES COMPRISING THE SAME
Lee E. Veneziale, Jr., Tyrone, Pa., assignor to Westvaco Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 45,933, June 12, 1970, now abandoned. This application Jan. 25, 1971, Ser. No. 109,563
Int. Cl. B32b *17/12, 21/08, 27/36*
U.S. Cl. 161—6 13 Claims

A decorative and functional overlay comprising a sheet of glass fibers, a decorative sheet, and a shock-absorbing sheet, all sheets containing polyester resin. The sheets may be layed up with and fused directly to a rigidity-imparting base member or the sheets may be consolidated into a thin unitary panel not exceeding 0.030 inch in thickness which may be bonded or glued to a core material. A low pressure laminate with high impact resistance, suitable for horizontal as well as vertical surface applications, is produced by laminating the sheets in particular order to flakeboard having a density of at least about 46 pounds per cubic foot.

3,663,342
CHRISTMAS TREE GARLANDS OF FLEXIBLE STRIP MATERIAL WITH ATTACHED STAR ELEMENTS AND METHOD OF ASSEMBLY
Bernhard R. Landwehr, 390 Whitewood Road, Union, N.J.
Filed Dec. 30, 1969, Ser. No. 889,153
Int. Cl. A47g *33/08*
U.S. Cl. 161—14 3 Claims



This invention consists of a strip of thin flexible foil-like material having a silver, gold, or any other desired finish. The aforesaid strip of material is provided with a plurality of spaced members extending at right angle to the strip of material, each member having a recess in each longitudinal edge thereof; and a plurality of stars or other configurated members having an opening therein for the reception of the aforesaid members. The members are adapted to hold the stars or other configurations on the aforesaid strip of material which is then placed on the Christmas tree or the like as a decoration.

3,663,343
COMPOSITE PRESSURE SENSITIVE ADHESIVE SHEET STRUCTURE AND PROCESS OF MAKING THE SAME
Homer G. Buck, Los Angeles, Calif., assignor to By-Buk Company
Filed May 11, 1970, Ser. No. 36,209
Int. Cl. B32b *3/16, 7/06*
U.S. Cl. 161—39 16 Claims

A process in which a carrier strip has a release coated web marginally secured thereto, the latter releasably adherently mounting a longitudinally extending tape having a pressure sensitive adhesive on its underside. The release coated strip is longitudinally severed with the line of severance being spanned by the adhesive coated tape. Subsequently, the combined span of the tape and a marginal portion of the release coated stock that is freely superposed on the carrier strip, are transversely slit defining a plurality of discrete pressure sensitive adhesive backed sections of tape, each provided with a corresponding tab by means of which each discrete section of tape can be peeled from the composite structure for application to another article. The process produces a roll of individually dispensible, pressure sensitive adhesive tape sections, each with its corresponding tab being so angularly related to the length of the composite structure as to facilitate



winding up of the product, in the process of manufacture, to protectively enclose the tabs between successive coils of the carrier strip. Upon unwinding of the roll through a specially adapted guide means of a dispensing apparatus, each tab is individually projected out of the plane of the carrier strip to provide clearance for grasping a free end of the tab stripping the associated adhesive backed sheet article from the roll. The carrier strip and tape may have different characteristics of light reflectivity, controlling an automatic feed system for the dispensing apparatus, cooperatively associated with a photoelectric light cell or the like.

3,663,344
ORTHOTROPIC FIBER-REINFORCED THERMOPLASTIC FILM AND METHOD OF MANUFACTURE
Robert J. Brock, Appleton, and Paul B. Hansen, Neenah, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Dec. 31, 1970, Ser. No. 103,150
Int. Cl. B32b *5/12, 27/04, 27/12*
U.S. Cl. 161—59 8 Claims



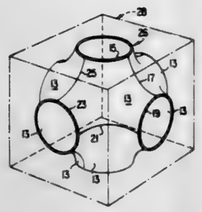
A film-staple fiber composite, and method of making same, provides an integral product of satisfactory tensile strength yet with low tear resistance. Cross-laid fiber webs impart tensile strength to the film and the fiber webs are placed in close proximity to each other to develop the low tear resistance.

3,663,345
FIRE RETARDANT CARPET
Gul G. Jaisinghani, Bell, Calif., assignor to National Acceptance Company of California, Beverly Hills, Calif.
Filed Mar. 2, 1970, Ser. No. 15,677
Int. Cl. B32b *7/04*
U.S. Cl. 161—64 1 Claim

A carpet in which the pile fibers are fixed to the primary backing by a compound comprising a latex binding material combined with an aluminum hydrate. The compound may be placed on the primary backing with sufficient thickness so that when the secondary backing is applied, no air pockets

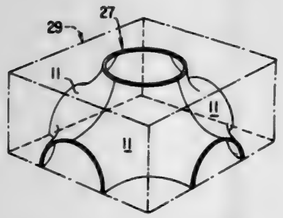
exist between the backings. Pressure rollers and/or a wetting or dispersion agent may be used to ensure that the primary backing is permeated by the compound.

3,663,346
HONEYCOMB CORE STRUCTURES OF MINIMAL SURFACE TUBULE SECTIONS
Alan H. Schoen, West Concord, Mass., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed July 22, 1970, Ser. No. 57,253
Int. Cl. B32b 3/12
U.S. Cl. 161—68 16 Claims



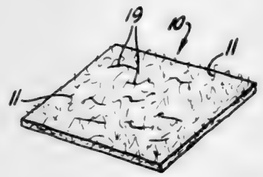
Honeycomb cores formed of tubule sections bounded orthogonally by plane facings are described. The tubule sections are defined as being formed of minimal surface elements that orthogonally intersect all of the surfaces of an imaginary kaleidoscopic cell at least once. In other words, the tubule sections are broken into elements for definition purposes. The elements are defined as minimal surface elements, i.e., elements that have a mean curvature that is equal to zero at all points on their surface. These elements are further defined inside of an imaginary kaleidoscopic cell in that they orthogonally intersect all surfaces of an imaginary kaleidoscopic cell at least once. Moreover, the tubule sections are smoothly interconnected to form honeycomb core structures that have no internal discontinuities.

3,663,347
HONEYCOMB PANELS FORMED OF MINIMAL SURFACE PERIODIC TUBULE LAYERS
Alan H. Schoen, West Concord, Mass., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed July 16, 1970, Ser. No. 55,537
Int. Cl. B32b 3/12
U.S. Cl. 161—68 17 Claims



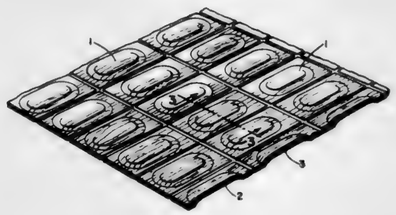
Panels including honeycomb cores formed of minimal surface periodic tubule layers are described. Each tubule layer is defined as being formed of minimal surface elements that orthogonally intersect all of the faces of a kaleidoscopic cell at least once. In other words, for purposes of definition, the tubule layers are broken into elemental sections. The elemental sections are defined as minimal surface elements, i.e., elements having a mean curvature at all points on the surface that is equal to zero. These elements are further defined inside of kaleidoscopic cells wherein they orthogonally intersect all faces of the kaleidoscopic cell with which they are associated at least once. The minimal surface elements are smoothly interconnected to form tubule layers which are stacked in a reflection image-like manner to form a honeycomb core having no internal discontinuities.

3,663,348
LOFTY AND SOFT NONWOVEN, THROUGH BONDED FABRIC
Gerald J. Lilola, North Brunswick; Louis F. May, Jr., Old Bridge; Norman Schiff, Kendall Park, all of N.J.; Frederick K. Mesek, Downers Grove, Ill.; Robert C. Shepherd, Oak Lawn, Ill., and William R. Strickel, Chicago, Ill., assignors to Johnson & Johnson
Continuation-in-part of application Ser. No. 515,874, Dec. 23, 1965, now abandoned. This application May 16, 1968, Ser. No. 729,784
Int. Cl. A61f 13/18; B32b 5/16; D04h 1/12
U.S. Cl. 161—116 14 Claims



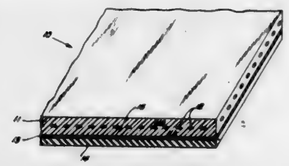
An improved lightweight fabric formed predominantly of short-length cellulosic fibers with a minor percentage of long fibers in a substantially homogeneous non-woven web, improved products such as a diaper made therefrom and improved methods of manufacture.

3,663,349
WALL PANEL
Fulvio Venturino, Corso Agnelli 38, Turin, Italy
Continuation-in-part of application Ser. No. 825-796, May 19, 1969, now abandoned. This application Mar. 18, 1971, Ser. No. 125,550
Int. Cl. B32b 1/00, 3/28
U.S. Cl. 161—130 4 Claims



A wall panel comprising a central layer of fabric having glued thereto on one side a layer of veneer wood or imitation leather and provided on the other side with plastic material secured to the fabric by hot pressing so as to impart to the wall panel the geometric embossed form of the pressing die.

3,663,350
MEMBRANE SYSTEM
William S. Stokes, 18655 Clark, Apt. 23, Tarzana, Calif.
Filed Jan. 12, 1970, Ser. No. 2,075
Int. Cl. B32b 13/12, 25/08; E04c 1/24
U.S. Cl. 161—151 14 Claims

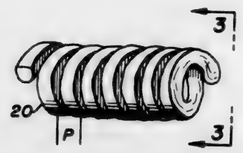


A leakproof membrane system including an outer sheet of fluid impervious, compression set resistant, synthetic polymer resin, a synthetic fiber scrim completely imbedded within the outer sheet, and an elastomeric layer coextensive with and adhesively bonded to the outer sheet. The elastomeric layer comprises an oriented rubber having preferred resilience within the plane of the layer. When installed on a substrate, fluid leakage to the substrate is prevented by the membrane system. Further, the elastomeric layer provides a "slip-sheet" effect, isolating the membrane outer sheet from movement or cracking of the substrate.

3,663,351
VAPOR PERMEABLE POLYURETHANE ADHESIVE AND FINISH LAYERS IN ARTIFICIAL LEATHER
Walter T. Murphy, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed July 24, 1970, Ser. No. 58,167
Int. Cl. B32b 5/18, 27/40
U.S. Cl. 161—159 1 Claim

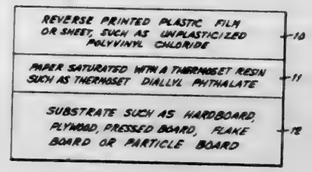
A vapor permeable adhesive based on a combination of polyurethane and water dissolved in tetrahydrofuran (THF) is supplied to adhere the elements of a vapor permeable laminate construction. As a thin top coating on the said laminate the said adhesive dries to form a durable microporous surface finish. A thixotropic viscosity improver added to the polyurethane-water-THF cement, insures acceptable moisture vapor permeability.

3,663,352
HELICALLY CRIMPED CONTINUOUS FILAMENT YARN
Joseph A. Self, Baton Rouge, La.; Gerald W. Sovereign, Gulf Breeze, Fla., and Alton E. Peacock, Chapel Hill, N.C., assignors to Monsanto Company, St. Louis, Mo.
Filed Nov. 1, 1968, Ser. No. 772,766
Int. Cl. D02g 3/00
U.S. Cl. 161—173 6 Claims



One side of a drawn homogeneous filament having at least 17 percent boiling water shrinkage is heated above its melting point while under high tension. The filament is then prebulked while under substantially no tension by being exposed to hot air at a temperature above the yarn glass transition temperature, soon after the initial heat treatment, and preferably before being wound. This produces a tighter crimp when the yarn is later subjected to hot water.

3,663,353
PLASTIC LAMINATE STRUCTURE CONSISTING OF A PLASTIC FILM LAMINATED TO A SUBSTRATE WITH A RESIN IMPREGNATED PAPER INTERMEDIATE LAYER
Jack D. Long, Cleveland, Ohio, and David Richards, Lunenburg, Mass., assignors to Fitchburg Paper Company, Fitchburg, Mass.
Continuation of application Ser. No. 602,797, Dec. 19, 1966, now abandoned. This application June 1, 1970, Ser. No. 41,740
Int. Cl. B32b 15/08, 27/08, 27/30
U.S. Cl. 161—184 1 Claim

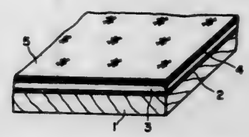


Laminated structures are disclosed wherein a reverse printed film of plastic such as polyvinyl chloride, Tedlar or polytetrafluoroethylene is joined to a substrate by means of a thermoset resin impregnated paper layer.

3,663,354
PRIMER FOR METALS
Hiroshi Ueno, Kawasaki-shi, and Seihichi Kobayashi, Yokohama-shi, both of Japan, assignors to Toyo Seikan Kabushiki Kaisha, Tokyo-to, Japan
Filed July 23, 1969, Ser. No. 844,154
Int. Cl. B32b 15/08, 27/34, 27/38
U.S. Cl. 161—186 12 Claims

A primer which is adhesive to both metals and linear polyamides, and which is a precondensate of (1) a resol type phenolic resin prepared from a mixture of phenols comprising p-cresol and tri- or higher functional phenol and (2) an epoxy resin. A metal article coated with the primer having a linear polyamide coat thereon, and a bonded structure of prime-coated metal sheets bonded with a linear polyamide as a cement are also disclosed.

3,663,355
FLAME-PROOF AND NO-SMOKE-PRODUCING PLATE FOR ARCHITECTURAL USE
Keisuke Shimizu, 32-15, 2-chome, Wakabayashi, Setagaya-ku, Tokyo, and Kiichi Suzuki, 15-9, 1-chome, Yutaka-cho, Shinagawa-ku, Tokyo, both of Japan
Filed Mar. 23, 1970, Ser. No. 21,872
Claims priority, application Japan, May 10, 1969, 44/35832
Int. Cl. B32b 13/10
U.S. Cl. 161—210 3 Claims



A flame-proof and no-smoke-producing wooden plate for architectural use comprising a wooden base plate, a layer of a water-proof composition formed on said wooden plate, a

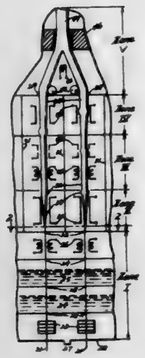
layer of a water-soluble silicate selected from the group consisting of sodium silicate or potassium silicate formed on said layer of said water-proof composition, and an additional layer of a water-proof composition formed on said water-soluble silicate layer. Each of said water-proof compositions is formed by adding to a water-soluble silicate selected from the group consisting of sodium silicate and potassium silicate a dicalcium silicate material which combines with a water-soluble silicate to produce a self-setting mixture.

3,663,356

REINFORCED METAL-MATRIX COMPOSITES

Chou H. Li, 379 Elm Drive, Roslyn, N.Y.

Filed Oct. 23, 1968, Ser. No. 769,938
Int. Cl. B21c *37/00*; B23p *17/00*; B32b *15/04*
U.S. Cl. 161—225 27 Claims



The invention discloses the structure of, and method and apparatus for making, improved metal-matrix composites. Each of the composites comprises a strain-hardenable metal matrix, and a plurality of high-strength, high-modulus, elongated reinforcing members arranged in spatial relationship therein. Each of the members is effectively bonded to the surrounding matrix at discrete regions along its length, so as to locally strain the matrix around the discretely bonded regions upon application of load on the composite. Being thus locally strained, the matrix is spatially selectively and differentially strain-hardened and strengthened near the bonded regions. The spheres of influence of the straining and strain-hardening in the matrix near the bonded regions on one member are designed to significantly overlap similar spheres of influence near the neighboring members. This composite structure substantially increases mechanical interaction and load transfer ability between the members through the intervening hardened and strengthened matrix.

3,663,357

BLEACHING OF MECHANICAL CELLULOSIC PULP WITH OZONE IN THE PRESENCE OF A PEROXYGEN COMPOUND

Norman Liebergott, Chomedey, Laval, Canada, assignor to Pulp and Paper Research Institute of Canada, Pointe Claire, Quebec, Canada

Filed Mar. 18, 1970, Ser. No. 20,824
Claims priority, application Canada, Nov. 27, 1969, 068,520
Int. Cl. D21c *9/16*
U.S. Cl. 162—65 10 Claims

Bleaching of mechanical pulp in the form of fibers and fiber aggregates by adding a peroxygen compound to moist pulp to provide a mixture of pulp and peroxygen compound and thereafter treating said mixture with an ozone containing gaseous mixture.

3,663,358

A METHOD FOR INCREASING BISULFITE PULP YIELD COMPRISING TREATING LIGNOCELLULOSIC MATERIAL WITH CYANIDE IONS AT A PH OF 7–12 PRIOR TO DIGESTION

Sten I. Falkehag, Charleston; Alan M. Bills, Summerville, both of S.C., and Harold L. Hintz, Covington, Va., assignors to Westvaco Corporation, New York, N.Y.

Filed Apr. 29, 1970, Ser. No. 33,044
Int. Cl. D21c *1/04*, *3/06*
U.S. Cl. 162—70 6 Claims

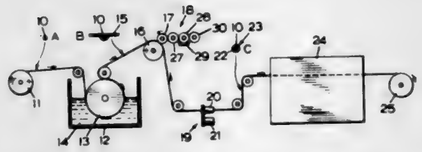
A process for increasing pulp yield from lignocellulosic material consists of treating the lignocellulosic material with either a solution of cyanide ions at a temperature below about 130° C., preferably about 75° C., or treating the material with a mixture of cyanide-bisulfite ions in solution at a temperature below 130° C. preferably about 100° C., and digesting at conventional neutral or acid bisulfite conditions. The treatment of wood prior to neutral or acid bisulfite digestion with either cyanide ion alone or a combination of cyanide-bisulfite results in pulps having increased yield and improved brightness stability over untreated bisulfite cooks.

3,663,359

COLOR CODING OF PULP INSULATED CONDUCTORS

David H. Braim, Lachine, Quebec, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed May 1, 1970, Ser. No. 33,771
Int. Cl. D21h *3/82*
U.S. Cl. 162—105 6 Claims



A method and apparatus for the intermittent marking or color coding of an absorbent sheath on a continuous wire strand, obtained by forming pulp material as a ribbon parallel to the wire and wrapping the pulp ribbon laterally about the wire, in which lateral stripes of dye are applied at spaced intervals to that surface of the pulp ribbon opposite the wire after the ribbon is formed and before it is wrapped around the wire. The dye stripes are applied to the pulp ribbon, while wet, by a marking roller located between a pulp vat and a polisher, and the stripes extend laterally the width of the ribbon.

3,663,360

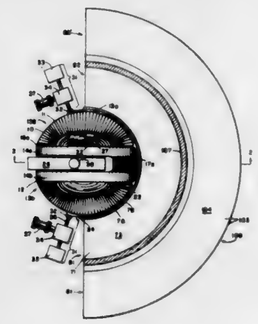
CONVERSION OF HIGH TEMPERATURE PLASMA ENERGY INTO ELECTRICAL ENERGY

Richard F. Post, Walnut Creek, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Aug. 13, 1970, Ser. No. 63,582
Int. Cl. G21b *1/00*
U.S. Cl. 176—3 17 Claims

High temperature plasma is produced in a containment zone of a controlled fusion reactor defined by a magnetic containment field from which field plasma emerges as a beam. The plasma beam is directed through the magnetic field of an expander which expander field is coupled to the containment field and diminishes in intensity therethrough so that rotational energy of the plasma ions is converted to translational kinetic energy. An arrangement is provided at the outlet of the expander to separate electrons from the high energy ions which ions are then directed into a collector

structure. The collector structure comprises a plurality of stages maintained at progressively higher positive potentials wherein the ions are progressively decelerated so that successive fractions of the ions passes residual kinetic energies less than the differential potential between successive collector stages. The collector stages are provided with a deflector means which selectively deflects the ions with low residual kinetic energies to impinge upon collector plates to create electrical current at the stage potential. In one disclosed em-



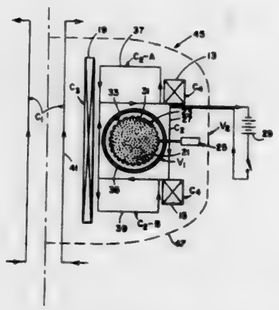
bodiment the selective deflector means utilizes a vapor jet charge exchange arrangement, in a second, the selective deflector means is an arrangement using crossed electric and magnetic fields, and, in a third, the selective deflector means utilizes particle focussing lenses. Electrical circuitry means are provided for combining and/or converting the individual collector currents for delivery to an electrical distribution system with means to establish the initial decelerating or retarding potentials.

3,663,361

NUCLEAR FUSION DEVICE OF THE AIR-CORE TOKAMAK TYPE

Shoichi Yoshikawa, Princeton, N.J., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Feb. 17, 1970, Ser. No. 11,994
Int. Cl. G21b *21/00*
U.S. Cl. 176—3 7 Claims



An air-core tokamak having high symmetry for providing an increased ratio of plasma radius over the major radius, stability, high B and minimizing field error, as well as a low aspect ratio, high accessibility to the plasma, and separation of the plasma column from the proximity of the material of the vacuum container wall and limiters.

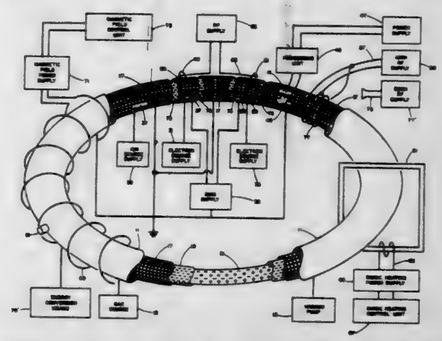
The toroidal confinement device has an air-core toroidal solenoid disposed along the inside diameter of the plasma column for producing a toroidal electric field, and spaced apart, toroidal conductors disposed along the outside diameter of the plasma column for compensating for the return flux of said solenoid and providing a transverse magnetic field for stably confining the plasma.

3,663,362

CONTROLLED FUSION REACTOR

Thomas H. Stix, Princeton, N.J., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Dec. 22, 1970, Ser. No. 100,734
Int. Cl. G21b *1/00*
U.S. Cl. 176—4 17 Claims



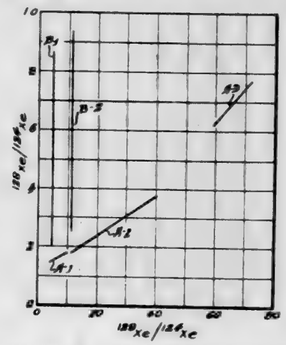
Method and apparatus for plasma confinement and/or heating in a toroid-like magnetic system, wherein a dense electron-rich sheath is maintained between the surface of a toroid-like body of quasi-neutral plasma and an adjacent conducting wall or grid in order to create a deep electrostatic potential well for the ions of said quasi-neutral plasma and thus to enhance the confinement of ions in said system and/or to accelerate injected ions for the heating of said plasma.

3,663,363

IDENTIFICATION OF FAILED FUEL ELEMENTS

Carl E. Crouthamel, Glen Ellyn; Lester F. Coleman, Wheaton; George J. Bernstein, Park Forest, all of Ill., and Peter B. Henault, Idaho Falls, Idaho, assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 13, 1969, Ser. No. 806,942
Int. Cl. G21c *17/04*
U.S. Cl. 176—19 LD 1 Claim



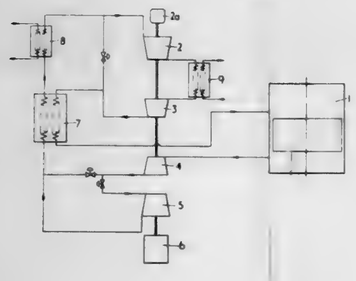
Each subassembly in a breeder reactor is tagged with a gas containing a different mixture of xenon isotopes having a

mass number from 124 to 130. The reactor cover gas is tested for fission-product gases and if any are found they are tested for light xenon isotopes to identify which subassembly has failed.

3,663,364
NUCLEAR REACTORS OPERATING IN CONJUNCTION WITH GAS TURBINES

John Thompson, and Roger Davison Vaughan, both of Knutsford, England, assignors to The Nuclear Power Group Limited, Knutsford, Cheshire, England

Filed Sept. 23, 1969, Ser. No. 860,188
Int. Cl. G21c *15/28*; G21d *1/02*
U.S. Cl. 176—65 **4 Claims**



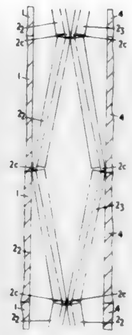
A thermal power plant employing a gas cooled nuclear reactor comprising a closed cycle gas turbine plant having at least one compressor driven by at least one compressor turbine, at least one work turbine mechanically separate from the compressor turbine and coupled to an electrical generator, and at least one heat exchanger for heating the working fluid, the plant incorporating duct means for conveying the working fluid in a closed path through the compressor, through one side of a heat exchanger, through the nuclear reactor, through the compressor turbine, through the work turbine and thence through the other side of the heat exchanger before re-entering the compressor, the arrangement being that the compressor turbine and compressor are arranged vertically within a first cavity in a concrete pressure vessel, the heat exchanger is arranged in a second vertical cavity within the pressure vessel and the reactor core within a third vertical cavity, extending transversely across the vessel with respect to the other cavities, the four cavities being interconnected for the passage of working fluid through the gas turbine plant and reactor core.

3,663,365
NUCLEAR REACTOR FUEL ELEMENT ASSEMBLIES

Donald Stanley Pettinger, and John Mackinlay Yellowlees, both of Cheshire, England, assignors to The Nuclear Power Group Limited, Knutsford, Cheshire, England

Filed Oct. 28, 1968, Ser. No. 771,035
Claims priority, application Great Britain, Oct. 27, 1967, 49,011/67
Int. Cl. G21c *3/23*
U.S. Cl. 176—77 **5 Claims**

A nuclear reactor fuel element assembly in which a plurality of sleeves arranged end to end house nuclear fuel-containing members arranged in clusters, wherein the ends of the fuel-containing members have cut-away portions or projections and the fuel-containing members of the groups are so disposed that gravitational forces due to the weight of the fuel-containing members of the group, when the assembly is located in a vertical channel in a reactor core, act to produce couples on the members causing them to lean at one end towards one another in mutually supporting relationship and



to lean at the other end away from one another against fixed surfaces provided at least in part by the walls of the sleeves.

3,663,366
SHROUD FOR A FUEL ASSEMBLY IN A NUCLEAR REACTOR

Tor Ole Sauar, Stabekk, Norway, assignor to Institutt for Atomenergi, Kjeller, Norway

Filed Apr. 3, 1969, Ser. No. 813,296
Claims priority, application Norway, Apr. 6, 1968, 1351/68
Int. Cl. G21c *3/30*, *3/38*
U.S. Cl. 176—68 **1 Claim**

In nuclear reactors utilizing water both as moderator and coolant, shrouds are frequency applied for the direction and confinement of the coolant flow along the fuel element.

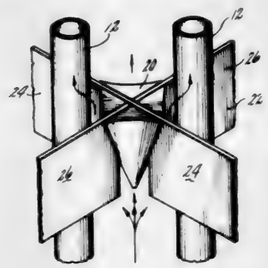
In a reactor according to the invention, however, said shrouds also serve another purpose, namely to provide the reactor core with burnable poison, which will advantageously modify the operation of the reactor in several ways.

According to the invention it is considered convenient to disperse said burnable poison in sheets of stainless steel, which form an internal layer of a zirconium alloy. Said shroud will then be constructed from such compound plates.

3,663,367
FLOW DEFLECTOR FOR NUCLEAR FUEL ELEMENT ASSEMBLIES

John N. Calvin, West Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 31, 1969, Ser. No. 889,548
Int. Cl. G21c *3/34*
U.S. Cl. 176—78 **9 Claims**



A nuclear reactor fuel element assembly containing a plurality of spaced parallel fuel elements is provided with inverted conical or pyramidal deflector elements in the coolant flow channels between the fuel elements to divert the coolant flow. This disrupts the coolant layer adjacent to the fuel elements, promotes the mixing of coolant from various channels and raises the critical heat flux. The deflector elements are supported in position at the points of intersection of a grid structure which may also be a support grid for the fuel elements.

3,663,368
METHOD FOR REMOVING LEVULINIC ACID BY MICROORGANISMS

Takahiro Ueno, and Michio Harada, both of Takasago-shi, Japan, assignors to Kikkoman Shoyu Co., Ltd., Noda-shi, Japan

Filed Dec. 12, 1968, Ser. No. 783,202
Claims priority, application Japan, Dec. 18, 1967, 42/80632; Oct. 1, 1968, 43/70785
Int. Cl. C12b *1/00*
U.S. Cl. 195—4 **10 Claims**

A method for removing levulinic acid from a liquid containing levulinic acid which comprises adding materials containing cells of microorganisms to a liquid containing levulinic acid, said materials containing cells of microorganisms having been obtained by culturing a microorganism having the ability of utilization of levulinic acid in said liquid. Microorganisms employed include *Arthrobacter simplex* ATCC 6946, *Brevibacterium linens* ATCC 21330, *Corynebacterium equi* ATCC 21329 and *Pseudomonas aeruginosa* ATCC 21328.

3,663,369
HYDROLYSIS OF STARCH

Alpha L. Morehouse; Ronald C. Malzahn, and John T. Day, all of Muscatine, Iowa, assignors to Grain Processing Corporation, Muscatine, Iowa

Filed Feb. 23, 1968, Ser. No. 707,557
Int. Cl. C12b *1/00*
U.S. Cl. 195—31 **9 Claims**

Low conversion starch hydrolyzate products having dextrose equivalent values not substantially above 18 and characterized by a unique saccharide composition, good clarity and little tendency of retrogradation in solution. Methods for preparing low conversion starch hydrolyzates by a two-stage hydrolysis; hydrolysis in the first stage being carried out with acids or enzymes at elevated temperatures for short periods to achieve liquefaction of the starch with very little dextrinization or saccharification and the second stage of the hydrolysis being carried out at an alkaline pH with bacterial alpha-amylase to achieve a desired dextrose equivalent value.

3,663,370
PROCESS FOR PRODUCING L-GLUTAMIC ACID BY FERMENTATION

Kageaki Kono, Tokyo; Toshikazu Oki, Fujisawa-shi; Atsuo Kitai, Kamakura-shi, and Asaichiro Ozaki, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc. and Sanraku Ocean Co. Ltd., Tokyo, Japan

Filed Mar. 26, 1969, Ser. No. 810,785
Claims priority, application Japan, Mar. 30, 1968, 43/20617
Int. Cl. C12d *13/06*
U.S. Cl. 195—49 **7 Claims**

L-Glutamic acid is produced by fermentation of culture media containing methanol as the main or sole carbon source by certain strains of microorganisms of the genera Methanomonas, Protaminobacter, and Microcyclus. The glutamic acid yield is improved by the presence of thiamine in the medium, and thiamine is required for growth of some of the microorganisms.

3,663,371
METHOD OF PRODUCING DEXTRANASE

John P. Viccaro, Jamaica, N.Y., and John M. Weaver, Glen Rock, N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed May 26, 1970, Ser. No. 40,723
Int. Cl. C12d *13/10*
U.S. Cl. 195—66 R **6 Claims**

Dextranase is obtained by propagating *Penicillium aculaetum* in a nutrient medium containing dextran and thereafter recovering the enzyme from the medium.

3,663,372
METHOD OF PREPARING A DRIED GLUCOAMYLASE PREPARATION

Jay Allen Smith, Downers Grove, Ill., assignor to CPC International Inc.

Filed Mar. 27, 1969, Ser. No. 811,252
Int. Cl. C07g *7/02*
U.S. Cl. 195—66 R **11 Claims**

A process is set out for producing a highly concentrated glucoamylase preparation, which is carrier-free, by adding a precipitant to an aqueous solution of glucoamylase in sufficient quantity to precipitate the glucoamylase; separating at least a substantial portion of the solution from the glucoamylase precipitate, while keeping the precipitate in an unagglomerated form; then adding a dehydrating solvent to the precipitate; and recovering the precipitate. The precipitate is then separated from the liquid, dried, and a highly concentrated glucoamylase preparation is recovered.

3,663,373
PROCESS FOR THE PREPARATION OF IODININ

Julius Berger, Passaic; Richard H. Epps; Edward M. Jenkins, both of Montclair, and Benjamin Tabenkin, Upper Montclair, all of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

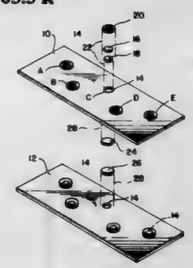
Filed Feb. 24, 1970, Ser. No. 13,785
Int. Cl. C12d *9/00*
U.S. Cl. 195—96 **9 Claims**

A method for producing iodinin through the cultivation of selected isolates of the organism *Brevibacterium iodinum*. Cultivation takes place in a specialized nutrient medium and the iodinin is isolated by extraction. Iodinin is a valuable chemical intermediate used in the preparation of the known pharmaceutically useful antibiotic myxin.

3,663,374
METHOD AND APPARATUS FOR QUANTITATING ENZYME ACTIVITY

Rudolph H. Moyer, West Covina, and Donald J. Sibbett, Cucamonga, both of Calif., assignors to Geomet, Incorporated, Rockville, Md.

Filed Aug. 14, 1970, Ser. No. 63,842
Int. Cl. G01n *31/14*
U.S. Cl. 195—103.5 R **10 Claims**



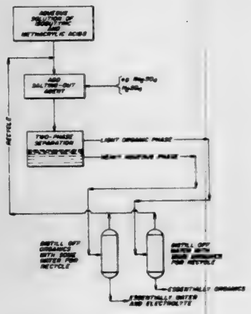
Method and apparatus for quantitating enzyme activity in blood and other fluids, using a spot test technique. The test

utilizes enzyme standards freeze-dried in absorbent discs held under a membrane filter. Other discs above the filter contain substrate, cofactors, and indicators. The spot test plates are entirely self-contained, requiring neither instrumentation nor measurement of fluid volumes, and the test can be carried out under any ambient conditions. The test is particularly applicable to emergency screening requirements, such as may occur in hospital receiving rooms, doctors' offices, ambulances, or whereever rapid diagnosis of myocardial infraction may be required.

3,663,375
SEPARATION OF COMPONENTS FROM A REACTION PRODUCT MIXTURE OF WATER ISOBUTYRIC ACID AND METHACRYLIC ACID BY PHASE SEPARATION AND DISTILLATIONS

John Maurice Witheford, Wyckoff, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Mar. 31, 1970, Ser. No. 24,362
Int. Cl. B01d *3/34*; C07c *53/22*, *57/04*
U.S. Cl. 203—15 6 Claims



To separate aqueous and organic components of a mixture of isobutyric acid, water and methacrylic acid, the mixture is initially separated by salting out by means of a water soluble electrolyte e.g. sodium sulfate, which causes separation of aqueous and organic phases. Residuals in each phase are distilled off as a low-boiling mixed distillate resembling an azeotropic mixture which is returned for repeated separation by salting-out. Organics are further separated by fractional distillation.

ERRATUM

For Class 203—91 see:
Patent No. 3,663,382

3,663,376
SELECTIVE SPOT PLATING OF LEAD FRAME SHEETS

Gary Uchytil, Campbell, and Franz Kolterer, Los Altos, both of Calif.

Filed Mar. 17, 1971, Ser. No. 125,237
Int. Cl. C23b *5/48*; G03c *5/00*; B44d *1/18*
U.S. Cl. 204—15 13 Claims

Relatively small apertures or passages in a sheet are masked to prevent their plating during the electroplating of selected zones of one side of the sheet by filling the apertures with a readily deformable, photo-hardenable material. A photosensitive facing is applied to each side of the sheet and the side including the plated zones is masked with a shield placed thereover to define the zones. Thereafter, both sheet sides are subjected to light, the shield is removed and the sheet is placed in a developing tank for removal of facing portions overlying the zones and the zones of the sheet are electroplated. Thereafter, the remaining facings and the

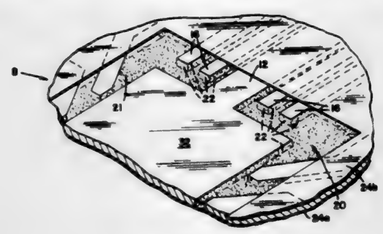


photo-hardenable material are stripped to bare both sheet sides and the apertures for the subsequent use of the sheet.

3,663,377
ELECTROPLATABLE POLYOLEFINS

Habet M. Kheighatian, and Wassily Poppe, both of P.O. Box 426, Springfield, Pa.

Continuation of application Ser. No. 802,645, Feb. 26, 1969, now abandoned. This application May 8, 1970, Ser. No. 33,178
Int. Cl. C23b *5/60*
U.S. Cl. 204—30 9 Claims

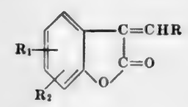
In the art of electroplating polyolefins, adhesion of the plated metal to the polyolefin is enhanced by incorporating into the polyolefin from 0.1 to 2 percent by weight of at least one surface active agent such as a nonionic, cationic or anionic surfactant.

3,663,378
ELECTROPLATING OF NICKEL

Henry Brown, Huntington Woods, Mich., assignor to Udylite Corporation, Warren, Mich.

Continuation-in-part of application Ser. No. 812,377, Apr. 1, 1969, now abandoned. This application Mar. 16, 1971, Ser. No. 124,941
Int. Cl. C23b *5/08*, *5/46*
U.S. Cl. 204—49 8 Claims

An aqueous acidic nickel plating bath which contains a brightening amount of a compound having the formula:



wherein R_1 and R_2 are H, CH_3, C_2H_5, F, Cl, Br, CH_3O-, C_2H_5O-, CH_3CO-, CH_3CONH-, $-O(CH_2)_n-SO_3H$, $-O(CH_2)_n-SO_3H$, C_2H_5CO-, or C_2H_5CONH-. R is H, F, Cl or phenyl, and n is a number from 1 to 6 inclusive.

3,663,379
METHOD AND ELECTROLYTES FOR ANODIZING TITANIUM AND ITS ALLOYS

Earl W. Kendall, Bonita, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

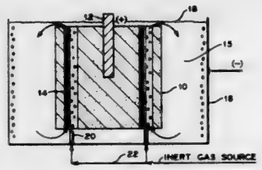
Filed July 1, 1969, Ser. No. 838,342
Int. Cl. C23b *11/02*
U.S. Cl. 204—56 7 Claims

Titanium and its alloys are anodized by making the metal the anode in an electrolytic system which utilizes carbon as the cathode and an electrolyte consisting of water, both a silicate and a perborate of an alkali metal, the hydroxide of an alkali metal, and the alkali metal salt of an acid selected from the group consisting of ethylenediamine tetraacetic acid, diethylenetriamine pentaacetic acid, and mixtures thereof. Direct current applied to the system may be varied between 10 and 50 amperes per square foot of anode surface, with EMF pressures not exceeding a rate of 8 volts per minute until the current threshold is obtained.

3,663,380
ELECTRODES FOR ELECTROLYTIC CONVERSION

King L. Mills, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Mar. 2, 1970, Ser. No. 15,389
Int. Cl. B01k *3/00*
U.S. Cl. 204—59 11 Claims

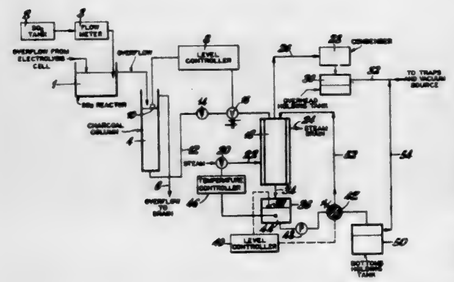


An electrode employed in an electrolytic cell is provided with at least one passageway extending therethrough, preferably in a generally vertical direction. Electrolyte circulates through said passageway and cools said electrode. If desired, circulation of said electrolyte can be enhanced by introducing an inert gas into said passageway.

3,663,381
ELECTROCHEMICAL CONVERSION OF PHENOL TO HYDROQUINONE

Frank H. Covitz, Lebanon, and Robert V. Carrubba, Cranford, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Apr. 9, 1970, Ser. No. 26,924
Int. Cl. C07b *29/06*; C07c *37/00*
U.S. Cl. 204—78 10 Claims

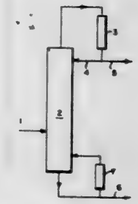


The electrochemical conversion of phenol to hydroquinone has been improved by a combination of steps directed to effect removal of by-products and conversion of p-benzoquinone to hydroquinone as part of the process for the recovery of the hydroquinone product. These steps include first reducing residual p-benzoquinone to hydroquinone, followed by removal of tars and color bodies, vacuum distillation to condense the volume of the electrolyzed reaction mixture, and finally crystallizing the hydroquinone product out of the condensed distillation residue.

3,663,382
PROCESS OF RECOVERING HYDROGEN FLUORIDE FREE OF ARSENIC BY DISTILLATION

George J. Garris, Deer Park, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 19, 1969, Ser. No. 851,359
Int. Cl. B01d *3/10*
U.S. Cl. 203—91 2 Claims

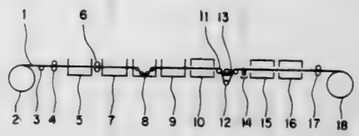


Anhydrous hydrogen fluoride containing less than about 3,000 parts per billion of arsenic is produced by distilling hydrogen fluoride at a pressure below 25 pounds per square inch absolute.

3,663,383
METHOD FOR MANUFACTURING PAINTED METAL SHEET

Shozo Matsuda; Tadashi Tanaka, both of Kawasaki; Kouzou Murayama; Kunimitsu Yamamoto, both of Matsudo; Joji Oka, Kawasaki; Royji Takahashi, Katsushika-gun, and Megumi Koyama, Matsudo, all of Japan, assignors to Yawata Iron & Steel Co., Ltd. and Yawata Econ Steel Co., Tokyo, Japan

Filed June 5, 1968, Ser. No. 734,801
Claims priority, application Japan, June 5, 1967, 42/35900; June 12, 1967, 42/50450; June 19, 1967, 42/39147
Int. Cl. B01k *5/02*; C23b *13/00*
U.S. Cl. 204—181 10 Claims



A method for manufacturing a painted metal sheet by successive paintings comprises the steps of (a) subjecting a metal sheet plated with zinc or zinc alloy to an electrophoretic treatment with a water-soluble resin series paint to provide an undercoating, then (b) painting the steel sheet having the electro-deposited paint coating with a water-soluble or solvent-soluble paint to provide a final coat, and then (c) baking and drying the undercoat and the final coat at the same time.

Step (a) may optionally be preceded by a step of subjecting the initial metal sheet, plated with zinc or zinc alloy, to a chemical-synthetic treatment to form a foundation for subsequent painting.

3,663,384
BATH FOR ELECTROPLATING TIN-BISMUTH ALLOY

Jean P. Lescure, Montpellier, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 8, 1970, Ser. No. 79,272
Claims priority, application France, Dec. 19, 1969, 6944284
Int. Cl. C23b *5/38*
U.S. Cl. 204—43 6 Claims

Bath for electroplating tin-bismuth alloy upon a metal object such as a frame of a computer, including fluoboric acid

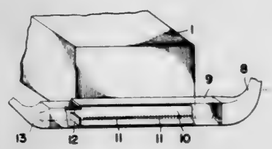
in order to maintain the pH acid, tin fluoborate and a bismuth oxide-bismuth sulphate mixture of low quantity. The utilized method is of the soluble anode type and the cathode is formed of the object to be coated.

3,663,385

ALKALI SALT ELECTROLYSIS BY MERCURY PROCESS

Hiroshi Shibata; Teruo Imai, and Shigeji Kumaki, all of Iwaki-shi, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Aug. 25, 1969, Ser. No. 852,582
Claims priority, application Japan, Aug. 30, 1968, 43/61725
Int. Cl. C01d *3/00*
U.S. Cl. 204—99 **1 Claim**



In an alkali salt electrolysis operation by the mercury process wherein mercury recovered in a denuding tower is recirculated with wash water through a mercury return passageway to be returned to an electrolytic cell, a portion of the mercury is caused to constantly overflow together with washing water over a weir provided in the mercury return passageway and then to undergo auxiliary circulation to a mercury reservoir interposed between the denuding tower and a mercury pump.

An alkali chloride electrolytic apparatus, in which a reservoir tank is provided between a denuding tower and a mercury pump and an auxiliary circulation passageway communicates between a mercury return passageway and an entrance of the reservoir tank.

3,663,386

ELECTROCLEANER COMPOSITION AND PROCESS

Joseph V. Otrhalek, Dearborn, and Harold A. Skinner, Wyandotte, both of Mich., assignors to Basf Wyandotte Corporation, Wyandotte, Mich.

Filed Feb. 8, 1971, Ser. No. 113,752
Int. Cl. C23b *1/00, 1/04*
U.S. Cl. 204—141 **7 Claims**

Electrolytic caustic cleaning compositions are improved by adding to the composition from 0.33 to 3.0 percent by weight of the dry cleaning composition a monophosphate ester of oxyalkylated alcohol. The phosphate ester improves the cleaning efficiency of the electrolytic process and at the same time, minimizes the formation of spray, mist and the discharge of gases from the bath.

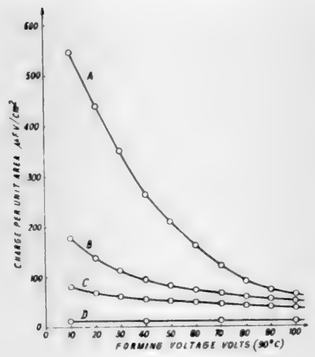
3,663,387

MANUFACTURE OF ELECTRODE FOIL FOR ELECTROLYTIC CAPACITORS

Donald Keith Harrison, West Lothian, Scotland, assignor to Plessey Handel und Investments A.G., Zug, Switzerland

Filed Mar. 1, 1971, Ser. No. 122,615
Claims priority, application Great Britain, Mar. 5, 1970, 10,536/70
Int. Cl. C23b *1/00*
U.S. Cl. 204—141 **7 Claims**

Very high gain etching of tantalum foil is achieved by effecting before electrolytic etching with an electrolyte containing lithium chloride, brushing of the surface of the foil



with steel wool so as to produce local iron contamination of the tantalum.

3,663,388

GOLD REMOVAL PROCESS

Clarence L. Hedman, Jr., Campbell, Calif., assignor to SCM Corporation, New York, N.Y.

Filed Oct. 28, 1970, Ser. No. 84,908
Int. Cl. B01k *1/00*; B23p *1/00*
U.S. Cl. 204—146 **10 Claims**

A process for removing gold from a gold-coated substrate is disclosed. The gold-coated substrate is submerged in an electrolytically conductive solution. An electrode is also placed in the solution in spaced relation with the gold coating. A potential difference is applied across the electrode and the gold coating to render the coating positive with respect to the electrode thereby causing the gold coating to be oxidized. The applied potential difference is terminated and the substrate emerged from the solution. Oxidized gold remaining on the surface of the substrate is them removed.

3,663,389

METHOD OF ELECTRODEPOSITING NOVEL COATING

Jerry Norman Koral, and Werner Joseph Blank, both of Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of application Ser. No. 684,467, Nov. 20, 1967, now abandoned. This application Apr. 17, 1970, Ser. No. 29,703
Int. Cl. C23b *13/00*
U.S. Cl. 204—181 **6 Claims**

A process for electrocoating metal comprising immersing said metal in an aqueous dispersion of a mixture of from about 5 percent to about 40 percent, by weight, of (A) a mixture of substantially water-insoluble, substantially fully etherified tetramethylol guanamines and correspondingly from about 95 percent to about 60 percent, by weight, of (B) a water dispersible non-gelled polymeric material carrying an ionic charge which is heat reactive with (A) wherein said percentages by weight, total 100 percent and are based on the total solids weight of (A) and (B), and subjecting the aqueous dispersion to electrophoresis in order to deposit the mixture of (A) and (B) on the metal as an adherent film, is disclosed.

3,663,390

METHOD OF CHANGING COLOR PLAY RANGE OF LIQUID CRYSTAL MATERIALS

James L. Ferguson, Kent, Ohio, and Newton N. Goldberg, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original application Aug. 22, 1968, Ser. No. 754,582. Divided and this application Sept. 24, 1970, Ser. No. 75,180
Int. Cl. B01j *1/10*
U.S. Cl. 204—158 HE **6 Claims**



Increasing dosages of X-ray radiation progressively lower the color-play range of cholesteric-phase liquid-crystal materials. The effect is enhanced when an effective amount of an iodine-containing compound is used in the liquid-crystal material. Novel iodine-containing compounds are described, and articles are disclosed that give direct reading indication of the dosage of X-ray radiation that they have received, without need for a separate development operation.

3,663,391

SOLUTION POLYMERIZATION OF ETHYLENE BY IONIZING RADIATION IN THE PRESENCE OF CHLOROFLUORINATED HYDROCARBONS

Tsutomu Kagiya, Kyoto-shi; Miyuki Hagiwara, and Hidemasa Okamoto, both of Takasaki-shi, all of Japan, assignors to Japan Atomic Energy Research Institute

Filed Apr. 17, 1969, Ser. No. 817,005
Claims priority, application Japan, Apr. 25, 1968, 43/28107
Int. Cl. C08d *1/00, 3/04*; C08f *1/16*
U.S. Cl. 204—159.22 **4 Claims**

Ethylene is irradiated with ionizing radiation under high pressure and in the presence of a chlorofluorinated hydrocarbon represented by the general formula

$$C_nF_mCl_{2n+2-m}$$

wherein n is 1 or 2 and m is 1–3 when n is 1 and 1–5 when n is 2. A high molecular weight polyethylene is this readily obtained and in a good yield.

3,663,392

CHLORINATING POWDERED VINYL CHLORIDE POLYMERS

Gerhard Zeltler, Hessheim, and Hans-Georg Trieschmann, Hambach, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed June 18, 1970, Ser. No. 47,578
Claims priority, application Germany, June 27, 1969, P 19 32 589.4
Int. Cl. C08f *27/02*
U.S. Cl. 204—159.18 **6 Claims**

A process for the chlorination of vinyl chloride polymers in which a powdered vinyl chloride polymer is treated in a first stage with gaseous chlorine at below the softening point and under the action of light followed by a second stage in which it is treated at above the softening point while excluding light.

The products are homogeneously chlorinated and have a high thermostability; they may be used as special glasses and for hot water pipes.

3,663,393

IRRADIATION METHOD OF PREPARING ARALKYL HYDROPEROXIDES FROM HYDROCARBONS

Harold K. Latourette, Yardley, Pa., assignor to FMC Corporation, New York, N.Y.

Filed Sept. 3, 1968, Ser. No. 757,125
Int. Cl. B01j *1/10*
U.S. Cl. 204—162 R **4 Claims**

Primary benzylic hydroperoxides, useful in the production of aromatic acids, aldehydes and alcohols, are obtained by oxidizing a methylated aromatic hydrocarbon with oxygen under high pressure at low temperature in the presence of a radical-forming activator.

3,663,394

PROCESS FOR THE VAPOR PHASE REARRANGEMENT OF HYDROCARBONS UTILIZING MICROWAVE ENERGY

Yoshio Kawahara, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed June 1, 1970, Ser. No. 42,493
Int. Cl. C07b *29/06*; C07c *3/48*
U.S. Cl. 204—168 **3 Claims**

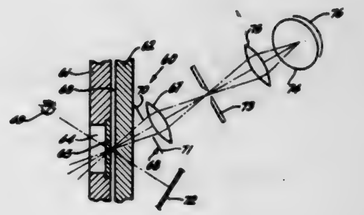
A process for the vapor phase rearrangement of hydrocarbons is disclosed wherein said hydrocarbons are subjected to a microwave electrical discharge maintained by an incident power of from about 500 watts to about 5 megawatts, said feed having a residence time of no more than about 0.02 seconds, residence time being defined as the time required for a molecule to travel through the visible glow discharge zone in a given reactor.

3,663,395

CROSS-SECTION ILLUMINATOR FOR A CONTINUOUS PARTICLE ELECTROPHORESIS CELL

Allen Strickler, Fullerton, Calif., assignor to Beckman Instruments, Inc.

Filed Dec. 17, 1969, Ser. No. 885,941
Int. Cl. B01k *5/00*
U.S. Cl. 204—180 R **16 Claims**

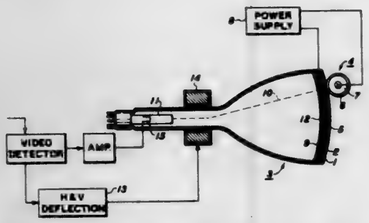


In a continuous particle electrophoresis cell, the present invention comprises means for illuminating a section of the electrolyte curtain with a narrow blade of light rather than with a broad beam which would flood the area of interest. Such blade of light illuminates the bands of sample particles only where they intersect the plane of light. By viewing the electrophoresis cell at a suitable angle, against a dark background, the cross-sectional pattern of the particle band distribution becomes fully visible. This provides a valuable, practical tool for gauging and optimizing instrument performance.

3,663,396
KINESCOPE PHOTOELECTROPHORETIC IMAGING METHOD AND SYSTEMS

Robert W. Gundlach, Victor, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Feb. 2, 1970, Ser. No. 7,933
Int. Cl. B01k 5/00; G03g 17/00
U.S. Cl. 204—181 19 Claims

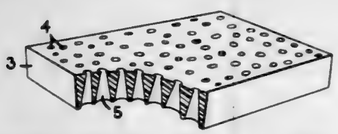


Black and white and color kinescopes are used as the exposure mechanism in a photoelectrophoretic imaging system. Images are formed on the face plate of a kinescope as a roller electrode travels over the face plate.

3,663,397
TREATMENT OF ELECTRODEPOSITION BATH

Louis R. Le Bras, Gibsonia, and John S. Ostrowski, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 883,584, Dec. 9, 1969, now abandoned. This application Sept. 14, 1970, Ser. No. 71,742
Int. Cl. B01k 5/02; C23b 13/00
U.S. Cl. 204—181 5 Claims

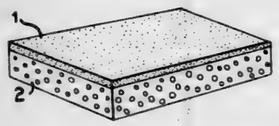


This invention relates to a method of rinsing articles coated by an electrodeposition process in such a manner that at least a portion of the rinse water returns to the electrodeposition bath, thereby reducing dragout losses. The percentage of solids are controlled by utilizing a membrane-controlled selective separation process such as an ultrafiltration process to control the electrodeposition bath composition.

3,663,398
ION EXCHANGE OF AN ULTRAFILTRATE DERIVED FROM AN ELECTRODEPOSITION BATH

Roger M. Christenson, Gibsonia, and Robert R. Zwack, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 879,769, Nov. 25, 1969, now abandoned. This application Sept. 14, 1970, Ser. No. 71,984
Int. Cl. B01k 5/02; C23b 13/00
U.S. Cl. 204—181 20 Claims

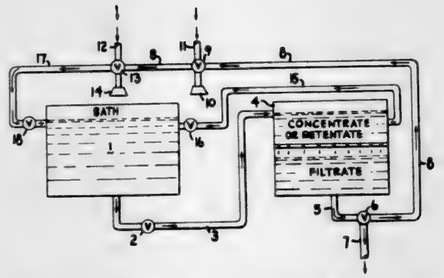


This invention relates to a method of treating and controlling the composition of electrodeposition baths. The process of the invention comprises ultrafiltration in combination with ion exchange of the filtrate derived from the ultrafiltration process.

3,663,399
TREATMENT OF ELECTRODEPOSITION BATH

Frederick M. Loop, North Olmsted, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 881,259, Dec. 1, 1969, now abandoned. This application Sept. 17, 1970, Ser. No. 73,093
Int. Cl. B01k 5/02; C23b 13/00
U.S. Cl. 204—181 15 Claims

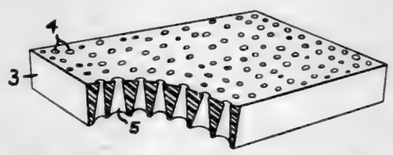


This invention relates to a method of rinsing articles coated by electrodeposition process which comprises using as the rinsing agent the effluent obtained from a selective separation process such as a filtration process, for example, ultrafiltration, utilized to control electrodeposition bath composition.

3,663,400
CONTROLLING SOLIDS IN ELECTRODEPOSITABLE COMPOSITIONS

Roger M. Christenson, and Louis R. Le Bras, both of Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 814,789, Apr. 9, 1969, now abandoned. This application Sept. 23, 1970, Ser. No. 74,658
Int. Cl. B01l 15/02; C23b 13/00
U.S. Cl. 204—181 11 Claims



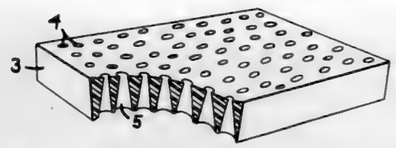
This invention relates to a method of controlling electrodeposition bath solids. More particularly, this is a method by which the concentration of solids in an electrodeposition bath is maintained at a desired level by utilizing a membrane-controlled selective separation process such as an ultrafiltration process.

3,663,401
CONTROL OF WATER-SOLUBLE ACIDS IN AN ELECTRODEPOSITION BATH

Roger M. Christenson, and Louis R. Lebras, both of Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 814,789, Apr. 9, 1969. This application Oct. 13, 1970, Ser. No. 80,374
Int. Cl. B01k 5/02; C23b 13/00
U.S. Cl. 204—181 21 Claims

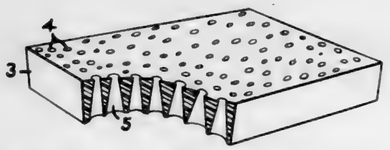
This invention relates to a method of controlling water-soluble acids present in a base-solubilized electrodepositable composition, which comprises subjecting the bath to a selective filtration process such as ultrafiltration and thereby removing water-soluble acids from the bath.



3,663,402
PRETREATING ELECTRODEPOSITABLE COMPOSITIONS

Roger M. Christenson, Gibsonia, and Robert R. Zwack, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 12, 1970, Ser. No. 88,533
Int. Cl. B01k 5/02; C23b 13/00
U.S. Cl. 204—181 8 Claims

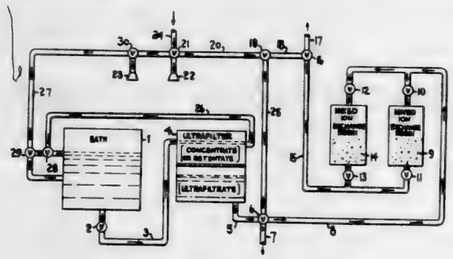


A method of pretreating electrodepositable compositions prior to utilization of such compositions, in an electrodeposition process, which comprises subjecting a synthetic resin ionically solubilized in an aqueous medium to a selective separation process such as ultrafiltration which passes an aqueous effluent through a physical barrier while retaining the solubilized resin component. The method enables the removal of deleterious impurities and contaminants which affect coating parameters and thus provides a direct method of controlling the quality of the deposited film.

3,663,403
DOUBLE ION EXCHANGE OF AN ULTRAFILTRATE DERIVED FROM AN ELECTRODEPOSITION BATH

Roger M. Christenson, Gibsonia, and Robert R. Zwack, Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 71,984, Sept. 14, 1970, which is a continuation-in-part of application Ser. No. 879,769, Nov. 25, 1969, now abandoned. This application Nov. 27, 1970, Ser. No. 93,088
Int. Cl. B01k 5/02; C23b 13/00
U.S. Cl. 204—181 20 Claims

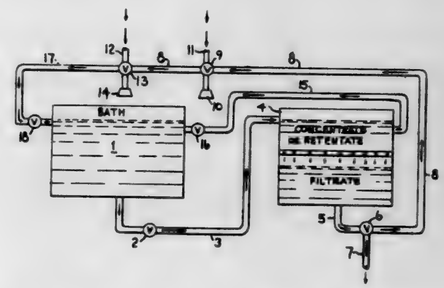


This invention relates to a method of treating and controlling the composition of an electrodeposition bath. The process of the invention comprises ultrafiltration in combination with double ion exchange of the filtrate derived from the ultrafiltration process.

3,663,404
TREATMENT OF ELECTRODEPOSITION BATH

Frederick M. Loop, North Olmsted, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 881,259, Dec. 1, 1969, now abandoned, and a continuation-in-part of 73,093, Sept. 17, 1970, which is a continuation-in-part of application Ser. No. 881,259, Dec. 1, 1969. This application Dec. 1, 1970, Ser. No. 94,023. The portion of the term of the patent subsequent to Feb. 15, 1989, has been disclaimed.
Int. Cl. B01h 5/02; C23b 13/00
U.S. Cl. 204—181 10 Claims

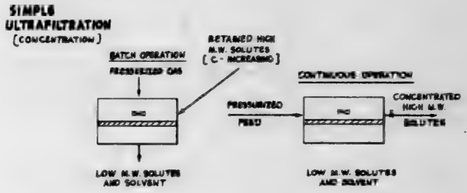


This invention relates to a method of rinsing articles coated by an electrodeposition process which comprises employing as at least a portion of the rinsing agent the effluent obtained from a selective separation process such as an ultrafiltration process, while withdrawing a portion of said effluent which contains excess and/or undesirable low molecular weight species present in the electrodepositable composition, thereby, first, conserving bath material and, second, controlling the composition of the electrodepositable composition.

3,663,405
ULTRAFILTRATION OF ELECTRODEPOSITABLE COMPOSITIONS

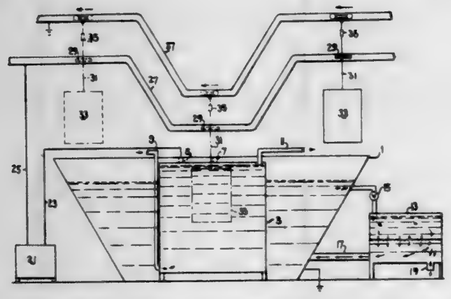
Roger M. Christenson and Louis R. Le Bras, Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 814,789, Apr. 9, 1969. This application Feb. 25, 1971, Ser. No. 118,681
Int. Cl. B01k 5/02; C23b 13/00
U.S. Cl. 204—181 35 Claims



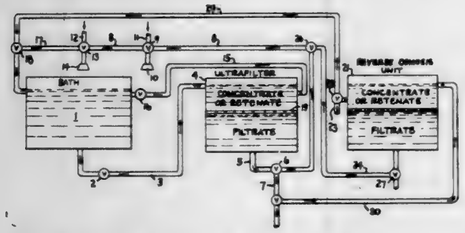
This invention relates to the use of a selective filtration technique such as ultrafiltration to control the composition of an electrodeposition bath comprising a solubilized synthetic organic vehicle resin.

3,663,406
COMBINED ELECTRODIALYSIS AND ULTRAFILTRATION OF AN ELECTRODEPOSITION BATH
Louis R. Le Bras, Gibsonia, and Robert R. Zwack, New Kensington, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Mar. 11, 1971, Ser. No. 123,299
Int. Cl. B01k 5/02; C23b 13/00
U.S. Cl. 204—181 13 Claims



A method of controlling undesirable components in an electrodeposition bath comprising a film-forming vehicle resin in an aqueous medium, by subjecting at least a portion of the electrodepositable composition, simultaneously or at a separate time, to an electrodialysis process in conjunction with a selective separation process whereby process parameters and the properties of the deposited film are maintained.

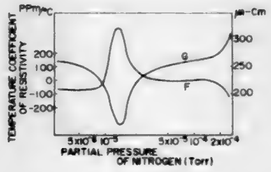
3,663,407
TREATMENT OF AN ULTRAFILTRATE DERIVED FROM AN ELECTRODEPOSITION PROCESS BY REVERSE OSMOSIS
Frederick M. Loop, North Olmsted, and Frank C. Bosworth, Bay Village, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed June 21, 1971, Ser. No. 155,042
Int. Cl. B01k 5/02; C23b 13/00
U.S. Cl. 204—181 8 Claims



This invention relates to the use of reverse osmosis to treat ultrafiltrate derived from an electrodeposition process in order to provide a relatively more pure process effluent and/or to provide rinse water to the process of relatively higher purity.

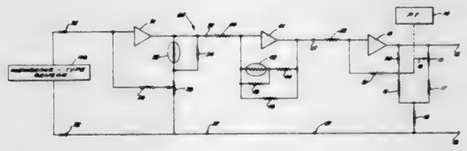
3,663,408
METHOD OF PRODUCING TANTALUM NITRIDE FILM RESISTORS
Shun Kumagai and Toshiaki Koikeda, Tokyo, Japan, assignors to Oki Electric Industry Company Limited, Tokyo, Japan
Filed July 22, 1969, Ser. No. 843,603
Int. Cl. C23c 15/00
U.S. Cl. 204—192 2 Claims

This invention is to conduct reactive sputtering by heating a substrate to a temperature of 300 to 550 ° C. while keeping the partial pressure of nitrogen at 3×10^{-5} to 2×10^{-4} torr in a high vacuum of less than 5×10^{-3} torr of the mixed pressure of argon and nitrogen so that



a tantalum nitride film resistor in which the temperature coefficient becomes zero in the plateau of characteristics may be obtained.

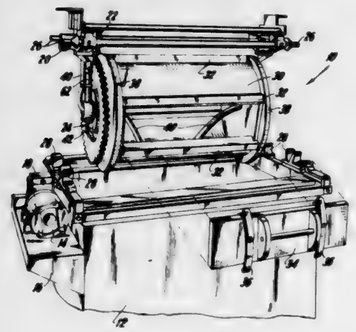
3,663,409
PRESSURE COMPENSATION OF MEMBRANE-TYPE SENSORS
Malbone W. Greene, Covina, Calif., assignor to Beckman Instruments, Inc.
Filed May 14, 1970, Ser. No. 37,267
Int. Cl. G01n 27/30
U.S. Cl. 204—195 P 14 Claims



In a sensor for measuring the quantity of a substance in a composition of matter of the type including a membrane which is permeable to the substance and substantially impermeable to liquid and ions, the permeability of the membrane being a function of the pressure thereon, the sensor providing an electrical output signal which is a function of the quantity of the substance in the composition of matter, there is disclosed an improvement consisting of a method and means for accurately compensating the output of the sensor for the effect of pressure upon membrane permeability by multiplying the output signal by the function e^{kp} thus cancelling the pressure effect which is given by the function P_0e^{-kp} where P_0=membrane permeability at zero pressure, p=absolute pressure, and k=a membrane constant. According to a preferred embodiment of the invention, such multiplication is achieved through the use of a pressure-driven, variable resistance in the feed-back loop of an operational amplifier.

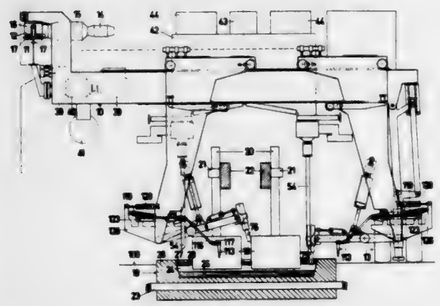
3,663,410
CONVERSION KIT FOR ELECTROPLATING APPARATUS
Walter Schumacher, Valley Stream, N.Y., assignor to Alberts Plating Works, Inc., Brooklyn, N.Y.
Filed Jan. 4, 1971, Ser. No. 103,631
Int. Cl. C23b 5/78
U.S. Cl. 204—213 3 Claims

Means are provided for using a single electroplating barrel with either disc type or dangler type plating cathode conductors. A bearing ring assembly that is permanently secured to each transverse end wall of the electroplating barrel is used with both types of cathodes. When using the dangler type cathode conductor, nylon bearing means and a Teflon washer and bearing ring are inserted into each bearing ring assembly and a dangler is then passed through each bearing ring from a position external of the barrel to terminate inwardly of the barrel in the usual manner. When using the disc type cathode conductors,



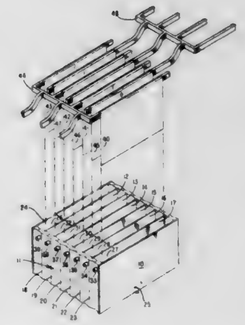
suitable rubber sealing rings and Teflon bushings are used in conjunction with a metallic bearing stud shaft that extends outwardly of the drum and which terminates in the conventional hanger bearing assembly.

3,663,411
MOBILE FURNACE MANIPULATOR
Kurt Springer, Rheinfelden, Germany, assignor to Swiss Aluminium Ltd., Chippis, Switzerland
Filed Oct. 22, 1970, Ser. No. 83,045
Claims priority, application Switzerland, Oct. 24, 1969, 15,878/69
Int. Cl. C22d 3/02, 3/12
U.S. Cl. 204—243 R 3 Claims



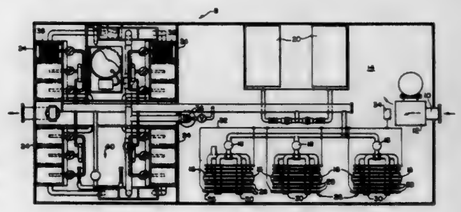
A travelling furnace manipulator for breaking up the slag crust in an aluminum melt electrolysis cell having a cell rim, an anode spaced across the cell from the rim, and a device for feeding alumina to the cell, a chisel device for breaking the crust, first and second scrapping devices arranged respectively in front of and behind the chisel device when looking in the direction of movement of the manipulator, and an arrangement for moving the first scraping device in front of the chisel device so as to pull an alumina cover on the slag in the cell toward the cell rim, and another arrangement for moving the second scraping device behind the chisel device so as to spread the alumina cover in the direction toward the anode.

3,663,412
ELECTROLYTIC CELL
Edward E. Kling and James L. Cousino, Muskegon, Mich., and James A. Frens, Houma, La., assignors to Lakeway Chemicals, Inc., Muskegon, Mich.
Filed June 12, 1970, Ser. No. 45,790
Int. Cl. B01k 3/10
U.S. Cl. 204—257 9 Claims



An electrolytic cell comprises a cast U-shaped frame, a separator membrane mounted within said frame, and a pair endplates coextensive with the frame and together with a separator membrane defining elongated electrolyte compartments. An electrode is situated within each of the compartments, and a duct is provided within the frame communicating with the electrolyte compartment. Preferably, a portion of the separator membrane edge mounted within the frame is covered with a resilient material such as polytetrafluoroethylene. The cell is manufactured by casting the frame about a membrane, solidifying the cast frame, and thereafter welding the coextensive endplates on the frame.

3,663,413
DEVICE FOR ELECTROLYTICALLY INDUCING FLOCCULATION FOR WATER TREATMENT PLANTS
Anthony R. Marmo, Cheswick, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 6, 1970, Ser. No. 9,375
Int. Cl. B01k 3/00
U.S. Cl. 204—275 4 Claims



A device for artificially inducing flocculation to aid in sewage treatment processes; which device comprises sacrificial electrodes suspended in an aeration tank above the air diffusers. The electrodes produce metallic hydroxides in solution which act as flocculating agents on sewage particles. The air diffusers act to keep the electrodes clean and to mix the metallic hydroxides with the sewage particles.

3,663,414
ELECTRODE COATING

Aleksandrs Martinsons, Wadsworth, and Bernard J. De Witt, Akron, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed June 27, 1969, Ser. No. 837,372
Int. Cl. B01k *3/04*; B44d *1/02*
U.S. Cl. 204—290 F 11 Claims

The novel anode may be used in the electrolysis of an aqueous solution such as of alkali metal chloride. The anode includes an electroconductive base member, typically of titanium, and an electroconductive coating or surface including an inner layer of a platinum group metal and an outer layer of a platinum group metal oxide.

3,663,415
APPARATUS FOR SELECTIVE APPLICATION OF ELECTROPHORETIC COATINGS

Lucien V. Auletta, Wappingers Falls, Yungil Kim, Poughkeepsie, and Andrew M. Simon, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 4, 1969, Ser. No. 882,070
Int. Cl. B01k *5/02*; C23b *13/00*
U.S. Cl. 204—299 10 Claims



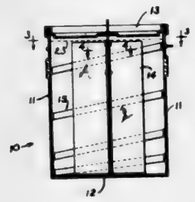
Electrophoretic coatings are formed selectively upon surfaces receptive to coating. The coating suspension is extruded in a small viscous mass at the selected surface site and a coating deposit is formed from the the mass by electrophoresis. A hand tool devised for this purpose includes a resiliently deformable hand manipulatable vessel assembly having a capped filler opening for receiving supplies of the coating suspension fluid and a dispensing duct for extruding the suspension. The duct includes a flexible insulated nozzle element connected with the main reservoir structure through a rigid conductive tubular element which also acts as an electrophoresis electrode. The tubular element and nozzle element taper progressively towards a small opening in the nozzle at which the coating fluid is dispensed with capillarity. The opening in the nozzle is adapted to contact and conform to the receptive surface at the site selected for coating. The tool includes a battery compartment and external connection lead for supplying voltage to generate the electrophoretic deposits.

3,663,416
SILVER RECOVERY DEVICE FOR PHOTO FIXER SOLUTIONS

Robert J. Cooper and Victor V. Carnell, Spokane, Wash., assignors to Noble Metals, Inc.

Filed Sept. 4, 1970, Ser. No. 69,572
Int. Cl. B01k *3/04*
U.S. Cl. 204—272 4 Claims

A plastic cylindrical container having a removable top lid which is adapted to receive a quantity of used photographic solution. An anode strip extends in a spiral configuration abutting the inside walls of the container. The anode comprises a plurality of turns which decrease in axial spacing from top to bottom along the container walls. A central cathode in the form of a flexible blade is suspended from the center of the container cover and

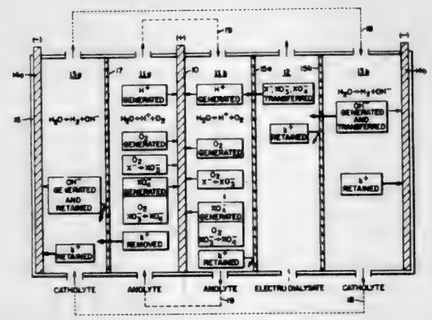


is spaced from the anode. The cathode extends along the full height of the container. A direct current power supply is connected to the anode through the top container wall and through the cover to the cathode. Recovered silver is removed from the cathode by flexing the blade surfaces slightly.

3,663,417
PER(HALO-OXYGEN) ACID OXIDATION, PURIFICATION AND RECOVERY APPARATUS

Allyn Harold Helt, 14 Thornton Place, Mount Holly, N.J. 08060, and James Norris Williamson, 7 Birch Lane, Marlton, N.J. 08053

Original application Apr. 8, 1968, Ser. No. 719,361. Divided and this application Oct. 7, 1970, Ser. No. 78,989
Int. Cl. B01d *13/02*
U.S. Cl. 204—301 17 Claims



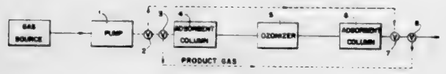
An electrodialytic apparatus utilizing anion and cation permselective membranes and having at least one two-chamber cell for purification and at least one three-chamber cell proximal the two-chamber unit for concentration of aqueous per(halo-oxygen) acids and their salts, all anolyte chambers sharing a common anolyte stream, all catholyte chambers sharing a common catholyte stream, and at least one of the anolyte chambers of the purification and the concentration cells sharing a common anode. A multi-step process for recovering and regenerating the periodate oxidant used in preparing oxidized polysaccharides in which the primary liquor and subsequent wash liquors from the oxidized polysaccharide filter cake are

circulated in the anolyte and middle chambers of the electrodialytic apparatus having two-chamber and three-chamber cells for re-oxidation and concentration respectively, the liquors having a concentration of 1 to 15 weight percent being circulated in the anolyte chambers; those liquors having a concentration of 0.5 to 5 weight percent being circulated in the middle chamber, all liquors and effluents having a concentration of less than 0.5 weight percent being passed through a strong base anion exchange resin which removes the remaining periodate or chemically reduced periodates, which are subsequently eluted by the sodium hydroxide catholyte, which in turn is circulated in the anolyte chambers of the apparatus for regeneration.

3,663,418
PERIODICALLY REVERSED GAS FLOW OZONE PRODUCTION METHOD AND APPARATUS

Masayuki Kawahata, Scotia, N.Y., assignor to Environment/One Corporation, Latham, N.Y.

Filed Jan. 26, 1970, Ser. No. 5,853
Int. Cl. C01b *13/12*
U.S. Cl. 204—314 7 Claims



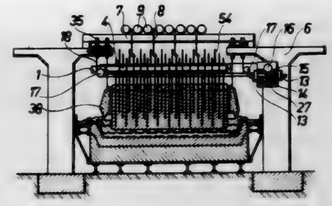
A periodically reverse gas flow method and apparatus for ozone production is described. Because moisture reduces the efficiency of most ozonizers, moisture is removed from an oxygen containing fluid before it passes through the ozonizer and the moisture is returned to the oxygen and ozone containing fluid after the ozonizer. At least two moisture adsorbent material columns are used so that the oxygen containing fluid is first passed serially through the two columns with the ozonizer interposed and then periodically reversed to pass serially through the three components in the opposite direction so that at least one column is always in an adsorbent cycle while at least another column is always in a desorber cycle. The pressure of the oxygen containing fluid may be increased immediately upstream of the adsorber column and reduced immediately downstream of the adsorber column, for increased efficiency. The heat of adsorption is transferred from the adsorber column to the desorber column to provide the heat of desorption at the latter column, with the ozonizer serially interposed; the coolant fluid flow is preferably co-current to the oxygen fluid flow and reversed everytime that the oxygen containing fluid flow is reversed.

3,663,419
ELECTROLYTIC CELL FOR THE PRODUCTION OF ALUMINUM

Mihaly Toth and Jozsef Imrefi, Budapest, Hungary, assignors to Alutero Aluminiumipari Tervezo Vallalat, Budapest, Hungary

Filed Sept. 10, 1969, Ser. No. 856,533
Int. Cl. B01k *3/00*; C22d *3/02*; C23b *5/70*
U.S. Cl. 204—225 12 Claims

An electrolytic cell for the production of aluminum comprises a plurality of anodes in a self-coking carbonaceous anode mass that is progressively lowered into the bath. The anodes have flattened upper ends whose greatest width is greater than the width of the lower portions of the anodes; and the anodes are suspended by clamping the narrow edges of these flattened upper ends, so that the anodes can be inserted and removed by rotating them a quarter turn about their axes. The anodes are arranged in special patterns relative to each other. The anode mass is vertically movable by a special mechanism, and is encased in an aluminum sheath secured thereto



which in turn is surrounded by an insulating casing of special construction, with powdered alumina fed downwardly between the sheath and the casing.

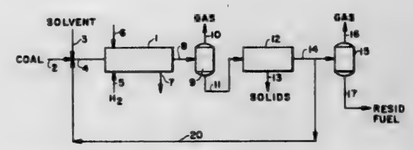
ERRATUM

For Class 206—19.50 C see:
Patent No. 3,663,432

3,663,420
COAL PROCESSING

Harry E. Jacobs, Glenwood, Ill., and George R. Worrell, Media, Pa., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Oct. 14, 1970, Ser. No. 80,673
Int. Cl. C10g *1/04*
U.S. Cl. 208—8 6 Claims



A method for forming a low sulfur residual fuel oil from a high sulfur coal comprising hydrogenating the coal in the absence of externally supplied contact particles and at an elevated temperature, followed by separating solid particles from the liquefied coal at an elevated temperature.

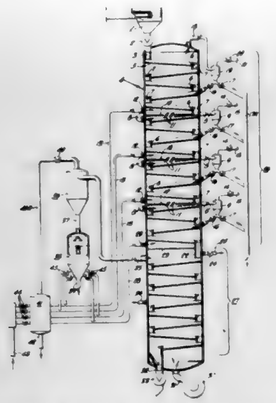
3,663,421
CONTINUOUS, FLUIDIZED PROCESS AND SYSTEM FOR THERMAL RECOVERY OF HYDROCARBONACEOUS MATERIALS FROM SOLIDS

George E. Parr, West Chester, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Filed Nov. 4, 1970, Ser. No. 86,710
Int. Cl. C10b *53/06*
U.S. Cl. 208—8 5 Claims

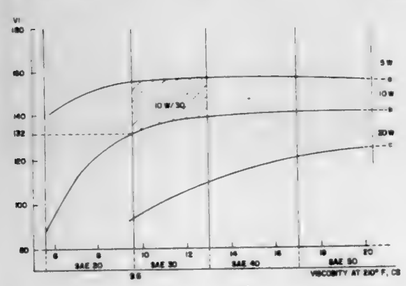
The invention relates to a new process and apparatus for the thermal recovery of valuable liquid and gaseous hydrocarbon products from hydrocarbonaceous materials. The process is conducted within a vessel which has contiguous thermal treatment zones and spent solids combustion zones separated by a gas seal; the thermal treatment zone is characterized by maintaining a fluidized bed of the hydrocarbonaceous material on shallow-bed con-

catenated, slanting trays; a plurality of sidestream outlets to remove condensable hydrocarbon products and a plu-



rality of hot gas inlets which serves to maintain fluidization and give temperature control.

3,663,422
PROCESS FOR THE PRODUCTION OF VERY HIGH VI LUBRICATING OILS BY HYDROTREATING
Peter W. Dun and Formijn J. van Hemert, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.
Filed Aug. 28, 1969, Ser. No. 853,719
Claims priority, application Great Britain, Sept. 5, 1968, 42,311/68
Int. Cl. C10g *41/00*
U.S. Cl. 208—28 **5 Claims**



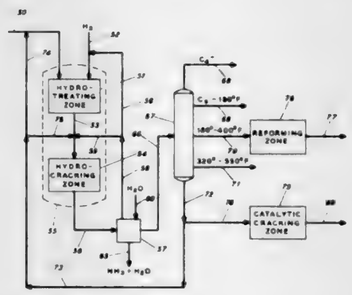
Very high viscosity index (VI >125) lubricating oils are produced by hydrotreating solvent-refined, asphalt-free waxy hydrocarbons in the presence of a suitable catalyst under specific hydrotreating conditions. A true SAE 10W/30 multigrade oil is produced which does not require the addition of VI improves or thickeners.

3,663,423
PRODUCTION OF LUBRICATING OILS
Robert Neil Bennett, Ashford, Richard Nigel Parker, Middlesex, and Bernard Whiting Burbidge, Surrey, England, assignors to The British Petroleum Company Limited, London, England
No Drawing. Filed Mar. 14, 1969, Ser. No. 807,401
Claims priority, application Great Britain, Mar. 22, 1968, 13,889/68
Int. Cl. C10g *13/02, 37/02*
U.S. Cl. 208—59 **6 Claims**

A wholly catalytic route for the production of lubricating oils for petroleum feedstocks boiling above 350° C. comprises the steps of VI improvement over a catalyst of a Group VI*a* and/or Group VIII metal on a refractory oxide support and catalytic dewaxing over a catalyst of a Group VI*a* and/or Group VIII metal on low alkali metal content mordenite. The steps may be in either order but the VI improvement step is preferably first.

The VI improvement step is at 650–850° F. and 1000–3000 p.s.i.g. using preferably, Co-Mo or silica alumina and the catalytic dewaxing step is at 450–950° F. and 100–3000 p.s.i.g. using, preferably, Pt on decationised mordenite having a SiO_2:Al_2O_3 ratio of 14:1–50:1. Depending on the feedstock to and the severity of the VI improvement step, lubricating oil product fractions of either high (75–100) or super high (100–140) VI may be produced.

3,663,424
HYDROTREATING CATALYST COMPRISING AN INTERSTRATIFIED CRYSTALLINE CLAY-TYPE ALUMINOSILICATE COMPONENT AND A CRYSTALLINE ZEOLITIC MOLECULAR SIEVE COMPONENT, AND PROCESS USING SAID CATALYST
Joseph Jaffe, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Continuation-in-part of application Ser. No. 750,283, Aug. 5, 1968. This application Dec. 19, 1969, Ser. No. 886,726
Int. Cl. C01b *33/28*; **C10g** *13/04, 37/00*
U.S. Cl. 208—59 **21 Claims**



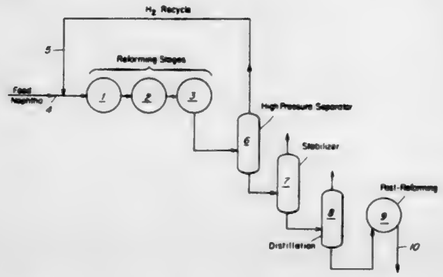
A catalyst comprising an interstratified synthetic crystalline aluminosilicate cracking component and a crystalline zeolitic molecular sieve component, which may be dispersed in a matrix comprising a siliceous gel, if desired one or both of said components being substantially in the ammonium or hydrogen form and substantially free of any catalytic metal or metals when dispersed in a matrix, and if desired one of said components being substantially in the ammonium or hydrogen form and substantially free of any catalytic metal or metals when not dispersed in a matrix, and at least one hydrogenating component selected from rhenium and compounds thereof and Group VIII metals and compounds thereof, and processes using said catalyst.

3,663,425
GASOLINE PRODUCING PROCESS COMPRISING HYDROCRACKING AND REFORMING
Ernest L. Pollitzer, Skokie, and Lee Hilfman, Prospect Heights, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Sept. 16, 1969, Ser. No. 858,510
Int. Cl. C10g *37/10*
U.S. Cl. 208—60 **7 Claims**

A combination process involving hydrocracking and dehydrogenation. Hydrocracking of a heavier-than-gasoline charge stock is effected at conditions conducive to aromatic saturation and extended catalyst stability. Dehydrogenation of at least a portion of the hydrocracked

product effluent is effected at conditions which are conducive to the conversion of naphthenes to aromatics. The hydrocracking reaction is effected at high pressures and high space velocities, while the dehydrogenation reaction is effected at lower pressures and lower space velocities.

3,663,426
UPGRADING OF REFORMATE WITH A TELLURIUM-FAUJASITE CATALYST
Richard J. Mikovsky, Trenton, N.J., Anthony J. Silvestri, Morrisville, Pa., and Robert L. Smith, Hopewell, N.J., assignors to Mobil Oil Corporation
Filed Nov. 14, 1969, Ser. No. 876,624
Int. Cl. C10g *39/00*
U.S. Cl. 208—65 **9 Claims**



Naphtha is reformed over a noble metal catalyst to effect a desired degree of naphthene aromatization and then subjected to a post-reforming step in which paraffins in the reformate are aromatized over a dehydrocyclization catalyst.

3,663,427
PREPARATION OF LUBE HYDROCRACKING STOCKS
Jeffrey R. Thomas, Claymont, and Ib Steinmetz, Wilmington, Del., assignors to Sun Oil Company, Philadelphia, Pa.
No Drawing. Filed Oct. 6, 1970, Ser. No. 78,629
Int. Cl. C10m *1/04*
U.S. Cl. 208—87 **8 Claims**

A process for preparing high V.I. lube oils of high quality in improved yield comprising fractionating the stock material into three fractions, boiling at (a) from 720–855° F., (b) 855 to 980° F. and (c) the residuum or a fraction boiling at from 986–1070° F., solvent extracting fraction (b) with a solvent having preferential solubility for aromatics such as furfural, recombining the three fractions, and hydrocracking the combined fractions at from 720 to 800° F. using a hydrogen partial pressure of from 2,000 to 3,000 p.s.i. The higher boiling fraction is deasphalted if required.

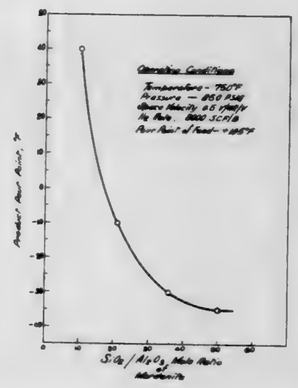
3,663,428
PROCESS FOR PRODUCING ALKYLATED TARS
Masaaki Takahashi, Tokyo, and Osamu Mayumi, Chiba, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
No Drawing. Filed Feb. 16, 1970, Ser. No. 11,904
Claims priority, application Japan, Feb. 14, 1969, 44/10,488
Int. Cl. C10g *37/00*
U.S. Cl. 208—97 **5 Claims**

A process for the production of alkylated tars comprising reacting a lower olefin, in the presence of a silica-alumina or zeolite type catalyst, with a tar fraction obtained by the thermal decomposition of a petroleum hydrocarbon at 700–2300° C., and if desired, following a desulfurization reaction.

3,663,429
PROCESS FOR HYDROCONVERSION OF RAW SHALE OIL
Barney Vallino, Homewood, Ill., assignor to Atlantic Richfield Company, New York, N.Y.
No Drawing. Filed Apr. 9, 1970, Ser. No. 27,126
Int. Cl. C10g *9/14, 13/00*
U.S. Cl. 208—108 **7 Claims**

The process of catalytically hydrogenating and/or hydrocracking raw shale oil is improved by incorporating in the feedstock a heavy mineral oil such as high boiling shale oil fractions and high boiling petroleum fractions of desirable properties to prevent substantial amounts of deposits from accumulating in the preheater and in the reactor catalyst bed.

3,663,430
HYDROCARBON DEWAXING WITH A MORDENITE-TYPE ALUMINO-SILICATE
Herbert C. Morris, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.
Filed Dec. 22, 1967, Ser. No. 692,818
Int. Cl. B01j *11/40*; **C08g** *13/02, 41/00*; **C01b** *33/28*
U.S. Cl. 208—111 **18 Claims**

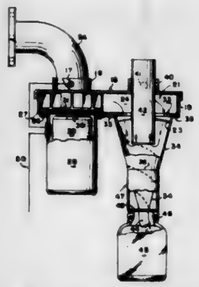


Hydrocarbon feedstocks containing wax-like materials are dewaxed in the presence of a mordenite-type crystalline alumino-silicate in hydrogen form having a silica to alumina mole ratio greater than about 10 to 1. A catalytic material, containing either a Group VIII or a Group VI–B metal, associated with the zeolite provides increased activity and longer catalyst life.

3,663,431
TWO-PHASE HYDROCARBON CONVERSION SYSTEM
Robert E. Wagner, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
No Drawing. Filed Oct. 15, 1969, Ser. No. 866,764
Int. Cl. C10g *23/02*
U.S. Cl. 208—143 **21 Claims**

Hydrocarbons are hydrocracked, hydrofined, hydrogenated and/or demetallized by intimate contacting at elevated temperatures in the presence of hydrogen with an aqueous dispersion of a sulfide of molybdenum, vanadium and/or rhenium. The catalytically active components are conveniently produced in the aqueous phase by reduction and/or sulfurization of the corresponding water soluble sulfides, oxides, acids or salts. These methods are particularly attractive for the selective demetallization and molecular weight reduction and/or removal of asphaltenes and resins.

3,663,432
SELF-CLEANING ASH TRAY FOR VEHICLES AND THE LIKE
Lloyd H. Ellison, 2735 NW. Coolidge Way, Corvallis, Oreg. 97330
Filed Aug. 14, 1970, Ser. No. 63,797
Int. Cl. C65d *3/08*
U.S. Cl. 206—19.5 C 3 Claims



A receptacle for cigar and cigarette stubs, ashes, and similar waste material. The receptacle is accessible through a doorway in the dashboard of a vehicle and in communication through an air duct with a container disposed within the engine compartment of the vehicle. A suction fan is driven by a motor in electrical circuit with the vehicle battery through a toggle switch, or the like, mounted on the dashboard. The air stream generated by the fan conveys the deposited material from the receptacle through the air duct to the container.

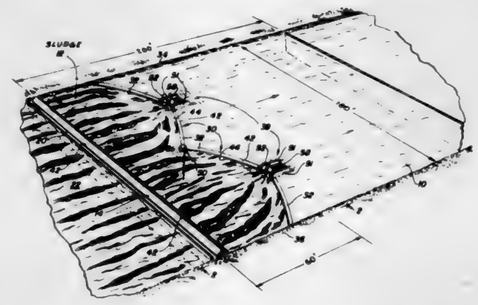
3,663,433
PROCESS FOR REDUCING SULFUR IN HYDROCARBONS WITH METALLIC MAGNESIUM
Edward A. Fraini, Lake Jackson, and David E. Minter, Austin, Tex., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Feb. 1, 1971, Ser. No. 113,031
Int. Cl. C10g *23/06*
U.S. Cl. 208—213 7 Claims

A crude hydrocarbon feedstock containing sulfur impurities is desulfurized, i.e. reduced in sulfur content, by reacting the feedstock in a hydrogen atmosphere with finely divided magnesium at a high temperature and pressure. The feedstock is then separated from the magnesium sulfide. Sulfur can be recovered from the magnesium sulfide and the magnesium recycled if desired.

3,663,434
DESULFURIZATION
Alan G. Bridge, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Continuation-in-part of application Ser. No. 743,568, July 9,1968, which is a continuation-in-part of application Ser. No. 688,046, Sept. 15, 1967. This application Jan. 12, 1970, Ser. No. 2,097
The portion of the term of the patent subsequent to Feb. 17, 1987, has been disclaimed
Int. Cl. C10g *23/02*
U.S. Cl. 208—210 8 Claims

A process for hydrodesulfurization of a heavy oil containing iron as an organometallic compound, which comprises: (a) passing the heavy oil at an elevated temperature, together with hydrogen, through a first fixed catalyst bed which has increasing catalytic hydrogenation activity along the normal direction of feed flow through the first bed; and (b) passing at least a portion of the effluent from the first bed, at an elevated temperature and pressure, and in the presence of hydrogen, through a second fixed bed containing sulfactive catalyst particles having a surface are of at least 100 $m.^2/g$.

3,663,435
WATER PURIFICATION PROCESS
James F. Grutsch and George C. Flood, Hammond, Ind., assignors to Standard Oil Company, Chicago, Ill.
Continuation of application Ser. No. 824,781, May 15, 1969. This application Aug. 5, 1970, Ser. No. 61,419
Int. Cl. B03d *1/00*
U.S. Cl. 210—44 1 Claim



Buoyant matter produced in a bioflotation lagoon is confined to the lagoon's upstream end by floating booms, and skimmers along the booms remove buoyant matter carried to the skimmers by the lagoon's surface currents.

3,663,436
LUBRICATING GREASES
William D. Carswell, Chester, England, assignor to Shell Oil Company, New York, N.Y.
No Drawing. Filed June 27, 1968, Ser. No. 740,487
Claims priority, application Great Britain, July 13, 1967, 32,205/67
Int. Cl. C10m *3/26*
U.S. Cl. 252—28 6 Claims

Copper corrosion resistant greases are obtained by incorporating therein a minor amount of a 3-amino-1,2,4-triazole.

3,663,437
SEMI-FLUID LUBRICANT COMPOSITIONS
Howard D. Moore, Ernest L. Padmore, and John Whittle, Cheshire, England, assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed Nov. 19, 1969, Ser. No. 878,216
Claims priority, application Great Britain, Nov. 20, 1968, 55,000/68
Int. Cl. C10m *7/36*
U.S. Cl. 252—28 3 Claims

Lubricant compositions comprising a synthetic base fluid of a polyoxy-alkylene compound gelled to a semi-fluid consistency, having a penetration value within the range of about 350 to about 450, reduce lubricant loss from imperfect gear-box seals etc. and possess good oxidation and good slip properties.

3,663,438
HIGH TEMPERATURE GREASE COMPOSITIONS
Joshua D. Smith, New Orleans, and Marion A. Clifton, Holson, La., assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed June 23, 1969, Ser. No. 835,725
Int. Cl. C10m *5/22*
U.S. Cl. 252—28 9 Claims

Grease compositions comprising a mineral lubricating oil thickened to grease consistency having incorporated therein minor amounts each of a phenothiazine-type inhibitor and a polyester of a C_{1-20} alcohol and a C_{3-20} carboxylic acid, have improved high speed, high temperature lubricating properties.

3,663,439
LUBRICANT COMPOSITIONS
Gerassimos Frangatos, Westmont, N.J., assignor to Mobil Oil Corporation
No Drawing. Filed June 25, 1970, Ser. No. 49,939
Int. Cl. C10m *1/44*
U.S. Cl. 252—49.9 10 Claims

The oxidation and extreme pressure properties of lubricating oils are improved by adding thereto a compound prepared from cetyl vinyl ether and N-vinylpyrrolidone in the presence of a trihydrocarbyl phosphite.

3,663,440
PIEZOELECTRIC STRUCTURE COMPOSED OF A CERAMIC FERRO-ELECTRIC MATERIAL HAVING A PEROVSKITE ARRANGEMENT OF COMPONENTS
Helmut Thomann, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed July 24, 1970, Ser. No. 58,098
Claims priority, application Germany, July 28, 1969, P 19 38 318.7
Int. Cl. C04b *35/46, 35/48*
U.S. Cl. 252—62.9 7 Claims

A piezoelectric structure comprised of a ceramic ferro-electric material having a Perovskite arrangement of components defined by the general formula: 41 through 49 mol percent $PbTiO_3$, 37 through 49 mol percent $PbZrO_3$ and 5 through 18 mol percent $Pb(A_nB_m)O_3$, wherein A and B are both individual and distinct chemical elements, each having a positive valence and n and m are positive numerals, the sum of which equals 1 and the sum of the product of the valence $A^x n$ plus the product of the valence of $B^x m$ is equal to 4. For example, a preferred Perovskite arrangement for a preferred ferro-electric material is

$$xPbTiO_3—yPbZrO_3—zPb(Mg_{0.5}W_{0.5})O_3$$

wherein x, y and z are numerals the sum of which is equal to 1. The ferro-electric material also includes about 1% of MnO_2 and 0.15% Al_2O_3 by weight of all of the components. The disclosed structure has an improved electro-mechanical coupling factor k, an improved mechanical quality factor Q and an increased dielectric ϵ-value factor, all of which factors are selectively adjustable by selection of individual components and their amounts.

3,663,441
PREPARING ALUMINUM ALLOYS FOR FINISHING
Michael Gulla, Newton, Mass., assignor to Shipley Company, Inc., Newton, Mass.
Application Dec. 18, 1967, Ser. No. 691,256, now Patent No. 3,551,122, dated Dec. 29, 1970, which is a continuation-in-part of application Ser. No. 675,425, Oct. 16, 1967, now Patent No. 3,565,771. Divided and this application Aug. 5, 1970, Ser. No. 61,420
Int. Cl. C23g *1/18*; C23d *3/00*
U.S. Cl. 252—79.4 10 Claims

A composition for preparing an aluminum alloy containing at least 0.1 percent silicon for finishing. The composition is characterized by its ability to dissolve aluminum from the surface of the alloy leaving silicon and other insoluble alloying metals behind as a normally, visible, adherent coating resistant to oxidation and highly receptive to finishing operations such as metal plating, painting and the like.

3,663,442
HOUSEHOLD BLEACH HAVING STABLE OPACIFIER
Benjamin R. Briggs, Los Alamitos, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.
No Drawing. Filed Feb. 9, 1970, Ser. No. 9,966
Int. Cl. C11d *7/54*
U.S. Cl. 252—95 19 Claims

Liquid household bleach having visual opacity is provided by the incorporation into the bleach of a certain styrene-vinyl acid-vinyl sulfonate terpolymer latex which is highly resistant to deterioration in the bleach. The latex is prepared by introduction of styrene monomer into a preformed aqueous solution of the vinyl acid and vinyl sulfonate and a noncationic surfactant.

3,663,443
BLEACHING COMPOSITION
Dominique Du Bois, Amiens, France, Jorgen Heino, London, England, and Alan Frank Walden, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed Nov. 20, 1969, Ser. No. 878,577
Claims priority, application France, Nov. 27, 1968, 175,556
Int. Cl. C11d *7/18, 7/56*
U.S. Cl. 252—99 10 Claims

A bleaching composition containing a builder, detergent, water-soluble hydrogen peroxide addition compound, and a copolymer of a vinyl compound of formula RCH=CHR where one R represents a hydrogen atom and the other R represents an alkyl ether radical having one to four carbon atoms or a hydrogen atom. The bleaching composition has an improved bleaching action due to the reduced rate of active oxygen loss from the hydrogen peroxide addition compound in the aqueous solution. The reduction in the rate of active oxygen loss is accomplished by the inclusion of a minor amount of the copolymer in the bleaching composition.

3,663,444
WASHING AND CLEANSING AGENTS WITH POLYAMIDES HAVING IMPROVED DIRT-CARRYING CAPACITY
Edmund Schmadel, Mettmann, Germany, assignor to Henkel & Cie GmbH, Dusseldorf, Germany
No Drawing. Filed Apr. 29, 1970, Ser. No. 33,090
Claims priority, application Germany, May 2, 1969, P 19 22 450.1
Int. Cl. C11d *7/56*
U.S. Cl. 252—99 6 Claims

A washing and cleansing composition with improved dirt-carrying capacity consisting essentially of

(1) a surface-active detergent composition,

(2) from 0.1% to 20% by weight, based on the total solids, of a water-soluble or water-dispersible polyamide reaction product of (a) a polyalkyleneimine having an average molecular weight of from 300 to 6000 selected from the group consisting of polyethyleneimines and polypropyleneimines and (b) an organic polycarboxylic acid having from 2 to 10 carbon atoms selected fro mthe group consisting of oxalic acid, alkanedioic acids, alkanetrioci acids, alkenedioic acids, benzenedicarboxylic acids, benzenetricarboxylic acids, cyclohexanedicarboxylic acids, cyclohexanetricarboxylic acids, hydroxyalkanedioic acids, hydroxyalkanetrioic acids, polyoxyalkanedioic acids, polythioalkanedioic acids, polyaminoalkanedioic acids and polyaminoalkanetrioic acids, the molar ratio of alkyleneimine unit to organic polycarboxylic acid being from 100:1 to 5:1, and

(3) optionally a non-surface-active builder salt and a compound with an intensified cleaning action.

3,663,445
SURFACE CLEANING AND DEFATTING COMPOSITION

Horst Augustin and Siegfried Klassendorf, Mannheim, Germany, and Konrad Kofer, Vienna, Austria, assignors to Lever Brothers Company, New York, N.Y.

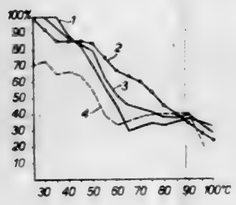
No Drawing. Continuation-in-part of application Ser. No. 885,966, Feb. 24, 1969, which is a continuation-in-part of application Ser. No. 537,282, Mar. 25, 1966. This application Aug. 22, 1969, Ser. No. 852,478
Int. Cl. C11d 9/30
U.S. Cl. 252—117 6 Claims

Liquid storable concentrates and cleaning and defatting compositions, particularly for metal surfaces, prepared from said concentrates by dilution with water, wherein the concentrates comprise a nonionic surfactant, an alkanolamine salt of a fatty acid and an alkalolamine.

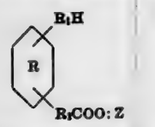
3,663,446
DETERGENT COMPOSITIONS WITH THERMO CONTROLLED FOAMING CAPACITY

Hans Barth, Kleve, Wilhelm Griess, Mannheim-Almenhof, Martin Knausenberger, Hockenheim, Henner Lange, Hamburg, Hans-Udo Menz, Schenefeld-Hamburg, and Angelos Sagredos, Hamburg, Germany, assignors to Lever Brothers Company, New York, N.Y.

Filed Feb. 19, 1968, Ser. No. 706,445
Claims priority, application Germany, Feb. 24, 1967, U 13,590
Int. Cl. C11d 3/065
U.S. Cl. 252—539 3 Claims



Foaming at low washing temperatures is obtained without overfoaming at high temperatures. The thermo-controller is a substance of the general formula



in which R represents a carbon ring with, if desired, one or more double bonds, which may also be semicyclic; R_1 and R_2 are carbon chains, at least one of which, preferably R_2, is branched, and which are saturated or which may contain one or more double bonds, whereas R_1 and R_2 may also be zero. The ring system R may also carry further substituents. Z is a hydrogen atom or a salt-forming element or a salt-forming group.

3,663,447
COMPOSITION AND PROCESS FOR STRIPPING PAINT

Donald P. Murphy, Roseville, Mich., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Oct. 1, 1968, Ser. No. 764,291
Int. Cl. C11d 7/06
U.S. Cl. 252—156 11 Claims

An aqueous alkaline stripping solution which contains an accelerator composition comprised of an alkylene glycol aryl ether and an organic nitrogen compound of the formula:



wherein R_1, R_2 and R_3 are independently selected from the group consisting of hydrogen, alkanol and hydroxy ether groups, which latter groups contain from about 2 to 10 carbon atoms, at least one of R_1, R_2 and R_3 being other than hydrogen, the compound having a boiling point of at at least about 100 degrees C. and a molecular weight which is not substantially in excess of about 500. The preferred alkaline stripping solution is an aqueous sodium hydroxide solution and the preferred components of the activator composition are ethylene glycol monophenyl ether and triethanolamine.

3,663,448
INHIBITING SCALE DEPOSITION

Paul Hotchkiss Ralston, Pittsburgh, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

No Drawing. Continuation-in-part of application Ser. No. 597,569, Nov. 29, 1966. This application Sept. 25, 1970, Ser. No. 75,706
Int. Cl. C02b 5/06; C23f 14/02
U.S. Cl. 252—180 9 Claims

A method of inhibiting scale formation in aqueous systems is disclosed, in which combinations of amino phosphonate compounds and water soluble polyacrylic acid derivatives are used.

3,663,449
MOLDING SYNTHETIC DETERGENT SUPERIOR IN MECHANICAL STRENGTH AND CONTAINERS MOLDED THEREFROM

Rinnosuke Susuki, Tokyo, Hiroshi Hoshi, Narashino-shi, and Jiro Saito and Kiyoshi Moriki, Tokyo, Japan, assignors to Raion Yushi Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 30, 1970, Ser. No. 33,470
Claims priority, application Japan, May 12, 1969, 44/36,426
Int. Cl. C11d 17/00
U.S. Cl. 252—174 8 Claims

A synthetic detergent containing 25 to 95 percent sodium silicate, which has been limited to the order of 1 percent or at most over 10 percent for technical reasons, and a small amount of polyhydric alcohol such as glycerine or ethylene glycol is molded in the same manner as synthetic resins so as to make a container. Various containers such as for washing or detergent can be made of detergent itself.

3,663,450
ALPHA OLEFIN AND DIENE POLYMERIZATION CATALYST

Charles Cozewith, Westfield, and Erik G .M. Tornqvist, Roselle, N.J., assignors to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 694,051, Dec. 28, 1967. This application Dec. 23, 1969, Ser. No. 887,781
Int. Cl. C08d 1/14
U.S. Cl. 252—429 B 5 Claims

A Ziegler-type catalyst system for polymerizing alpha olefins and conjugated dienes comprising (a) a hydrocarbon soluble adduct of a titanium subhalide and a Lewis base, such as the methyl- and dimethyl-derivatives of tetrahydrofuran and tetrahydrothiophene and (b) an organo aluminum compound, such as diethylaluminum chloride.

3,663,451
OLEFIN POLYMERIZATION CATALYSTS

Thomas Hill, Falkirk, Scotland, assignor to BP Chemicals Limited, London, England

No Drawing. Filed Jan. 30, 1970, Ser. No. 7,220
Claims priority, application Great Britain, Jan. 30, 1969, 5,195/69
Int. Cl. C07c 3/10
U.S. Cl. 252—431 R 18 Claims

Olefin oligomerization and polymerization catalyst containing (a) transition metal bonded to a carrier and a ligand and (b) an aluminium alkyl. A typical embodiment is the combination of (a) nickel bonded to silica, alumina or silica/alumina and acetylacetone and (b) aluminumtriethyl.

3,663,452
HYDROGENATION CATALYST

Thomas E. Klovsky, El Sobrante, and Milton M. Wald, Walnut Creek, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed May 15, 1970, Ser. No. 37,912
Int. Cl. B01j 11/82
U.S. Cl. 252—438 4 Claims

A catalyst for increasing the rate of hydrogenation reactions including a complex salt of the chloride, bromide or iodide of zinc, tin, antimony, bismuth, cadmium, gallium, mercury or arsenic, and the corresponding ammonium halide.

3,663,453
SKELETAL ISOMERIZATION OF OLEFINS OVER HALOGEN-CONTAINING ZIRCONIA CATALYST

John W. Myers, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,278
Int. Cl. B01j 11/78
U.S. Cl. 252—441 6 Claims

A catalyst suitable for the skeletal isomerization of olefin hydrocarbons comprises zirconia promoted with at least one compound which is a halogen acid or an ammonia halide salt which has been activated by calcination at a temperature of from about 500° to about 1200° F.

3,663,454
ACTIVATION OF HYDROCARBON CATALYST USING SOLUTION

Robert M. Suggitt, Fishkill, and John H. Estes, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed June 15, 1967, Ser. No. 646,199
Int. Cl. B01j 11/78
U.S. Cl. 252—442 8 Claims

This invention and this disclosure are directed to an improved method for activating alumina and noble metal-alumina composites to prepare catalysts useful for hydrocarbon conversion, particularly isomerization. The invention revolves about activating the composite with a solution of hexachloroethane or octachloropropane which are normally solids at ambient conditions. The activation of the alumina or metal-alumina composite is performed by introducing the hexachloroethane activating agent in the form of a solution and treating the composite to be activated with the solution under activating conditions. A suitable solvent is tetrachloroethylene.

3,663,455
METHOD OF PREPARING SUPPORTED OXIDATION CATALYSTS FOR PRODUCING ETHYLENE OXIDE

Benedetto Calcagno and Natale Feriazzo, Milan, and Marcello Ghirga, Bresso, Italy, assignors to Società Italiana Resine S.p.A., Milan, Italy

No Drawing. Filed Nov. 19, 1969, Ser. No. 878,200
Claims priority, application Italy, Nov. 23, 1968, 24,087/68
Int. Cl. B01j 11/82
U.S. Cl. 252—443 5 Claims

A method for preparing a supported catalyst for use in oxidizing ethylene to ethylene oxide, said supported catalyst consisting essentially of silver to the extent of 7 to 30% by weight with respect to the support, and of a member selected from the group consisting of platinum, palladium and gold to an extent of from 0.01 to 1.0% by weight with respect to said silver, which comprises:

(a) impregnating a solid, inert subdivided support, at a temperature of from 60° C. to 115° C., with a solution of silver lactate in lactic acid containing in suspension, carbon and at least one metal selected from the group consisting of palladium, platinum and gold, said lactic acid being present in a molar excess of from 20% to 200% with respect to the number of mols required for complete salification of said silver,

(b) drying the particles thus impregnated in a stream of air at a temperature rising to a maximum, but not exceeding 130° C. for a period of from 1 to 3 hours, and

(c) subjecting the particles thus impregnated to a heat treatment, said temperature being raised gradually to a maximum level of between 230° C. and 360° C. over a period of 10 to 15 hours.

3,663,456
ZEOLITE A SYNTHESIS

Lawrence L. Upson, Wallingford, Pa., and Ronald T. Wood, Wilmington, Del., assignors to Air Products and Chemicals, Inc., Philadelphia, Pa.

No Drawing. Filed Nov. 17, 1969, Ser. No. 877,440
Int. Cl. C01b 33/28
U.S. Cl. 252—455 Z 2 Claims

Kaolin is calcined at a severity sufficient to prepare amorphous de-exothermed kaolin substantially free from mullite. A mixture of about 4.3 parts of such de-exothermed kaolin and 1 part of alumina alpha trihydrate is prepared and dispersed in a sodium hydroxide solution at ambient temperature. The freshly prepared solution is heated to about 100° C. and maintained at hot aging conditions for from about 10 to about 20 hours, to prepare a product comprising significant amounts of Zeolite A in an aluminosilicate matrix.

3,663,457
METHOD OF PREPARING AN OXIDIZING CATALYST FOR THE EXHAUST GASES OF INTERNAL COMBUSTION ENGINES

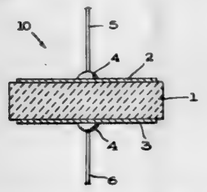
Takaaki Tamura, Tokyo, Tsutomu Kato, Hamamatsu-shi, and Kazuyoshi Sakamoto, Fukurol-shi, Japan, assignors to Kachita Co., Ltd., Hamamatsu-shi, Japan

No Drawing. Filed June 8, 1970, Ser. No. 44,650
Claims priority, application Japan, June 12, 1969, 44/45,763
Int. Cl. B01j 11/06, 11/22
U.S. Cl. 252—463 4 Claims

A method of preparing a granular oxidizing catalyst useful in the conversion of carbon monoxide contained in the exhaust gases of internal combustion engines to harmless carbon dioxide which comprises the steps of mixing fine powders of high purity manganese dioxide, copper oxide, activated alumina and alumina cement together, kneading the mixed powders with water into a paste, form-

ing the paste into wet granules of suitable size, allowing the still wet granules to stand as they are over 24 hours to increase the hardness thereof and thermally drying them for natural solidification into a rigid form.

3,663,458
NONLINEAR RESISTORS OF BULK TYPE
Takeshi Masuyama, Michio Matsuoka, and Tsuyoshi Nishi, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sept. 27, 1968, Ser. No. 763,285
Claims priority, application Japan, Oct. 17, 1967, 42/67,389, 42/67,392, 42/67,393, 42/67,394, 42/67,395; Jan. 22, 1968, 43/4,192, 43/4,198; Feb. 12, 1968, 43/9,311; May 10, 1968, 43/31,772, 43/31,773
Int. Cl. H01b *1/06*
U.S. Cl. 252—518 **5 Claims**



A nonlinear resistor wherein the nonlinearity is due to the bulk thereof and which has a high *n*-value comprises a sintered body of a composition comprising ZnO and 0.05 to 10.0 mole of Bi_2O_3. Such a nonlinear resistor has nonohmic resistance due to the bulk itself, and the C-value can be changed without impairing the *n*-value. Ohmic electrodes are applied to opposite surfaces of the sintered body. The presence of other specified oxides tends to raise the *n*-value.

3,663,459
DETERGENT BAR
Ryonosuke Yoshida and Masahiro Takehara, Kanagawa-ken, Hitoshi Akiba, Saitama-ken, and Yasunori Usuba, Tokyo, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
No Drawing. Filed Feb. 25, 1970, Ser. No. 14,202
Claims priority, application Japan, Mar. 7, 1969, 44/17,040
Int. Cl. C11d *17/00, 3/32*
U.S. Cl. 252—546 **3 Claims**

The water soluble salts of N-acyl-glutamic acids and N-acylaspartic acids whose acyl groups are the acyl radicals of saturated or unsaturated fatty acids having 8 to 22 carbon atoms with the alkali metals, ammonium, basic amino acids, and other amines can be milled with water and molded into bars by procedures conventional in the making of milled toilet soaps, and have desirable properties as detergents for toilet use.

ERRATA

For Classes 252—301 thru 252—431 see:
Patent Nos. 3,663,473 thru 3,663,480

3,663,460
CHROMIUM(III) AND IRON(III) HYDROXY BIS(PHOSPHINATE) AND BIS(ARSINATE) POLYMERS
Burton Peter Block, Wayne, Piero Luigi Nannelli, King of Prussia, Hyman David Gillman, Norristown, and Paula Marion Thomas, King of Prussia, Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.
No Drawing. Filed Apr. 27, 1970, Ser. No. 32,351
Int. Cl. C08g *33/16, 33/20*
U.S. Cl. 260—2 P **6 Claims**

Chromium(III) and iron(III) hydroxy bis(phosphinate) and bis(arsinate) polymers composed of the recurring unit $[Z(OH)(OMRR'O)_3]$, where Z is chromium or iron in the trivalent state, M is phosphorus or arsenic, and R and R' are inert organic groups, are useful as corrosion proof coatings for metal which will be subjected to high temperature conditions.

3,663,461
CHAIN EXTENDED POLYELECTROLYTE SALTS AND THEIR USE IN FLOCCULATION PROCESSES
Edward Witt, Dover, Del., assignor to Standard Brands Chemical Industries, Inc., Dover, Del.
No Drawing. Continuation-in-part of application Ser. No. 763,977, Sept. 30, 1968. This application June 30, 1970, Ser. No. 51,344
Int. Cl. C08g *33/00, 33/06*
U.S. Cl. 260—2 BP **11 Claims**

Water-soluble poly(quaternary ammonium) polyether polyelectrolyte salts containing quaternary nitrogen atoms in the polymer backbone and chain-extended by ether groups are prepared by treating the polymeric reaction product from an N,N,N',N'-tetraalkyl-hydroxy substituted diamine and an organic dihalide such as a dihaloalkane or a dihalo ether with an epoxyhaloalkane. These polyelectrolytes are used in processes for flocculating particles dispersed in aqueous media, for example, white water clarification, clay flocculation, sewage treatment, and wet-end addition, by adding the polyelectrolyte to the aqueous media in amounts sufficient to flocculate the dispersed particles.

3,663,462
PREPARATION OF ACRYLATE FOAMS
Peter Joseph Arndt, Jugenheim, Herbert Fink, Bickenbach Ueber Darmstadt, Helmut Moroff, Trautheim, near Darmstadt, and Hermine Determann and Reinhard Grimm, Darmstadt, Germany, assignors to Rohm Gesellschaft mit beschrankter Haftung, Darmstadt, Germany
No Drawing. Filed Jan. 9, 1970, Ser. No. 1,871
Claims priority, application Germany, Jan. 16, 1969, P 19 02 076.9
Int. Cl. C08f *47/08, 37/06*
U.S. Cl. 260—2.5 L **10 Claims**

A method of making acrylate foams by dispersing a gas in an aqueous dispersion of an acrylate polymer comprising more than 50 percent by weight of an ester of acrylic or methacrylic acid, and then removing water from the mixture. The dispersion contains at least 55 percent by weight of solids having a critical average particle size and particle size distribution defined by the settling characteristics of the dispersion when centrifuged. Acrylate foams made by this method.

3,663,463
NONCOMBUSTIBLE AND FIREPROOFING POLYMER COMPOSITIONS AND PROCESS
Henry K. Wren, 8521 Lamira Lane, Indianapolis, Ind. 46234
No Drawing. Filed July 16, 1970, Ser. No. 55,589
Int. Cl. C08f *47/08*; C08j *1/22*
U.S. Cl. 260—2.5 FP **20 Claims**

Noncombustible and fireproofing polymer compositions are prepared by reacting via a condensation mechanism, a polyol, an organic anhydride, or an organic acid, and boric acid to form first an esterified material and then further condensing this first esterified material with both a nitrogenous spumific compound and a carbohydrate class compound to form the noncombustible and fireproofing polymer compositions. The polymer compositions may then be formed into noncombustible films, sheets, laminates or fibers, cast, extruded or otherwise formed into articles or may be incorporated into paints, lacquers, varnishes, plastics, rubbers, to yield these materials fireproof, and additionally may be coated alone or as a further composition on fibers, fabrics, wood, paper, cardboard, plastics, leather, wire and so on.

3,663,464
POLYMERIC VEHICLES AS CARRIERS FOR SULFONIC ACID SALT OF NITROSUBSTITUTED AROMATIC AMINES
Paul M. Sawko, San Jose, Calif., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
No Drawing. Filed Aug. 13, 1970, Ser. No. 63,610
Int. Cl. C08d *13/08*
U.S. Cl. 260—2.5 FP **7 Claims**

An intumescent agent is provided which contains the ammonium salt of 4-nitroaniline-2-sulfonic acid and a polymer of the mercaptan type which may contain disulfide linkages or polyoxyalkylene linkages. The adhesion and char resistance of such compositions can be further improved by the addition of epoxy resins.

3,663,465
PREPARATION OF OPEN-CELL POLYURETHANE FOAMS IN THE PRESENCE OF 2-SUBSTITUTED 1,1,3,3-TETRAALKYL GUANIDINES AND AN ACID
Adolf W. Fogiel, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Jan. 29, 1970, Ser. No. 6,965
Int. Cl. C08g *22/44*
U.S. Cl. 260—2.5 AC **16 Claims**

Open-cell, non-shrinking, flexible polyurethane foam prepared from an aliphatic polyisocyanate, a polyester polyol, and water in the presence of a 2-substituted-1,1,3,3-tetraalkyl guanidine as catalyst and an acid, said acid having a pKa of about 1–10 and being practically insoluble in diethyl ether; the addition of all the components being conducted in such a manner that contact between said acid and said catalyst is avoided prior to the mixing of all the components.

3,663,466
FOAMABLE THERMOPLASTIC POLYMER GRANULES AND METHOD FOR MAKING
Werner L. Jablonski, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Aug. 1, 1968, Ser. No. 749,287
Int. Cl. C08f *33/02, 47/10*
U.S. Cl. 260—2.5 B **10 Claims**

Foamable styrene polymers are prepared by incorporating within the particles an alkali metal salt of long chain or aromatic carboxylic acids. Improved fusion, low cooling time and anti-clumping properties are obtained.

3,663,467
POROUS POLYMERS BASED ON TRIMETHYLOLPROPANE TRIMETHACRYLATE AND RELATED MATERIALS
Robert L. Albright, Churchville, Pa., assignor to Rohm & Haas Company, Philadelphia, Pa.
No Drawing. Continuation-in-part of application Ser. No. 756,392, Aug. 30, 1968. This application July 30, 1969, Ser. No. 846,271
Int. Cl. B01d *15/08*; C08f *29/46, 47/08*
U.S. Cl. 260—2.5 B **14 Claims**

Porous polymers are prepared by polymerization of a polyfunctional methacrylate such as trimethylolpropane trimethacrylate, either alone or in conjunction with other comonomers in the presence of a variety of phase separating solvents. These porous polymers are useful as adsorbants in both aqueous and non-aqueous media and, when ionic functional groups are incorporated into the resin structure, are also useful as ion exchange resins.

3,663,468
METHOD OF MAKING RIGID POLYURETHANE FOAMS
Loren A. Haluska, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
No Drawing. Original application May 2, 1966, Ser. No. 546,548, now Patent No. 3,518,288, dated June 30, 1970. Divided and this application Aug. 8, 1969, Ser. No. 848,715
Int. Cl. C08g *22/44*
The portion of the term of the patent subsequent to Aug. 20, 1985, has been disclaimed
U.S. Cl. 260—2.5 AM **7 Claims**

An improved process of making rigid polyurethane foams is disclosed which comprises incorporating therein new siloxane-polyethylene oxide copolymers. With this process it is possible to consistently produce uniform fine-celled foams having a high percentage of closed cells under a wide variety of manufacturing conditions.

3,663,469
PARTICLE-CONTAINING ELASTIC POLYURETHANE LAYER
Joseph A. Weissmahr, Rome, Italy, assignor to Wertex Anstalt, Vaduz, Liechtenstein
No Drawing. Filed Oct. 17, 1969, Ser. No. 867,386
Claims priority, application Italy, Nov. 7, 1968, 40,972/68
Int. Cl. C08f *47/08*; C08g *22/44, 41/04*
U.S. Cl. 260—2.5 BE **6 Claims**

An elastic layer of polyurethane is prepared by binding granulated elastic material with a liquid polyurethane composition which cures to a resilient solid product. When the spaces between the granulated material is only partially filled with the liquid, a porous article results.

3,663,470
METHOD OF PRODUCING POLYVINYL ACETAL POROUS ARTICLES AND THE SHAPED POROUS ARTICLES MADE THEREFROM
Hiroshi Nishimura, Sowa-machi, and Shizuo Sato, Tokyo, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan
No Drawing. Filed May 28, 1970, Ser. No. 41,631
Claims priority, application Japan, June 5, 1969, 44/44,387
Int. Cl. C08f *27/20, 47/08*
U.S. Cl. 260—2.5 F **12 Claims**

Polyvinyl acetal porous articles having useful and excellent properties as cosmetic sponge puff, sponge handkerchief, filtering media and the like are produced by reacting an aqueous solution of polyvinyl alcohol with an aldehyde and an acid catalyst in the presence of at least one water soluble inorganic salt, with or without a pore forming agent.

3,663,471
THERMOPLASTIC MOLDING COMPOSITIONS AND MOLDINGS OF POLYCARBONATES ADMIXED WITH A GRAFT COPOLYMER
Hermann Schirmer, Krefeld, Gunter Peilstocker, Krefeld-Bockum, and Hugo Vernaleken, Krefeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Jan. 2, 1970, Ser. No. 343
Claims priority, application Germany, Jan. 8, 1969, P 19 00 756.8
Int. Cl. C08f *15/00*; C08g *39/00, 51/04, 57/14*
U.S. Cl. 260—40 **6 Claims**

The invention relates to thermoplastic moulding compositions and mouldings of polycarbonates of dihydric phenols having improved properties containing particular amounts of particular graft polymers admixed to the polycarbonates. The particular graft polymers are manufactured from about 50 to about 90% by weight of polybutadiene and a mixture of about 5 to about 40% by weight of acrylonitrile and about 5 to about 45% by

weight of an aromatic vinyl hydrocarbon, such as styrene, and said graft polymers are present in an amount of about 0.5 to about 9.5 parts by weight for about 99.5 to about 90.5 parts by weight of polycarbonate.

3,663,472

COMPOSITION AND METHOD FOR SURFACING LEATHERS AND LEATHER SUBSTITUTES BASED ON FILLED POLYURETHANE LATEX

Albert E. Raymond, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation of application Ser. No. 755,436, Aug. 26, 1968. This application Mar. 15, 1971, Ser. No. 124,230

Int. Cl. C08g *41/04, 51/14*

U.S. Cl. 260—6 4 Claims

Formation of leather-like surfacing from coating compositions comprising aqueous dispersions of polyurethane latex containing 10 to 50 percent by weight of a tough, flexible, organic particulate filler such as leather dust, organic spheroids, or the like, having an average diameter of 10 to 75 microns, the slurry having a mayonnaise-like consistency and a viscosity of about 30 to 2500 poise and being suitable for coating of substrates such as imperfect leather, leather splits, woven or non-woven fabrics, or polymeric films.

3,663,473

PRECIPITATION METHOD OF PREPARING ALKALINE-EARTH METAL FLUORO-CHLORO PHOSPHATE PHOSPHOR

Joseph W. Sausville, Glen Rock, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

No Drawing. Filed Nov. 6, 1970, Ser. No. 87,578

Int. Cl. C09k *1/36*

U.S. Cl. 252—301.6 P 5 Claims

An improved method of preparing alkaline-earth metal fluoro-chloro-phosphate phosphor is detailed, wherein metal activator doped alkaline-earth metal fluoro-apatite is precipitated from solution and thereafter fired to incorporate chlorine into the phosphor matrix and optimize the luminescence of the resulting halophosphate phosphor. An aqueous solution essentially containing as reactive constituents predetermined amounts of alkaline-earth metal, phosphate radical, fluorine and antimony is prepared with a pH value of less than about 4.5. The aqueous solution is maintained at a temperature greater than about 65° C., whereby apatite-structured alkaline-earth metal fluorophosphate is formed. A predetermined amount of selected basic compound is added to the solution to adjust the pH value to from about 6 to 8.5. A soluble chlorine containing compound is included in the solution, either prior to or after the pH is raised, as well as soluble compounds of any additional metal activator constituents, and the solution is digested. The resultant activator doped fluoropatite is then separated from solution, and after drying is fired to incorporate chlorine into the phosphor matrix and optimize the luminescence of the phosphor.

3,663,474

ERBIUM OXIDE/YTTERBIUM OXIDE DOPED GLASS LASERS

Haynes A. Lee, Jr., Sylvania, and Charles F. Rapp, Toledo, Ohio, assignors to Owens-Illinois, Inc.

No Drawing. Continuation-in-part of application Ser. No. 765,039, Oct. 4, 1968. This application Apr. 14, 1970, Ser. No. 28,518

The portion of the term of the patent subsequent to July 22, 1986, has been disclaimed

Int. Cl. C09k *1/54;* C03c *3/28, 3/04*

U.S. Cl. 252—301.4 F 26 Claims

Erbium oxide/ytterbium oxide glass laser compositions useful as laser rods having relatively high efficiency and low solarization are provided, the compositions containing about 45 to 75 mole percent silica, about 15 to 35 percent lithia, 0 to 8 percent alumina and 0 to 30 percent calcia, with the total of lithia and calcia being not substantially more than about 50%.

3,663,475

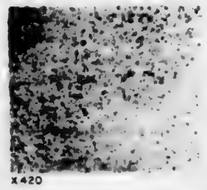
NOVEL DIAMOND POWDER DISPERSIONS AND PROCESS FOR OBTAINING SAME

Francis J. Figiel, Boonton, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 651,354, July 3, 1967. This application Mar. 6, 1970, Ser. No. 17,319

Int. Cl. B01j *13/00*

U.S. Cl. 252—309 20 Claims



x420

This application is directed to dispersions of synthetic shock-formed diamond powder and to the method of obtaining same by subjecting a mixture of synthetic shock-formed diamond powder in a liquid dispersion medium to shear stresses. The preferred dispersions are stable for at least 24 hours. The diamond powder used is characterized by an average particle diameter range of from about 7×10^{-4} to about 1×10^{-2} microns and a surface area of between about 40 and about 400 square meters per gram.

3,663,476

ALKALINE STRIPPING COMPOSITION AND PROCESS

Donald P. Murphy, Roseville, Mich., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Mar. 20, 1969, Ser. No. 809,011

Int. Cl. C11d *7/16, 7/32*

U.S. Cl. 252—529 4 Claims

An aqueous alkaline stripping solution which contains an accelerator composition comprised of an alkylene glycol aryl ether, tripropylene glycol or dipropylene glycol, and an organic nitrogen compound of the formula:



wherein R_1, R_2 and R_3 are independently selected from the group consisting of hydrogen, alkanol and hydroxy ether groups wherein the hydroxy group is terminal, which latter groups contain from about 2 to 10 carbon atoms, at least 1 of R_1, R_2 and R_3 being other than hydrogen, the compound having a boiling point of at least about 100 degrees C. and a molecular weight which is not substantially in excess of about 500. The preferred components of the activator composition are ethylene glycol monophenyl ether, tripropylene glycol and triethanolamine.

3,663,477

DILATANT AQUEOUS POLYMER SOLUTIONS

George P. Ahearn, Houston, Tex., assignor to Esso Production Research Company

Continuation-in-part of application Ser. No. 595,733, Nov. 21, 1966. This application Feb. 27, 1970, Ser. No. 14,905

Int. Cl. B65g *53/04;* E21b *43/16;* B01j *13/00*

U.S. Cl. 252—311.5 10 Claims

A composition of matter including as essential ingredients at least 0.001 weight percent of a high molecular weight polymer of ethylene oxide, between about 0.5 weight percent and about 10 weight percent of a petroleum sulfonate having an average molecular weight of at least 400, and a major proportion of water. The composition exhibits non-Newtonian dilatant rheological characteristics. The composition has utility as a liquid vehicle for the transportation of particulate solids, as a fluid for fracturing subterranean oil-bearing formations, and as a fluid for displacing oil from subterranean formations.

3,663,478

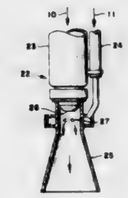
SULFUR-OIL SLURRY PREPARATION FOR PIPELINE TRANSPORTATION

Calvin J. Kuhre, Kensington, and Clifford C. Segerstrom, Lafayette, Calif., assignors to Shell Oil Company, New York, N.Y.

Filed Apr. 7, 1970, Ser. No. 26,278

Int. Cl. B01j *13/00*

U.S. Cl. 252—314 7 Claims



An improved method of preparing a sulfur-oil slurry for pipeline transportation using a shrouded nozzle for injection of molten sulfur into oil to form the slurry.

3,663,479

EXTENDED-SURFACE DISPERSIBLE HYDROGENATION CATALYST AND PROCESS FOR PRODUCING SAME

Norman V. Lovegren, Marie S. Gray, and Reuben O. Feuge, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed June 24, 1970, Ser. No. 49,555

Int. Cl. C11c *3/12*

U.S. Cl. 252—429 10 Claims

Nylon is dissolved in an aqueous solution of formic acid, or dissolved in a primary solvent such as ortho-phosphoric acid, meta-cresol, or phenol, in conjunction with ethyl alcohol as a secondary solvent, then precipitated in microscopic-sized particles by the addition of water. The precipitated nylon particles are washed with water until free of solvent. The nylon particles are mixed with an aqueous solution of a platinum (or palladium) compound, stirred and heated, thereby producing an easily dispersed hydrogenation catalyst of high surface area that is useful for selectively hydrogenating unsaturated fatty esters.

3,663,480

CATALYTIC COMPOSITION FOR THE PREPARATION OF HIGH VINYL POLYBUTADIENE

Robert P. Zelinski and Richard J. Sonnenfeld, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Mar. 9, 1970, Ser. No. 17,936

Int. Cl. C08d *1/14*

U.S. Cl. 252—431 9 Claims

A catalyst system is disclosed which is used to prepare high vinyl polybutadiene by the polymerization of 1,3-butadiene to obtain a product having at least 75 percent 1,2-addition. The catalyst system consists of a molybdenum compound and an aluminum compound wherein the molybdenum compound is represented by the general formula MoX_aY_b and the aluminum compound is represented by the general formula R_cAlY_d. In the above formulas X is a halogen, Y is selected from the formulas OR and O_2CR wherein R is a hydrocarbyl radical containing 1 to 30 carbon atoms, and the sum of a and b is 5, the sum of c and d is 3, a and b are integers having a value of 1 to 4, and c and d are integers having a value of 1 to 2.

3,663,481

PHENOL-FORMALDEHYDE ADHESIVE RESIN CONTAINING HYDROXYETHYL CELLULOSE

Harlan G. Freeman, Gene F. Baxter, and John T. Howell, Seattle, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,261

Int. Cl. C08b *21/32;* C08g *37/18*

U.S. Cl. 260—14 10 Claims

Improved phenol-formaldehyde adhesive resins suitable for plywood manufacture are obtained by premixing with aqueous formaldehyde about 0.3–6.0 weight percent of hydroxyethyl cellulose based on formaldehyde and thereafter reacting the hydroxyethyl cellulose formaldehyde solution with phenol in the presence of alkali to obtain a thermosetting phenol-formaldehyde resole resin. When formulated as a plywood glue, this modified phenol-formaldehyde resin provides an adhesive glue with enhanced tolerance to a wide variety of wood and production variables including assembly time.

3,663,482

AQUEOUS SUSPENSION POLYMERISATION PROCESS FOR VINYL HALIDES

Geoffrey James Gammon, Ashford, England, assignor to The British Petroleum Company Limited, London, England

No Drawing. Filed Mar. 13, 1970, Ser. No. 19,477

Claims priority, application Great Britain, Mar. 21, 1969, 14,929/69

Int. Cl. C08f *1/11*

U.S. Cl. 260—17 R 15 Claims

This invention relates to a process for the production of vinyl or vinylidene halide polymers by aqueous suspension polymerisation of the monomers in the presence of a free radical initiator and using a sparingly soluble inorganic phosphate suspending agent in conjunction with a metal alkyl phosphate extender. The phosphate suspending agents are suitably the hydroxy-apatities and the extender is suitably an alkali metal alkyl phosphate, the alkyl group having from 2 to 20 carbon atoms.

3,663,483

STEAM JET COOKING METHOD FOR MAKING AQUEOUS RESIN EMULSIONS AND COMPOSITIONS CONTAINING SUCH EMULSIONS FOR COATING PAPER

Clyde W. Steele, Wisconsin Rapids, Wis., assignor to Nekoosa-Edwards Paper Company, Inc., Port Edwards, Wis.

Filed Dec. 15, 1969, Ser. No. 885,058

Int. Cl. C08g *37/18*

U.S. Cl. 260—17.2 21 Claims

Preparation of an aqueous emulsion of meltable, oil-soluble but water insoluble, acidic polymeric material of phenol-aldehyde or alkyl phenol-acetylene resins, and a protective colloid-forming binder of starches or gums for use as a paper coating composition of between 15 and 70% total solids content. Such an emulsion is prepared by flowing an aqueous stream of resin and starch through a confined heating zone of an eductor system into contact and admixture with a steam jet in such weight proportions and under such pressure and temperature

conditions as to convert the resin without further mechanical grinding thereof into spherical particles of about 10 microns or less maximum dimension dispersed in



cooked starch as a protective colloid therefor. The final resin-containing emulsion can optionally include pigments, dispersants and anionic surfactants.

3,663,484

METHOD FOR MANUFACTURING WATER-DILUTABLE, VINYL MODIFIED SYNTHETIC RESINS BASED ON POLYETHER ESTERS

Bernhard Broecker, Hamburg, Germany, assignor to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany

No Drawing. Filed June 11, 1970, Ser. No. 45,601
Claims priority, application Switzerland, June 11, 1969, 8,326/69; Jan. 30, 1970, 1,325/70; Mar. 31, 1970, 4,712/70
Int. Cl. C09d *3/58*; C23b *13/00*
U.S. Cl. 260—19 EP **31 Claims**

Water-dilutable, vinyl modified synthetic resins based on polyetheresters which are reaction products of

(a) compounds carrying epoxy groups and possibly also hydroxyl groups,

etherified with

(b) monovalent alcohols with 3–20 C atoms, having at least one and preferably several ethylenic double bonds, by heating,

then esterified with

(c) the etherification products with aliphatic monocarboxylic acids with 6–20 C atoms, containing preferably one or more ethylenic double bonds,

thereafter

(d) reacted with such amounts of α,β-ethylenically unsaturated mono or polycarboxylic acids possibly in the presence of other vinyl or vinylidene compounds, by heating, so that the reaction products have an acid number of at least 25,

and

(e) mixed with such amounts of ammonia and/or strong organic nitrogen bases up to complete or partial neutralization, until the reaction products are sufficiently dispersible of water-dilutable.

Preferred are the polyetheresters of this invention, usable for the manufacture of electrophoretically depositable synthetic binders, which are obtained when the new polyetheresters are mixed together with phenoplasts and/or aminoplasts before the neutralization with ammonia or amines and are subjected to a precondensation by heating to temperatures of 100° to 150° C., the heating of the mixture being interrupted immediately if the formed precondensate has reached the necessary acid number.

3,663,485

PROCESS FOR THE PRODUCTION OF BINDERS FOR AQUEOUS COATINGS

Bernhard Broecker, Hamburg, Germany, assignor to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,094
Claims priority, application Switzerland, Nov. 17, 1969, 17,041/69
Int. Cl. C08g *37/18*; C09d *3/52*
U.S. Cl. 260—19 EP **5 Claims**

The invention consists of a method of making a binder for aqueous coatings based on plasticized, neutralized resins I and heat-curing, water-soluble on at least hydrophilic, low-molecular aldehyde condensation products II. The plasticized resins I are new polyetherester resins with valuable properties. The heat-curing, water-soluble or at least hydrophilic, low-molecular aldehyde condensation product II are known in the art.

3,663,486

PHENOLIC RESIN COMPOSITIONS AND A METHOD FOR THE PREPARATION THEREOF

William A. Keutgen, Martinsville, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Nov. 10, 1969, Ser. No. 875,535
Int. Cl. C08g *5/20*
U.S. Cl. 260—19 **6 Claims**

This invention relates to phenolic resin compositions, suitable for use in molding applications and to a method for the preparation thereof by adding a Group II metal hydroxide or oxide to a liquid phenolic novolac resin to form a solution and thereafter adding to this solution, with agitation, a monobasic acid and if desired a filler such as sand with the result that the sand is coated by the phenolic resin and a Group II metal salt is precipitated and dispersed throughout the resultant free-flowing composition.

3,663,487

METHOD OF MAKING VINYL-MODIFIED SYNTHETIC RESINS, BASED ON POLYETHER ESTERS, WHICH ARE CAPABLE OF BEING THINNED WITH WATER

Bernhard Broecker, Hamburg, Germany, assignor to Reichhold-Albert-Chemie Aktiengesellschaft

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,079
Claims priority, application Switzerland, Nov. 17, 1969, 17,041/69
Int. Cl. C08f *19/14*; C09d *3/58, 5/02*
U.S. Cl. 260—23 EP **4 Claims**

The invention consists in a method of making vinyl-modified synthetic resins, based on polyether-esters, which are capable of being thinned with water, and which have valuable properties.

3,663,488

POLYOLEFINE FILMS

John Alan Elliott Kail, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Mar. 24, 1969, Ser. No. 809,977
Claims priority, application Great Britain, Apr. 3, 1968, 16,018/68; Dec. 20, 1968, 60,717/68
Int. Cl. C08f *19/14*
U.S. Cl. 260—23 H **7 Claims**

Polyolefine film of high gloss and clarity which is suitable for twist wrapping and contains from 5% to 30% of a polyterpene, hydrogenated polyterpene or a rosin derivative.

3,663,489

HEAT-RESISTANT PHENOLIC RESIN FOAM FORMING COMPOSITION

Thomas J. Byerley, Shawnee Mission, Kans., and Howard W. Christie, Kansas City, Mo., assignors to Butler Manufacturing Company, Kansas City, Mo.

No Drawing. Filed Feb. 19, 1970, Ser. No. 12,845
Int. Cl. C08j *1/18*
U.S. Cl. 260—2.5 F **3 Claims**

A heat-resistant phenolic resin composition comprising a phenolaldehyde resole and a boron containing compound formed by reacting boric acid or boric oxide with glyoxal, glyoxal trimer, substituted glyoxal and glyoxal derivatives. These reaction products produce an "acid like" cure of the resin as they are weak acids in the presence of the water in the phenoleformaldehyde resole.

The resin may be made into coatings, castings or, by the addition of a surfactant and a blowing agent, foams may be produced.

3,663,490

ACRYLIC ACID-ACRYLAMIDE-DIACETONE ACRYLAMIDE TERPOLYMER

Amir M. Sarem, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Original application Dec. 21, 1967, Ser. No. 692,383, now Patent No. 3,476,186. Divided and this application July 28, 1969, Ser. No. 845,492
Int. Cl. C08f *15/40*
U.S. Cl. 260—29.6 TA **17 Claims**

A novel water-soluble terpolymer of acrylic acid, acrylamide and diacetone acrylamide useful as a flood water additive and a method for preparing the polymer in which the monomers are copolymerized in the presence of an organoboron catalyst.

3,663,491

ADHESIVE OF A POLYMER LATEX, A RESOL RESIN AND A NOVOLAK RESIN

Richard W. Kibler, Cuyahoga Falls, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Original application Oct. 27, 1967, Ser. No. 678,517, now Patent No. 3,547,729, dated Dec. 15, 1970. Divided and this application Mar. 2, 1970, Ser. No. 18,776
Int. Cl. C08g *51/24*
U.S. Cl. 260—29.3 **8 Claims**

Natural and synthetic rubbers and mixtures thereof are adhered to fabrics such as polyester tire cords, by an adhesive of a resol condensation product, a novolak resin and a latex of a polymer of a conjugated diene monomer and an unsubstituted or alkyl-substituted monovinylpyridine such as disclosed in Mighton U.S. Reissue Patent 23,451, which polymer preferably also includes styrene. The invention includes the adhesive, fabrics coated with the adhesive and with a rubber vulcanized thereto, the method of producing the adhesive and the method of treating the fabric and adhering rubber to it.

3,663,492

PROCESS FOR THE PREPARATION OF POLYAMIDOCARBOXYLIC ACIDS

Erich Behr, Troisdorf, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing. Filed Jan. 6, 1971, Ser. No. 104,522
Claims priority, application Germany, Jan. 31, 1970, P 20 04 495.5
Int. Cl. C08g *51/02, 51/44, 51/48*
U.S. Cl. 260—30.2 R **10 Claims**

New and improved process of producing polycarboxy pendant polycarbonamide polymers suitable for cyclization into polyimides by forming a dispersion of each reactant, that is, a tetracarboxylic acid (or a corresponding mono or dianhydride) and a diamine respectively, in an inert substantially non-polar, organic substantially anhydrous liquid; and then adding a polar organic solvent slowly to the dispersion either continuously or intermittently, with stirring and appropriate heat control, whereby said reactants react to form said polycarboxyl pendant polycarbonamide.

3,663,493

PROCESS FOR THE PRODUCTION OF MARBLEIZED REINFORCED POLYACRYLIC COMPOSITIONS

Robert E. Miller, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Dec. 29, 1969, Ser. No. 888,829
Int. Cl. B29c *21/00*; C08f *29/50, 45/02*
U.S. Cl. 260—31.8 M **9 Claims**

Method for preparing marbleized inorganic filler reinforced polyacrylic composite products by the free radical catalyzed polymerization of an acrylic monomer in the presence of at least 25 and up to 90 weight percent of an inorganic particulate filler and a coupling agent to effect chemical bonding between the filler and the polymer; characterized by the addition to a moving monomer-coupling agent-filler slurry composition, which slurry composition may be partially polymerized prior to said addition, of ribbons of pigmented solid polymeric compositions consisting of a polyblend of a polyvinyl chloride-polyvinyl acetate copolymer with a polyalkyl methacrylate and plasticizer therefor together with one or more pigment additives in an amount to give the desired color and optionally containing one or more inorganic fillers and coupling agents of the same general nature as that present in the slurry composition, wherein said addition of the pigmented polymeric ribbons is effected just prior to casting and for a sufficient exposure time in the slurry to cause said ribbons to partially dissolve in said slurry and form color-shaded striations therein simulating the natural texture and coloration of variegated and banded marbles and other similar quarried rock.

3,663,494

STABILISED TITANIUM DIOXIDE FOR POLYCARBONATE MOULDING COMPOSITIONS

Gerhard Kienast and Gunter Pellstocker, Krefeld, Hans G. Volz, Krefeld-Bockum, and Wolfgang Wiegreffe, Krefeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 29, 1970, Ser. No. 85,286
Claims priority, application Germany, Nov. 22, 1969, P 19 58 665.3
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 PC **3 Claims**

Rutile pigments for colouring polycarbonate moulding compositions which have an improved light stability by incorporating into the TiO_2 0.2 to 5% by weight of zinc oxide and by coating the calcined pigment with aluminium phosphate.

3,663,495

SELF-EXTINGUISHING POLYAMIDE MOULDING COMPOSITIONS

Dietrich Michael, Krefeld-Bockum, and Wilfried Kosiol, Moers, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 17, 1969, Ser. No. 867,380
Claims priority, application Germany, Oct. 17, 1968, P 18 03 606.1
Int. Cl. C08g *51/10, 51/58*
U.S. Cl. 260—37 N **4 Claims**

Self-extinguishing polyamide moulding compositions containing as flame retardant agents, melamine, a derivative of melamine, or the melamine condensation product melam in synergistic combination with organic halogen compounds.

3,663,496
ABLATIVE COMPOSITION COMPRISING RUBBER, RESIN, AND FILLER
William P. Whelan, Wayne, N.J., assignor to Uniroyal, Inc., New York, N.Y.
No Drawing. Filed Sept. 14, 1964, Ser. No. 397,670
Int. Cl. C08g 51/08
U.S. Cl. 260—38 5 Claims
An ablative composition, resistant to erosion by high velocity hot gases, comprising a cured blend of rubber (e.g., 35–75% butadiene-acrylonitrile rubber), resin (e.g., correspondingly 65–25% phenol-formaldehyde resin) and particulate filler (e.g., graphite in amount of 15 to 80% of the whole mixture). Useful for making molded rocket nozzle liners.

3,663,497
FRICTION MATERIAL
Kiyosha Ninomiya and Hideaki Ohara, Nagoya-shi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya-shi, Aichi-ken, Japan
Continuation-in-part of application Ser. No. 723,350, Apr. 19, 1968. This application Sept. 16, 1970, Ser. No. 72,698
Claims priority, application Japan, Apr. 28, 1967, 42/27,651
Int. Cl. C08g 51/12
U.S. Cl. 260—38 4 Claims
An improved friction material for friction-engaging mechanisms, such as automotive brakes and clutches, comprising about 30 to 80% of iron oxide powder whose main ingredient is ferrosoferric oxide, such as iron sand, about 15 to 65% of organic binder, and the balance of fillers and additives, whereby to improve wear, reduce defacement and provide a substantially constant coefficient of friction.

3,663,498
THERMOPLASTIC MOULDING COMPOSITIONS ON THE BASIS OF SATURATED POLYESTERS
Rudolf Uebe, Hofheim, Taunus, and Ludwig Brinkmann, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Aug. 28, 1970, Ser. No. 68,048
Claims priority, application Germany, Sept. 5, 1969, P 19 45 102.6
Int. Cl. C08g 17/00
U.S. Cl. 260—40 R 12 Claims
Moulding compositions are prepared on the basis of linear saturated polyesters, inert inorganic solid substances, and alkali metal aralkyl sulfonates, which are suitable for processing in the thermoplastic range, and from which shaped articles having good mechanical properties can be manufactured exhibiting a very good surface quality and not showing any discoloration, which come off the mould already after a short dwell time in the mould, a fact that makes them particularly suitable for the manufacture of complex shaped articles.

3,663,499
INJECTION MOLDED ARTICLES OF THERMOPLASTIC POLYESTER RESINS CONTAINING TITANIUM DIOXIDE
Ludwig Brinkmann, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Continuation of application Ser. No. 782,483, Dec. 9, 1968. This application Jan. 7, 1971, Ser. No. 104,793
Claims priority, application Germany, Dec. 9, 1967, P 16 94 232.8
Int. Cl. C08g 51/04
U.S. Cl. 260—40 R 12 Claims
Thermoplastic moulding compositions of linear, saturated polyesters and titanium dioxide which can be processed in the thermoplastic range to obtain shaped articles of high impact strength and dimensional stability.

3,663,500
UNSATURATED POLYESTER RESINS ADMIXED WITH POLYURETHANES OR CYCLOALIPHATIC DIEPOXIDES
John Dinsdale Crabtree, Rainhill, near Liverpool, Kenneth Henry Grundy, Ashton-on-Mersey, Sale, and Alan Edward Johnson, Sutton Leach, St. Helens, England, assignors to Fibreglass Limited, Liverpool, England
No Drawing. Filed June 2, 1969, Ser. No. 829,734
Claims priority, application Great Britain, June 4, 1968, 26,470/68
Int. Cl. C08g 51/10, 17/10
U.S. Cl. 260—40 R 7 Claims
A polyester resin for reinforcement by glass fibres is modified by the addition of a urethane, a cycloaliphatic epoxide, or a derivative of a cycloalphatic epoxide with methacrylic acid.

3,663,501
ADHESIVE CEMENT
Robert J. Adams and Wendell C. Overhults, East Brunswick, N.J., assignors to Johnson & Johnson
No Drawing. Filed June 11, 1970, Ser. No. 45,538
Int. Cl. C08f 45/04; A61k 5/02
U.S. Cl. 260—41 R 9 Claims
Adhesive compositions comprising a polymerizable monomeric ester of α-cyanoacrylic acid are substantially improved by the addition of about 5 to 25 parts by weight of sodium fluoride. The compositions preferably contain a finely-divided filler, and still further improvement results from the selection of a particular particle size for the filler, e.g., a mixture containing a substantial proportion of about 40–50 and about 90–100 micron size particles. The preferred filler is alumina having about equal proportions of the smaller and larger particle sizes.

These improved adhesive compositions are activated by an amine catalyst, preferred forms being the tertiary amines N,N-dimethyl-p-toluidine and N,N-dimethylaniline. They can be applied to either dry or wet surfaces of a variety of materials. Upon curing, they exhibit enhanced bonding and resistance to wear and long-term deterioration, even under submerged or otherwise moist conditions. They are particularly suitable for the treatment of teeth, e.g., for filling pits, cracks and fissures to prevent caries and for temporary fillings and the preparation of dental restorations.

3,663,502
TERTIARY PHOSPHINE OXIDE-AMMONIUM POLYPHOSPHATE COMBINATIONS AS FLAME-RETARDANTS FOR PROPYLENE POLYMERS
Robert William Murray, Lebanon, and Christos Savides, Piscataway, N.J., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Oct. 29, 1970, Ser. No. 85,307
Int. Cl. C08f 45/04, 45/60; C09k 3/28
U.S. Cl. 260—41 11 Claims
Flame-retardant compositions comprising (A) a phosphine oxide having the formula

$$R_1P{=}O \text{ or } (R_1\overset{\overset{O}{\|}}{P}CH_2)_2$$

wherein R is 2-cyanoethyl, 2-carbamoylethyl or 2-(N-alkylcarbamoyl)ethyl and (B) ammonium polyphosphate and propylene polymers containing said compositions, are disclosed.

3,663,503
COLORLESS, COLD CURE PHENOLIC RESIN CONTAINING SULFUR STABILIZERS
Rudolf H. E. Klemke, Sparta, N.J., assignor to Mohawk Industries Inc., Sparta, N.J.
No Drawing. Filed Feb. 25, 1970, Ser. No. 14,178
Int. Cl. C08g 51/60
U.S. Cl. 260—45.8 N 3 Claims
The specification discloses a phenolic resin composition comprising an organic compound having an S═C moiety which composition can be cold cured to a colorless or white product and a method for providing a colorless or white cold cured phenolic resin composition by incorporating in the resin an organic compound characterized by the presence of a C═S group and then curing the resin with a strong organic acid.

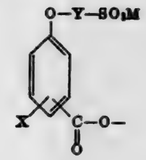
3,663,504
RADIATION-RESISTANT PLASTIC INSULATORS
Bernard J. Sturm, Oak Ridge, and William W. Parkinson, Kingston, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed Nov. 10, 1970, Ser. No. 88,484
Int. Cl. C08f 45/58, 51/58
U.S. Cl. 260—45.7 P 7 Claims
A high molecular weight organic composition useful as an electric insulator in radiation fields is provided and comprises normally a solid polymer of an organic compound having a specific resistance greater than 10^{19} ohm-cm. and containing phenyl groups and 1 to 7.5 weight percent of a high molecular weight organic phosphite. In one embodiment the composition comprises normally solid polystyrene having 7.5 weight percent tris-β-chloroethyl phosphite as an additive; the composition exhibited an increase in the post-irradiation resistivity of over an order of magnitude over the post-irradiation resistivity of pure polystyrene.

3,663,505
ANTIOZONANT COMPOSITION AND USE THEREOF IN NATURAL AND SYNTHETIC RUBBER COMPOSITIONS
Alfred E. Hoffman, Saddle River, N.J., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Continuation-in-part of application Ser. No. 666,493, Sept. 8, 1967. This application Apr. 2, 1970, Ser. No. 25,256
Int. Cl. C08d 11/04
U.S. Cl. 260—45.9 R 10 Claims
Novel antiozonant composition comprising a mixture of N,N′-di-alkyl-p-phenylenediamine in which each alkyl contains 6 to 10 carbon atoms, N-phenyl-N′-alkyl-p-phenylenediamine in which the alkyl contains 3 to 6 carbon atoms, and N-phenyl-N′-alkyl-p-phenylenediamine in which the alkyl contains 7 to 10 carbon atoms, and use of said composition in rubber.

3,663,506
STABILIZATION OF URETHANE POLYMERS WITH SUBSTITUTED UREAS
Robert John Knopf, St. Albans, Lloyd Marshall Bowne, Nitro, and Robert Darrell Hiser, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed Nov. 18, 1970, Ser. No. 90,871
Int. Cl. C08g 17/58
U.S. Cl. 260—45.85 9 Claims
Urethane polymers are stabilized against discoloration by certain substituted ureas, some of which are novel. The invention is particularly useful for stabilizing spandex fibers, urethane films, foams, and the like, against discoloration.

3,663,507
LINEAR POLYARYLSULFONES HAVING FUNCTIONAL GROUPS THEREON
Herward A. Vogel, Oakdale Township, Washington County, and Hans T. Olen, Lakeland, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Continuation of application Ser. No. 625,011, Mar. 22, 1967. This application Jan. 2, 1970, Ser. No. 488
Int. Cl. C08g 17/00, 20/32
U.S. Cl. 260—49 14 Claims
Certain linear thermoplastic polyarylsulfones having reactive groups thereon are disclosed. The reactive groups can recur along the polymer chains and/or can occur at the ends of the chains. In addition, segmented (graft and block) copolymers containing polyarylsulfone segments are disclosed. The linear and segmented polymers have wide areas of utility, e.g. in coatings, impregnants, films, filaments, and molded articles, etc.

3,663,508
MODIFIED POLYESTERS AND SHAPED STRUCTURES MADE THEREFROM
Heinzhorst Möbius, Frankfurt am Main, Günter Keil, Lorsbach, Taunus, and Franz Jakob, Hofheim, Taunus, Germany, assignors to Hoechst Fibers Incorporated, Spartanburg, S.C.
No Drawing. Filed Sept. 3, 1968, Ser. No. 757,163
Claims priority, application Germany, Feb. 10, 1968, P 16 94 244.2
Int. Cl. C08g 17/14
U.S. Cl. 260—49 12 Claims
The present invention relates to novel modified polyesters containing in the polymer molecule 0.1 to 10 mol percent of sulfonate groups-containing chain members of the general formula



having an improved affinity for cationic dyestuffs and to filaments, fibers and films made of the said polyesters.

3,663,509
SULPHONATED POLYETHERS
Lucien Bonnard and Rene Pich, Lyon, and Alain Palsky, Caluire, Rhone, France, assignors to Societe Rhodiaceta, Paris, France
No Drawing. Filed Oct. 28, 1968, Ser. No. 771,358
Claims priority, application France, Oct. 31, 1967, 126,583; Mar. 12, 1968, 143,387
Int. Cl. C08g 5/00, 5/02; C07c 143/50
U.S. Cl. 260—49 7 Claims
The present invention relates to new sulphonated polyethers used as agents for modifying polyamides and polygeously be incorporated in polyesters or polyamides as a dispersion or, in the case of polyesters, as part of the polymer molecule, to improve their affinity for basic dyestuffs.

3,663,510
PROCESS FOR PRODUCING POLYAMIDE COATING MATERIALS
Marvin A. Peterson, Fort Wayne, Ind., assignor to General Electric Company
Filed May 8, 1969, Ser. No. 823,108
Int. Cl. C08g 20/32
U.S. Cl. 260—65 25 Claims
In the present invention, I prepare polyamide prepolymers from aromatic dianhydride and aromatic diamine

materials by first producing a stable nonionic precursor material in the form of the reaction product of an aromatic dianhydride and aromatic diamine in the molar ratio of 2/1. There is then added to this stable precursor which may be represented by the formula XYX, wherein X represents aromatic dianhydride and Y represents aromatic diamine, a slight molar excess of Y and in so doing, I do not follow the expected path of polymerization which had been predicted. Instead, the XYX tends to polymerize only up to a certain point and then I complete the polymerization to any desirable molecular weight range by slowly adding a predetermined additional amount of dianhydride X as a back addition. In this manner, the path of reaction followed by inherent viscosity which is an indicator of molecular weight, then climbs sharply and by means of slowly adding the anhydride I can closely control the molecular weight, substantially increasing such molecular weight and narrowing the range of molecular weight of the polyorthoamic acid prepolyimide material. I can thereby through this procedure obtain any preselected desirable molecular weight range by the back addition of dianhydride to amine terminated polyamide prepolymers.

3,663,511

POLYURETHANES CHAIN-EXTENDED WITH A HYDROXYL CONTAINING AMIDE CHAIN EXTENDER

Frank G. Lombardi, Clifton, and Fritz Hostettler, Verona, N.J., assignors to Inter-Polymer Corporation, Passaic, N.J.

No Drawing. Continuation of application Ser. No. 734,901, June 6, 1968. This application June 10, 1970, Ser. No. 48,832

Int. Cl. C08g *22/08*

U.S. Cl. 260—75 NQ **3 Claims**

There is disclosed a process for the manufacture of novel chain extenders or mixtures thereof for use in preparing polyurethanes comprising reaction of an aliphatic, cycloaliphatic, heterocyclic, or aromatic diamine or amino alcohol, with from about 1.0 to about 1.5 moles of an epsilon-caprolactone or a 6-hydroxycaproic acid per mole of active amine functional group of said diamine or amino alcohol, at a temperature of from 100 to 300° C., in the presence or absence of a metallic catalyst.

There is further disclosed a process for the manufacture of polyurethane polymers which comprises reacting a member of the group consisting of (a) polyesters prepared from dicarboxylic acids and glycols, (b) polyesters prepared from epsilon-caprolactones or 6-hydroxycaproic acids, or (c) polyethers prepared from 1,2-alkylene oxides and/or tetrahydrofuran, with organic polyisocyanates and a chain extender prepared as described above.

3,663,512

PROCESS FOR THE PREPARATION OF HIGH MOLECULAR WEIGHT POLYESTERS FOR INJECTION MOULDING PURPOSES

Rudolf Uebe, Hofheim, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed July 1, 1970, Ser. No. 51,741

Claims priority, application Germany, July 9, 1969, P 19 34 719.4

Int. Cl. C08f *17/013*

U.S. Cl. 260—75 R **11 Claims**

A process for the preparation of linear saturated polyesters of aromatic dicarboxylic acids and saturated aliphatic or cycloaliphatic diols, using carboxylic acid manganese salts as transesterification catalysts, which contain from 3 to 20 carbon atoms in the anion and an epoxy group. The said polyesters are suitable for injection-moulding purposes.

3,663,513

POLYURETHANE ADHESIVE COMPOSITION

Seizi Kazama and Masamitsu Nakabayashi, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Oct. 5, 1970, Ser. No. 78,162

Claims priority, application Japan, Oct. 6, 1969, 44/79,760

Int. Cl. C08g *22/22, 41/00*

U.S. Cl. 260—75 NT **3 Claims**

Adhesive composition which is particularly useful in bonding polyesters or polyolefines to themselves or to other substrates comprises per 100 weight parts of component (A) about 1 to about 30 weight parts of component (B), component (A) being a hydroxy terminated polyurethane prepolymer which is prepared by reacting a polyester diol having a molecular weight of about 500 to about 3000 with ω,ω'-diisocyanato dimethyl benzene in such a ratio that NCO/OH is about 1/1 to give an NCO-terminated prepolymer and reacting the prepolymer with a low molecular polyol having at least 3 OH groups per molecule in a ratio such that OH/NCO is about 3 to about 10, and component (B) being an NCO-terminated prepolymer which is prepared by reacting a low molecular polyol having at least 2 OH groups per molecule and having a molecular weight of lower than about 400 with an excess amount of ω,ω'-diisocyanato dimethyl benzene.

3,663,514

LIGHT-STABLE POLYURETHANE COATINGS

Robert W. Campbell and Ralph P. Williams, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Apr. 9, 1970, Ser. No. 27,108

Int. Cl. C08g *22/18*

U.S. Cl. 260—77.5 AT **10 Claims**

A polyol is reacted with a diisocyanate to produce a first compound having available for further reaction unreacted isocyanate groups. The first compound is cured to produce a polyurethane compound having improved light stability. The diisocyanate useful in this invention is represented by the formula:

$$OCN—R_1—R_2—R_3—NCO$$

wherein the —NCO group attached to R_1 is more reactive than the —NCO group attached to R_3 and R_1 is an aromatic group, R_2 is an aliphatic group or a direct bond, and R_3 is a 1,4-cyclohexylene group.

3,663,515

PROCESS OF PREPARATION OF POLYCAPROLACTONE POLYESTERS AND POLYURETHANE ELASTOMERS THEREFROM

Fritz Hostettler, Verona, and Frank G. Lombardi, Clifton, N.J., assignors to Inter-Polymer Corporation, Passaic, N.J.

No Drawing. Continuation of application Ser. No. 715,165, Mar. 22, 1968. This application Apr. 13, 1970, Ser. No. 28,173

Int. Cl. C08g *22/10, 17/02*

U.S. Cl. 260—77.5 AN **11 Claims**

There is disclosed a process for the polymerization of linear, predominantly hydroxyl-terminated monomeric components or low molecular weight polymers comprising the reaction products of (a) low-boiling alkylene glycols with 6-hydroxy-caproic acids or alkyl ester derivatives thereof, or optionally (b) low-boiling alkylene glycols with e-caprolactones to higher molecular weight polyesters comprising subjecting said reaction products to temperatures of from about 150° C. to about 300° C. in the presence of an ester interchange catalyst while continuously removing the low-boiling alkylene glycols from the reacting mixture.

There is further disclosed a process for the depolymerization of predominantly hydroxy-terminated polyesters comprising polymeric reaction products of (a) glycols, amino alcohols or polyamines with 6-hydroxycaproic acids, or alkyl ester derivatives thereof, or optionally comprising (b) polymeric reaction products of glycols, amino alcohols or polyamines with ϵ-caprolactones, to lower molecular weight hydroxyl-terminated polyesters, comprising subjecting said polymeric reaction products to reaction with glycols at temperatures of from 150 to 300° C. in the presence of an ester interchange catalyst. The resulting polyesters are suitable for the production of polyurethane elastomers.

3,663,516

POLYURETHANE PRODUCT AND METHOD OF PRODUCING SAME

Herwart C. Vogt, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Original application July 3, 1967, Ser. No. 650,590, now Patent No. 3,522,304, dated July 28, 1970. Divided and this application Apr. 30, 1970, Ser. No. 43,634

Int. Cl. C08g *22/16*

U.S. Cl. 260—77.5 AQ **1 Claim**

A polyurethane product and method of producing same by coreacting a mixture of an organic polyisocyanate and polyhydroxy diurea. The polyhydroxy diurea in turn comprises the reaction product of a primary or secondary alkanolamine with a compound selected from the group consisting of diisocyanates and dicarbonyl chlorides, the latter being the reaction product of a primary or secondary diamine with phosgene.

3,663,517

PREPARATION OF AROMATIC POLYAMIDES BY INTERFACIAL POLYCONDENSATION

Teruho Adachi, Takarazuka-shi, Japan, assignor to Sumitomo Chemical Co., Ltd., Osaka, Japan

No Drawing. Filed Oct. 1, 1970, Ser. No. 77,336

Claims priority, application Japan, Oct. 1, 1969, 44/78,862

Int. Cl. C08g *20/22*

U.S. Cl. 260—78 R **7 Claims**

A process for producing aromatic polyamides having a high molecular weight, which comprises reacting an aromatic diamine with a dicarboxylic acid halide in the presence of an acetophenone compound by means of interfacial polycondensation.

3,663,518

PROCESS FOR PREPARING ACRYLAMIDE POLYMERS

Harold I. Patzelt and Lawrence J. Connelly, Oak Lawn, Edward G. Ballweber, Chicago, David B. Korzenski, La Grange Park, and Kenneth L. Slepicka, Aurora, Ill., assignors to Nalco Chemical Company, Chicago, Ill.

No Drawing. Continuation of application Ser. No. 780,288, Nov. 29, 1968. This application July 8, 1970, Ser. No. 56,161

Int. Cl. C08f *1/08, 3/90, 15/00*

U.S. Cl. 260—80.3 N **11 Claims**

Monomers soluble in polar solvents, e.g., water and/or methanol, capable of undergoing polymerization exothermically are polymerized by: (1) forming a solution of at least one monomer and a catalyst, (2) forming the thus prepared solution into the form of a thin film, (3) heating the formed thin film to a temperature sufficient to initiate polymerization and initiating such polymerization, and (4) maintaining the polymerization temperature until the polymerization is essentially completed.

3,663,519

COPOLYMERS OF VINYL CHLORIDE

Robert Buening, Troisdorf-Sieglar, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing. Filed Mar. 31, 1970, Ser. No. 24,399

Claims priority, application Germany, Apr. 2, 1969, P 19 17 011.7

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.81 **5 Claims**

Copolymers of vinyl chloride, vinyl esters of saturated, alpha-alkyl-substituted monocarboxylic acids having 9 to 19 carbon atoms and ethylene and/or propylene.

3,663,520

PROCESS FOR SUSPENSION POLYMERIZATION OF VINYL CHLORIDE

Thomas Baiwe, Johann Bauer, and Kurt Fendel, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany

No Drawing. Filed Apr. 1, 1969, Ser. No. 812,290

Claims priority, application Germany, Apr. 2, 1968, P 17 70 113.2

Int. Cl. C08f *1/11, 3/30, 1/88*

U.S. Cl. 260—87.5 R **1 Claim**

An improvement in the suspension polymerization of a polymerizate containing at least 50% polyvinyl chloride by the steps of mixing (1) monomers selected from the group consisting of vinyl chloride and mixtures of vinyl chloride with up to 50% of olefinically unsaturated compounds copolymerizable with vinyl chloride, (2) a polymerization catalyst, (3) suspension stabilizers including protective colloids, and (4) water, heating said mixture under continuous agitation to polymerization temperatures and recovering said polymerizate. The improvement comprises mixing the monomers with water prior to the addition of the suspension stabilizers including protective colloids. The so-prepared polymerizates require less suspension stabilizers including protective colloids to attain the same size distribution as in the case where the monomer is mixed with water in the presence of the suspension stabilizers including protective colloids.

3,663,521

POLYMERS OF PERFLUOROBUTADIENE AND METHOD OF MANUFACTURE

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention by Madeline S. Toy, Orange, and James M. Newman, Huntington Beach, Calif.

No Drawing. Continuation-in-part of application Ser. No. 848,325, Aug. 7, 1969. This application May 19, 1971, Ser. No. 145,026

Int. Cl. C08f *3/20, 15/06*

U.S. Cl. 260—92.1 **7 Claims**

A polyperfluorobutadiene which is a copolymer of perfluoro-1,2- and 1,4-butadiene. One method of initiating the polymerization of the perfluorobutadiene utilizes diisopropyl peroxydicarbonate.

3,663,522

METHOD FOR MULTIPLE DIRECTION PINCH-OFF

Alvin E. Butcher, Bartlesville, Okla., assignor to Phillips Petroleum Company

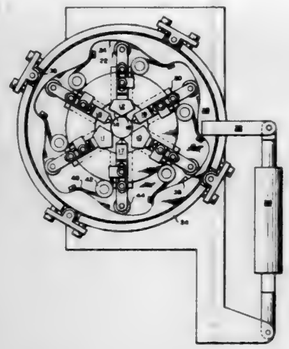
Original application Nov. 14, 1967, Ser. No. 682,745, now Patent No. 3,524,218, dated Aug. 11, 1970. Divided and this application Feb. 5, 1970, Ser. No. 8,979

Int. Cl. B29c *17/02, 17/14;* **B29d** *23/03*

U.S. Cl. 264—94 **6 Claims**

A hollow thermoplastic parison is sealed off by means of radial pressure applied to a wall of the parison from the plurality of points to form a seal having a plurality of radial fusion lines, while at the same time applying

pressure radially inward along a second plurality of points spaced alternately with the seal-forming plurality of



points to thus fold the wall in at points beneath the fusion lines.

3,663,523

DICARBOXYLIC ACID FROM ROSIN AND PROCESS FOR PREPARING SAME

Bernard A. Parkin, Jr., Walter H. Schuller, and Ray V. Lawrence, Lake City, Fla., assignors to the United States of America as represented by the Secretary of Agriculture

Filed Oct. 30, 1969, Ser. No. 872,654
Int. Cl. C09f 1/00
U.S. Cl. 260—101 5 Claims

This invention relates to a new dicarboxylic acid and the preparation of same. More particularly, this invention relates to the decarboxylation of rosin in the presence of phosphoric acid and a subsequent reaction of the rosin oil with fumaric acid or maleic anhydride to yield a dicarboxylic acid or anhydride and a stabilized rosin oil.

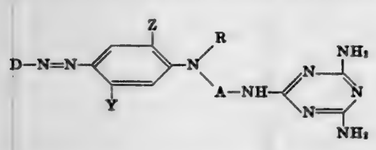
3,663,524

WATER-INSOLUBLE MONAZO-DYESTUFFS CONTAINING A DIAMINO TRIAZINYLAMINO GROUP

Konrad Opitz, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed June 12, 1970, Ser. No. 45,915
Claims priority, application Germany, July 30, 1969, P 19 38 579.6
Int. Cl. C09b 29/36
U.S. Cl. 260—153 7 Claims

A water-insoluble monoazo-dyestuff of the formula



wherein D represents chlorophenylene, dichlorophenylene, trichlorophenylene, fluorophenylene, bromophenylene, lower alkyl-phenylene, carbo lower alkoxy phenylene, chloro-nitrophenylene, chloro-trifluoromethyl-phenylene, dichloro-nitro-phenylene or chloro-dinitro-phenylene, Y represents hydrogen, chlorine, lower alkyl or acetylamino, Z represents hydrogen or lower alkoxy, R represents hydrogen, lower alkyl or β-hydroxyethyl, and A represents alkylene of from 1 to 6 carbon atoms, said dyestuffs being suitable for the dyeing or printing of polyester fibres, cellulose-2, ½-acetate fibres or cellulose-triacetate-fibres, yielding on these fibres dyeings or prints of high tinctorial strength and brightness and of good fastness to thermofixation and to light.

3,663,525

PREPARATION OF COPPER FORMAZYL DYES

Vincent G. Witterholt, Wilmington, Del., and John W. Dalgarn, Bellmawr, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Nov. 6, 1968, Ser. No. 773,951
Int. Cl. C09b 45/18; D06p 3/24
U.S. Cl. 260—149 10 Claims

A process for preparing copper formazyl dyes by reacting alkoxy formazane compounds with a soluble copper salt. The reaction employs certain organic, nitrogen-containing solvents, such as pyridine, 2-methylpyridine, 3-methylpyridine, 4-methylpyridine, formamide, dimethylformamide and dimethylacetamide. When one of the formamides or dimethylacetamide is used, an acid acceptor such as sodium acetate is also added to the reaction medium.

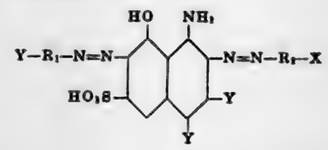
3,663,526

DISAZO DYES CONTAINING AN ALKOXY-HALOGEN-TRIAZINE GROUP

Fritz Oesterlein, Basel, and Karl Seitz, Oberwil, Basel-Land, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Oct. 15, 1969, Ser. No. 866,724
Claims priority, application Switzerland, Nov. 4, 1969, 16,383/69
Int. Cl. C09b 62/08
U.S. Cl. 260—153 6 Claims

A disazo compound of the formula



in which one of the symbols Y represents a hydrogen atom and the other symbol Y represents a sulphonic acid group, R_1 and R_2 each represents an aromatic residue containing a sulphonic acid group, one of the symbols X represents a fibre-reactive alkoxy-halogeno-triazine group bound to the aromatic residue by way of an —NH group, the alkoxy residue containing an etherified alkyl residue, and the other symbol X represents a hydrogen atom or a fibre-reactive acyl residue bound to the aromatic residue by way of an —NH group.

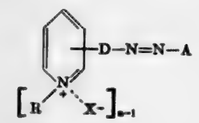
3,663,527

QUATERNARY PYRIDINIUMAZOLEAZO DYESTUFFS

Gert Hegar, Schonenbuch, Switzerland, assignor to Ciba Limited, Basel, Switzerland

No Drawing. Filed Feb. 25, 1969, Ser. No. 802,227
Claims priority, application Switzerland, Mar. 1, 1968, 3,081/68
Int. Cl. C09b 29/06, 29/08, 29/22
U.S. Cl. 260—156 12 Claims

Azo dyestuffs of the formula



in which A represents the residue of a coupling component free from sulphonic acid and carboxylic acid groups, D represents the residue of a five-membered heterocyclic ring which contains the pyridine residue bound directly to a carbon atom of the ring, R represents an alkyl, aralkyl or cycloalkyl residue, X represents an anion and *n* stands for 1 or 2. The dyestuffs are suitable for dyeing and printing synthetic fibres, which produce intense and level dyeings and printings possessing good fastness properties such as good fastness to light, washing, perspiration and sublimation, and which display good stability in a wide pH range.

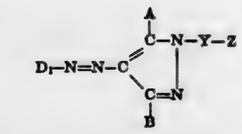
3,663,528

AZO PYRAZOLE DYESTUFFS CONTAINING AN AMINO-, HYDRAZINO- OR ETHERIFIED HYDROXYL-AMINOALKYLENE GROUP WHICH MAY BE QUATERNIZED

Visvanathan Ramanathan, Basel, Switzerland, assignor to Ciba Limited, Basel, Switzerland

No Drawing. Filed Apr. 29, 1969, Ser. No. 820,275
Claims priority, application Switzerland, May 13, 1968, 7,078/68
Int. Cl. C09b 29/38; D06p 3/24
U.S. Cl. 260—156 14 Claims

Basic azo dyestuff of the formula



wherein Y denotes an alkylene chain of up to 6 carbon atoms which may be interrupted by a hetero-atom selected from the group consisting of nitrogen, oxygen or sulfur, A denotes amino or lower alkylamino, B denotes hydrogen, lower alkyl, lower alkoxy or phenyl, Z denotes an amino, hydrazino or etherified hydroxylamino group which may be quaternized, and D_1 is the residue of a diazo component; the new dyestuffs are especially valuable for dyeing synthetic fibers such as polyvinylchloride, polyamide or polyurethane with good general fastness properties, such as fastness to light, washing and sublimation.

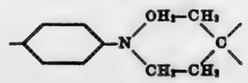
3,663,529

AZO DYESTUFFS CONTAINING A PHENYL-PIPERIDINE COUPLING COMPONENT

Ved Parkash Kubba, Bombay, India, and Visvanathan Ramanathan and Walter Jenny, Basel, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed June 13, 1969, Ser. No. 833,144
Claims priority, application Switzerland, June 14, 1968, 8,833/68
Int. Cl. C09b 29/36
U.S. Cl. 260—156 2 Claims

Azo dyestuffs which contain at least one residue of a coupling component of formula



wherein the carbon atom which is located in the 4-position of the azacyclohexane ring is bonded to 1 or preferably 2 identical or mutually different positivising groups which are capable of rendering an adjacent methylene group acid.

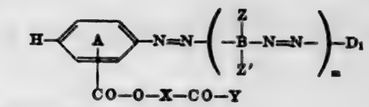
3,663,530

WATER-INSOLUBLE PYRAZOLONE AZO DYESTUFFS

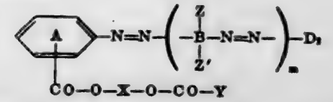
Jean Marie Louis Leroy, Rouen, and Claude Marie Henri Emile Brouard, Sotteville-les-Rouen, France, assignors to Ugine Kuhlmann, Paris, France

No Drawing. Filed Oct. 4, 1968, Ser. No. 765,013
Claims priority, application France, June 26, 1968, 156,564
Int. Cl. C09b 29/38, 31/14; D06p 3/00
U.S. Cl. 260—163 3 Claims

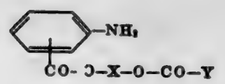
Water-insoluble dyestuffs are provided having the formula:



or the formula:



in which B represents a p-phenylene or p-naphthylene radical linked to the ntirogen atoms, *m* represents the numbers 0 or 1, X represents an alkylene radical having up to 4 carbon atoms, Z and Z' each represent a hydrogen or halogen atom or an alkyl, alkoxy, or acylamino group having up to 4 carbon atoms, Y represents an aliphatic, arylaliphatic, aromatic or heterocyclic radical, D_1 represents the residue of a coupling compound of the benzene, diphenyleneoxide, indazole, coumarin, acetylacetarylide, pyrazolone or hydroxy-quinoline series, D_2 represents the residue of a coupling compound of the benzene, diphenylene-oxide, indazole, coumarin, acetylacetarylide, hydroxyquinoline, 1 - phenyl-3-methyl-pyrazolone or 1-phenyl-3-carbonamidopyrazolone series, the nuclei A, B, D_1, D_2 and Y containing no solubilising acid groups. These dyestuffs are useful for the colouration of hydrophobic textile materials and may be prepared from novel diazotisable bases of the general formula:



in which X, Y, Z and Z' are as defined above. The shades obtained are remarkably fast to thermal fixation, sublimation, creasing, combustion gases, overdyeing, dry cleaning, chlorine and wet tests. The reserve of natural fibres and the dischargeability are good. The fastness to light is remarkable even with light shades and the dyestuffs resist boiling and reduction at temperatures between 80° C. and 220° C.

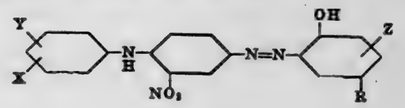
3,663,531

WATER-INSOLUBLE PHENYL-AZO-PHENYL DYESTUFFS

Hans Wilhelm Liechti, Oberwil, Basel-Land, Switzerland, assignor to Ciba Limited, Basel, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 655,288, July 24, 1967. This application Aug. 12, 1969, Ser. No. 849,500
Claims priority, application Switzerland, July 29, 1966, 10,598/66
Int. Cl. C07c 107/06; C09b 29/34
U.S. Cl. 260—206 8 Claims

Nitroazo dyestuffs of the formula



in which X and Y are each hydrogen, chloro, lower alkyl, lower hydroxyalkyl, lower alkoxy, lower hydroxyalkoxy, phenoxy, phenyl-lower alkoxy, lower alkylmercapto, phenylmercapto, or lower alkanoylamino, R is chloro, bromo, lower alkyl, cyclohexyl, phenyl, β-cyanoethyl or lower alkoxy and Z is hydrogen or lower alkyl. The new dyestuffs are useful for dyeing cellulose acetate, cellulose triacetate, polyamide and especially polyester fibers, on which they yield yellow to orange shades of excellent fastness properties.

3,663,532
BENZODIAZOCINES

Theodore S. Sulkowski, Narberth, Pa., assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation of application Ser. No. 609,779, Jan. 17, 1967. This application Mar. 4, 1970, Ser. No. 15,313
Int. Cl. C07d *53/00, 99/06*
U.S. Cl. 260—239 BD **12 Claims**

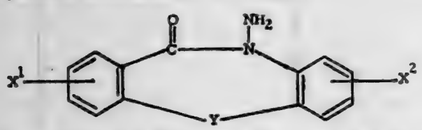
A new class of chemical compounds whose members exert an appetite suppressant and mood-elevating effect in man has been invented. This class is defined as being composed of those compounds having the 1-substituted-2,5-benzodiazocine structure, fully saturated in the non-benzenoid portion, and whose nitrogens are tervalent. Members of this class are prepared by condensing an ortho-benzoylbenzoic acid or ester thereof with an ethylenediamine and reducing with a metallic alkaline hydride the product thus obtained.

3,663,533
HYDRAZINE DERIVATIVES

Michio Nakanishi, 756 Shinborimachi, Nakatsu, Oita, Japan; Hiroshi Yuki, 1336 Oaza-Hirotsu, Yoshitomi-machi, Chikujogun, Fukuoka, Japan; and Tomio Muro, 2275 Kanaya-Uenocho, Nakatsu, Oita, Japan

No Drawing. Filed May 6, 1970, Ser. No. 35,233
Claims priority, application Japan, May 6, 1969, 44/34,952
Int. Cl. C07d *93/42, 87/54, 53/00*
U.S. Cl. 260—239.3 **15 Claims**

Hydrazine derivatives of the formula



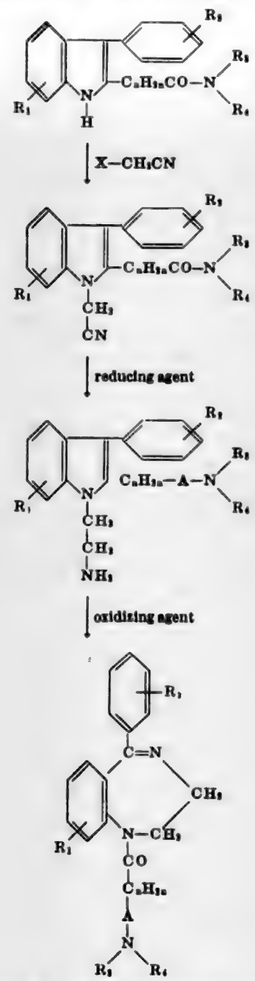
and pharmaceutically acceptable, acid-addition salts thereof, and wherein X^1 is H or Cl, X^2 is H, Cl, CH_3O or CF_3 and Y is —O—, —S—, —SO_2—, —NH—, —$N(CH_3)$—, —CO—, —CH_2—, —$CH(CH_3)$— or —$C(CH_3)_2$— are useful as antiepileptic agents.

3,663,534
PROCESS FOR PREPARING BENZODIAZEPINE DERIVATIVES AND SALTS THEREOF

Hisao Yamamoto, Nishinomiya-shi, Shigeho Inaba, Takarazuka-shi, Tadashi Okamoto and Toshiyuki Hirohashi, Ashiya-shi, Kikuo Ishizumi, Minoo-shi, Michihiro Yamamoto, Toyonaka-shi, Isamu Maruyama, Minoo-shi, Kazuo Mori, Kobe, and Tsuyoshi Kobayashi, Minoo-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Jan. 19, 1970, Ser. No. 4,040
Claims priority, application Japan, Jan. 25, 1969, 44/5,573, 44/5,574, 44/5,575; Apr. 18, 1969, 44/30,604; May 13, 1969, 44/37,159; June 9, 1969, 44/45,690
Int. Cl. C07d *27/56, 53/06*
U.S. Cl. 260—239 BD **13 Claims**

A novel process for preparing benzodiazepine derivatives and salts thereof, which are useful as tranquilizers, muscle-relaxants, antispasmodics and hypnotics. This process is shown by reaction scheme as follows:



wherein R_1 and R_2 signify individually hydrogen atom, halogen atom, lower alkyl group having up to 4 carbon atoms, lower alkoxy group having up to 4 carbon atoms, trihalomethyl group, nitro group or amino group; R_3 and R_4 signify individually hydrogen atom or lower alkyl group having up to 4 carbon atoms; and A signifies a carbonyl group or a methylene group, *n* signifies 0, 1 or 2, and X signifies a halogen atom. Among these compounds, benzodiazepine derivatives wherein *n* is O and A is a carbonyl group are novel compounds.

3,663,535
4-ACYLOXY-AZETIDINE-2-ONES

Herbert Bestian, Frankfurt am Main, and Dieter Grimm, Wiesbaden, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Jan. 23, 1970, Ser. No. 5,346
Claims priority, application Germany, Feb. 8, 1969, P 19 06 401.8
Int. Cl. C07d *25/02*
U.S. Cl. 260—239 A **9 Claims**

4-acyloxy-azetidine-2-ones are obtained by reacting vinyl esters with chlorosulfonyl isocyanate. The products

are starting compounds for syntheses of compounds containing the β-lactam ring and are useful as acid-yielding agents, especially for printing inks.

3,663,536
1,5-DIAZACYCLONONANES

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Original application July 21, 1966, Ser. No. 566,751, now Patent No. 3,497,513, dated Feb. 24, 1970. Divided and this application Nov. 13, 1969, Ser. No. 876,578
Int. Cl. C07d *53/00*
U.S. Cl. 260—239 BC **4 Claims**

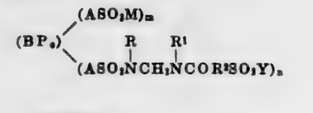
Substituted 1,5-diazacyclononanes are prepared by treating substituted 1,5-diazabicyclo[4.3.0]nonanes with sodium in the presence of liquid ammonia and are useful as central nervous system stimulants and antidepressants.

3,633,537
LIGHT-FAST AND WASH-FAST REACTIVE PHTHALOCYANINE DYES

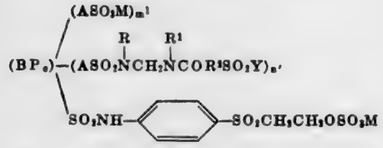
Hirohito Kenmochi, Toyonaka-shi, Seiji Hotta, Minoo-shi, and Takashi Akamatsu, Ashiya-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Continuation-in-part of application Ser. No. 561,064, June 28, 1966. This application Nov. 10, 1969, Ser. No. 875,566
Claims priority, application Japan, July 1, 1965, 40/39,475; June 11, 1966, 41/37,945
Int. Cl. C07d *27/76*
U.S. Cl. 260—239.6 **14 Claims**

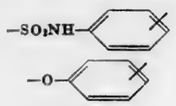
Light-fast and wash-fast reactive phthalocyanine dyes which are free from metal or contain metal represented by the following general formula,



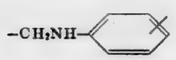
or



wherein P_c means the residue of phthalocyanine; B represents 2H or a divalent metal in the center of the phthalocyanine molecule; A means direct linkage or a bisvalent radical selected from the group consisting of



and



(the benzene ring may be substituted with methyl or methoxy radical); R means hydrogen atom, an alkyl radical having 1 to 4 carbon atoms of β-sulfatoethyl radical; R^1 means hydrogen atom or an alkyl radical having 1 or 2 carbon atoms; R^2 means an alkylene radical having 1 or 2 carbon atoms; Y means β-sulfatoethyl or vinyl radical; M means hydrogen atom or an alkali metal; *m* and *n* means respectively a number of 1 to 3, provided that the total number of *m* and *n* is 2 to 4; and *m'* and *n'* mean respectively a number of 1 to 2, provided that the total number of *m'* and *n'* is 2 to 3.

3,663,538
CATIONIC DERIVATIVES OF 4,4' - BIS-(s-TRIAZINYLAMINO)-STILBENE - 2,2'-DISULFONIC ACID, PROCESS FOR THE PREPARATION THEREOF AND APPLICATION AS OPTICAL BRIGHTENERS

Karl Heinz Lebkücher, Hofheim, Taunus, Ebrenfried Nischwitz, Kelkheim, Taunus, and Erich Schinzel, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed July 7, 1969, Ser. No. 839,640
Claims priority, application Switzerland, July 22, 1968, 10,953/68
Int. Cl. C07d *55/22*
U.S. Cl. 260—240 B **10 Claims**

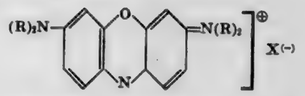
Cationic compounds of the 4,4' - bis - (s - triazinylamino) - stilbene - 2,2' - disulfonic acid series are useful as optical brighteners for fibrous materials, especially cellulose materials. These brighteners are compatible with cationic auxiliaries and operative when working at low pH values and thus capable of application together with cation-active laundry refining agents or crease-resistant finishing agents. They are, furthermore, useful for brightening paper pulps or paper coatings.

3,663,539
PROCESS FOR THE MANUFACTURE OF BASIC OXAZINE DYESTUFFS

Gustav Schafer and Norbert Ottawa, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Feb. 13, 1969, Ser. No. 799,086
Int. Cl. C07d *87/50*
U.S. Cl. 260—242 **4 Claims**

In the process for the manufacture of basic oxazine dyestuffs of the formula



in which R represents an alkyl group from 1 to 4 carbon atoms and $X^{(-)}$ represents Cl^- or $ZnCl_3^-$ by treating a dialkyl-m-aminophenol-alkyl ether, the alkyl groups herein containing from 1 to 4 carbon atoms, with nitrous acid and condensing the p-nitroso compound so obtained with a dialkyl-m-amino-phenol, the alkyl groups herein containing from 1 to 4 carbon atoms, the improvement which comprises condensing the suspension of the p-nitroso compound obtained as described above with the said dialkyl-m-amino-phenol without being intermediately isolated.

3,663,540
7 - (p-AMINOMETHYLPHENYLTHIO)ACETAMIDO-3 - (PYRIDINIUMMETHYL)CEPH - 3 - EM - 4-CARBOXYLATE

Raymond Urgel Lemieux and Rintje Raap, Edmonton, Alberta, Canada, assignors to R & L Molecular Research Ltd., Edmonton, Alberta, Canada

No Drawing. Filed June 19, 1970, Ser. No. 47,915
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **4 Claims**

7 - (p - aminomethylphenylthio)acetamido-3-(pyridiniummethyl)ceph-3-em-4-carboxylate and its nontoxic, pharmaceutically acceptable salts are valuable as antibacterial agents, as nutritional supplements in animal feeds and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment of infectious diseases caused by many gram-positive and gram-negative bacteria. 7 - (p - aminomethylphenylthio) - acetamido - 3 - (pyridiniummethyl)ceph - 3 - em - 4-carboxylate is prepared, for example by treatment at 0° C. with trifluoroacetic acid of the corresponding com-

pound in which the free amino group is protected with a tert.-butoxycarbonyl group.

3,663,541
REACTIVE ANTHRAQUINONE DYESTUFFS CONTAINING A TOLYLSULFONYLMETHYLENE OXYTRIAZINE GROUP

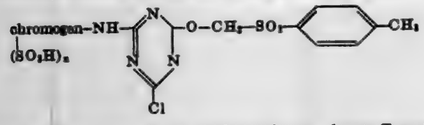
Angelo Mangini, Antonio Tundo, and Bianca Flavia Bonini, Bologna, and Marta Rossetti, Milan, Italy, assignors to Aziende Colori Nazionali Affini ACNA S.p.A., Milan, Italy

No Drawing. Original application Mar. 21, 1966, Ser. No. 536,144, now Patent No. 3,527,747, dated Sept. 8, 1970. Divided and this application Mar. 31, 1970, Ser. No. 24,343

Int. Cl. C07d 55/46

U.S. Cl. 260—249 2 Claims

Reactive triazine dyestuffs having the formula:



wherein chromogen is an anthraquinone dyestuff residue and *n* is an integer from 1 to 4, are particularly effective for dyeing cellulose. The dyestuffs may be absorbed and fixed onto the cellulose fibers by hot or cold dyeing techniques. The dyestuffs have high reactivity and good dyeing power and the dyeings obtained therefrom have high brilliance and purity of chromatic shades and improved fastness to washing.

3,663,542
PROCESS FOR THE PREPARATION OF ALKOXY-BIS(ALKYLAMINO)-s-TRIAZINES

Howard V. Lemaster, Mobile, Ala., assignor to Geigy Chemical Corporation, Greenburgh, N.Y.

No Drawing. Filed Oct. 2, 1970, Ser. No. 77,676

Int. Cl. C07d 55/20

U.S. Cl. 260—249.8 10 Claims

A method for the preparation of alkoxy-bis(alkylamino)-s-triazines by reacting halogeno-bis(alkylamino)-s-triazines with aliphatic alcohols at elevated pressures in the presence of a slight excess of alkali.

3,663,543
2,3-DICHLORO-5,10-DIHYDROPYRAZINO(2,3-b) QUINOXALINE

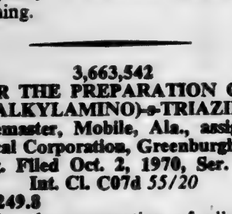
Aylin H. Gulbenk, Walnut Creek, Dorothy J. Horne, Piedmont, and Howard Johnston, Walnut Creek, Calif., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 2, 1970, Ser. No. 9,260

Int. Cl. C07d 51/76, 51/78

U.S. Cl. 260—250 R 2 Claims

Halogenated, tricyclic pyrazino compounds having the general structure:



I

wherein the X's independently, in each occurrence, represent hydrogen or halogen, Y and Z independently are

—S—, —O— or —NR

(where R is hydrogen or alkyl), and R_1, R_2, R_3 and R_4 are independently hydrogen, alkyl or halogen. Said compounds are prepared by reacting the appropriate polyhalopyrazine compound with a benzene compound which is ortho-substituted by two groups selected from hydroxy, mercapto and/or amino radicals. The compounds are variously useful as pesticides for the control of plant, insect and other organisms.

3,663,544
NOVEL PHOSPHORIC ACID AMIDE ESTERS

Karlheinz Miltzner, Basel, and Fritz Reisser, Therwil, Basel-Land, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

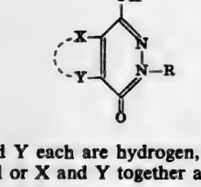
No Drawing. Filed July 23, 1970, Ser. No. 57,815

Claims priority, application Switzerland, Aug. 1, 1969, 11,727/69; Oct. 21, 1969, 15,708/69; Jan. 19, 1970, 674/70

Int. Cl. C07d 51/42

U.S. Cl. 260—256.4 E 9 Claims

Novel phosphoric acid amide esters of the formula:



wherein R_1 is alkyl of 1 to 4 carbon atoms, R_2 is alkyl of 1 to 4 carbon atoms, R_3 is hydrogen or alkyl of 1 to 4 carbon atoms, and R_4 is hydrogen or alkyl of 1 to 4 carbon atoms, which possess pesticidal properties, or more particularly insecticidal, acaricidal and ovicidal properties.

3,663,545
DIMERIZATION OF ROSIN

Richard G. Sinclair and David A. Berry, Columbus, Ohio, and Walter H. Schuller and Ray V. Lawrence, Lake City, Fla., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Apr. 9, 1970, Ser. No. 27,174

Int. Cl. C08h 11/04

U.S. Cl. 260—99.5 9 Claims

Rosin of substantial resin-acid dimer content has been produced upon mixing a rosin dissolved in chlorinated solvent with either mono- or difluorophosphoric acid and reacting at relatively low temperatures for about 17 hours. Higher resin-acid dimer contents were obtained when boron trifluoride was bubbled through the resin solution prior to treatment with the fluorophosphoric acid selected.

3,663,546
PROCESS FOR THE PREPARATION OF PYRIDAZONE DERIVATIVES

Rupert Schönbeck, Leonding, near Linz (Danube), and Engelbert Kloimstein, Eferding, Austria, assignors to Osterreichische Stickstoffwerke Aktiengesellschaft, Linz (Danube), Austria

No Drawing. Filed Jan. 27, 1970, Ser. No. 6,312

Claims priority, application Austria, Feb. 6, 1969, A 1,181/69

Int. Cl. C07d 51/04

U.S. Cl. 260—250 A 8 Claims

Pyridazone derivatives of the formula

(I)

in which X and Y each are hydrogen, chloride; bromine and lower alkyl or X and Y together are the group

—CH=CH—CH=CH— (II)

and R is hydrogen or lower alkyl, optionally substituted by phenyl or the cyano group were prepared by reacting maleic acid or anhydride, or its substitution products with the acid solution of a hydrazine $H_2N—NHR$, which was prepared by treating crude solutions containing said hydrazine as the base at the boil with aliphatic ketones, which at normal temperature are liquid and water-immiscible, separating the organic layer and decomposing this layer with an aqueous mineral acid, optionally in presence of the maleic acid or anhydride or its substitution products respectively.

3,663,547
2,3,4,5 - TETRAHYDRO-3-HYDROXY-6-PHENYL-2-SULFONYLPYRIDAZINE - 3 - PROPIONIC ACID γ-LACTONES AND CONGENERS

William K. Sprenger, Niles, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 53,335, July 8, 1970. This application July 31, 1970, Ser. No. 60,113

Int. Cl. C07d 51/04

U.S. Cl. 260—250 A 17 Claims

Disclosed herein are analgesic, anti-ulcerogenic, and anti-protozoal 2,3,4,5-tetrahydro - 3 - hydroxy-6-phenyl-2-sulfonylpyridazine-3-propionic acid γ-lactones and congeners; anti-ulcerogenic, pepsin-inhibiting; anti-bacterial, and anti-protozoal 5-phenyl-1-sulfonamidopyrrole-2-propionic acids and congeners; and the preparation of these compounds from corresponding 4,7-dioxoheptanoic acids and sulfonic acid hydrazides.

3,663,548
1,4-DISUBSTITUTED 2-PHENYL PIPERAZINES

Yoshihiro Nitta, Yoshiaki Ikeda, and Toshiyuki Furue, Tokyo, Akitoshi Shioya, Saitama-ken, and Shigeru Sugano and Yasuyuki Shiraki, Tokyo, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed June 26, 1968, Ser. No. 740,071

Claims priority, application Japan, June 29, 1967, 42/41,303; July 28, 1967, 42/48,183

Int. Cl. C07d 51/72

U.S. Cl. 260—268 R 4 Claims

Novel 1,4-disubstituted 2-phenyl piperazines having a powerful coronary dilating action are produced. These compounds include 1-(p-chlorobenzyl)-2-phenyl-3,4-dimethyl piperazine; 1-(p-chlorobenzyl)-2-phenyl-4-methyl piperazine; and 1-(p-chlorobenzyl)-2-phenyl-4-ethyl piperazine.

3,663,549
METHOD OF MAKING DIARYL HYDROXYETHYL TERTIARY AMINES

Raymond John Michaels, Jr., Mundelein, and Harold Elmer Zaugg, Lake Forest, Ill., assignors to Abbott Laboratories, Chicago, Ill.

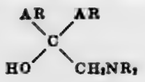
No Drawing. Original application May 10, 1967, Ser. No. 637,350. Divided and this application Oct. 6, 1969, Ser. No. 870,925

Int. Cl. C07d 51/70

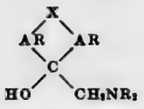
U.S. Cl. 260—268 TR 4 Claims

A novel series of diaryl hydroxyethyl tertiary amines represented by general Formulae I and II

I



II



wherein AR represents an aryl radical, NR_2 signifies a tertiary amine in Formula I, and X represents O, S, —NCH_3, —CH_2—CH_2—, —CH=CH— and a direct single bond, NR_2 is as previously described in Formula II. The novel method for making these compounds comprises first reacting the appropriate diaryl ketone with an alkali metal reducing agent, followed by alkylation with a sodium formaldehyde bisulphite derivative of a secondary amine to yield the final product. The compounds made according to this novel process are useful as antispasmodic agents.

3,663,550
2-LOWER ALKYL-2,3-DIHYDROTHIENO[3,2-c] QUINOLINE OXIDES

Yasuo Makisumi, Amagasaki-shi, Japan, assignor to Shionogi & Co., Ltd., Osaka, Japan

No Drawing. Filed Dec. 9, 1969, Ser. No. 883,613

Claims priority, application Japan, Dec. 25, 1968, 43/95,190; Dec. 28, 1968, 44/296, 44/297

Int. Cl. C07d 63/18

U.S. Cl. 260—283 S 8 Claims

2-lower alkyl - 2,3-dihydrothieno[3,2-c]quinoline oxides and pharmaceutically acceptable non-toxic salts thereof synthesized from 2-lower alkyl-2,3-dihydrothieno[3,2-c]quinolines or 3-(2-halogeno-lower alkyl)-4-halogenoquinoline 1-oxides, showing strong hypothermic, analgesic and anti-inflammatory activities with low toxicities.

3,663,551
PRODUCTION OF ISOCARBOSTYRILS

Antoon M. Deryckere, Uccle, and Fernand J. F. Eloy, Rhode-Saint-Genese, Belgium, assignors to Union Carbide Corporation

No Drawing. Filed July 5, 1968, Ser. No. 742,531

Int. Cl. C07d 35/30

U.S. Cl. 260—283 SY 7 Claims

Isocarbostyrils are produced by heating styryl isocyanates, many of which are new compounds.

3,663,552
2'-SUBSTITUTED-CINCHONA ALKALOIDS

John P. Yardley, King of Prussia, Royal E. Bright, Philadelphia, Richard W. Rees, Newtown Square, and Herchel Smith, Bryn Mawr, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 692,277, Dec. 21, 1967. This application Apr. 9, 1970, Ser. No. 27,119

Int. Cl. C07d 43/24

U.S. Cl. 260—284 12 Claims

2'-substituted alkaloids of the cinchona series, especially 2'-substituted quinine, quinidine, cinchonine, cinchonidine and dihydro analogs of Formulas I and II, and their salts, are prepared by treating ar-N-oxides of the alkaloids with the corresponding organometallic reagent and, if desired, converting the free bases thus formed into pharmaceutically-acceptable acid-addition salts. The new compounds are pharmacologically active, especially antimalarially and anti-arrhythmically.

3,663,553
DI-SILVER AMINOTETRAZOLE PERCHLORATE

Charles T. Rittenhouse, Glendale, Ariz., assignor to Unidynamics/Phoenix, Goodyear, Ariz.

No Drawing. Filed Feb. 12, 1969, Ser. No. 798,775

Int. Cl. C06c 1/00; C07f 1/10

U.S. Cl. 260—299 1 Claim

A new composition of matter, di-silver aminotetrazole perchlorate, is useful as a primary explosive for initiating secondary explosives such as TNT, HNS, DIPAM, and the like. The compound is stable at 500° F. for upwards of 50 hours.

3,663,554

PREPARATION OF β-COLLIDINE

Juerg Albert Walter Gutzwiller, Bloomfield, and Milan Radoje Uskokovic, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Jan. 22, 1968, Ser. No. 699,334. Divided and this application Mar. 27, 1970, Ser. No. 23,503

Int. Cl. C07d *31/08*

U.S. Cl. 260—290 P 5 Claims

The preparation of β-collidine from methyl vinyl ketone and an amine such as, for example, benzylamine, through various intermediates, for example, 3-acetyl-1-benzyl - 1,2,5,6 - tetrahydro-4-methylpyridine, 3-acetyl-1,2,5,6 - tetrahydro - 4 - methylpyridine, 3 - acetyl-4-methylpyridine, 1 - benzyl - 3 - (1-hydroxyethyl)-1,2,5,6-tetrahydro - 4 - methylpyridine, 3-(1-hydroxyethyl)-4-methylpyridine and 1-benzyl-3-ethylene-1,2,3,6-tetrahydro - 4-methylpyridine, is described. β-Collidine, i.e., 3-ethyl-4-methylpyridine, is useful in the synthesis of, for example, dihydroquinidine.

3,663,555

METHOD FOR PREPARING 3-HYDROXY-2-IMINO-1(2H) - PYRIDINE-SULFONIC ACID MONOHYDRATE

John Valdemar Brammer Petersen and Niels Clauson-Kaas, Farum, Denmark, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Application June 25, 1968, Ser. No. 751,650, now Patent No. 3,553,224, dated Jan. 5, 1971, which is a division of application Ser. No. 544,685, Apr. 25, 1966, now Patent No. 3,419,570, dated Dec. 31, 1968. Divided and this application Aug. 19, 1970, Ser. No. 65,337

Claims priority, application Switzerland, Apr. 29, 1965, 5,938/65, 5,939/65, 5,940/65

Int. Cl. C07d *31/48*

U.S. Cl. 260—294.8 R 5 Claims

3-hydroxy-2-imino-1(2H)-pyridine-sulfonic acid monohydrate is prepared from furfural, a chlorinating agent and sulfaminic acid.

3,663,556

METHOD FOR PREPARING ALKALI METAL SALTS OF 3-HYDROXY - 2-OXO-1(2H)-PYRIDINE-SULFONIC ACID

John Valdemar Brammer Petersen and Niels Clauson-Kaas, Farum, Denmark, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Application June 25, 1968, Ser. No. 751,650, now Patent No. 3,553,224, Jan. 5, 1971, which is a division of application Ser. No. 544,685, Apr. 25, 1966, now Patent No. 3,419,570, dated Dec. 31, 1968. Divided and this application Aug. 19, 1970, Ser. No. 65,327

Claims priority, application Switzerland, Apr. 29, 1965, 5,938/65, 5,939/65, 5,940/65

Int. Cl. C07d *34/48*

U.S. Cl. 260—294.8 R 4 Claims

Alkali metal salts of 3-hydroxy-2-oxo-1(2H)-pyridine-sulfonic acid are prepared from furfural, a chlorinating agent, sulfaminic acid and an alkali metal ion-donating agent.

3,663,557

BIOLOGICALLY ACTIVE FORMS OF PYRIDOXINE COENZYMES

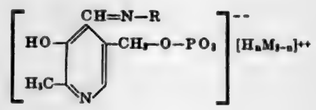
Edmond Forget, Sierne-Geneva, Switzerland, assignor to Etablissement Kogerim, Vaduz, Liechtenstein

No Drawing. Original application June 8, 1966, Ser. No. 555,991, now Patent No. 3,462,529, dated Aug. 19, 1969. Divided and this application Dec. 4, 1968, Ser. No. 833,205

Int. Cl. C07d *31/36, 31/44*

U.S. Cl. 260—295 VB 4 Claims

Biologically active forms of pyridoxine coenzymes possessing all the pharmacological properties of vitamin B_6 have the general formula:



in which R is such that RNH_2 represents a monoamino acid or diamino acid containing one or two carboxyl groups, or, an ester of such acid, or an amide of such acid; *n* is a number assuming the value 0 when RNH_2 is a monoamino or diamino dicarboxylic acid and the value 1 in other cases; and M represents an alkali metal. These coenzymes are prepared by contacting together at room or ambient temperature and in an alcoholic medium the RNH_2 derivative, pyridoxal-5'-monophosphate and an alkaline base in substantially the stoichiometric proportions corresponding to the general formula as defined above.

3,663,558

Δ^3 PIPERIDONE ENOL ETHERS AND A PROCESS FOR THEIR PREPARATION

Keisuke Murayama, Toshimasa Toda, Eiko Yamao, Katsuaki Matsui, Tomoyuki Kurumada, Noriyuki Ohta, and Ichiro Watanabe, Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

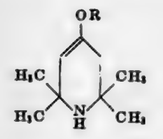
No Drawing. Filed Sept. 15, 1970, Ser. No. 72,522

Claims priority, application Japan, Sept. 27, 1969, 44/77,258; Nov. 4, 1969, 44/88,262

Int. Cl. C07d *31/28*

U.S. Cl. 260—297 R 6 Claims

New piperidone enol ethers having the formula



wherein R represents an alkyl group of 1–18 carbon atoms; a cycloalkyl group which contains 5 or 6 carbon atoms and may be substituted with an alkyl group of 1–4 carbon atoms or hydroxyl group; or the group of the formula $—CH_2—R'$ in which R' represents an aryl group which contains 6–10 carbon atoms and may be substituted with an alkyl group of 1–4 carbon atoms, an alkoxy group of 1–4 carbon atoms, a halogen atom or hydroxyl group in the aryl moiety or a 5- or 6-membered heterocyclic group which contains oxygen atom as a hetero atom and may be substituted with an alkyl group of 1–4 carbon atoms, an alkoxy group of 1–4 carbon atoms, a halogen atom or hydroxyl group. These piperidone enol ethers

are prepared by reacting triacetonamine with an alcohol having the formula

R—OH

wherein R is as defined above in the presence of an acid catalyst. These piperidone enol ethers exhibit a superior stabilizing effect against photo- and thermo-deterioration of various synthetic polymers and thus they are useful as a stabilizer for synthetic polymers.

3,663,559

PREPARATION OF OXO-FURO-PYRIDINES FROM FURYLVINYL ISOCYANATES

Antoon M. Derijckere, Uccle, and Fernand G. F. Eloy, Rhode-Saint-Genese, Belgium, assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 788,318, Dec. 31, 1968, which is a continuation-in-part of application Ser. No. 742,531, July 5, 1968. This application Dec. 3, 1969, Ser. No. 881,872

Int. Cl. C07d *31/32*

U.S. Cl. 260—297 B 10 Claims

Condensed pyridones are prepared by heating, for example, 2-(furyl)-, 2-(thienyl)-, or 2-(pyrrolyl)vinyl isocyanates. For instance, 4,5-dihydro-4-oxo-furo[3,2-c]pyridines are produced by heating 2-(2-furyl)vinyl isocyanates, 1,2-dihydro-1-oxo-benzothieno[2,3-c]pyridines are prepared by heating 2-(3-benzothienyl)vinyl isocyanates, and 4,5-dihydro-4-oxo pyrrolo[3,2-c]pyridines are prepared by heating 2-(pyrrolyl)vinyl isocyanates. The condensed pyridones are transformed into various derivatives by utilizing known types of reactions. The pyridones and their derivatives are useful reaction intermediates.

3,663,560

PYRAZOLYL-TRIAZOLYL COUMARINS

Carl-Wolfgang Schellhammer, Opladen, Alfons Dorlars, Leverkusen, and Wolf-Dieter Wirth, Cologne-Stammheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 13, 1968, Ser. No. 728,800

Claims priority, application Germany, May 22, 1967, F 52,479

Int. Cl. C07d *99/04;* C09k *1/02*

U.S. Cl. 260—299 2 Claims

7 - [pyrazolyl - (1)]-3-[1,2,4-triazolyl-(1)-]-coumarins and their quaternization products, adapted for use as brightening agents, are prepared by condensing 7-hydrazino-3-[1,2,4-triazolyl(1)]-coumarins with 1,3 - dicarbonyl compounds and optionally quaternizing that product.

3,663,561

2-HYDROCARBYLDITHIO - 5 - MERCAPTO-1,3,4-THIADIAZOLES AND THEIR PREPARATION

Eli W. Blaha, Highland, Ind., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 643,794, May 19, 1967. This application Dec. 29, 1969, Ser. No. 888,808

Int. Cl. C07d *91/62*

U.S. Cl. 260—302 SD 6 Claims

Novel and useful 2-hydrocarbyldithio-5-mercapto-1,3,4-thiadiazoles are prepared by oxidation coupling of equal molecular portions of a hydrocarbyl mercaptan and 2,5-dimercapto-1,3,4-thiadiazole or its alkali metal mercaptide. 2-hydrocarbyldithio - 5 - mercapto-1,3,4-thiadiazoles are unusual scavengers of elemental sulfur, for example one mole can deactivate 100 atoms of elemental sulfur at a temperature of about 210° F. and 25 atoms of elemental sulfur at about 300° F. The sulfur deactivation makes 2-hydrocarbyldithio-5-mercapto-1,3,4-thiadiazoles useful for preventing copper corrosion by active sulfur. Illustrative of 2-hydrocarbyldithio-5-mercapto-1,3,4-thiadiazoles are those having as the hydrocarbyl substituent alkyl, cycloalkyl, alkaryl and aralkyl groups.

3,663,562

PROCESS FOR THE PRODUCTION OF 2-MERCAPTO-BENZOTHIAZOLE

Helmut Magerlein and Hans-Dieter Rupp, Erlenbach, and Gerhard Meyer, Obernburg, Germany, assignors to Glanzstoff AG, Wuppertal, Germany

No Drawing. Filed Apr. 10, 1970, Ser. No. 27,418

Claims priority, application Germany, Apr. 17, 1969, P 19 19 420.8

Int. Cl. C07d *91/48*

U.S. Cl. 260—306 5 Claims

Process for the production of 2-mercapto-benzothiazole by reacting aniline and elementary sulfur with trithiane at an elevated temperature and preferably under superatmospheric pressure. The product is obtained in good yields and purity and is known to be useful as a vulcanization accelerator.

3,663,563

ESTERS OF 6-AMINOPENICILLANIC ACID

George Robert Fosker, Horsham, Sussex, and John Herbert Charles Nayler, Dorking, Surrey, England, assignors to Beecham Group Limited, Brentford, England

No Drawing. Filed July 22, 1969, Ser. No. 843,744

Claims priority, application Great Britain, July 26, 1968, 35,771/68; Feb. 13, 1969, 7,757/69

Int. Cl. C07d *99/14*

U.S. Cl. 260—306.7 6 Claims

Esters of 6-aminopenicillanic and are disclosed. These have utility as intermediates in the preparation of semi-synthetic penicillins.

3,663,564

URAZOLES AND THEIR PRODUCTION

Charles R. Jacobson, Orange, Anthony D'Adamo, East Orange, and Charlotte E. Cosgrove, West Orange, N.J., assignors to Knoll Pharmaceutical Company, Orange, N.J.

No Drawing. Filed June 19, 1958, Ser. No. 742,994

Int. Cl. A61k *27/00;* C07d *55/06*

U.S. Cl. 260—308 C 19 Claims

A phenyl-substituted urazole and a method of making urazoles. The urazoles are drugs, especially anticonvulsants.

3,663,565

ESTERS AND AMIDES OF 3-PHENYL-ADAMANTANE-1-CARBOXYLIC ACID

Carl Peter Krimmel, Wauconda, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed July 2, 1969, Ser. No. 838,644

Int. Cl. C07c *103/44*

U.S. Cl. 260—326.3 5 Claims

Dialkylaminoalkyl amides, esters, thioamides, and thioesters of 3-phenyladamantane-1-carboxylic acid are described herein. They possess anti-bacterial, anti-protozoal, anthelmintic, anti-fungal, anti-algal, and anti-viral activity. The compounds are prepared from 3-phenyladamantane-1-carboxylic acid or the corresponding acid chloride.

3,663,566

1-(3-PHENOXY-2-BENZOYLAMINO)-PROPYL-PYRROLIDINES

Roland-Yves Mauvernay, Riom, Norbert Busch, Loubeyrat, Jacques Simond, Chamalieres, and Jacques Moleyre, Mozac, France, assignors to Centre Europeen de Recherches Mauvernay C.E.R.M.

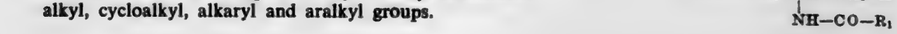
No Drawing. Filed July 16, 1969, Ser. No. 842,388

Claims priority, application France, July 17, 1968, 159,466

Int. Cl. C07d *27/04*

U.S. Cl. 260—326.3 5 Claims

Amides of the formula:



wherein R is an alkyl, alkenyl, alkynyl, aryl or arylalkyl radical, all of which may be unsubstituted or substituted, A is a tertiary amine group included in a heterocyclic group, and R_1 is an aromatic radical which may be substituted in the nucleus, or an arylalkyl radical, and their addition salts with physiologically acceptable acids, have valuable cardiovascular properties, and are suitable for therapeutic use.

3,663,567
N-SUBSTITUTED CYCLOALKANOINDOLES
Marcel K. Eberle, Madison, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Continuation-in-part of application Ser. No. 866,020, Oct. 13, 1969. This application Dec. 4, 1970, Ser. No. 95,407
Int. Cl. C07d *27/54*
U.S. Cl. 260—326.9 **12 Claims**

The invention discloses novel process for preparation of N-substituted cycloalkanoindoles including novel compounds of said type exhibiting pharmaceutical activity in animals and also useful as intermediates.

3,663,568
BENZO-TRIS-THIOPHENES
Ernst Roos and Klaus Wagner, Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Dec. 9, 1969, Ser. No. 883,635
Claims priority, application Germany, Jan. 16, 1969, P 19 02 050.9
Int. Cl. C07d *63/22*
U.S. Cl. 260—330.5 **2 Claims**

Novel benzothiophene derivatives are obtained by reacting an aromatic o-chloro-aldehyde in the presence of an acid binding agent with a mercaptomethyl compound.

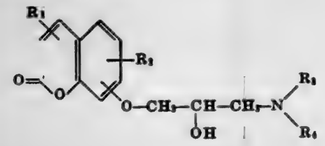
The new compounds obtainable according to this process are useful as light protective agents for polyvinyl chloride.

3,663,569
PROCESS FOR PREPARING CYCLIC CARBONATES FROM POLYHYDRIC ALCOHOLS
Baak W. Lew, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.
No Drawing. Filed Sept. 2, 1969, Ser. No. 854,752
Int. Cl. C07d *13/04, 13/06, 15/04*
U.S. Cl. 260—340.2 **2 Claims**

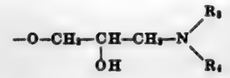
Polyhydric alcohol cyclic carbonates are prepared by the transesterification reaction of a polyhydric alcohol of at least four carbon atoms containing at least four hydroxyl groups with a dialkyl or diaryl carbonate in the presence of a dialkyl or diaryl tin oxide catalyst.

3,663,570
COUMARIN DERIVATIVES
Yasunobu Sato, Yutaka Kobayashi, Hiromu Takagi, Seiji Kumakura, Koichi Nakayama, and Takeshi Oshima, Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan
No Drawing. Filed Apr. 23, 1970, Ser. No. 31,380
Claims priority, application Japan, Apr. 28, 1969, 44/32,578; Oct. 27, 1969, 44/85,820
Int. Cl. C07d *7/20*
U.S. Cl. 260—343.2 R **11 Claims**

The application is directed to a novel coumarin derivative having the formula

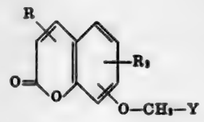


wherein R_1, R_2 and R_3 may be the same or different and each represents a hydrogen atom or a lower alkyl group, R_4 represents a lower alkyl group and the group

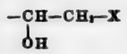


is substituted in 5- or 8-position of the coumarin ring and a process for the preparation thereof.

The coumarin derivative is useful as β-adrenergic blocking agents and prepared by reacting compound having the formula



wherein R_1 and R_2 are the same as above, Y represents a group



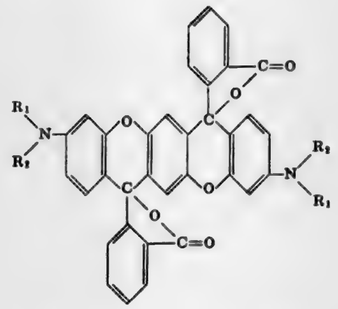
(wherein X represents a halogen atom) or 2-oxiranyl group and the group —O—CH_2—Y is substituted in 5- or 8-position of the coumarin ring with an amine having the formula



wherein R_3 and R_4 are the same as above in the presence or absence of a solvent.

3,663,571
LACTONE COMPOUND AND PROCESS FOR PREPARATION THEREOF
Shiro Kimura, Teruo Kobayashi, and Sadao Ishige, Kanagawa, and Masatak Kiritani, Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
No Drawing. Filed June 24, 1970, Ser. No. 49,510
Claims priority, application Japan, June 27, 1969, 44/50,820
Int. Cl. C07d *5/46*
U.S. Cl. 260—343.3 **5 Claims**

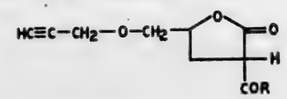
A novel lactone having the general Formula I



wherein R_1 and R_2 each is an alkyl group having from 1 to 5 carbon atoms or a benzyl group and a process for its preparation is disclosed. The lactone is useful in copying papers.

3,663,572
SUBSTITUTED 4-PROPARGYLOXYMETHYL-γ-BUTYROLACTONES
Claude P. Fauran, Guy M. Raynaud, and Colette A. Douzon, Paris, and Claude J. Gouret, Meudon, France, assignors to Delalande S.A., Courbevoie, Hauts-de-Seine, France
No Drawing. Filed Aug. 20, 1969, Ser. No. 851,757
Claims priority, application Great Britain, Sept. 17, 1968, 44,025/68
Int. Cl. C07d *5/06*
U.S. Cl. 260—343.6 **5 Claims**

A compound of the formula



in which R is a straight or branched-chain aliphatic hydrocarbon radical having 1 to 4 carbon atoms, alkoxy, optionally substituted aryl,

in which R_1 and R_2 are aliphatics having 1 to 4 carbon atoms, or a heterocyclic radical. The compound is prepared by reacting 1-propargyloxy-2,3-epoxy propane with

in which R has the same meaning as above and R′ is an alkoxy. The compounds possess tranquilizing, analgesic and hypotensive properties.

3,663,573
EPOXIDES DERIVED FROM SUBSTITUTED ACRYLAMIDES
Lester Earl Coleman, Willoughby Hills, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio
No Drawing. Filed Mar. 27, 1970, Ser. No. 23,498
Int. Cl. C07d *1/20*
U.S. Cl. 260—348 A **5 Claims**

Epoxides are prepared from N-3-oxohydrocarbon-substituted and N-3-hydroxyalkyl acrylamides, especially diacetone acrylamide, by reaction with a hypohalous acid followed by treatment with alkali or by reaction with a carboxylic peracid. These epoxides are useful as diluents for epoxy resins.

3,663,574
PROCESS FOR THE CONTINUOUS PRODUCTION OF PROPYLENE OXIDE
Kazuo Yamagishi, Tokyo, and Osamu Kageyama and Yoshiaki Numa, Ohimachi, Saitama, Japan, assignors to Daicel Ltd., Osaka, Japan
Filed May 12, 1969, Ser. No. 823,605
Claims priority, application Japan, May 11, 1968, 43/31,513
Int. Cl. C07d *1/12*
U.S. Cl. 260—348.5 **7 Claims**

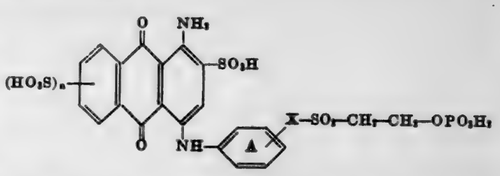
Propylene oxide is produced by incorporating bubbles of propylene gas at a pressure in the range of 3–50 kg./sq. cm. gauge into an organic solvent solution of peracetic acid and forwarding the reactants in concurrent flow through a series of reaction zones separated by perforate members whose perforations have a diameter in the range of 2 to 10 mm. and a perforation ratio of 1 to 20%. The flow rate of the solution is less than 2000 in Reynolds number and the superficial velocity of the propylene bubbles is in the range of 0.05–50 cm./sec. The temperature in the reaction system is in the range of 30° C. to 80° C. and the mean residence time of the reactants in the reaction system is in the range of 30 to 180 minutes.

3,663,575
PROCESS FOR THE PRODUCTION OF AROMATIC LACTONES
Ernst Roos, Cologne-Flittard, and Klaus Wagner, Cologne-Buchheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed July 2, 1968, Ser. No. 741,851
Claims priority, application Germany, Aug. 23, 1967, F 53,311
Int. Cl. C07d *5/34*
U.S. Cl. 260—343.3 **4 Claims**

Production of aromatic lactones by hydrolyzing an aromatic compound, e.g. benzene, naphthalene and diphenyl-dichloro-methane compounds, containing at least two orthdichloromethyl groups, with the remainder of the nuclear positions thereof having all of the corresponding hydrogen atoms thereat substituted by chloro and/or dichloromethyl substituents, with a hydrolyzing agent, e.g. at least about 75% sulfuric acid or oleum at about 80–200° C., such aromatic lactones being usable as intermediates for reaction with primary and secondary amines, i.e. to exchange one or more chloro substituents therewith, to form fluorescent dyes or optical brighteners, those aromatic lactones in which at least one substituent is other than chloro being new.

3,663,576
WATER-SOLUBLE ANTHRAQUINONE DYESTUFFS
Fritz Meininger, Frankfurt am Main, Klaus Hunger, Kelkheim, Taunus, and Hartmut Springer, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Aug. 6, 1969, Ser. No. 848,073
Claims priority, application Germany, Aug. 10, 1968, P 17 93 172.5
Int. Cl. C09b *1/34*
U.S. Cl. 260—372 **6 Claims**

Water-soluble anthraquinone dyestuff having in form of the free acid formula



in which X represents a direct linkage, —CH_2—, —CH_2CH_2—, —NH— or —N(lower alkyl)—, the benzene nucleus is unsubstituted or substituted by hydrogen, methyl, lower alkoxy, carboxyl, chlorine or bromine, and *n* stands for 0 or 1, the said dyestuffs being suitable for the dyeing or printing of leather or of fibrous materials consisting of wool, silk, linear polyamides, native or regenerated cellulose fibres, the dyeings or prints obtained on said materials being distinguished by very good fastness properties to wetting and to light.

3,663,577
ANTHRAQUINOID DYESTUFFS
Richard Peter, Hans-Joerg Angliker, and Angelo Della Casa, Basel, Switzerland, assignors to Ciba Limited, Basel, Switzerland
No Drawing. Filed July 22, 1969, Ser. No. 843,834
Claims priority, application Switzerland, July 26, 1968, 11,234/68
Int. Cl. C09b *1/32, 1/50*
U.S. Cl. 260—377 **3 Claims**

An anthraquinoid dyestuff which comprises at least one residue of an anthraquinoid disperse dyestuff and at least one residue of a disperse dyestuff of the styryl series.

3,663,578

CATALYTIC OXIDATION OF ALKYL-SUBSTITUTED HYDROQUINONES TO THE CORRESPONDING P-BENZOQUINONES

Nikolaus von Kutepow, Karlsruhe, August Magin, Mutterstadt, and Hans-Ingo Joschek, Mannheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Apr. 1, 1970, Ser. No. 24,524
Int. Cl. C07c *49/64*
U.S. Cl. 260—396 R 9 Claims

Air oxidation of alkyl-substituted hydroquinones in the presence of heavy metal salts as catalysts in a liquid mixed phase consisting of an aqueous phase and an organic phase. The aqueous phase contains dissolved catalyst and additives for setting up a pH below 7, and the organic phase is a selective solvent for the alkyl-substituted p-benzoquinone formed in the oxidation. The process enables 2,3,6-trimethylhydroquinone, an important intermediate in the synthesis of vitamin E, to be separated from mixtures of methyl-substituted hydroquinones.

3,663,579

DIMERIC STEROID-21-ALKYL-CARBONATES AND PROCESS FOR THEIR MANUFACTURE

Ulrich Stache and Werner Haede, Hofheim, Taunus, Werner Fritsch, Neuenhain, Taunus, Kurt Radscheit, Kelkheim, Taunus, and Hans-George Schroder, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Apr. 24, 1969, Ser. No. 819,092
Claims priority, application Germany, May 3, 1968, P 17 68 345.3
Int. Cl. C07c *169/32*
U.S. Cl. 260—397.45 10 Claims

Bis[steroid - 21] - alkyl carbonates having anti-inflammatory activity are prepared by reacting corticosteroids with bis-chloroformiates.

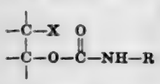
3,663,580

HALOGEN-AMINOCARBONYLOXY COMPOUNDS OF THE STEROID SERIES

Kurt Ponsold and Peter Grosse, Jena, Germany, assignors to VEB Jena Pharm, Jena, Germany

No Drawing. Filed Mar. 6, 1970, Ser. No. 17,325
Int. Cl. C07c *169/20, 169/60*
U.S. Cl. 260—397.2 24 Claims

Vicinal halogen-aminocarbonyloxy compounds of the steroid series, in which the amino group can be substituted or unsubstituted, having the formula



wherein C—C designates a segment of the steroid framework, X designates halogen, and R designates hydrogen, an alkyl, aryl, arylalkyl, cyclohexyl, unsubstituted or substituted amino group or acid group and a process of preparing this class of compounds comprising reacting a cis- or trans-halogen-hydrine of the steroid series with phosgene in an inert solvent under addition of a basic catalyst to form the corresponding chlorocarbonic acid ester, reacting the latter with an NH-active compound in a solvent under addition of an acid binding agent, the reaction being facilitated where necessary by addition of a tertiary amine.

The steroids of the invention are characterized by their outstanding pharmacological activity.

3,663,581

PROCESS FOR THE PROTECTION OF AUTO-OXIDIZABLE MATERIALS

Gunter Lehmann, Saarbrucken, Otto Neunhoeffer, Homburg, Saar, Wilhelm Roselius, Bremen-St. Magnus, and Otto Vitzthum, Bremen, Germany, assignors to Hag Aktiengesellschaft, Bremen, Germany

No Drawing. Filed Feb. 11, 1970, Ser. No. 10,595
Int. Cl. C11b *5/00*
U.S. Cl. 260—398.5 3 Claims

A process for protecting auto-oxidizable materials through the addition of an antioxidative substance in the form of an extract of green coffee beans.

3,663,582

HEXACHLOROCYCLOPENTADIENE ADDUCTS OF UNSATURATED AMIDES

Robert R. Mod, Frank C. Magne, and Eveld L. Skau, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,922
Int. Cl. C07c *103/19*
U.S. Cl. 260—404 10 Claims

This invention relates to certain new nitrogen-containing compounds, more particularly to N-substituted and N,N-disubstituted amides, the acyl moieties of which are the acyl moieties of the hexachlorocyclopentadiene adducts of either 9-octadeceonic or 10-undecenoic acids.

The compounds which are the subject of this invention are characterized by the fact that as growth inhibitors they are effective against a variety of bacteria, yeasts, and molds, some of which are pathogenic. They are also useful as plasticizers.

3,663,583

PARTIALLY SAPONIFIED ETHOXYLATED TRIGLYCERIDES OF RICINOLEIC ACID

George M. Haynes, Spartanburg, S.C., assignor to Whitestone Chemical Corporation, Spartanburg, S.C.

No Drawing. Filed Mar. 30, 1970, Ser. No. 24,011
Int. Cl. B01d *19/04*; C07c *69/66*; C11d *1/72*
U.S. Cl. 260—410.7 9 Claims

Partially saponified castor oil surfactants are prepared by reacting an ethoxylated castor oil surfactant with about 0.5 to 3.0 moles, per mole of ethoxylated castor oil, of an alkali metal hydroxide. The reaction is carried out at a temperature ranging from about 75° C. to 100° C., for a period of about 0.5 to 3.0 hours. The products of the present invention are improved surfactants exhibiting excellent detergency; low foaming characteristics; stability in both alkaline and acid solutions; complete water solubility and no cloud point in typical aqueous use solutions.

3,663,584

DI-(6-METHOXY-2-NAPHTHYL)ZINC AND 6-METHOXY-2-NAPHTHYLZINC HALIDE

Francisco Alvarez, Sunnyvale, Calif., assignor to Syntex Corporation, Panama, Panama

No Drawing. Filed Dec. 4, 1970, Ser. No. 95,377
Int. Cl. C07f *3/06*
U.S. Cl. 260—429.9 3 Claims

2-(6-methoxy-2-naphthyl)propionic acid is prepared by reacting di(6 - methoxy-2-naphthyl)zinc or 6-methoxy-2-naphthylzinc halide with a lower alkyl 2-halopropionate in a suitable solvent to form a lower alkyl 2-(6-methoxy-2-naphthyl)propionate and hydrolyzing the ester group thereof. The product has anti-inflammatory, analgesic and anti-pyretic activities.

3,663,585

PROCESS FOR LITHIATING FERROCENE

Arthur W. Langer, Jr., Watchung, N.J., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 690,076, Dec. 13, 1967, which is a continuation-in-part of application Ser. No. 560,110, June 24, 1966, which is a continuation-in-part of application Ser. No. 505,976, Nov. 1, 1965, which is a continuation-in-part of application Ser. No. 359,434, Apr. 13, 1964, which in turn is a continuation-in-part of application Ser. No. 266,188, Mar. 19, 1963. This application Aug. 3, 1970, Ser. No. 60,772
Int. Cl. C07f *15/02*
U.S. Cl. 260—439 CY 2 Claims

Ferrocene or a derivative thereof is lithiated by reaction, at temperatures in the range 25°–100° C., in a hydrocarbon solvent, with a hydrocarbon lithium, preferably in conjunction with an N,N,N',N'-tetraalkyl ethylene diamine (I). The products produced in conjunction with (I) tend to have higher degrees of lithiation than those produced in the absence of (I).

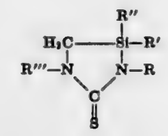
3,663,586

CYCLIC THIOUREA DERIVATIVES AND PROCESS FOR THEIR MANUFACTURE

Hans Dietrich Golitz, Cologne-Stammheim, Rudolf Merten, Leverkusen, Walter Noll, Opladen, and Walter Simmler, Odenthal-Globusch, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

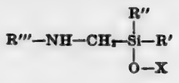
No Drawing. Filed Oct. 16, 1970, Ser. No. 81,513
Claims priority, application Germany, Apr. 13, 1970, P 20 17 507.9
Int. Cl. C07f *27/10*
U.S. Cl. 260—448.2 N 13 Claims

Novel cyclic thiourea derivatives containing silicon atoms have the general formula



wherein R is a hydrocarbon radical optionally being interrupted by oxygen atoms in ether linkages, R' and R'' (same or different) are hydrocarbon radicals, halohydrocarbon radicals, cyanohydrocarbon radicals, or alkoxy radicals, and R''' is a hydrocarbon radical. The compounds are useful as cross-linking agents and as intermediates for carbofunctional siloxanes.

These 2,5-diaza-3-silacyclopentathiones can be produced, according to the invention, by reacting an aminomethylalkoxysilane of the general formula



(R', R'' and R''' as above; X=alkyl) at a temperature between 0 and 250° C. with an isothiocyanate of the general formula RNCS (R as above) and recovering the product by distillation under reduced pressure or by filtration.

These products are suitable as intermediates for carbofunctional organopolysiloxanes and as cross-linking agents in water-reactive organopolysiloxane preparations.

3,663,587

BROMINATED SILOXANES AND THEIR PREPARATION

Donald John Holman, Wedhey, Harlow, England, assignor to Berk Limited, London, England

No Drawing. Filed Oct. 4, 1968, Ser. No. 765,006
Claims priority, application Great Britain, Oct. 18, 1967, 47,454/67
Int. Cl. C07f *7/04, 7/06, 7/18*
U.S. Cl. 260—448.8 R 4 Claims

Stable brominated siloxanes having the formula

$$R_x(Br_5C_6O)_{3-x}Si—O—Si(OC_6Br_5)_{3-x}R_x$$

in which R is alkyl and x is 0, 1 or 2, are provided. These compounds are useful as fire retardant additives in polymer compositions.

3,633,588

CERTAIN DIFLUORAMINO COMPOUNDS

Donald Pilipovich, Canoga Park, and Michael G. Warner, Camarillo, Calif., assignors to North American Rockwell Corporation

Continuation-in-part of application Ser. No. 568,097, July 21, 1966. This application Apr. 18, 1967, Ser. No. 634,031
Int. Cl. C07c *35/02*; C07c *87/22*
U.S. Cl. 260—453 R 5 Claims

The invention relates to the compounds $CF_3(ONF_2)_3$ and $CF_3(ONF_2)OF$ and a method for their production. The method comprises reacting $CF_3(ONF_2)$ and

$$MF \cdot HNF_2$$

where M is K, Rb and Cs at temperatures between −126° C. and +27° C.

3,663,589

PROCESS FOR THE PRODUCTION OF NITRILES

Juergen Luecke, Tubingen, Germany, assignor to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed Mar. 17, 1969, Ser. No. 807,914
Int. Cl. C07c *121/10, 121/00, 121/46*
U.S. Cl. 260—464 12 Claims

Improvement in the production of nitriles by heating carboxylic acids or their functional derivatives with urea, which improvement consists in the additional use of amido-sulphonic acid in the reaction mixture.

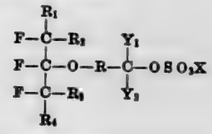
3,663,590

NOVEL POLYHALOORGANO HALOSULFATES

Louis Gene Anello, Basking Ridge, and Richard Francis Sweeney, Dover, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Apr. 23, 1969, Ser. No. 818,826
Int. Cl. C07c *143/68*
U.S. Cl. 260—456 R 27 Claims

Halosulfates of the formula:



wherein R_1–R_4 are independently selected from the group consisting of F, Cl, alkyl and haloalkyl groups in which the halogen atoms are Cl or F; R_1 and R_4 when taken together and with the carbon chain therebetween form a cyclic structure, R is an alkylene or haloalkylene group in which the halogen atoms are selected from Cl and F, Y_1 is selected from H, F, Cl and perhaloalkyl groups in which the halogen atoms are selected from F and Cl, Y_2 is selected from F and Cl and X is selected from F and Cl; may be prepared by reacting a corresponding polyhaloorgano alkyl iodide with chlorosulfonic or fluorosulfonic acid as appropriate. The novel halosulfate products are

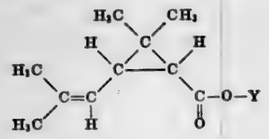
useful as surfactants, oil, stain and water repellent agents and as intermediates to other valuable surface active agents.

3,663,591
CHRYSANTHEMIC ACID ESTERS

John Mervyn Osbond, Hatfield, and James Charles Wickens, St. Albans, England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

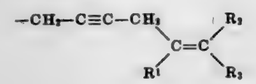
No Drawing. Filed Nov. 28, 1969, Ser. No. 880,964
Claims priority, application Great Britain, Dec. 9, 1968, 58,351/68, 58,352/68, 58,353/68, 58,354/68
Int. Cl. C07c *69/74*; A01n *9/24*
U.S. Cl. 260—468 P 19 Claims

The invention comprises chrysanthemic acid ester compounds of the formula

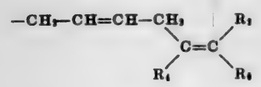


(I)

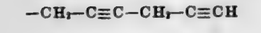
wherein Y is the moiety



(a)

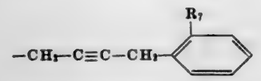


(b)



(c)

or



(d)

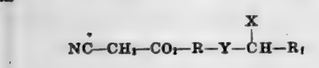
wherein R^1–R_7 is hydrogen or an alkyl group. The compounds of Formula I are useful as insecticides and are prepared by reacting an acid chloride with alcohol or by reacting a halide with a salt of a chrysanthemum carboxylic acid.

3,663,592
FLUOROALKOXYALKYL 2-CYANOACETATES

Elden H. Banitt, Woodbury Village, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation-in-part of application Ser. No. 734,195, June 4, 1968. This application Dec. 2, 1969, Ser. No. 881,584
Int. Cl. C07c *121/16*
U.S. Cl. 260—465.4 6 Claims

Fluorinated alkoxyalkyl 2-cyanoacetates having the formula



wherein R is a straight or branched, divalent, aliphatic hydrocarbon radical having from 2 to 8 carbon atoms; R_f is a straight or branched fluoroaliphatic radical having from 1 to 5 carbon atoms, Y is O or S and X is H, lower alkyl or lower fluoroaliphatic have been found to be useful intermediates in synthesizing cyanoacrylates which are useful adhesives. When the latter are applied as monomers to adherends, they polymerize rapidly in the presence of even small amounts of, e.g., moisture, to form strong bonds.

3,663,593
FUNGICIDAL COMPOSITION

Hiroshi Takeda, Tokyo, Japan, and Walter H. Schuller and Ray V. Lawrence, Lake City, and Seymour S. Block, Gainesville, Fla., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed July 18, 1969, Ser. No. 843,225
Int. Cl. C07c *63/04*, *69/76*
U.S. Cl. 260—469 5 Claims

This invention relates to the formation of a new composition of matter, active as a fungicide. This product is prepared by heating either methyl levopimarate or a salt of levopimaric acid in the presence of a proton acceptor such as potassium hydroxide, sodium hydroxide, tris-n-butylamine, etc. and the resulting mixture ozonized and the ozonide oxidized by the method of King and Farber.

3,663,594
N-SUBSTITUTED ARYL CARBAMATES

Melancthon S. Brown and Gustave K. Kohn, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation-in-part of application Ser. No. 764,299, Oct. 1, 1968. This application Sept. 4, 1969, Ser. No. 855,421
Int. Cl. C07c *149/40*
U.S. Cl. 260—470 5 Claims

Insecticidal carbamates of the formula

wherein R is aryl or aralkyl of 6 to 20 carbon atoms, R^1 is H or alkyl of 1 to 6 carbon atoms, and R^2 is alkyl of 1 to 10 carbon atoms or monocyclic aryl of 6 to 12 carbon atoms substituted with 0 to 2 alkyl in which the total number of carbon atoms in the alkyl groups combined is 1 to 6, 0 to 2 halogens of atomic number 17 to 35 or 0 to 2 trifluoromethyl.

3,663,595
CARBALKOXYAMINOPROPANE

Laszlo Beregi, Boulogne, Pierre Hugon, Rueil-Malmaison, and Jean-Claude Le Douarec, Suresnes, France, assignors to Société en nom collectif Science Union et Cie, Societe Francaise de Recherche Medicale, Suresnes, France

No Drawing. Filed Sept. 6, 1968, Ser. No. 762,328
Claims priority, application France, Sept. 22, 1967, 121,906
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C 1 Claim

1-trifluoromethylphenyl-2 - carbalkoxyamino propanes having anorexigenic properties.

3,663,596
ALIPHATIC ESTERS OF 3,5-DI-ALKYL SALICYLIC ACIDS USEFUL AS UV STABILIZERS FOR THERMOPLASTICS

Hans A. Gersmann, Hendricus A. Oosterhof, and Aart Strang, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Original application Mar. 1, 1968, Ser. No. 709,811, now Patent No. 3,542,728, dated Nov. 24, 1970. Divided and this application Aug. 10, 1970, Ser. No. 62,672
Int. Cl. C07c *69/76*
U.S. Cl. 260—473 S 5 Claims

Thermoplastic compositions comprise as stabilizers against actinic radiation certain esters of mono- or polyvalent saturated non-aromatic alcohols with certain 2-hydroxybenzoic acids having an alkyl or alkoxy substituent in the ring in the 3-position, the 5-position, or both.

3,663,597
PROCESS FOR THE PURIFICATION OF CYCLANDELATE

David Flitter, Havertown, Pa., assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Filed May 5, 1970, Ser. No. 34,894
Int. Cl. C07c *65/02*
U.S. Cl. 260—473 A 7 Claims

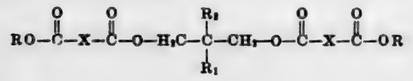
The amount of the impurity trimethylcyclohexylphenylglyoxylate formed in the preparation of cyclandelate by the reaction of 3,3,5-trimethylcyclohexanol and mandelic acid may be substantially reduced or eliminated by stirring crude cyclandelate in solution with an aqueous solution of sodium borohydride at temperatures ranging from 25 to 65° C. and a pH of 2.5 to 11.5. The amount of borohydride ranges from 0.5 to 2.0 percent by weight of the amount of cyclandelate present.

3,663,598
PHTHALATE ESTERS

Joseph A. Vasta, Woodbury, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 2, 1968, Ser. No. 718,246
Int. Cl. C07c *69/80*
U.S. Cl. 260—475 P 1 Claim

Compound of the formula



where

R is an alkyl group or a cyclohexyl group,
R_1 is hydrogen or an alkyl group,
R_2 is —OH or —CH_2OH, and
X is the residue from phthalic acid, maleic acid, or succinic acid,

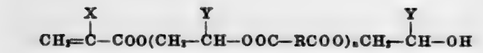
and coating compositions containing these compounds.

3,663,599
METHOD OF PRODUCING VINYLIC POLYMERIZABLE MONOMERS

Masamitsu Koshimura, Tokyo, Yukinori Haruta and Junichi Matsuzaka, Yokohama, and Shinichi Wako, Fujisawa, Japan, assignors to Nippon Oils and Fats Company Limited, Tokyo, Japan

No Drawing. Filed May 6, 1969, Ser. No. 822,299
Claims priority, application Japan, May 8, 1968, 43/30,658; Oct. 15, 1968, 43/75,082; Nov. 5, 1968, 43/80,376
Int. Cl. C07c *69/80*
U.S. Cl. 260—475 P 9 Claims

Reactive monomeric polyester containing a vinylic unsaturated bond and a hydroxyl group, which has the following general formula

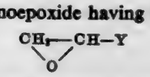


wherein X is hydrogen, methyl or ethyl group, Y is hydrogen, methyl, phenyl or CH_2Z group, in which Z is a halogen or an alkyl group, R represents an aliphatic, alicyclic or aromatic group and *n* is an integer of 1 to 3, is produced by reacting in one step at least one vinylic unsaturated acid having the general formula

with at least one organic dibasic acid anhydride having the general formula



and at least one monoepoxide having the general formula



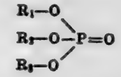
X, Y and R in the above formula having the same meanings as described above, at a temperature lower than 100° C. by using lithium salt alone or in admixture with quaternary ammonium salt as a catalyst.

3,663,600
PURIFICATION OF BIS(β-HYDROXYETHYL) TEREPHTHALATE

Wayne V. McConnell, James H. Bond, and Nicholas C. Russin, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Dec. 15, 1969, Ser. No. 885,287
Int. Cl. C07c *69/82*
U.S. Cl. 260—475 PR 6 Claims

A process for the purification of bis(β-hydroxyethyl) terephthalate, and particularly that prepared by the esterification of terephthalic acid with ethylene glycol, which comprises dissolving one part of crude bis(β-hydroxyethyl) terephthalate in a hot solvent, treating the solution with from about 0.005 to about 0.5 part, based on the bis(β-hydroxyethyl) terephthalate, of a phosphorus containing component selected from phosphoric acid, phosphorous acid, and phosphate esters having the general formula



wherein each of R_1, R_2 and R_3 are selected from hydrogen or straight or branched chain alkyl radicals having from 1 to 10 carbon atoms, and wherein the ester contains at least an average of 0.5 acidic hydrogen atoms for each phosphorus atom, filtering the hot solution and cooling the filtrate to cause pure bis(β-hydroxyethyl) terephthalate to crystallize therefrom.

3,663,601
ALLYL-BETA-PHENYLPROPIONATE

Morris Dunkel, Paramus, N.J., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 483,310, Aug. 27, 1965. This application Mar. 26, 1969, Ser. No. 811,691
Int. Cl. C07c *69/76*
U.S. Cl. 260—476 R 4 Claims

Allyl-beta-phenylpropionate as new compositions of matter and to the use thereof as olfactory ingredients in perfume compositions.

3,663,602
1,1-DIARYL-2-ADAMANTYL ETHYLENE COMPOUNDS

Martin Steinman, Bloomfield, N.J., assignor to Schering Corporation, Bloomfield, N.J.

No Drawing. Filed Aug. 25, 1969, Ser. No. 852,906
Int. Cl. C07c *69/76*
U.S. Cl. 260—479 R 6 Claims

1,1-diaryl-2-adamantyl ethylene compounds particularly useful as antifertility agents.

3,663,603

HYDRAZINE-CARBOXYLIC ACID ESTERS AND PROCESS FOR THE PRODUCTION THEREOF

Erwin Müller and Wolfgang Heydkamp, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 12, 1968, Ser. No. 712,355
Claims priority, application Germany, Mar. 25, 1967, F 51,948
Int. Cl. C07c *133/00*
U.S. Cl. 260—482 B 7 Claims

Polyhydrazine-monocarboxylic acid esters and a process for their production by reacting a polymonophenyl carbonate of a polyhydric alcohol with hydrazine or hydrazine hydrate.

3,663,604

POLYFLUOROCARBAMATES

Walter Blöchl, Karlsruhe, Germany, assignor to FMC Corporation, New York, N.Y.

No Drawing. Filed Mar. 5, 1969, Ser. No. 804,699
Int. Cl. C07c *125/04*
U.S. Cl. 260—482 C 9 Claims

Hydroxymethylated derivatives of fluorinated carbamates are useful to impart oil and water repellency to fibrous substrates. The carbamates have the formula:

$$R_f—Y—OCONH_3$$

where R_f is a perfluoroalkyl group of 4–16 carbon atoms and Y is an alkylene bridge optionally interrupted with —O—, —S—, —SO—, —SO_2— and —NR— wherein R is lower alkyl or lower hydroxyalkyl. Examples are given where Y contains 3 to 5 carbon atoms.

3,663,605

N-PHENETHYLACETAMIDES AND RELATED COMPOUNDS

Ronald J. McCaully, Malvern, and George L. Conklin, Havertown, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 831,726, June 9, 1969. This application May 15, 1970, Ser. No. 37,908
Int. Cl. C07c *69/16, 69/28, 67/00*
U.S. Cl. 260—490 30 Claims

Novel compounds are prepared by condensing a substituted phenylamine or a phen(lower)alkylamine with a reactive di(lower)alkanoyloxyacetyl compound such as the chloride. The novel compounds are pharmacologically active as central nervous system depressant agents and are of value in the calming of mammals.

3,663,606

ORGANIC IMINO-COMPOUNDS

Yoshikazu Isowa, Tokyo, Japan, assignor to Mitsui Toatsu Chemicals Incorporated, Tokyo, Japan

Filed June 16, 1967, Ser. No. 646,536
Int. Cl. C07c *101/20*
U.S. Cl. 260—471 A 2 Claims

Novel organic imino-compounds produced by decomposition with water or an alcohol of organic imino-compound metal chloride coordination complexes obtained by the reaction of an aliphatic or aromatic nitrile, e.g., acetonitrile or benzonitrile, and an active methylene compound, e.g., diethyl malonate, in the presence of a metal chloride, e.g., stannic chloride. Processes for producing such organic imino-compounds.

3,663,607

1-CARBAMOYLALKYL PHENOXY-3-AMINO-2-PROPANOLS

Arthur Michael Barrett, John Carter, Roy Hull, David James Le Count, and Christopher John Squire, Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Feb. 6, 1970, Ser. No. 9,451
Claims priority, application Great Britain, Feb. 21, 1969, 9,445/69
Int. Cl. C07c *103/28*
U.S. Cl. 260—501.1 9 Claims

Novel 1-(electronegatively-substituted-alkyl- or alkenylphenoxy)-3-alkylamino-2-propanol derivatives, for example 1-p-carbamoylmethylphenoxy-3-isopropylamino-2-propanol, methods for their preparation and pharmaceutical compositions containing them. The compounds possess β-adrenergic blocking activity and are useful in the treatment of heart diseases and other complaints in man.

This invention relates to new alkanolamine derivatives which possess β-adrenergic blocking activity and which are therefore useful in the treatment or prophylaxis of heart diseases, for example angina pectoris and cardiac arrhythmias, and in the treatment of hypertension and phaeochromocytoma, in man.

3,663,608

1-PHENYL-3-AMINOALKYL-1,2,3,4-TETRAHYDRONAPHTHALENES AND THE SALTS THEREOF

Henry Michael Holava and Richard Anthony Partyka, Liverpool, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Dec. 10, 1969, Ser. No. 883,985
Int. Cl. C07c *87/28*
U.S. Cl. 260—501.1 5 Claims

The specification discloses the preparation of certain 1-phenyl-3-aminoalkyl-1,2,3,4-tetrahydronaphthalenes which have been found to have activity as either anorectic agents or central nervous system stimulants and the corresponding 3-carbamoyl-1,2,3,4-tetrahydronaphthalenes which are used as intermediates in the disclosed synthesis.

3,663,609

METHOD OF PRODUCING ALKYL ALKOXYBENZENE DISULFONATES

Gar Lok Woo, Tiburon, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Oct. 16, 1970, Ser. No. 81,508
Int. Cl. C07c *143/42*
U.S. Cl. 260—512 R 13 Claims

Method of producing alkyl alkoxybenzene disulfonates comprising reacting a 2- to 4-carbon olefin with an alkylphenol disulfonate under superatmospheric pressure followed by neutralization and digestion of the mixture.

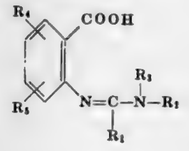
3,663,610

AMIDINE DERIVATIVES WITH SPASMOLYTIC, PSYCHOSTIMULANT AND ANOREXIGENIC PROPERTIES

Zoltán Ecsery, Ildikó Kósa, and József Knoll, Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT, Budapest, Hungary

No Drawing. Filed July 8, 1968, Ser. No. 743,031
Claims priority, application Hungary, July 11, 1967, CI–718
Int. Cl. C07c *101/54*
U.S. Cl. 260—518 R 2 Claims

Psychostimulant, anorexigenic and spasmolytic compounds of the general formula



wherein

R_1 is a member selected from the group consisting of hydrogen, alkyl, substituted alkyl, aryl, substituted aryl and heterocyclic radical,

R_2 is a member selected from the group consisting of hydrogen, alkyl, substituted alkyl, aryl, substituted aryl and heterocyclic radical,

R_3 is a member selected from the group consisting of hydrogen, alkyl, substituted alkyl, aryl, substituted aryl and heterocyclic radical,

R_4 is a member selected from the group consisting of hydrogen, halogen, nitro, amino, acylamino, hydroxy and alkoxy,

R_5 is a member selected from the group consisting of hydrogen, halogen, nitro, amino, acylamino, hydroxy and alkoxy.

3,663,611

PROCESS FOR CONDUCTING EXOTHERMIC CHEMICAL REACTION IN HETEROGENEOUS GAS-LIQUID MIXTURES

Germany, assignors to Dynamit Nobel AG, Troisdorf, Hans Leuck, Troisdorf, and Erich Kratz, Porz-Zundorf, Germany

Filed Aug. 29, 1969, Ser. No. 854,223
Claims priority, application Germany, Aug. 29, 1968, P 17 92 402.6
Int. Cl. C07c *63/02*
U.S. Cl. 260—524 R 9 Claims

Exothermic chemical reactions in heterogeneous gas-liquid mixtures are carried out by conducting the reaction in a reaction column containing a cooling means and which is in communication with a corresponding parallel-arranged reflux column of the same length, the gaseous reactant being introduced into the reaction column at a unit charge of 0.3 to 0.6 $Nm.^3$ of gas per square meter of reactor cross-section per second and wherein about 60–80% of the gas is introduced into the reaction column and the remainder into the reflux column. The process is especially advantageous for oxidizing a mixture of p-xylene and methyl p-toluate during the production of dimethyl terephthalate.

3,663,612

METHOD OF SEPARATING LEVULINIC ACID AS AN ALKALINE-EARTH LEVULINATE FROM HEXOSE-CONTAINING CARBOHYDRATE SUBSTRATES

Emiliano Ramos-Rodriguez, San Juan, Puerto Rico, assignor to the Government of the Commonwealth of Puerto Rico

Filed Aug. 8, 1969, Ser. No. 848,462
Int. Cl. C07c *51/42*
U.S. Cl. 260—527 R 17 Claims

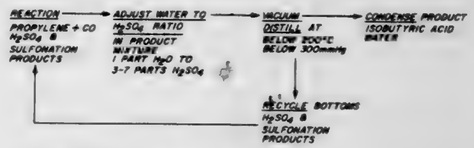
A method of clarification is provided for separating levulinic acid as alkaline earth levulinate directly from the liquor that is produced in the treatment of sugar solutions, starch, lignocellulosic materials and related products with catalysts of mineral or organic acids in the presence of heat and pressure. The method includes treatment of the liquor with an alkaline agent such as alkaline earth hydroxide to neutralize the liquor, raise the pH, separate impurities and produce alkaline earth levulinate and further treatment of the liquor with oxidant, phosphoric acid and additional alkaline agent to bleach, decompose and separate impurities and destroy foaming compounds. The clarified solution produced by this process contains alkaline earth levulinate which easily yields said alkaline earth levulinate on evaporation and crystallization.

3,663,613

SEPARATION OF ORGANIC ACID PRODUCTS AND WATER FROM CATALYSTS AFTER SYNTHESIS BY REDUCED PRESSURE DISTILLATION

Venkatrao Krishnarayn Pai, Stamford, and Daniel Hyman, Greenwich, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 18, 1969, Ser. No. 800,289
Int. Cl. B01d *3/10*; C07c *51/14*
U.S. Cl. 260—533 A 7 Claims



Vacuum distillation of a product mixture comprising isobutyric acid, water, sulfuric acid, and hydroxyalkanesulfonic acid with its sulfuric acid ester, surprisingly results in practically complete separation of isobutyric acid and some water leaving practically all of the other acids in the residue. Concentration of water in the residue is also reduced to desired level by vacuum distillation without expected decomposition of the olefin sulfonation products. The distillation residue is a suitable catalyst for recycle to a high pressure carbonylation reaction that produces the product mixture to be distilled. Thus the invention provides easy separation of carboxylic acid product from the catalyst which can be continuously recycled.

3,663,614

METHOD OF MAKING TRIMETHYLUREA

Kenneth C. Rennells, Whitehall, Mich., assignor to The Ott Chemical Company

No Drawing. Filed Feb. 19, 1969, Ser. No. 800,756
Int. Cl. C07c *127/18*
U.S. Cl. 260—553 R 6 Claims

Covers a method of making trimethylurea by heating a tetramethylurea salt at a sufficient temperature to cleave said salt, thereby forming said trimethylurea, which is recovered.

3,663,615

NUCLEAR SULFAMOYL N-ORGANOSULFONYL BENZAMIDES

Carl Ziegler, Glenside, and James M. Sprague, Gwynedd Valley, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Mar. 2, 1970, Ser. No. 15,915
Int. Cl. C07c
U.S. Cl. 260—556 AC 6 Claims

Nuclear sulfamoyl and nuclear sulfonyl substituted N-organosulfonyl benzamides and salts thereof wherein the benzene ring may be either unsubstituted or substituted by one or more lower alkyl, halo, trihalomethyl, nitro, carboxy, amino, halosulfonyl, alkylsulfonyl or sulfamoyl radicals. The products are prepared by treating a nuclear sulfamoyl- (or sulfonyl)substituted benzoyl halide with an organosulfonamide or salt thereof. The products are useful as uricosuric agents in the treatment of gout and gouty arthritis.

3,663,616

BIS(2-CARBAMYLPHENYL)DISULFIDES

John C. Grivas, South Holland, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Filed Oct. 13, 1969, Ser. No. 865,977
Int. Cl. C07c *103/26*
U.S. Cl. 260—558 S 5 Claims

Novel bis(2-carbamylphenyl)disulfides are effective in controlling mildew fungi, especially *Pullularia pullulans*

and can be incorporated in organic coating compositions. About 0.5–1% concentration in paint provides protection against mildew.

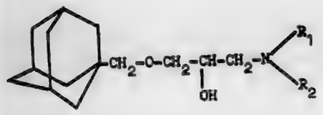
3,663,617

1-(ADAMANTYLMETHYLOXY) - 2 - HYDROXY-3-SUBSTITUTED AMINO PROPANES AND ACID ADDITION SALTS THEREOF

Andrea Pedrazzoli, Milan, and Leone Dall'Asta, Pavia, Italy, assignors to Societe d'Etudes de Recherches et d'Applications Scientifiques et Medicales E.R.A.S.M.E., Paris, France

No Drawing. Filed June 4, 1970, Ser. No. 43,582
Int. Cl. C07c *93/12*
U.S. Cl. 260—563 P 7 Claims

Adamantane derivatives having the following general formula:



and their pharmaceutically acceptable acid addition salts are useful as sympaticolytic, myolitic, analgesic and, particularly, as local anaesthetic and β-adrenergic blocking agents. The novel compounds are prepared starting from 1 - hydroxy - methyl - adamantane through the new intermediate 1-(adamantyl-methyloxy) - 2,3 - epoxypropane.

3,663,618

FLUORINATED CYCLOHEXYLAMINE DERIVATIVES AND COMPOSITIONS EMBODYING THE SAME

Maurice S. Baseman, 5890 Hobart St., Pittsburgh, Pa. 15217

No Drawing. Original application July 18, 1967, Ser. No. 654,090, now Patent No. 3,558,513, dated Jan. 26, 1971. Divided and this application Sept. 8, 1970, Ser. No. 70,595
Int. Cl. C23f *11/00*
U.S. Cl. 260—563 R 3 Claims

The reaction product of hexafluoroisopropanol with monocyclohexylamine or dicyclohexylamine, or mixtures of both, have been produced. These reaction products have been found to be unusually effective as corrosion inhibitors. The reaction products can be used alone or carried in or on the surface of paper, plastics or other solid materials; they can be added to hydrocarbons, oils, greases, hydraulic fluids and other liquid carriers, either in solution or in suspension, and they prevent rusting of ferrous metals or corrosion of other metals.

3,663,619

PROCESS FOR THE PREPARATION OF 2,2',6,6'-TETRABROMO-4,4'-METHYLENEDIANILINE

Robert M. Thomas and Rastko I. Mamuzic, West Lafayette, Ind., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

No Drawing. Filed July 22, 1969, Ser. No. 843,755
Int. Cl. C07c *85/08*
U.S. Cl. 260—570 D 3 Claims

2,2',6,6'-tetrabromo - 4,4' - methylenedianiline is produced in high yield by addition of liquid bromine to a methanolic solution of 4,4'-methylenedianiline. Refluxing produces a high yield of methyl bromide as by-product. Washing the separated product with methanol produces a high purity product in high yield.

3,663,620

N-(HALOGENATED BIPHENYL)-DIETHYLENE TRIAMINES

John J. Merianos, Jersey City, Edward Griffin Shay, Belle Mead, Phillip Adams, Murray Hill, and Alfonso N. Petrocci, Glen Rock, N.J., assignors to Milmaster Onyx Corporation, New York, N.Y.

No Drawing. Filed Dec. 9, 1969, Ser. No. 883,636
Int. Cl. C07c *91/16*
U.S. Cl. 260—570.5 P 1 Claim

Microbiocidal ammonia and amino substituted halogenated biphenyls, as well as the nitrogen derivatives thereof such as quaternary ammonium compounds, amine oxides, imidazolines, amides, enamines, ampholytes, and the like.

The ammonia and amino halobiphenyls are prepared by reacting the ammonia or the amine and the halobiphenyl reactants in such a manner that the ratio of amine to halobiphenyl is preferably limited to between two and five mols of amine to each mol of halobiphenyl.

3,663,621

FLUORINATION PROCESS FOR PREPARING CERTAIN DIFLUORAMINO COMPOUNDS

Donald L. Esmay, Coon Rapids, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation-in-part of application Ser. No. 531,654, Feb. 21, 1966. This application Sept. 11, 1967, Ser. No. 668,741
Int. Cl. C07c *87/22*
U.S. Cl. 260—583 NH 7 Claims

Fluorination process especially adapted for the production of highly fluorinated oxidant compounds comprising the steps of forming an adduct between ammonia and a substituted fluorimino compound in solution in an alkyl nitrile, at relatively low temperatures, then adding to this reaction mixture an inert fluorocarbon solvent, followed by direct fluorination by contacting the adduct-solvent mixture with fluorine at a temperature less than 0° C. The process produces improved yields in larger scale reactions.

3,663,622

TRANS-ANNULAR SEC-PHOSPHINE

John L. Van Winkle, San Lorenzo, Calif., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Original application Feb. 28, 1968, Ser. No. 708,788, now Patent No. 3,590,087, dated June 29, 1971. Divided and this application Oct. 7, 1970, Ser. No. 86,393
Int. Cl. C07f *9/02*
U.S. Cl. 260—606.5 P 2 Claims

The novel trans-annular sec-phosphine, hydrocarbyl-(octahydropentalyl-1-)phosphine is used in the selective direct, single-stage production of reaction products consisting predominantly of primary alcohols by reacting an olefinic compound with carbon monoxide and hydrogen at a temperature between about 100° and 300° C. and superatmospheric pressure in the presence of a catalyst of cobalt in complex combination with carbon monoxide and hydrocarbyl(octahydropentalyl-1-)phosphine.

3,663,623

PREPARATION OF IODOMETHYLSULFONES

Aldo J. Crovetti, Lake Forest, and Martin Winn, Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed July 25, 1969, Ser. No. 845,071
Int. Cl. C07c *147/02*
U.S. Cl. 260—607 A 4 Claims

A general preparation of iodomethylsulfones in which iodine monochloride is reacted with a substituted sulfonyl

acetic acid in a reaction mixture maintained at a nearly neutral pH to produce a superior conversion.

3,663,624

PREPARATION OF ANHYDROUS ALKALI MERCAPTIDES

Howard E. Jones, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 27, 1969, Ser. No. 869,900
Int. Cl. C07c *149/06*
U.S. Cl. 260—609 R 13 Claims

Anhydrous alkali mercaptides such as potassium methylmercaptide are prepared by reacting the corresponding mercaptan such as methylmercaptan with an aqueous solution of the alkali hydroxide such as potassium hydroxide, in an inert organic medium such as toluene followed by azeotropically distilling off the water while adding additional mercaptan to the reaction mass. The alkali mercaptide can be removed from the resulting anhydrous slurry by filtration or centrifugation or by dissolving the alkali mercaptide in a lower alkanol solvent immiscible with the inert organic medium, and separating the two immiscible phases.

3,663,625

BIS[1-ALKYL(OR ARYL)VINYL]p-PHENYLENE OXIDE MONOMERS

Roy G. Neville, San Carlos, Calif., assignor to Bechtel International Corporation

No Drawing. Filed Apr. 23, 1970, Ser. No. 31,358
Int. Cl. C07c *43/22*
U.S. Cl. 260—612 R 1 Claim

This invention relates to a group of polyindanyl polymers derived from disubstituted phenylene oxides. When suitably catalyzed, the monomers of the invention are polymerized to materials that exhibit improved thermal stability, chemical resistance and mechanical flexibility. These polymeric products can be employed as adhesives, coating materials, and laminating resins; and, when suitably reinforced, they can be used as structural plastics.

3,663,626

HYDROGENATION OF ARYLALDEHYDES

Joseph T. Arrigo, Mount Prospect, and Nils J. Christensen, Palatine, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed May 1, 1969, Ser. No. 821,092
Int. Cl. C07c *29/14*
U.S. Cl. 260—613 D 5 Claims

A continuous process for the hydrogenation of arylaldehydes to the corresponding alcohols effected in contact with a catalyst composite of platinum and alkali metal component.

3,663,627

1-INDANMETHANOLS

Peter Frederick Juby and Thomas William Hudyma, DeWitt, and Richard Anthony Partyka, Liverpool, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed June 1, 1970, Ser. No. 42,457
Int. Cl. C07c *35/22*
U.S. Cl. 260—618 F 8 Claims

5 - cyclohexyl-1-indanmethanols are useful anti-inflammatory agents in the treatment of inflammatory diseases in animals, including man. An example of a compound of the disclosure is 5-cyclohexyl-1-indanmethanol.

3,663,628

CATALYSTS FOR PRODUCING ACETYLENIC ALCOHOLS

Robert J. Tedeschi, Whitehouse Station, N.J., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

No Drawing. Continuation of application Ser. No. 845,623, July 3, 1969, which is a continuation of application Ser. No. 661,171, Aug. 14, 1967, which in turn is a continuation of application Ser. No. 352,955, Mar. 18, 1964. This application July 6, 1970, Ser. No. 56,130
Int. Cl. C07c *33/04, 35/08, 33/06*
U.S. Cl. 260—632 Y 9 Claims

Acetylenic alcohols, of a type produced by the reaction of a ketone and acetylene, are reacted with an alkali metal hydroxide to produce adducts which have utility as catalysts for the synthesis of acetylenic alcohols. The reaction of the alcohol and the hydroxide takes place in the presence of a solvent, following which the adduct is separated from the solvent.

3,663,629

PROCESS FOR THE PREPARATION OF 1,1-DIHYDROPERFLUOROALKANOLS

Hartmut Fischer, Kelkheim, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Aug. 13, 1970, Ser. No. 63,617
Claims priority, application Germany, Sept. 2, 1969, P 19 44 381.3
Int. Cl. C07c *31/34*
U.S. Cl. 260—633 9 Claims

The hydrogenation of perfluoroalkane carboxylic acids and the lower alkanol esters thereof at elevated temperatures and pressures with a ruthenium catalyst in an aqueous system yields pure 1,1-dihydro-perfluoro alkanols in high yields. The products are useful intermediates, e.g. for the synthesis of water- and oil repellent agents.

3,663,630

OXIDATIVE DEHYDROGENATION OF 1-BUTENES

Roger M. Bean, Glen Mills, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

No Drawing. Filed Sept. 17, 1970, Ser. No. 73,214
Int. Cl. C07c *5/18, 11/12*
U.S. Cl. 260—680 E 7 Claims

Process for oxydehydrogenation of a 1-butene of structure



where R_1 is hydrogen or lower alkyl and R_2 is lower alkyl to form the corresponding 1,4-diolefin by contacting said 1-butene with oxygen at elevated temperature and in the presence of a sodium or calcium type A molecular sieve catalyst.

3,663,631

METHOD OF RECOVERING UNREACTED MONOMERS

Kenji Takeya and Mitsutoshi Okazaki, Okayama, and Toshiyuki Kobashi, Tsukubo-gun, Japan, assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 24, 1970, Ser. No. 31,482
Int. Cl. C07c *121/32, 21/08, 21/06*
U.S. Cl. 260—654 S 10 Claims

A process for recovering unreacted monomers from a polymerization reaction mixture comprising acrylonitrile and a water-insoluble monomer of lower boiling point than acrylonitrile is disclosed which process comprises distilling said monomers from the reaction mixture under vacuum, recovering acrylonitrile and a portion of said

water-insoluble monomer in a first condensation step under vacuum, recovering additional water-insoluble monomer by a second condensation at normal pressure in water at a ratio of monomer to water too low for stratification and and decantation, distilling low-boiling monomer from said second condensate, and recovering said low-boiling monomer as a third condensate at a ratio of monomer to water suitable for stratification and decantation.

3,663,632
METHOD OF RECOVERING UNREACTED MONOMERS

Kenji Takeya and Mitsutoshi Okazaki, Okayama, and Toshiyuki Kobashi, Tsukubo-gun, Japan, assignors to American Cyanamid Company, Stamford, Conn.

Filed May 13, 1970, Ser. No. 36,956
Int. Cl. C07c *21/08, 121/32;* C07k *21/06*
U.S. Cl. 260—654 S 8 Claims

A process for recovering unreacted monomers from a polymerization reaction mixture comprising acrylonitrile and a water-immiscible monomer of lower boiling point than acrylonitrile is disclosed which process comprises distilling said monomers from the reaction mixture under vacuum, recovering acrylonitrile and a portion of said water-immiscible monomer in a first condensation step, condensing additional monomer while simultaneously introducing into said vapors an organic liquid at a temperature above its melting point, said organic liquid having a melting point below the temperature of condensation and dissolving water at the temperature of condensation, so as to form a second condensate comprising water-immiscible monomer, water and said organic liquid, and recovering low boiling monomer from said second condensate.

3,663,633
ALLENE CHLORINATION

Chester E. Pawloski, Bay City, and Russell L. Stewart, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Apr. 22, 1968, Ser. No. 723,243
Int. Cl. C07c *21/04*
U.S. Cl. 260—654 H 8 Claims

Propargyl chloride and 2,3-dichloropropene are the principal products in a process comprising reacting by contacting allene with chlorine in the presence of water, preferably at a temperature between 0 and 105° C. Both products are biologically active.

3,663,634
PREPARATION OF ORGANODILITHIUM INITIATOR AND POLYMERIZATIONS UTILIZING SAME

Maurice Morton and Lewis J. Fetters, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Sept. 19, 1969, Ser. No. 859,576
Int. Cl. C07c *11/26*
U.S. Cl. 260—665 R 5 Claims

A method of preparing hydrocarbon soluble organodilithium polymerization initiators in a one-step process by forming the organodilithium initiators in a solvent system comprising (A) a compound selected from a group consisting of aliphatic, cycloaliphatic and aromatic hydrocarbons and (B) at least one compound selected from a group consisting of aromatic ethers, aromatic thioethers and tertiary amines responding to the formula R′R″R‴N where N is nitrogen and R′, R″ and R‴ are alkyl, cycloalkyl and alkaryl radicals and where R′, R″ and R‴ may or may not be the same and where the (B) solvent component can range from at least 10 percent by volume.

3,663,635
HYDROGENATION PROCESS AND CATALYSTS THEREFOR

Christian Lassau, 11 Rue Lalo, 75 Paris (XVI eme), France; Robert Stern, 20 Bis rue Saint Cyr, 78 Marly-le-Roi, France; and Lucien Sajus, 41 Avenue de Verdun, 78 Croissy-sur-Seine, France

No Drawing. Filed Sept. 5, 1969, Ser. No. 856,251
Claims priority, application France, Sept. 5, 1968, 165,254; Dec. 24, 1968, 180,253; Feb. 17, 1969, 6903966
Int. Cl. C07c *15/00*
U.S. Cl. 260—666 P 2 Claims

In the hydrogenation of unsaturated compounds such as olefins, there is provided a new improved catalyst. This catalyst is made by contacting a transition metal compound with an aluminum hydride of the formula:

$$AlH_nX_{3-n} \text{ or } Me(AlH_mX'_{4-m})_p$$

wherein

n is 1 or 2,
m is 1, 2 or 3,
Me is a metal of Group I*a* or II*a* of the Periodic Table,
p is the valence of the metal Me,
X is OR, NR_2, NHR or SR,
X′ is R, OR, NR_2, NHR or SR,
R, taken separately, is a monovalent hydrocarbon, and when taken in pairs represent —A—Z—B— wherein A and B each is alkylene, and Z is alkylene, an oxygen or sulfur atom, a NH or N-hydrocarbyl group or a polyvalent metal.

3,663,636
DISPROPORTIONATION AND ISOMERIZATION OF ALKYLAROMATIC HYDROCARBONS

Robert M. Suggitt, Wappingers Falls, Stanley Kravitz, Wiccopee, and John H. Estes, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Nov. 2, 1970, Ser. No. 85,881
Int. Cl. C07c *3/62, 5/24*
U.S. Cl. 260—668 A 15 Claims

Alkylaromatic hydrocarbons are disproportionated and isomerized in the presence of a catalyst composed of a member of Group VI–B of the Periodic Chart, alumina and fluorine where the catalyst is prepared by contacting a composite of alumina having associated therewith a member of Group VI–B with a combination of (1) hydrogen or carbon monoxide and (2) sulfur hexafluoride, sulfuryl fluoride or thionyl fluoride at a temperature of from about 200 to 1200° F.

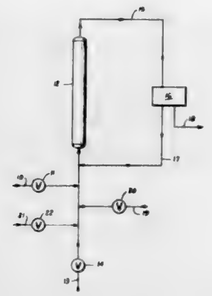
3,663,637
START-UP METHOD FOR HYDROGENATION PROCESS

William G. Juhl, Seabrook, and Jacques D. Robinson and John G. Trafton III, Alvin, Tex., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 23, 1970, Ser. No. 31,176
Int. Cl. C07c *7/00*
U.S. Cl. 260—674 N 8 Claims

A method for initiating a process wherein a naphthalene concentrate feed containing, as impurities, significant quantities of indenes, monoolefins and diolefins is selectively hydrogenated using a solid hydrogenation catalyst comprised of palladium or platinum on alumina comprising first contacting the catalyst with an inert liquid containing a major proportion of hydrocarbons, said inert liquid being one which does not hydrogenate under the process condtions, slowly admitting hydrogen, maintaining the inert liquid and hydrogen in contact with the catalyst until equilibrium amounts of hydrogen have accumulated on the catalyst and then introducing the naphthalene concentrate feed. The start-up procedure avoids the rapid

temperature rises generally associated with the initiation of the hydrogenation process and substantially prevents



hydrogenation of aromatic rings in the naphthalene concentrate feed.

3,663,638
AROMATIC HYDROCARBON SEPARATION BY ADSORPTION

Richard W. Neuzil, Downers Grove, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 823,933, May 12, 1969, which is a continuation-in-part of application Ser. No. 739,176, June 24, 1968. This application Aug. 31, 1970, Ser. No. 68,568
Int. Cl. C07c *7/12;* C10g *25/04*
U.S. Cl. 260—674 SA 18 Claims

A process for the separation of a C_8 aromatic component from a feed mixture containing at least two C_8 aromatic hydrocarbons using a crystalline aluminosilicate adsorbent containing barium and potassium cations. A feed mixture is contacted with an adsorbent wherein one component of the feed is preferentially adsorbed by the adsorbent. The preferentially adsorbed component of the feed is thereafter recovered utilizing a desorption step.

3,663,639
OPEN-CHAIN OLIGOMERS AND PRODUCTION OF THE SAME

Hiroyuki Morikawa, Ami-machi, and Junji Furukawa, Kyoto-shi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan

Filed Mar. 31, 1970, Ser. No. 24,214
Claims priority, application Japan, Apr. 5, 1969, 44/26,504
Int. Cl. C07c *11/12, 11/100*
U.S. Cl. 260—677 R 14 Claims

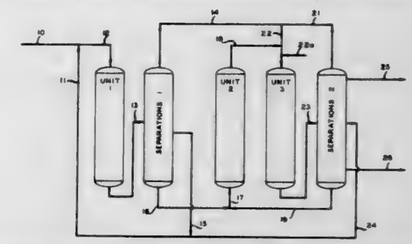
Open-chain co-trimers of 1,3-butadiene with 1,3-pentadiene are produced by the catalytic co-oligomerization of the dienes in which the catalyst is a mixture of (I) a phosphorus compound of the formula $PO(OR)_3$ or $P(OR)_3$, (II) a tetravalent halo-, alkoxy or alkoxyhalo-titanium compound of the formula $Ti(OR')_nX_{4-n}$, and (III) alkyl- or alkylhalo-aluminium compound of the formula AlR''_1Y_m.

3,663,640
CONVERSION OF OLEFINIC HYDROCARBONS

Robert L. Banks, Bartlesville, Okla., assignor to Phillips Petroleum Company

Continuation of application Ser. No. 627,724, Apr. 3, 1967. This application Sept. 17, 1969, Ser. No. 858,736
Int. Cl. C07c *3/62, 11/18*
U.S. Cl. 260—680 R 6 Claims

A mixture of isobutene and an olefinic hydrocarbon containing four carbon atoms per molecule and having a double bond in the 1-position is contacted with a catalyst, active for disproportionating propylene into ethylene and butene, to produce ethylene and branched olefinic hydrocarbons having six carbon atoms per molecule which are isomerized to produce an approximately equilibrium mixture of isomers. The mixture of isomers is contacted with a catalyst, active for disproportionating propylene into



ethylene and butene, to produce an olefinic hydrocarbon having 5 carbon atoms per molecule. When the olefin having the double bond in the 1-position is 1-butene the 5-carbon olefin is 3-methylbutene-1 and when the olefin having the double bond in the 1-position is 1,3-butadiene the 5-carbon olefin is isoprene.

3,663,641
REMOVAL OF OXYGENATED COMPOUNDS FROM UNSATURATED HYDROCARBONS

Donald O. Hanson, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Sept. 18, 1970, Ser. No. 73,583
Int. Cl. C07c *7/00*
U.S. Cl. 260—681.5 3 Claims

Oxygenated materials are removed from unsaturated hydrocarbons; for example, carbonyls are removed from a butadiene stream containing them by a liquid-liquid phase water wash at a temperature below of the order of about 32° F. Freezing point depressants, such as alcohol, glycol, etc., can be added to avoid ice formation.

3,663,642
SYNTHESIS OF ISOPRENE

Rudolph Rosenthal, Broomall, Giovanni A. Bonetti, Wynnewood, and Harold Shalit, Drexel Hill, Pa., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Dec. 16, 1970, Ser. No. 98,894
Int. Cl. C07c *1/20*
U.S. Cl. 260—681 3 Claims

Improvement in the method for the synthesis of isoprene by condensation of isobutylene and formaldehyde over an acidic catalyst in the vapor phase, such improvement being increasing the reaction temperature during the duration of the run to compensate for the decrease in activity of the catalyst, thus increasing the length of time between catalyst regenerations without loss in isoprene production rate.

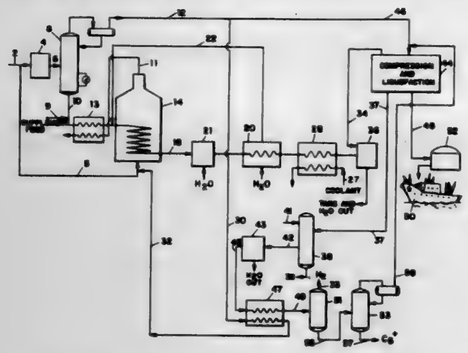
3,663,643
RECOVERY OF BASIC ORGANIC MATERIALS FROM THEIR HYDROLYSIS PRODUCTS

David W. Hall, Vancouver, British Columbia, Canada, assignor to Marathon Oil Company, Findlay, Ohio

No Drawing. Filed Apr. 29, 1968, Ser. No. 725,207
Int. Cl. C07c *1/20*
U.S. Cl. 260—681 13 Claims

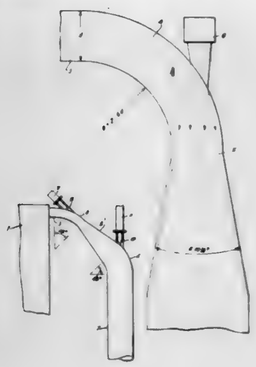
A process of recovering lactam type organic materials which have undergone hydrolysis by heating the hydrolysis products to a temperature in the range of from 50° C. to 450° C. and at a pressure of from 10 microns to 10 atmospheres while maintaining the hydrolysis products in their free base or acid addition salt form.

3,663,644
INTEGRATED ETHYLENE PRODUCTION AND LNG TRANSPORTATION
Robert H. Harvey, Short Hills, N.J., assignor to Esso Research and Engineering Company
Filed Jan. 2, 1968, Ser. No. 695,140
Int. Cl. C07c *3/30, 11/01*
U.S. Cl. 260—683 R 11 Claims



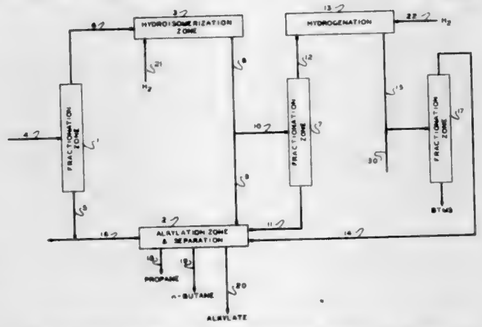
The instant disclosure is directed to a process wherein ethylene production, liquefied natural gas transportation, and ethylene purification are advantageously integrated to mutual benefit. A large economical cracking facility is provided at the source of the natural gas and by performing the cracking operation at this location, improvements in the overall manufacturing economics are achieved.

3,663,645
LIQUID QUENCH
Rolf K. Dorn, Berkeley Heights, and Maldwyn J. Maddock, Westfield, N.J., and Salvatore A. Guerrieri, Rowayton, Conn., assignors to The Lummus Company, Bloomfield, N.J.
Filed Feb. 2, 1970, Ser. No. 7,707
Int. Cl. C07c *3/00;* C10g *9/12*
U.S. Cl. 260—683 19 Claims



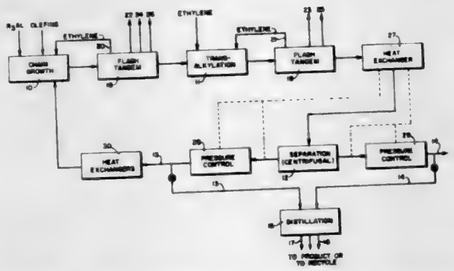
A method and an apparatus for quenching hot gases obtained in treatment of hydrocarbons. A stream of hot gaseous hydrocarbons issues from a reactor and is conveyed in a conduit. In the immediate vicinity of the outlet connecting the reactor with the conduit the latter is provided with a long radius bend of at least approximately 45° to facilitate the injection of cooling liquid concurrently and coaxially into the stream of hot gaseous hydrocarbons without obstruction of the flow path for the hot gaseous hydrocarbons, in order to avoid any flow disturbance of the stream of hot gaseous hydrocarbons passing through the conduit. Downstream of this bend the conduit diverges to constitute a diffusor. The bend is associated with at least one fluid-injecting nozzle which injects the cooling liquid, such as recycled or recirculated hydrocarbons, into the outlet portion of the bend.

3,663,646
ALKYLATION WITH CHARGE STOCK FROM ISOMERIZATION AND HYDROGENATION REACTIONS
Charles C. Chapman, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed July 15, 1970, Ser. No. 55,031
Int. Cl. C07c *3/50*
U.S. Cl. 260—683.4 R 5 Claims



An alkylation feedstock comprising butene-1, butene-2, isobutylene and n-butane is fractionated to produce streams which are isomerized to convert the butene-1 to butene-2, or which are hydrogenated to convert the isobutylene to isobutane. A plurality of streams are thus directed to alkylation to provide increased yield of alkylate.

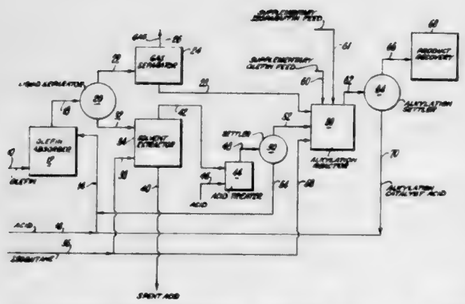
3,663,647
PROCESS FOR THE PRODUCTION OF OLEFINS
Carroll W. Lanier, Baker, La., assignor to Ethyl Corporation, New York, N.Y.
Filed Aug. 27, 1969, Ser. No. 853,306
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D 27 Claims



Olefins in the range of 6–20 carbon atoms are prepared by feeding lower olefin (e.g., ethylene), lower alkyl organometallic (e.g., triethyl aluminum) and product olefin into a reaction system in which chain build up occurs (e.g., chain growth or catalytic polymerization). The reaction effluent is flashed to remove product olefin and lower boiling olefin. The remainder of the effluent contains higher alkyl organometallic and is subjected to an alkyl displacement reaction using lower olefin (e.g., ethylene) to give a mixture of olefins (both in and outside of product range) along with lower alkyl organometallic. This mixture is converted to a mixed vapor-

mist system where olefins having more than about 16 carbon atoms per molecule are in the mist phase and the volatile components are in the vapor phase and the vapor-mist system is separated into two respective streams in an inertia separator. The vapor phase component stream is then furnished as feed to the first-named reaction system.

3,663,648
ISOPARAFFIN ALKYLATION WITH DIALKYL SULFATES INCLUDING THE ABSORPTION, EXTRACTION AND ACID-TREATMENT THEREOF
Raymond J. Ruble, Dobbs Ferry, N.Y., assignor to Texaco Development Corporation, New York, N.Y.
Filed Oct. 6, 1970, Ser. No. 78,537
Int. Cl. C07c *3/54*
U.S. Cl. 260—683.61 1 Claim



Isoparaffin-olefin alkylation provides for C_3–C_8 olefin absorption with used sulfuric acid. A hydrocarbon phase containing a minor portion of dialkyl sulfates is separated, gaseous components are removed, and the degassed hydrocarbon phase is passed to the alkylation reaction. The acid phase containing a major portion of dialkyl sulfates is extracted with an isoparaffin hydrocarbon solvent; the extract is treated with concentrated sulfuric acid; the acid-treated extract is passed to the alkylation reaction, and the treating acid is passed to the absorption reaction. The dialkyl sulfates are alkylated with isoparaffin in the presence of an alkylation acid, which is formed in the reaction of said dialkyl sulfates with said isoparaffin.

3,663,649
THERMOPLASTIC OLEFINIC SILOXANE-ETHYLENE POLYMER BLOCK COPOLYMERS
Marshall L. Wheeler, Jr., Olean, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 422,037, Dec. 29, 1964, which is a continuation-in-part of application Ser. No. 356,944, Apr. 2, 1964. This application June 1, 1970, Ser. No. 42,494
Int. Cl. C08g *47/10;* C08f *29/10*
U.S. Cl. 260—827 10 Claims

This invention relates to thermoplastic siloxane-ethylene polymer block copolymers consisting essentially of at least one siloxane block consisting essentially of hydrocarbylsiloxane groups and at least one ethylene polymer block consisting essentially of ethylene groups, said hydrocarbyl groups being monovalent hydrocarbon groups free of aliphatic unsaturation, said ethylene polymer block being derived from a solid ethylene polymer having a molecular weight of at least 1800 and said siloxane block being linked to said ethylene polymer block by a silicon to carbon bond.

The block copolymers of this invention are useful as surfactants in olefin polymers (e.g., as additives to polyethylene to improve the anti-block and anti-slip properties thereof).

3,663,650
SUBSTANTIALLY TRANSPARENT POLYDIMETHYLSILOXANE - POLYALKYLMETHACRYLATE COMPOSITIONS AND METHOD FOR MAKING SAME
Peter C. Juliano, Scotia, N.Y., assignor to General Electric Company
No Drawing. Filed Dec. 28, 1970, Ser. No. 102,086
Int. Cl. C08g *47/10;* C08f *29/50*
U.S. Cl. 260—827 17 Claims

A method, and binary polydimethylsiloxane-polyalkylmethacrylate block copolymers made by such method are provided involving the use of certain dilithio aromatic initiators. The transparent binary polydimethylsiloxanepolyalkylmethacrylate block copolymers can be blended with clear polyalkylmethacrylate plastics to produce substantially transparent thermoplastic films, sheets and coatings having improved surface characteristics.

3,663,651
THERMAL-RESISTANT POLYIMIDE-EPOXY POLYMERS
George Robert Traut, Danielson, Conn., assignor to Rogers Corporation, Rogers, Conn.
No Drawing. Filed Sept. 3, 1970, Ser. No. 69,434
Int. Cl. C08g *45/12*
U.S. Cl. 260—830 P 10 Claims

Cross-linked, polyimide-epoxy polymers are prepared by reacting polyamide-acids, derived from the reaction of an excess of an organic dianhydride with an organic diamine with epoxy compounds, followed by curing the resultant reaction product, usually by heating, to give the polyimide-epoxy polymers.

3,663,652
POLYURETHANE RESINS IN ADMIXTURE WITH POLYEPOXIDES
John Allister Cannon and Jerome Earl Malone, Toms River, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed Oct. 27, 1970, Ser. No. 84,468
Int. Cl. C08g *45/12, 45/08, 45/10*
U.S. Cl. 260—830 P 10 Claims

Compositions comprising carboxyl containing polyurethane resins and di- or polyepoxide resins. The compositions when cured have excellent adhesion to untreated and treated substrates, excellent flexibility and good resistance to chemical attack.

3,663,653
POLYTETRAHYDROFURAN MODIFIED BLOCK COPOLYESTER THERMOPLASTIC MOLDING COMPOSITIONS
Helmut Frohlich, Wilmington, Del., and Ludwig Brinkman, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed July 2, 1969, Ser. No. 838,670
Claims priority, application Germany, July 9, 1968, P 17 70 823.5
Int. Cl. C08g *39/10, 49/04*
U.S. Cl. 260—860 9 Claims

Modified polyesters from aromatic dicarboxylic acids and aliphatic and/or cycloaliphatic diols, which contain from 0.5 to 15 percent by weight of polytetrahydrofuran blocks obtained from a polytetrahydrofurandiol having a molecular weight of from 300 to 5000 (hydroxyl number 375 to 22) as structural units. These modified polyesters are distinguished by a high crystallization speed and can be worked up in the thermoplastic range to yield dimensionally stable shaped articles.

3,663,654
FLAME RETARDANT COMPOSITION OF POLYPHENYLENE ETHER, STYRENE RESIN AND PHOSPHORUS
William R. Haaf, Voorheesville, N.Y., assignor to General Electric Company, New York, N.Y.
No Drawing. Filed Feb. 24, 1969, Ser. No. 801,805
Int. Cl. C08g 43/02
U.S. Cl. 260—874 15 Claims
A blend of a polyphenylene ether and a styrene resin characterized by the addition of a small but effective quantity of elemental phosphorus. The polyphenylene ethers are flame retardant. The admixture of a polyphenylene ether with a styrene resin destroys flame retardant properties. In accordance with the present invention, it has been found that the addition of elemental phosphorus, preferably elemental red phosphorus in small amounts, typically from 0.1 to 5% of the total composition, provides a blend having excellent flame retardant properties. Moreover, other properties of the blend are not materially affected by the addition of the phosphorus.

3,663,655
POLYMERISATION PROCESS
Alan Charles Sturt, Guildford, England, assignor to BP Chemicals Limited
No Drawing. Filed May 14, 1970, Ser. No. 37,306
Claims priority, application Great Britain, May 19, 1969, 25,418/69
Int. Cl. C08f 1/11
U.S. Cl. 260—875 5 Claims
Process comprising mixing a non-film forming polymer in latex form with a monomer, destroying the latex emulsifying agent so that the latex polymer particles pass into the monomer without substantial change in size and polymerising the monomer, preferably under suspension conditions.

3,663,656
PROCESS FOR MAKING NOVEL GRAFT COPOLYMER BLENDS
Emory A. Ford, Hampden, and Speros P. Nemphos, Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed June 22, 1970, Ser. No. 48,563
Int. Cl. C08f 41/12, 37/18
U.S. Cl. 260—876 R 13 Claims
A latex of a rubbery polymer having a particle size of less than 0.25 micron and a polymerizable vinylidene monomer formulation is subjected to polymerization conditions to produce polymerization and grafting of at least a portion of the monomer formulation onto the rubbery polymer. Subsequently, a latex of agglomerated rubbery polymer having a particle size of 0.35–1.2 microns is added to the polymerizing latex and polymerization of the vinylidene monomer formulation is continued to produce grafting of at least a portion thereof onto the agglomerated rubbery polymer.

3,663,657
EMULSION-SUSPENSION GRAFT COPOLYMERIZATION PROCESS
Alan Charles Sturt, Guilford, England, assignor to BP Chemicals Limited, London, England
No Drawing. Filed May 14, 1970, Ser. No. 37,356
Claims priority, application Great Britain, May 19, 1969, 25,418/69
Int. Cl. C08f 1/11, 29/24
U.S. Cl. 260—878 R 5 Claims
Process comprising mixing a saturated polymer in latex form with vinyl chloride, destroying the latex emulsifying agent so that the polymer particles pass into the vinyl chloride and polymerising the latter, preferably under suspension polymerisation conditions.

3,663,658
POLYESTER COMPOSITIONS AND AIR-DRYING COMPOSITIONS THEREOF
Frank Scardiglia, Woodcliff Lake, N.J., and Israel J. Dissen and Takeo Hokama, Chicago, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.
No Drawing. Continuation-in-part of application Ser. No. 826,699, May 21, 1969, which is a continuation-in-part of application Ser. No. 554,301, June 1, 1966. This application Apr. 30, 1970, Ser. No. 33,501
Int. Cl. C08f 21/00, 21/02
U.S. Cl. 260—869 13 Claims
This invention discloses new air drying polyester compositions comprising the adduct of maleic acid or anhydride and trans-piperylene; an unsaturated dicarboxylic compound selected from the group consisting of maleic acid, maleic anhydride and fumaric acid; and glycol.

3,663,659
PROCESS FOR THE PREPARATION OF HYDROXYLATED BLOCK POLYMERS
William C. Kray and De Loss E. Winkler, Emeryville, Calif., assignors to the United States of America as represented by the Secretary of Health, Education, and Welfare
No Drawing. Filed May 22, 1970, Ser. No. 39,888
Int. Cl. C08f 15/04, 27/00
U.S. Cl. 260—880 B 7 Claims
Elastic hydroxylated monovinyl arene-polydiene-monovinyl arene block copolymers are prepared by hydroboration and subsequent oxidation to the hydroxylated block copolymer. The hydrobromating agents include diborane, disiamylborane and 9-borabicyclo[3.3.1]nonane. These hydroxylated block copolymers have properties which are useful for reinforcing material for natural and synthetic rubber, for modification of rubber-based adhesives and due to their particular swellability for fabrication of devices for surgical implantation and for blood circulation in animals.

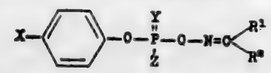
3,663,660
PROCESS FOR THE PREPARATION OF A CATALYST USEFUL FOR THE POLYMERIZATION OF OLEFINS
Andre Delbouille and Yves Gobillon, Brussels, and Jacques Stevens, Braine-l'Alleud, Belgium, assignors to Solvay & Cie, Brussels, Belgium
Filed June 18, 1969, Ser. No. 834,391
Claims priority, application France, June 20, 1968, 156,199
Int. Cl. C08f 1/56, 3/06
U.S. Cl. 260—88.2 16 Claims
Improved catalysts for the polymerization of olefins which comprise an organometallic compound and the reaction produced of a liquid halogenated derivative of a transition metal and a solid support constituted by an oxide of calcium and/or magnesium are provided. The solid supports for the improved catalysts are obtained by the heat treatment of an optionally hydrated, carbonate or basic carbonate of calcium or magnesium at a temperature between 350 and 1000° C.

3,663,661
RUBBER MODIFIED POLYPHENYLENE ETHER AND PROCESS
Arthur Katchman, Delmar, N.Y., assignor to General Electric Company
No Drawing. Filed Mar. 9, 1970, Ser. No. 17,940
Int. Cl. C08f 29/12, 41/12
U.S. Cl. 260—892 20 Claims
This invention relates to rubber modified polyphenylene ether compositions and to a method for forming the same. The method comprises polymerizing a monomeric phenol to a high molecular weight polyphenylene ether in a reaction medium containing solvated rubber and recovering polymeric components from solution in the form of a precipitate by admixture of said reaction medium with a non-solvent precipitant. After drying, the recovered precipitate comprises a free flowing powder consisting of the polyphenylene ether and the rubber which powder is suitable for molding operations such as extrusion, cold forming and the like.

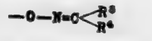
3,663,662
HEAT-SHRINKABLE FILMS FROM ETHYLENE POLYMER BLENDS
Ralph Crosby Golike, Tonawanda, N.Y., and George Joseph Ostapchenko, Williamsville, and William Drake Garlington, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Aug. 23, 1968, Ser. No. 754,953
Int. Cl. C08f 29/12
U.S. Cl. 260—897 A 4 Claims
Heat-shrinkable film having improved heat sealing characteristics prepared by irradiative crosslinking of an oriented film of a blend of low density and high density ethylene polymers.

3,663,663
POLYOLEFIN-ETHYLENE/ESTER COPOLYMER BLEND COMPOSITIONS
Richard Bernie McAda, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Sept. 13, 1968, Ser. No. 759,763
Int. Cl. C08f 29/12
U.S. Cl. 260—897 B 9 Claims
A new polyethylene blend having improved stress cracking properties, said blend comprising a high molecular weight polyethylene and a copolymer of ethylene and an ester comonomer, such as ethyl acrylate, isobutyl acrylate and vinyl acetate, the copolymer having a molecular weight below 15,000 and the ester comonomer moiety in the range from about 20 to about 65 weight percent. A method for preparing said blend wherein the copolymer is introduced into the polyethylene in the molten state as it passes from the polymerization zone.

3,663,664
OXIMINO ESTERS OF ORGANOPHOSPHORUS AND ORGANOTHIOPHOSPHORUS COMPOUNDS
Lawrence A. Retallick, Perry, Ohio, Lawrence E. Limpel, Yonkers, N.Y., and Henry Bluestone, University Heights, Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio
No Drawing. Filed May 5, 1969, Ser. No. 821,939
Int. Cl. C07f 9/06; A01n 9/36
U.S. Cl. 260—944 17 Claims
Novel oximino esters of para-substituted-phenyl phosphorus and thiophosphorus compounds have the formula



wherein X is nitro, cyano, azido, trihalomethyl, carboalkoxy or alkanesulfonyl; Y is O or S; R^1 and R^2 can be the same or different and are selected from the group consisting of H, alkyl radicals of 1–6 C atoms and phenyl; and Z is selected from the group consisting of alkyl and alkoxy radicals each having 1–6 C atoms, phenyl, Cl and



wherein R^3 and R^4 are as defined for R^1 and R^2. Many of these compounds are prepared by reacting an oxime with either a para-substituted-phenyl phosphorochloridate, a similarly substituted thiophosphorochloridate or phenylthiophosphonic chloride under alkaline conditions. Novel alkylidenimino para-substituted-phenyl phosphorochloridates and analogous thiophosphorochloridates are also disclosed.

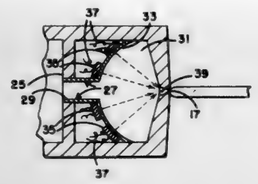
3,663,665
O-CYCLOALKYL-S-ALKYL-O-HALOPHENYL-PHOSPHOROTHIOLATES
Toyohiko Kume and Shizuo Higashikawa, Tokyo, Japan, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed June 3, 1969, Ser. No. 830,133
Claims priority, application Japan, June 18, 1968, 43/41,619
Int. Cl. C07f 9/18; A01n 9/36
U.S. Cl. 260—958 2 Claims
O-alkyl(-cycloalkyl)-S-alkyl-O-halophenyl - phosphorothiolates, i.e. O-alkyl and cycloalkyl-S-alkyl-O-chloro-and bromo-substituted-phenyl- -phosphorothiolates or -thiolphosphates, which possess fungicidal properties and which may be produced by conventional methods.

3,663,666
METHOD OF FORMING SILICONE RUBBER ARTICLES
Bird J. Vincent, Ingersoll Township, Midland County, Mich. (2775 Smith Crossing Road, Freeland, Mich. 48623)
No Drawing. Filed May 22, 1970, Ser. No. 39,916
Int. Cl. B01j 2/02
U.S. Cl. 264—13 4 Claims
A method of making powdered silicone rubber comprising the formation of a solvent dispersion by dispersing in a volatile solvent a silicone rubber stock together with any desired additives and a silica filler for the stock in an amount equal to at least 30 parts by weight per 100 parts stock and then spray drying the solvent dispersion. Silicone rubber articles are then formed from the powder by adding a curing agent to the powder, applying pressure and shear forces on a mill or in an extruder to cause massing of the powder and then shaping and curing the massed material.

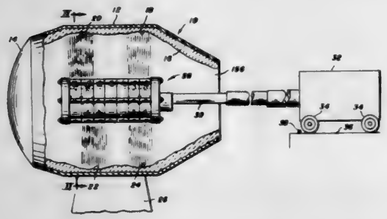
3,663,667
PROCESS FOR PRODUCING METAL POWDERS
Richard F. Cheney and James S. Smith, Towanda, Pa., assignors to Sylvania Electric Products Inc.
No Drawing. Filed Feb. 13, 1970, Ser. No. 11,354
The portion of the term of the patent subsequent to Mar. 28, 1989, has been disclaimed
Int. Cl. B01j 2/04
U.S. Cl. 264—14 10 Claims
Multimetal alloy powders are produced by a process wherein an aqueous solution of at least two thermally reducible metallic compounds and water is formed, the solution is atomized into droplets having a droplet size below about 150 microns in a chamber that contains a heated gas whereby discrete solid particles are formed and the particles are thereafter heated in a reducing atmosphere and at temperatures from those sufficient to reduce said metallic compounds to below the melting point of any of the metals in said alloy.

3,663,668
SONIC NUCLEATION IN FOAM EXTRUSION
Theodore H. Fairbanks, West Chester, Pa., assignor to FMC Corporation, Philadelphia, Pa.
Filed Feb. 28, 1968, Ser. No. 708,870
Int. Cl. B06b 1/06; B29d 27/00
U.S. Cl. 264—23 4 Claims
Method in which a gas is dissolved within a molten thermoplastic polymer during its passage through an extruder to provide a super-saturated solution of dissolved

gas therein as such polymer approaches and enters a region of lower pressure outwardly of the extruder. At a location near the beginning of the zone of the supersaturated solution of dissolved gas, the thermoplastic polymer is subjected to sonic vibrations to cause incipient bubble formation therein. Such bubbles are permitted to expand in the region of lower pressure, after which the thermoplastic polymer is quenched.

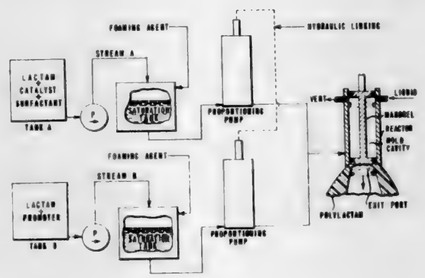


3,663,669
METHOD FOR SELECTIVELY PROJECTING REFRACTORY MATERIAL AGAINST THE LINING OF BASIC OXYGEN FURNACES
Leonard W. McConnell, 3629 St. Davids Road, Newtown Square, Pa. 19073
Original application Jan. 6, 1969, Ser. No. 789,202, now Patent No. 3,533,375, dated Oct. 13, 1970. Divided and this application June 24, 1970, Ser. No. 49,239
Int. Cl. F27d *1/16, 3/06*
U.S. Cl. 264—30 3 Claims



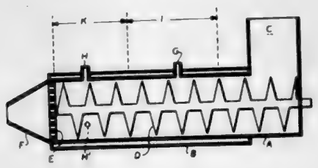
A method for selectively applying pulverulent or granular refractory material to the worn or eroded portions of a refractory lining. A container having a plurality of compartments, each divided into separate sections or quadrants, is secured to an end of a boom that is supported by a vehicle. Pulverulent refractory material is positioned in certain of the isolated sections or quadrants of each of the compartments depending upon the areas of the furnace refractory lining that are worn and eroded so that refractory can be directed to eroded areas. The container has an axial passageway in which an explosive material is positioned. The container secured to the end of the boom is moved into a predetermined position within the furnace while the furnace is at an elevated temperature, preferably immediately after the molten metal has been tapped and slag dumped prior to charging for ensuing heat. The explosive within the axial passageway is then detonated to propel the pulverulent refractory against the wet, plastic lining. The container is fabricated so that the outer cylindrical walls, especially the sections of the segments enclosing the quadrants or sections containing the pulverulent refractory, are frangible and are ruptured, torn and bent by the force of the explosion so that the pulverulent refractory material is selectively propelled through the openings formed in the ruptured outer wall against the refractory lining. Another embodiment provides separate explosive charges in each of the quadrants filled with the refractory material that are detonated by separate detonators. A still further embodiment includes the use of a pressurized source of gas positioned externally of the vehicle.

3,663,670
PLUG FLOW METHOD FOR MOLDING FOAMED POLYLACTAMS
Kenneth G. Swayne, Hockessin, Del., and Henry L. Dragun, Glen Burnie, Md., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed June 20, 1967, Ser. No. 647,405
Int. Cl. B29d *23/08, 27/04;* C08g *20/12, 20/16, 22/44, 53/08*
U.S. Cl. 264—53 29 Claims



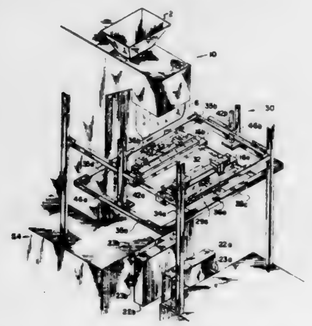
Foamed expanded polylactams are prepared by anionically polymerizing lactam in a mold cavity in the presence of foaming agent under pressure sufficient to maintain foaming agent in the lactam, i.e., monomeric lactam or polylactam. Then, after polymerization is substantially complete, pressure on the polylactam is reduced by opening an exit port and ejecting the shaped solid polylactam out of the mold cavity into an area of lower pressure thus producing cellular polylactam of low density and high tensile strength.

3,663,671
PROCESS FOR THE CONTINUOUS MANUFACTURE OF MARBELIZED SOAP BARS
Reinhold Walter Meye, Krefeld, and Gunter Thor, Krefeld-Traar, Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf, Germany
Filed Apr. 23, 1969, Ser. No. 818,756
Claims priority, application Germany, May 2, 1968, P 17 67 353.9
Int. Cl. B29b *1/04;* B29f *3/12;* C11d *13/08*
U.S. Cl. 264—75 8 Claims



Process for the continuous manufacture of marbelized soap bars involving the use of a soap plodder provided with a conical nozzle and wherein dye solutions are introduced into the soap mass through at least two inlets arranged in the jacket for the plodder, at least one of the inlets being arranged so that it is separated from the input end of the screw by at least one screw thread and from the outlet end by three to seven screw threads, and at least one additional inlet which is arranged at the first to third screw thread from the discharge end of the screw, the distance between the two inlets amounting to at least one screw thread.

3,663,672
PROCESS FOR PREPARING A PARISON FOR BLOW MOLDING
Calvin L. Button, Cedar Rapids, and Waldemar E. Woods, Greenville, S.C., assignors to W. R. Grace & Co., Duncan, S.C.
Continuation of application Ser. No. 563,752, July 8, 1966, now Patent No. 3,504,396. This application Sept. 18, 1969, Ser. No. 858,964
The portion of the term of the patent subsequent to Apr. 7, 1987, has been disclaimed
Int. Cl. B29c *17/07, 17/14*
U.S. Cl. 264—96 7 Claims



A process for converting an open ended tubular member into a sealed parison and transferring the still molten parison from the preparation zone to the molding zone. A molten tube of plastic material is extruded downwardly through a die and a first transverse seal is formed in a tube portion spaced from the die while the tube remains connected to the die. A second transverse seal is formed immediately below the first seal and above a previously formed seal to form a sealed tubular section containing fluid. The sealed tube is separated between the first and second seals and conveyed to a molding zone by continuing the sealing grasp of the second seal. The sealed section of the tubing is maintained molten throughout the process and the process is repeatedly carried out on the extruded tube, fluid being injected into the tube above each first seal while the tube is connected to the die.

3,663,673
PROCESS FOR MAKING A BAGASSE PITH COMPOSITE STRUCTURE
Jose A. Rionda, Beverly Hills, Jamaica, assignor to Esso Research and Engineering Company
No Drawing. Original application May 22, 1967, Ser. No. 640,391. Divided and this application Oct. 1, 1969, Ser. No. 870,985
Int. Cl. D21b *1/08*
U.S. Cl. 264—113 3 Claims

The process for the manufacture of a composite fiberboard structure from pith and fibrous portions of bagasse which comprises forming a felted mat of bagasse pith, fines and coarse fibers the fines being distributed on the surfaces, thereafter applying a resin to the surface and applying heat and pressure to cure the composite board.

3,663,674
DENSIFICATION OF POLY-α-OLEFINS
Allan D. Holiday, Overland Park, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed July 1, 1969, Ser. No. 838,351
Int. Cl. B01j *2/20*
U.S. Cl. 264—118 4 Claims

Poly-α-olefins are prepared in a dense granular form suitable for molding or extrusion by the application of sufficient mechanical energy to compress and collapse the porous polymer particles recovered from the polymerization reactor.

3,663,675
PROCESS FOR PRODUCING CRIMPED POLYPROPYLENE FILAMENTS
Noboru Fukuma, Kenichi Matsui, and Hiroshi Shimizu, Nobeoka-shi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
No Drawing. Continuation-in-part of application Ser. No. 869,450, Oct. 21, 1969, which is a continuation of application Ser. No. 706,674, Feb. 19, 1968. This application July 24, 1970, Ser. No. 58,207
Claims priority, application Japan, Feb. 28, 1967, 42/12,268
Int. Cl. D01d *5/22*
U.S. Cl. 264—168 3 Claims

Crystalline polypropylene having an intrinsic viscosity of 1.2 to 2.2 which is obtained by depolymerizing polypropylene having an intrinsic viscosity of 1.2 to 4.2 by a depolymerization degree of at most 1.9 and at most 20% by weight of additives is melt-spun through a spinneret at a temperature of 260 to 280° C. and at a spinning speed of more than 600 m./min. to form undrawn filaments. The resultant undrawn filaments having an intrinsic viscosity of 0.8–1.4 are heat treated at a temperature of 120–150° C., drawn at a temperature of 110–150° C., and thereafter relaxed to produce finely crimped filaments having a large number of crimps and good crimp retention ability.

3,633,676
PROCESS FOR TEMPORARILY REDUCING THE CRIMP INDEX IN BICOMPONENT ACRYLIC FIBERS
Arthur Lulay, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Jan. 24, 1968, Ser. No. 700,021
Int. Cl. D01d *5/22*
U.S. Cl. 264—168 4 Claims

An improved process for producing helically crimped acrylic bicomponent fiber, which temporarily reduces the crimp index of the fiber comprising: heating the moist fiber under critical temperature, time, and tension conditions in such a manner that the original crimp index is substantially recoverable by a subsequent boil-off.

3,663,677
PROCESS FOR TREATING ELASTOMERIC FIBERS
Herbert W. Keuchel, Summit, N.J., assignor to Celanese Corporation of America, New York, N.Y.
No Drawing. Continuation of application Ser. No. 377,074, June 22, 1964. This application July 13, 1970, Ser. No. 56,191
Int. Cl. B29c *25/00*
U.S. Cl. 264—210 F 5 Claims

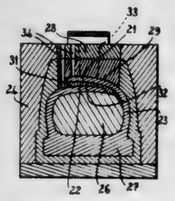
An improved elastomeric fiber and method for producing the same are disclosed and claimed which method comprises stabilizing the crystalline structure of a spun elastomeric fiber by treating the fiber with a swelling solvent therefor while maintaining the fiber in a state of stress. Preferably, the fibers treated are segmented elastomeric copolymers. These preferred elastomeric fibers are preferably polyurethane-containing polymers. The re-

sulting fibers have improved physical properties particularly as measured in reduced permanent setting characteristics.

3,663,678
METHOD OF USING SHRINKABLE PLASTICS
Joseph T. Miller, St. Louis County, Mo., assignor to Sinclair & Rush, Inc., St. Louis, Mo.
No Drawing. Filed Sept. 8, 1969, Ser. No. 856,167
Int. Cl. B29c 17/02
U.S. Cl. 264—230 6 Claims

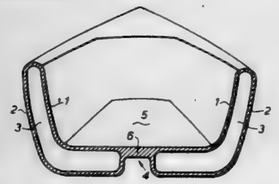
A shrinkable synthetic polymer part produced by swelling the part in solvent with subsequent "freezing" of the part in the enlarged state. The expanded part can be applied over the part to be covered and shrunk by the application of heat or solvent. The part preferably is of polyvinyl chloride.

3,663,679
METHOD OF MANUFACTURING FOOTWEAR
Jean-Gabriel Barre, Lyon, and Jean-Marie Diez, Chassieu, France, assignors to Centre Technique du Cuir, Lyon, France
Filed May 6, 1969, Ser. No. 822,109
Claims priority, application France, May 9, 1968, 50,000; June 17, 1968, 50,114
Int. Cl. A43d 65/00
U.S. Cl. 264—244 8 Claims



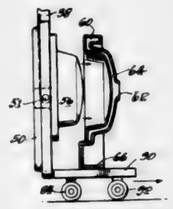
A method of molding an article of footwear from a liquid product, characterized in that said liquid product is polymerizable and cross-linkable at ambient temperatures. Liquid products, such as polyesters, polyurethanes, or elastomers, of different hardnesses or colors can be used successively to fill only desired parts of the mold to create different zones. The desired zones of the article are manufactured by using interchangeable removable cores, and plugs with pour holes and vents, the casting of the article interrupted to permit removal of a core and insertion of a plug, but said interruption being of such duration that the previously cast material is not fully polymerized. The mold and last may be constituted of the same material as the article of footwear to be manufactured.

3,663,680
METHOD OF MOULDING SHAPED ARTICLES WITH HOLLOW WALLS
Lars Ringdal, Montebellovelen 15, Oslo 3, Norway
Filed Sept. 30, 1969, Ser. No. 862,170
Int. Cl. B29c 5/04
U.S. Cl. 264—294 6 Claims



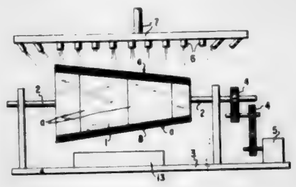
The method disclosed is one in which a hollow-walled article, such as a boat, is formed by sintering plastic material in a mould to form substantially spaced inner and outer walls having the desired thickness and thereafter moving the walls relatively toward each other to form connections at desired points while the plastic material is still hot, soft and adhesive so that completely firm and solid connections are formed.

3,663,681
METHOD FOR HANDLING CAST ARTICLES
Josef Ehrlich, Pacific Palisades, Calif., assignor to Winbrook China, Inc., Santa Monica, Calif.
Filed Jan. 26, 1970, Ser. No. 5,536
Int. Cl. B28b 1/26, 7/12
U.S. Cl. 264—238 3 Claims



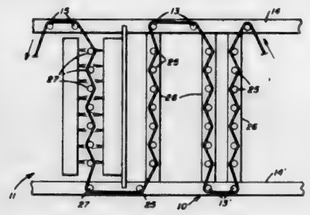
Injection molding method for molding articles, particularly ceramic articles such as square lavatories which have a flat back edge surface. The injection molding takes place at high pressure. Particular means are provided for handling the molds and for removing the top or cover of the carrier, rotating the top or cover and removing the finished cast article such that the finish piece is positioned to rest on its flat surface. The cast article is rotated through 90°, set on a movable surface and then separated from the mold cover by applying pressure which moves the article and the movable surface a small amount. The apparatus facilitates handling of the molds and makes possible rapid and repeated use of the mold and thereby greatly augments their utility.

3,663,682
ROTARY MOLDING METHOD
Haruo Nitta and Naotoshi Sagawa, Yokkaichi-shi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan
Filed Sept. 8, 1969, Ser. No. 855,872
Claims priority, application Japan, Sept. 18, 1968, 43/66,972
Int. Cl. B29c 5/04
U.S. Cl. 264—310 5 Claims



An irregular rotary mold carries external cooling liquid retaining devices along peripheral areas which are normally difficult to cool. The retaining devices permit a uniform cooling of the synthetic resin article after melting the resin and forming the article.

3,663,683
POLYESTER HEAT RELAX PROCESSES
Alfred E. Czerkas and Roger B. Kenyon, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed July 9, 1969, Ser. No. 840,252
Int. Cl. B29c 25/00; B29d 7/22, 7/24
U.S. Cl. 264—346 4 Claims



It has been discovered that oriented, heat-set, poly(ethylene terephthalate) films can be heat relaxed at extremely high temperatures (i.e., 300–350° F.), provided (a) that the exposure of the film to such temperatures is for a very short period of time, and (b) that the film is supported at closely spaced intervals (i.e., at most about 15 inches) during the exposure thereof to such extremely high temperatures.

ERRATUM

For Class 264—299 see:
Patent No. 3,662,693

3,663,684
CARCINOEMBRYONIC ANTIGEN AND DIAGNOSTIC METHOD USING RADIOACTIVE IODINE
Samuel Orkin Freedman, Westmount, Phil Gold, Cote St. Luc, and John Henry Krupey, Montreal, Quebec, Canada, assignors to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Filed June 1, 1970, Ser. No. 38,069
Int. Cl. A61k 27/04; G01n 31/08
U.S. Cl. 424—1 22 Claims

Methods for ioslating, identifying and detecting carcinoembryonic antigen which originates in the digestive system epithelium derived from embryonic entodermal tissue are disclosed.

3,663,685
BIODEGRADABLE RADIOACTIVE PARTICLES
Roger L. Evans, Sunfish Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Filed Apr. 1, 1968, Ser. No. 717,965
Int. Cl. A61k 27/04
U.S. Cl. 424—1 13 Claims

Particles, preferably substantially spherical particles having a smooth outer surface and essentially void-free interior are produced, consisting essentially of solid, cold-water insoluble vehicle comprising a physiologically acceptable, parenterally metabolizable protein or polysaccharide having dispersed therein a water-insoluble carrier loaded with radioisotopes, which are substantially non-leachable upon short term exposure to cold water. Such particles can be administered parenterally for diagnostic purposes, or for treatment with radioactive materials. On administration in this way, they are broken down or solubilized by the body fluids over a predeterminable period ranging from minutes to several days, whereupon the radioisotopic material is excreted from the body thus limiting exposure to the radiation.

3,663,686
BIODEGRADABLE RADIOACTIVE PARTICLES
Ivan M. Grotenhuis, Blaine, and David O. Kubiatowicz, Arden Hills, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Filed Apr. 24, 1968, Ser. No. 723,885
Int. Cl. A61k 27/04
U.S. Cl. 424—1 7 Claims

Particles, preferably substantially spherical particles having a smooth outer surface and essentially void-free interior are produced, consisting essentially of solid, cold-water insoluble vehicle comprising a physiologically acceptable, parenterally metabolizable radioactive protein, said particles being substantially non-leachable upon short term exposure to cold water. The particles can be administered parenterally for diagnostic, prophylactic or therapeutic purposes. On administration in this way, they are broken down or solubilized by the body fluids over a predeterminable period ranging from minutes to several days, whereupon the radioisotopic material is excreted from the body thus limiting exposure to the radiation.

3,663,687
BIODEGRADABLE PARENTERAL MICROSPHERULES
Roger L. Evans, Sunfish Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Filed June 26, 1968, Ser. No. 740,038
Int. Cl. A61k 27/04
U.S. Cl. 424—1 16 Claims

Tiny substantially spherular particles having a smooth outer surface and essentially void-free interior, are produced consisting essentially of solid, cold-water insoluble material comprising a physiologically acceptable, parenterally metabolizable protein, said spherules being capable of being made radioactive after their preparation, and said radioactivity being substantially non-leachable upon short term exposure to cold water. They can be used as carriers for substances, e.g. radioisotopes, which are administered parenterally for diagnostic, prophylactic or therapeutic purposes. On administration in this way, they provide a predeterminable dwell time and thereafter are broken down or solubilized by the body fluids over a predeterminable period ranging from minutes to several days. Thereafter the radioisotopic or other material is excreted from the body thus terminating exposure to the carried substance.

3,663,688
DIAGNOSTIC MATERIAL AND PROCESS USING CHELATED RADIOACTIVE YTTERBIUM
Ivan M. Grotenhuis, Blaine, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Filed June 26, 1968, Ser. No. 740,050
Int. Cl. A61k 27/04; C07f 5/00
U.S. Cl. 424—1 16 Claims

Compositions of matter comprising radio-ytterbium and a chelating agent therefor, the said compositions being

soluble in water and body fluids and having a stability constant above about 10^{15}, are used by parenteral administration to study the kidneys and the brain in warm-blooded animals. The chelating agent prevents the dissipation of the chemically active radio-nuclide into body tissues other than the kidneys, since chelates, although soluble, are preferentially excreted by the kidney. A useful diagnostic tool is provided.

3,663,689

DESTAINED GENTIAN VIOLET AND METHOD

Karl J. Karnaky, Houston, and James E. McShane, Dallas,, Tex., assignors to Savage Laboratories, Inc., Houston, Tex.

No Drawing. Continuation-in-part of application Ser. No. 614,797, Feb. 9, 1967, which is a continuation-in-part of application Ser. No. 266,487, Mar. 20, 1963, which in turn is a continuation-in-part of application Ser. No. 730,534, Apr. 24, 1958. This application July 14, 1969, Ser. No. 841,560

Int. Cl. A61k *9/00;* **A61l** *23/00*

U.S. Cl. 424—45 **8 Claims**

A destained gentian violet mixture comprising from about 22 to about 27 parts of a clay or clays from the montmorillonite group absorbing from about 0.25 to about 3.00 parts gentian violet. From about 7 to about 14 parts of polyvinylpyrrolidone (plasdone) may be added. The clay or the combined clay and polyvinylpyrrolidone should comprise not less than 16 parts by weight to each part of gentian violet. Bentonite and a mixture of bentonite and kaolin are preferred. Cornstarch may be added. A suitable solvent, such as water, the alcohols, chloroform, and the like are used in preparing the destained gentian violet mixture. The preparation may be in the form of a cream, an aerosol foam, an aerosol powder, a powder, a jelly or a tablet. In a cream or foam form the clay or mixture of clay from about 22% to about 27% and plasdone in excess of 7%, preferably 9–14%, of the total products should be present. Dispersing agents, solubilizing agents, viscosity regulators, wetting agents, antiseptics, preservatives and the like may be incorporated in the preparation.

3,663,690

MUCOLYTIC COMPOSITION AND METHOD OF TREATMENT OF BRONCHO-PULMONARY DISORDERS THEREWITH

Hermann J. Eichel and Kenneth R. Hickey, Cincinnati, and Frank R. Springman, Cleves, Ohio, assignors to American Hoechst Corporation, Somerville, N.J.

No Drawing. Filed Aug. 12, 1969, Ser. No. 849,487

Int. Cl. A61k *19/00*

U.S. Cl. 424—94 **1 Claim**

Pharmaceutically active compositions for treatment of broncho-pulmonary disorders containing an N-substituted cysteine derivative together with desoxyribonuclease, both of which act as mucolytic agents, each on its respective substrate.

It is known that certain compounds containing free mercapto groups can be used as mucolytic agents in the treatment of pulmmonary disorders. Such compounds lower the viscosity of respiratory mucous secretions by a mechanism involving the cleavage of disulfide linkages of mucoprotein. It is also known that desoxyribonuclease treatment of pulmonary disorders. Such compounds rapidly degrades desoxyribonucleoprotein (and desoxyribonucleic acid), thus decreasing the viscosity of purulent material.

3,663,691

KUNDRYMYCIN AND PROCESS FOR ITS PRODUCTION

Donald E. Nettleton, Jr., Jordan, James A. Bush, Fayetteville, and William T. Bradner, Manlius, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Sept. 3, 1970, Ser. No. 69,220

Int. Cl. A61k *21/00*

U.S. Cl. 424—121 **3 Claims**

The specification discloses a new chemical substance referred to as kundrymycin and a process for production thereof by fermentation of a kundrymycin-producing strain of Streptomyces, designated *Streptomyces metachromogenes*. Kundrymycin is shown to have antibiotic activity and antitumor properties against certain transplanted mouse tumors and Walker 256 carcinosarcoma.

3,663,692

METHODS OF BIRD CONTROL

Morley R. Kare, 215 Fairview Road, Narberth, Pa. 19072

No Drawing. Continuation-in-part of application Ser. No. 585,286, Oct. 10, 1966. This application Dec. 29, 1969, Ser. No. 888,844

Int. Cl. A01n *9/12, 9/22, 11/00*

U.S. Cl. 424—153 **10 Claims**

Bird populations are controlled and mortality is increased by applying a bio-affecting composition which can be absorbed through a bird's feet to roosting and nesting areas. A particularly preferred composition comprises caffeine carried in a low volatile liquid such as glycerin or vegetable oil.

3,663,693

ANTIMALARIAL COMPOSITIONS AND METHODS OF THEIR USE

Ralph G. Slighter, Nassau, and Dicran A. Berberian, Colonie, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 536,630, Mar. 23, 1966. This application Aug. 31, 1967, Ser. No. 664,635

Claims priority, application Great Britain, Mar. 16, 1967, 12,497/67

Int. Cl. A61k *27/00*

U.S. Cl. 424—229 **12 Claims**

The invention relates to a method for combatting malarial parasites in a host species by administering a 2-sulfanilamido - 5 - (lower-alkoxy)pyrimidine alone or in combination with one or more clincially effective antimalarial agent(s), and to a composition containing an antimalarially effective dosage of said combination of drugs.

3,663,694

IODOPHOR DAIRY SANITANTS

Sean Geoffrey Hall, Belfast, Northern Ireland, assignor to Kilco Chemicals Limited, Belfast, Northern Ireland

No Drawing. Continuation-in part of application Ser. No. 656,342, July 27, 1967. This application Dec. 19, 1968, Ser. No. 785,331

Claims priority, application Great Britain, July 27, 1966, 33,712/66

Int. Cl. A61l *13/00*

U.S. Cl. 424—238 **5 Claims**

An iodophor udder sanitising agent for cows contains an alkoxylated lanolin derivative in place of part or all of the conventional non-ionic surfactant used heretofore, complexed with iodine. If another non-ionic surfactant is present, it may be a surfactant with or without terminal hydroxyl groups.

3,663,695

ANTICOCCIDIAL COMPOSITIONS CONTAINING QUATERNARY 5 - AMMONIUMMETHYL - 4-AMINO - 2 - CYCLOALIPHATYL-PYRIMIDINE SALTS

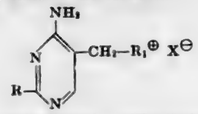
Renat Herbert Mizzoni, Long Valley, and George de Stevens, Summit, N.J., assignors to Ciba Corporation, Summit, N.J.

No Drawing. Continuation-in-part of application Ser. No. 620,626, Mar. 6, 1967, which is a continuation-in-part of application Ser. No. 592,314, Nov. 7, 1966, which is a continuation-in-part of application Ser. No. 572,671, Aug. 16, 1966, which is a continuation-in-part of application Ser. No. 534,666, Mar. 16, 1966, which in turn is a continuation-in-part of application Ser. No. 493,233, Oct. 5, 1965. This application Apr. 25, 1969, Ser. No. 819,459

Int. Cl. A61k *27/00*

U.S. Cl. 424—249 **17 Claims**

Quaternary 5-ammoniummethyl - 4 - amino-2-cycloaliphatylpyrimidine salts of the formula



R=cycloalkyl, cycloalkenyl, cycloalkylalkyl and cycloalkenylalkyl

$R_1^{\oplus}$=ammonium group of which the nitrogen atom is part of a heterocyclic radical

$X^{\ominus}$=anion of an acid

and acid addition salts thereof, exhibit anticoccidial effects.

3,663,696

TREATMENT OF DEPRESSION WITH 2-CHLORO-11 - (PIPERAZINYL)DIBENZ - [b,f][1,4]OXAZEPINES AND ACID ADDITION SALTS THEREOF

Charles Frederick Howell, Upper Saddle River, and Robert Allis Hardy, Jr., Ridgewood, N.J., and Nicanor Quinones Quinones, New York, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 551,544, May 20, 1966, which is a continuation-in-part of application Ser. No. 348,271, Feb. 28, 1964. This application July 22, 1970, Ser. No. 57,307

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **8 Claims**

The preparation of 2-chloro-11-(1-piperazinyl)dibenz-[b,f][1,4]oxazepine by heating ethyl 4-{[o-(p-chlorophenoxy)phenyl]carbamoyl}-1-piperazine carboxylate with phosphorus pentoxide and phosphorus oxychloride, is described. The base compound and pharmacologically acceptable acid addition salts are useful for their antidepressant effect on the central nervous system of warm-blooded animals.

3,663,697

3 - METHYLQUINOXALINE - 2 - CARBOXAMIDE-1,4-DIOXIDES FOR THE CONTROL OF *SALMONELLA CHOLERAESUIS* INFECTIONS

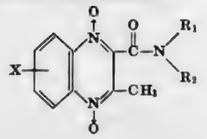
Lloyd H. Conover, Quaker Hill, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed Oct. 7, 1970, Ser. No. 78,920

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **6 Claims**

A method for the control of Salmonella infections in domestic animals, particularly *Salmonella choleraesuis* infections in swine, by administering to the animals an effective amount of a 3-methylquinoxaline-2-carboxamide-1,4-dioxide of the formula:



wherein

X is a 6- or a 7-position substituent selected from hydrogen, chloro, bromo, fluoro, methyl, methoxy and trifluoromethyl;

R_1 is hydrogen or alkyl having from one to four carbon atoms;

R_2 is hydrogen, methyl or ethyl, with the proviso that the total number of carbon atoms in R_1 and R_2 is not greater than four.

3,663,698

1,4-SUBSTITUTED-PYRIMIDIN-2(1H)-ONES FOR RELIEF OF PAIN AND INFLAMMATION

Goetz E. Hardtmann, Florham Park, N.J., and Hans Ott, Basel-Land, Switzerland, assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Nov. 26, 1968, Ser. No. 779,200

Int. Cl. A61k *27/00*

U.S. Cl. 424—251 **27 Claims**

The present invention discloses compounds of the class of 1-substituted-4-aryl-pyrimidin-2(1H)-ones, methods and intermediates for preparation of said compounds, and pharmaceutical methods and compositions based on said compounds and useful in therapy, for example, in the treatment of inflammation in animals.

3,663,699

METHOD OF TRANQUILIZING EMPLOYING N,N'-DIALKOXYMETHYL PHENOBARBITAL

John F. Reinhard and Carlos M. Samour, Wellesley, and Julius A. Vida, Boston, Mass., assignors to The Kendall Company, Walpole, Mass.

No Drawing. Continuation-in-part of application Ser. No. 867,865, Oct. 20, 1969. This application May 19, 1971, Ser. No. 145,053

Int. Cl. A61k *27/00*

U.S. Cl. 424—254 **2 Claims**

A series of N,N'-dialkoxymethyl phenobarbitals have been found to be useful as tranquilizers, analgesics and centrally acting skeletal muscle relaxants.

3,663,700

THERAPEUTIC HYPOTENSIVE COMPOSITIONS COMPRISING CALCIUM SALTS OF 5-ALKYL-PICOLINIC ACIDS

Hamao Umezawa, 23, 4-chome, Toyotama-kita, Nerima-ku, Tokyo, Japan, and Toshiharu Nagatsu, 3610–81 Aza-Higashiyama, Nabeya-ueno-machi, Chigusa-ku, Nagoya-shi, Aichi-ken, Japan

No Drawing. Continuation-in-part of application Ser. No. 798,116, Feb. 10, 1969. This application Nov. 24, 1970, Ser. No. 92,176

Int. Cl. A61k *27/00*

U.S. Cl. 424—266 **3 Claims**

Calcium 5-butylpicolinate and calcium 5-pentylpicolinate having hypotensive activity.

3,663,701

SUBSTITUTED THIOCYANO PYRROLES, FUNGICIDAL PREPARATIONS CONTAINING THESE COMPOUNDS AS ACTIVE INGREDIENTS AND METHODS OF USING THE SAME

Stig Hjalmar Johannes Akerstrom, Uppsala, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.

No Drawing. Original application Dec. 19, 1966, Ser. No. 602,598. Divided and this application Sept. 15, 1969, Ser. No. 858,123

Claims priority, application Sweden, Dec. 20, 1965, 16,447/65

Int. Cl. A01n *9/12, 9/22*

U.S. Cl. 424—274 **3 Claims**

Substituted dithiocyanopyrroles have been found to be useful as antifungal agents for combatting plant harmful fungi.

3,663,702

PHARMACEUTICAL COMPOSITIONS CONTAINING AMIDES OF β-(3 - THIANAPHTHENYL) ETHYLAMINES

John T. Suh, Mequon, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Original application May 5, 1967, Ser. No. 636,274, now Patent No. 3,528,994, dated Sept. 15, 1971. Divided and this application Apr. 17, 1970, Ser. No. 29,680

Int. Cl. A61k *27/00*

U.S. Cl. 424—275 5 Claims

Pharmaceutical compositions containing as an active ingredient an amide of β-(3-thianaphthenyl)ethylamines are useful in controlling antisocial aggressive behavior in animals. A composition containing N-iso-butyryl-3-(β-aminoethyl)thianaphthene is disclosed.

3,663,703

LAXATIVE PHARMACEUTICAL AND METHODS OF USE

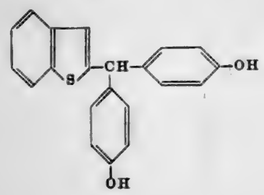
Ronald J. Meyer, Orville E. Horsley, and Herman J. Eichel, Cincinnati, Ohio, assignors to American Hoechst Corporation, New York, N.Y.

No Drawing. Original application June 26, 1968, Ser. No. 740,091. Divided and this application May 27, 1970, Ser. No. 51,408

Int. Cl. A61k *27/00*

U.S. Cl. 424—275 3 Claims

Bis(4-hydroxyphenyl)thianaphthyl-2 - methane having laxative (cathartic) properties of the formula:



and a process for preparing it.

3,663,704

AGRICULTURAL FUNGICIDE AND BACTERICIDE, A PROCESS FOR THE PREPARATION OF SAME AND A PROCESS FOR CONTROLLING RICE BLAST

Katsumichi Aoki, Iwaka, Elizaburo Uchida, Sendai, and Kiichi Shinoda and Takafumi Shida, Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 754,744, Aug. 22, 1968. This application June 24, 1970, Ser. No. 49,509

Claims priority, application Japan, Aug. 30, 1967, 42/55,172; Apr. 22, 1968, 43/26,560

Int. Cl. A01n *9/28*

U.S. Cl. 424—279 6 Claims

Novel fungicidal compositions for agricultural use containing 4,5,6,7-tetrachlorophthalide as an active ingredient and method for controlling rice blast by applying said compound or compositions thereof to rice plants. The compounds and compositions of the present invention are also useful as agricultural bactericide, particularly in the control of bacterial leaf blight in rice plants.

3,663,705

ANIMAL GROWTH PROMOTERS

Richard N. Hurd, Terre Haute, Ind., assignor to Commercial Solvents Corporation, New York, N.Y.

No Drawing. Filed Apr. 6, 1970, Ser. No. 26,123

Int. Cl. A61k *27/00*

U.S. Cl. 424—281 20 Claims

An animal feed, especially for meat-producing animals such as swine, ruminants, poultry, etc., which contains an amount of 3-(p-loweralkoxyphenyl) or 3-(p-hydroxyphenyl) or 3-(p-benzyloxyphenyl)-4-n-propyl-7-hydroxycoumarin effective to promote the rate of growth, e.g., weight gain, and feed conversion of the animal being fed.

3,663,706

USE OF 2,4-DIAMINOQUINAZOLINES AS HYPOTENSIVE AGENTS

Hans-Jurgen E. Hess, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Application Dec. 13, 1967, Ser. No. 690,101, now Patent No. 3,511,836, dated May 12, 1970, which is a continuation-in-part of application Ser. No. 555,704, June 7, 1966, which in turn is a continuation-in-part of application Ser. No. 469,879, Aug. 6, 1965. Divided and this application Sept. 29, 1969, Ser. No. 871,171

Int. Cl. A61k *27/00*

U.S. Cl. 424—251 11 Claims

Novel 2,4-diaminoquinazolines wherein at least one of the 6- or 7-positions is substituted with alkoxy having from 1 to 3 carbon atoms and acid addition salts thereof, the preparation thereof and the utility thereof as hypotensive agents.

3,663,707

MOLLUSCICIDAL OXIME CARBAMATES

Johannes Th. W. Montagne, Sittingbourne, and Willem A. van Tongeren, Herne Bay, England, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Jan. 9, 1970, Ser. No. 1,861

Claims priority, application Great Britain, Jan. 21, 1969, 3,323/69

Int. Cl. A01n *9/20*

U.S. Cl. 424—300 4 Claims

Novel use of oxime carbamates as molluscicides.

3,663,708

N-ARYL-N-FLUOROALKYLSULFONYL CARBAMATES

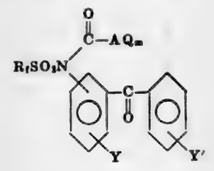
Joseph Kenneth Harrington, Edina, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Apr. 8, 1968, Ser. No. 719,746

Int. Cl. A61k *27/00*; C07c *143/74*

U.S. Cl. 429—300 12 Claims

N-carbonylfluorocarbonsulfonanilides of the general formula:



wherein R_f is a fluorocarbon group having 1 to 4 carbon atoms, having either at least one fluorine atom attached

to the alpha carbon atom or if there is no fluorine atom attached to the alpha carbon atom, having at least two fluorine atoms attached to hte beta carbon atom, A is —O—, —S—, —N< or a single carbon-carbon bond, Q is a hydrocarbon group containing up to 14 carbon atoms, *m* is 1 or 2 and Y and Y' are the same or different and are hydrogen, halogen, lower alkyl, hydroxy or lower alkoxy. These compounds have valuable physiological activity as anti-inflammatory agents.

3,663,709

NEMATOCIDAL USE OF PHENYLTHIOMETHYL N-METHYLDITHIOCARBAMATE

John J. D'Amico, Akron, Ohio, and David L. Gerwitz, Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Dec. 15, 1969, Ser. No. 885,359

Int. Cl. A01n *9/12*

U.S. Cl. 424—300 4 Claims

The life cycle of parasitic nematodes is terminated by applying a nematocidal amount of phenylthiomethyl N-methyldithiocarbamate to nematode infested soil.

3,663,710

METHODS AND COMPOSITIONS FOR IMPROVING FEED EFFICIENCY OF RUMINANTS USING BIS-POLYHALOMETHYL DERIVATIVES

Roger C. Parish, King of Prussia, and John E. Trei, Malvern, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed Feb. 12, 1970, Ser. No. 10,981

Int. Cl. A61k *27/00*

U.S. Cl. 424—301 16 Claims

Methods and compositions utilizing bis-polyhalomethyl derivatives improve the feed efficiency of commercial ruminant animals by inhibiting methanogenesis in the rumen. Preferred compounds to be used as active ingredient are hexachloroethane and trichloroethyl carbonate.

3,663,711

METHODS FOR PRODUCING GASTROINTESTINAL ANTISECRETORY ACTION

Giorgio Da Re, Milan, and Luigi Rovati, Monza, Italy, assignors to Rotta Research Laboratorium S.p.A.

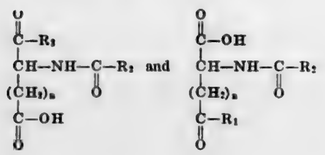
No Drawing. Original application July 23, 1965, Ser. No. 474,450, now Patent No. 3,551,419, dated Dec. 29, 1970. Divided and this application Mar. 26, 1970, Ser. No. 30,616

Claims priority, application Italy, July 31, 1964, 25,676/64

Int. Cl. A61k *27/00*

U.S. Cl. 424—309 4 Claims

Compounds having the following formula:



wherein:

R_2 is either phenyl or benzyl;
n is either 1 or 2;
R_1 and R_2 may be:

(a) mono- and di-substituted amino groups in which the substituent may be:
  (i) linear and branched chain alkyl radicals containing from 3 to 17 carbon atoms when *n* is 2;
  (ii) linear and branched chain alkyl radicals having from 1 to 17 carbon atoms when *n* is 1; and
  (iii) a carboalkoxy-substituted phenyl group;
(b) a heterocyclic group which is a morpholino-, piperidinopyrrolindino- 4-antipyrilamino- and hexamethyleneimino radical;
(c) a benzylamino radical when *n* is 1.

The above compounds exert either a depressing or stimulating effect on the central nervous system, and are particularly effective as anti-secretory agents in the gastrointestinal tract of warm-blooded mammals. Numerous examples of environments wherein the compounds of the present invention find utility are disclosed in the specification.

3,663,712

4,4'-BIS(ALPHA-AMINO SUBSTITUTED) DIPHENYL ETHERS AS ANTIMICROBIAL AGENTS

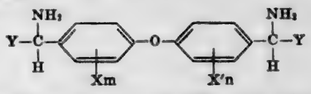
Bogislav von Schmeling, Hamden, Conn., and Walter R. Boos, Guelph, Ontario, Canada, assignors to Uniroyal, Inc., Middlebury, Conn., and Uniroyal, Ltd., Montreal, Quebec, Canada

No Drawing. Filed Sept. 25, 1969, Ser. No. 861,153

Int. Cl. A01n *9/20*

U.S. Cl. 424—330 16 Claims

4,4'-bis(alpha-amino substituted) diphenyl ethers of the formula:



where the X's are for example halogen or alkyl, and the Y's are for example alkyl, phenyl, or substituted phenyl, are useful as agricultural or industrial bactericides and fungicides. Typical chemicals are 4,4'-bis(alpha-amino-m-methylbenzyl) diphenyl ether and 4,4'-bis(alpha-aminoethyl) diphenyl ether. Agricultural uses of the chemicals include control of bean halo blight caused by the bacterium *Pseudomonas phaseolicola*.

3,663,713

NAPHTHYL ACETALDEHYDE DERIVATIVES, METHODS OF USE THEREOF

John Fried and Ian T. Harrison, Palo Alto, Calif., assignors to Syntex Corporation, Apartado, Panama

No Drawing. Continuation-in-part of application Ser. No. 741,900, July 2, 1968. This application Apr. 9, 1969, Ser. No. 814,855

Int. Cl. A61k *27/00*

U.S. Cl. 424—333 9 Claims

2 - (2' - naphthyl) acetaldehyde derivatives optionally substituted at the 2 position and/or positions C–1',4',5',7' or 8'; and/or position C–6' or positions C–5' and 7' exhibit anti-inflammatory, analgesic, antipyretic and anti-pruritic activity.

3,663,714

1,1,1-TRIFLUORO-2-DIFLUORO-METHOXY PROPANE AS AN ANESTHETIC AGENT

Ross C. Terrell, Plainfield, N.J., assignor to Airco, Inc.

No Drawing. Original application Apr. 29, 1968, Ser. No. 725,164. Divided and this application Oct. 9, 1969, Ser. No. 871,048

Int. Cl. A61k *27/00*

U.S. Cl. 424—342 2 Claims

The present invention relates to anesthetic compositions containing 1,1,1-trifluoro-2-difluoromethoxy propane, the method of preparing 1,1,1-trifluoro-2-difluoromethoxy propane, and to the method of anesthetizing warm blooded air breathing creatures by administering an effective amount of 1,1,1-trifluoro-2-difluoromethoxy propane.

3,663,715
ETHER COMPOUNDS AS ANESTHETICS
Ross C. Terrell, Plainfield, N.J., assignor to Airco, Inc.
No Drawing. Original application May 6, 1968, Ser. No. 727,004. Divided and this application Nov. 3, 1969, Ser. No. 871,050
Int. Cl. A61k 27/00
U.S. Cl. 424—342 8 Claims

The present invention relates to the novel compounds 1,1,2,2-tetrafluoroethyl trichloromethyl ether

$$(CHF_2CF_2OCCl_3)$$

1,1,2,2-tetrafluoroethyl dichloromethyl ether

$$(CHF_2CF_2OCHCl_2)$$

and 1,1,2,2-tetrafluoroethyl fluorochloromethyl ether ($CHF_2CF_2OCHFCl$). The compounds are prepared through selective stepwise chlorination and fluorination of 1,1,2,2-tetrafluoroethyl methyl ether. The compounds are useful as anesthetics and as solvents and dispersants of fluorinated materials.

3,663,716
METHOD OF TREATING ACNE WITH BENZYL ALCOHOL
Morris Emmanuel Stolar, Trumbull, Conn., assignor to Miles Laboratories, Inc., Elkhart, Ind.
No Drawing. Filed June 22, 1970, Ser. No. 48,454
Int. Cl. A61k 27/00
U.S. Cl. 424—343 4 Claims

Benzyl alcohol preferably in the form of an aqueous solution or ointment has been found to be effective in the treatment of acne when applied topically to the affected areas of the human body.

ERRATA

For Classes 99—13 and 260—606 see:
Patent Nos. 3,663,717 thru 3,663,729

3,663,717
INTERLOCKABLE CONFECTION BARS
Maurice Simon Coster, Tel Aviv, Israel, assignor to Borden, Inc., New York, N.Y.
Continuation of abandoned application Ser. No. 729,569, May 16, 1968. This application Dec. 28, 1970, Ser. No. 102,072
Int. Cl. A63h 33/08
U.S. Cl. 99—137 9 Claims

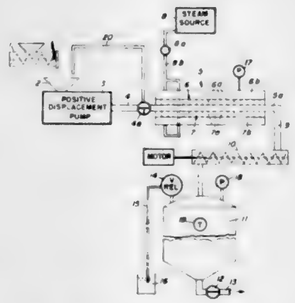


This invention relates to an elongated rectangular bar of a substantially uniform thickness for mounting a frozen comestible and comprises at least one aperture and at least one pair of transverse aligned notches, said aperture comprising a circle having diametrically opposed notches, the width of said transverse and diametrically opposed notches being greater than the thickness of said bar, the dimension between the inner edges of said transverse notches being less than the diameter of said circle, the dimension between the outer edges of said diametrically opposed notches being greater than the width of said bar.

3,663,718
PROCESS FOR PREPARING CHOCOLATE FLAVORED BANANA POWDER
Robert H. Bundus, Riverside, Ill., assignor to Beatrice Foods Co., Chicago, Ill.
No Drawing. Continuation-in-part of application Ser. No. 652,709, July 12, 1967. This application Oct. 13, 1970, Ser. No. 80,505
Int. Cl. A23b 7/02; A23l 1/27
U.S. Cl. 99—204 5 Claims

Chocolate flavored banana powder is prepared by co-drying a mixture of banana puree and cocoa. The product is less hygroscopic than the original banana solids. Desirably sugar is included in the composition.

3,663,719
SYSTEM FOR COOKING FISH
Richard H. Gnaedinger, St. Louis, Mo., assignor to the United States of America as represented by the Secretary of the Interior
Filed Dec. 3, 1969, Ser. No. 881,785
Int. Cl. A22c 25/00; A23k 1/10
U.S. Cl. 99—7 6 Claims



Ground raw fish is passed through a cooker where it is confined as a thin layer while steam passes into it through both the top and bottom of the layer. A downstream screw conveyor supplies back pressure which prevents steam from blowing fish out of the cooker. Cooked fish, by-products and entrapped steam pass from the screw conveyor to a reservoir. A relief valve on the reservoir maintains a predetermined pressure throughout the system. In its preferred design the cooker includes two perforated parallel plates which confine the fish as a thin layer. The interior face of each plate, in cross-section, defines a serrated edge. Other ground meat besides fish can be cooked in the system.

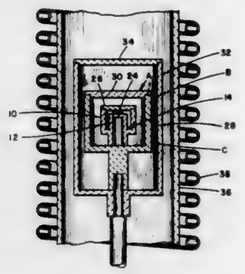
3,663,720
ARTICLE OF MANUFACTURE HAVING HIGH TEMPERATURE RESISTANT PROPERTIES AND METHOD OF MAKING THE SAME
Henry C. Thompson, Saratoga, Calif., assignor to Thompson Chemicals, Inc., San Carlos, Calif.
No Drawing. Original application Sept. 10, 1965, Ser. No. 486,528, now Patent No. 3,502,610. Divided and this application Sept. 12, 1969, Ser. No. 871,054
Int. Cl. B44d 1/14
U.S. Cl. 117—70 R 3 Claims

The invention relates to making a high temperature resistant glass fiber laminate by impregnating glass fibers with a condensation product of resorcinol and formaldehyde resins containing between 2 and 6 based in the weight of the condensation product of portland cement. A coating of an enamel alkyd may be applied to the glass fiber laminate.

3,663,721
ELECTROCHEMICAL CELLS WITH LITHIUM ANODE
Alain Blondel, Lillebonne, and Jean-Firmin Jammet, Poitiers, France, assignors to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romainville, France
Filed July 31, 1970, Ser. No. 59,993
Claims priority, application France, Aug. 1, 1969, 6926543
Int. Cl. H01m 35/00, 21/00
U.S. Cl. 136—6 10 Claims

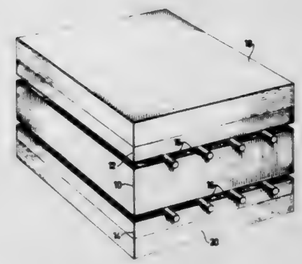
Electrochemical cells utilizing lithium anodes prepared by cold extrusion into sheet form. The extruded sheets are severed into prescribed band lengths and the bands are pleated in zig-zag form to provide multiple folds or pleats. Thin cathode plates are positioned between pleats, being insulated from the pleated lithium anode by suitable separating means. The dimension of the cathode plates parallel to the width of the bands is such as to leave a zone along at least one edge of the pleated anode band that has no opposite cathode plate counterpart. Electrical connections are secured to the pleated band in said zone and are in the form of tabs, for example, of stainless steel, spot welded to an expanded metal strip which latter in turn is fastened to said lithium anode band in said zone as by ultrasonic welding. The separating means may be in the form of an enclosing sheath or envelope of insulating material into which the lithium band is inserted prior to pleating or the cathode plates may be individually sheathed in separator material.

3,663,722
METHOD OF MAKING SILICON CARBIDE JUNCTION DIODES
G Sanjiv Kamath, Wellesley, Mass., assignor to Norton Research Corporation, Cambridge, Mass.
Continuation-in-part of applications Ser. No. 810,977, Mar. 27, 1969, and Ser. No. 840,255, July 9, 1969. This application Mar. 5, 1970, Ser. No. 16,855
Int. Cl. H01l 7/38; C01b 31/36; B01j 17/24
U.S. Cl. 148—172 2 Claims



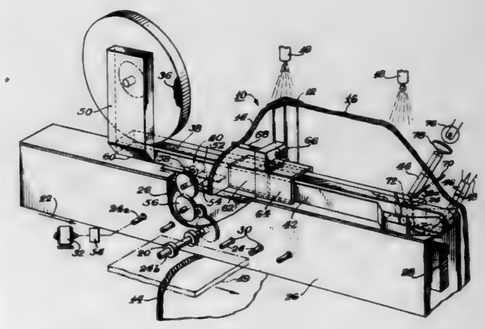
The production of electroluminescent silicon carbide junction diodes is described. These diodes are preferably produced by growth from a silicon carbide or carbon solution in silicon formed between a surface of a p or n-type silicon carbide base crystal and a source of carbon atoms such as a block of solid carbon. The silicon contains one or more p or n-type impurities so that a p-n junction is formed on the crystal. A multistratum epitaxial layer is grown on the base crystal by providing immediately adjacent the base crystal a layer of silicon having one impurity concentration and providing at a remote spot in the reaction zone another mass of silicon having a different impurity concentration. The initial stratum is grown at a relatively low temperature and the second stratum is grown at a higher temperature. The initial stratum can be very thin (less than .0005 inch) and transparent and the second stratum can be opaque and of low resistance dut to codoping with boron and aluminum.

3,663,723
METHOD OF ARMOURING ARTICLES OF METAL
Per Ingemar Persson, Huddinge, Sweden, assignor to Nitro Nobel AB, Gyttorp, Sweden
Filed Sept. 23, 1969, Ser. No. 860,242
Claims priority, application Sweden, Sept. 23, 1968, 12,803/68
Int. Cl. B26b 5/00
U.S. Cl. 156—179 4 Claims



The method of welding metal members to each other and to a reinforcing element located between such members to form a unitary armoured mass by heat and pressure created by the rapid burning and expansion of an explosive material which engages at least one surface of the metal members.

3,663,724
BUILT-IN TYPE SPEED CONTROL FOR CONVEYORIZED CONTINUOUS ETCHER
Robert C. Benton, State College, and Blair W. Heffner, Petersburg, Pa., assignors to Chemcut Corporation, State College, Pa.
Filed Nov. 14, 1969, Ser. No. 876,629
Int. Cl. C23f 1/04
U.S. Cl. 156—345 4 Claims



A continuous spray etching machine is disclosed in which the spray chamber and a longitudinally extending

conveying means therethrough cooperate to cause articles being etched to be continuously advanced through the spray chamber, and in which the spray chamber is provided with a built-in automatic control to control the conveying speed. The control is provided with its own etchable supply of control element strip material, and the strip material is fed by the control into the spray chamber and is therein destructively tested and monitored by the control as a measure of the degree of material removal both from the control element strip and, analogously, from the attendant articles being etched.

3,663,725

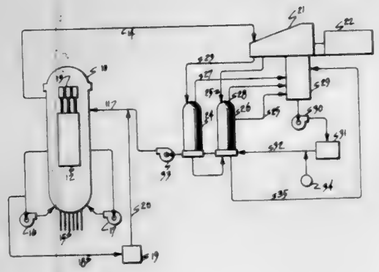
CORROSION INHIBITION

Wesley L. Pearl, San Jose, Calif., assignor to General Electric Company

Continuation of application Ser. No. 680,235, Nov. 2, 1967. This application Apr. 23, 1970, Ser. No. 29,736

Int. Cl. G21c *9/00*

U.S. Cl. 176—38 **4 Claims**



A small proportion of oxygen and hydrogen, preferably about 100 to 300 parts per billion of oxygen and stoichiometric amount of hydrogen, is introduced into the boiler feedwater in an electrical power generating plant so as to decrease the corrosion rate of materials such as carbon steel in the feedwater heater chain. This technique is especially useful in water cooled or moderated nuclear power plants since a suitable supply of oxygen and hydroen are generated by radiolytic decomposition of water in the reactor core and because corrosion products in the water supply are especially harmful in such a plant.

3,663,726

LUBRICATING GREASE

Roy L. Waring, Moore, Okla., assignor to Cities Service Oil Company, Tulsa, Okla.

No Drawing. Filed Nov. 28, 1969, Ser. No. 880,948

Int. Cl. C10m *5/14, 5/08*

U.S. Cl. 252—28 **10 Claims**

A lubricating grease having a consistency of about 220 to about 430 penetration number when measured by the method of ASTM D–217 and a density of substantially less than water. The lubricating grease comprises at least one grease thickener and a lubricating fraction including at least one lubricating fluid and at least one linear polymer which is soluble in the lubricating fluid. A method is provided for controlling the consistency of the lubricating grease and the viscosity of the lubricating fraction independent of density, by controlling the amount of the polymer in the grease composition.

3,663,727

PROCESS FOR PURIFICATION OF POLYMER SOLUTION

Akira Yamamoto, Toyoharu Miyako, and Kiyoshi Maeda, Yokkaichi-shi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

No Drawing. Filed Sept. 29, 1969, Ser. No. 862,034

Claims priority, application Japan, Oct. 3, 1968, 43/72,017

Int. Cl. C08d *5/00, 5/02*; C08f *1/88*

U.S. Cl. 260—80.78 **8 Claims**

A process for the purification of a polymer solution which comprises removing the polymerisation catalyst from a polymer solution obtained by solution-polymerising a monomer or monomers in a water-immiscible inert organic solvent in the presence of a polymerisation catalyst soluble in said solvent, characterised by mixing said polymer solution with water in the presence of a surface active agent to thereby form a first emulsion of water in polymer solution type, subsequently mixing said first emulsion with additional water to induce phase inversion of said first emulsion to a second emulsion of polymer solution in water type, and separating a water phase from the second emulsion.

3,663,728

PROCESS FOR PRODUCING POLYAMIDE ACID AND POLYIMIDES

John T. Hoback and Fred F. Holub, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Filed July 25, 1968, Ser. No. 747,460

Int. Cl. C08g *20/32*

U.S. Cl. 260—29.2 N **16 Claims**

Aromatic dianhydrides and diamines are reacted in a solvent comprising at least 40%, by weight of an aliphatic polyol to produce polyamide acid solutions which can be heat-cured to polyimide resins. These polyamide acid solutions can be converted to polyimides and employed as insulation over conducting cores, as laminating varnishes, as dipping varnishes to impregnate coils of previously-insulated wire in the motor and generator rotors, field coils, etc.

3,663,729

PROCESS FOR PREPARING 4-OXAPHOSPHORINANES

Peter Tavs, Limburgerhof, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

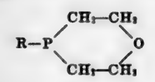
No Drawing. Filed Dec. 17, 1969, Ser. No. 886,044

Claims priority, application Germany, Jan. 8, 1969, P 19 00 706.8

Int. Cl. C07f *9/02*

U.S. Cl. 260—606.5 P **14 Claims**

A process for preparing 4-oxaphosphorinanes having the general formula:



where R denotes an aliphatic radical having one to twenty carbon atoms and a process for the production of the same which comprises reacting a divinyl ether with hydrogen phosphide or a monosubstituted organic phosphine in the presence of actinic light or a substance which decomposes into free radicals under the reaction conditions and also in the presence of a solvent which is inert under the reaction conditions. The products are suitable as modifying agents for cobalt carbonyl complexes.

ELECTRICAL

3,663,730

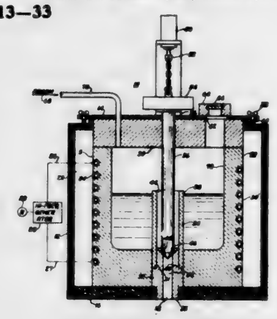
MOLTEN METAL DISPENSING EQUIPMENT

Wilbur C. Gates, Mentor, Ohio, assignor to General Electric Company

Filed Mar. 18, 1971, Ser. No. 125,499

Int. Cl. H05b *9/02*; F27d *3/12*

U.S. Cl. 13—33 **8 Claims**



An apparatus is disclosed which automatically dispenses a metered quantity of molten metal from a reservoir of the particular metal and which is particularly suitable for automated casting operations such as ferrous die casting. The apparatus employs an induction heating coil to raise the level of molten metal in the reservoir whereupon the molten metal is poured into a dispensing chamber and thereafter discharged to a mold or other forming equipment.

3,663,731

APPARATUS FOR MAKING VISIBLE MAGNETIC FIELDS BY MEANS OF IRON FILINGS

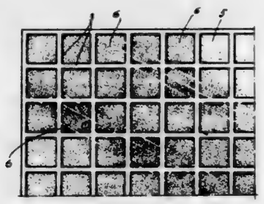
Anders E. Ofverstrom, Kullgardsvagen 21, 44300 Lerum, Sweden

Filed July 1, 1969, Ser. No. 838,217

Claims priority, application Sweden, July 8, 1968, 9360/68

Int. Cl. G09b *23/18*

U.S. Cl. 35—19 A **2 Claims**



An educational apparatus for displaying magnetic fields has a plurality of cells bordering each other in a flat unit with iron fillings therein and at least a transparent upper limiting surface on said cells.

The present invention is concerned with an educational apparatus for making visible magnetic field.

3,663,732

CIRCULAR FUNCTION TEACHING AID
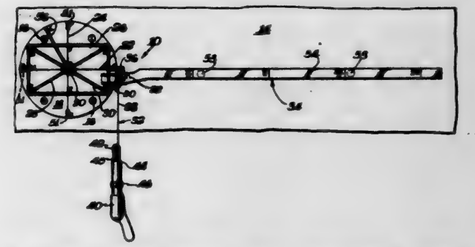
James A. Polk, R. D. #4, West Chester, Pa.

Filed Apr. 16, 1970, Ser. No. 29,178

Int. Cl. G09b *23/04*

U.S. Cl. 35—34 **10 Claims**

A circular function teaching aid includes a pair of concentrically arranged circles which are relatively movable with respect to each other. One of the circles has visible X and Y axes thereon, while the other circle includes a visible rectangle disposed symmetrically with respect to its center and with



the corners of the rectangle being coarcuate. A visible diagonal line connects diametrically opposite corners of the rectangle. A flexible distance selector is attached tangentially to one of the circles.

3,663,733

INTERCONNECTING DEVICE FOR MOVABLE CONTACTS OF KEYBOARD SWITCHES

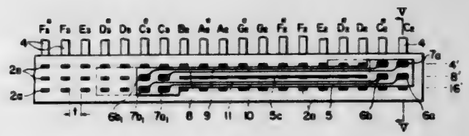
Shin-ichi Murakami, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed July 22, 1970, Ser. No. 57,077

Claims priority, application Japan, July 26, 1969, 44/70962

Int. Cl. G10f *1/06*

U.S. Cl. 84—1.01 **3 Claims**



An interconnecting device for movable contacts of multistage keyboard switches in an electronic musical instrument in which a printed circuit board structure capable of interconnecting the movable contacts as groups in place of the conventional individual wirings is used. The device simplifies the complicated wiring operations in manufacture and also troublesome, complex connections in the movable contacts, resulting in elimination of cross-talking due to the existence of stray capacitances caused by unreliable connections.

3,663,734

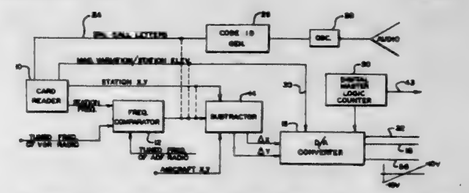
SIMULATED AIRCRAFT RADIO AIDS

Robert W. Howland, Windsor, and Richard L. Van Fleet, Binghamton, both of N.Y., assignors to The Singer Company, New York, N.Y.

Filed Mar. 27, 1970, Ser. No. 23,314

Int. Cl. G09b *9/08*; G06g *7/78*

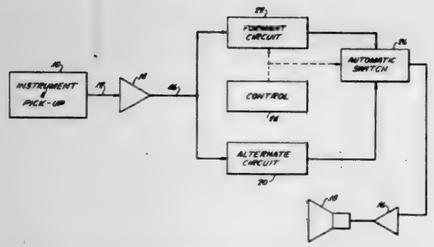
U.S. Cl. 35—10.2 **4 Claims**



A system for deriving electrical signals to operate simulated radio and navigation equipment in a fixed-base aircraft

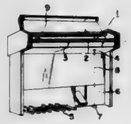
trainer in accordance with assumed fixed data and variable flight information. Data associated with the transmitting stations is programmed on punched cards which are inserted in a static card reader and supplied in digital form to other components for operations combining or comparing such data with digital flight data. Signals representing the difference between station and aircraft reference coordinates are provided in digital form, as opposed to the analog signals in all prior forms of such apparatus. These digital signals are then applied to a D/A converter, along with other digital signals representing other navigational information, and commensurate analog voltages are produced and sampled at appropriate times to provide signals for computation in the aircraft trainer radio aids analog computer. The D/A converter is time-shared so that it provides, in addition to the aforementioned analog outputs, a ramp voltage generated in response to an input from a free running digital counter.

3,663,735
AUTOMATIC ON-OFF CONTROL
Chauncey R. Evans, Costa Mesa, Calif., assignor to Columbia-Broadcasting Systems, Inc., New York, N.Y.
Filed June 1, 1970, Ser. No. 42,155
Int. Cl. G10h *3/00*
U.S. Cl. 84—1.11 **24 Claims**



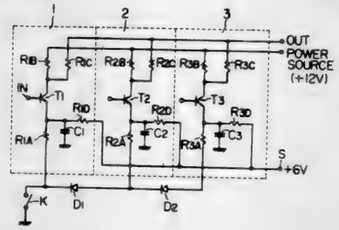
An electric musical instrument includes several tone modifying circuits. One of these is a special effects formant circuit operated by oscillatory motion of a foot control pedal. The formant circuit and another straight through or tone circuit are caused to have mutually exclusive operation by means of a pair of switches in the formant and alternate circuits that are actuated upon motion of the foot control pedal.

3,663,736
CONTROL DEVICE FOR PERFORMANCE EFFECTS OF AN ELECTRONIC MUSICAL INSTRUMENT
Norio Tomisawa, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan
Filed Dec. 23, 1970, Ser. No. 100,896
Claims priority, application Japan, Dec. 25, 1969, 44/122708
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.24 **7 Claims**



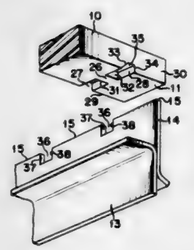
In order to improve a control device for performance effects of an electronic musical instrument there are provided a photoelectric conversion element on the underside of a keybed below the manual keyboard of the electronic musical instrument and also a light source near the front side of the bottom part of the instrument so as to face the photoelectric conversion element. By interrupting a light beam from the source to the photoelectric conversion element with part of the player's body, the resistance of the element is caused to be varied to actuate a relay, thereby permitting the use of circuits of performance effects such as sustain, vibrato and reverberation.

3,663,737
KEYING CIRCUIT FOR SIMULTANEOUSLY SWITCHING A PLURALITY OF CIRCUITS
Yasunori Hirose, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan
Filed Apr. 17, 1970, Ser. No. 29,506
Claims priority, application Japan, Apr. 21, 1969, 44/36608
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.26 **2 Claims**



A plurality of circuits employed in an electronic musical instrument and having different time constants are simultaneously switched by a keying circuit according to the present invention which is so organized that the circuits to be switched are arranged in an increasing order of the time constants, a single switch is connected directly to a switching terminal of the firstly arranged circuit having the smallest time constant, and a plurality of diodes are disposed in such a manner that each diode is connected between adjacent switching terminals of the circuits and that the forward direction of the diodes is so arranged as to conduct at a closure of the above said single switch. When the circuits to be switched include one or several groups of circuits having similar time constants, each of such groups of the circuits are commonly connected to a switching terminal and arranged in an increasing order of the time constants to be organized into a keying circuit as described above.

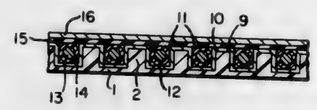
3,663,738
KEY SUPPORTING STRUCTURE OF KEYBOARD MUSICAL INSTRUMENTS
Seizi Nakada, Hamamatsu, Japan, assignor to Nippon Gakki Sugo Kabushiki Kaisha, Hamamatsu-shi, Japan
Filed Aug. 7, 1970, Ser. No. 61,899
Claims priority, application Japan, Aug. 7, 1969, 44/74592
Int. Cl. G10g *3/12*
U.S. Cl. 84—423 **5 Claims**



To improve the key supporting structure of a keyboard musical instrument, there are formed on both sides of the

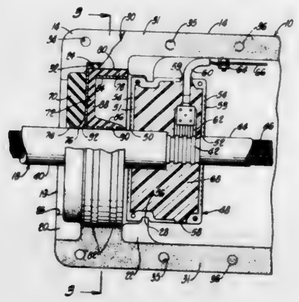
rear bottom plane of a key two opposite grooves extending crosswise of the key with an intermediate partition wall located therebetween, and on the upper edge portion of a key supporting plate there is formed a notch corresponding to the intermediate partition wall between the two grooves. The key is supported on the supporting plate by fitting the intermediate partition wall of the key into the notch of the supporting plate with the upper edge portion of the supporting plate received in the grooves.

3,663,739
UNIFORM FLAT CABLES
Jean-Claude Jacques Chevrier, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 26, 1970, Ser. No. 83,728
Int. Cl. H01b *11/06*
U.S. Cl. 174—36 **7 Claims**



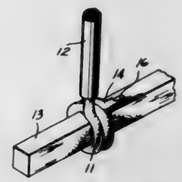
Flat cables comprising a layer containing polymeric material, polymeric material-containing ribs spaced along the width running substantially the length of the layer of polymeric material forming grooves on the layer of polymeric material, the grooves containing metal conductor, and a covering layer containing metal conductor.

3,663,740
CABLE SPLICE CASE
Harold W. Dellett, P.O. Box 565, Escondido, Calif.
Filed July 15, 1970, Ser. No. 55,143
Int. Cl. H02g *15/08*
U.S. Cl. 174—92 **8 Claims**



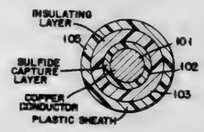
A splice case for use on several different types of sheathed or armored multi-conductor telephone and utility cables having the ability of accommodating both double and single sheath cables, on either pressurized or non-pressurized lines for use in buried, conduit or aerial applications. The case includes grippers for securely anchoring the sheaths of the cables to the case to prevent tension loads from damaging the splice, and unique sealing collars for maintaining the moisture-proof integrity of the case when unpressurized and for maintaining positive pressure on pressurized cable systems.

3,663,741
TERMINAL AND WRAPPED WIRE ASSEMBLY
Robert Holbrook Cushman, Lower Moreland Township, Montgomery County, Pa., assignor to Western Electric Company Incorporated, New York, N.Y.
Filed Apr. 16, 1971, Ser. No. 134,808
Int. Cl. H02g *15/08*
U.S. Cl. 174—94 R **10 Claims**



A number of wires are wrapped about a terminal. An insulation-free section of a first wire is initially wrapped about the terminal with a relatively low number of turns, e.g., two, leaving a short end portion which is directed axially along the terminal. The end portion of the first wire is then bonded to the terminal, the bonding operation compacting the end portion. Next, an insulation-free section of a second wire is wrapped about the terminal with a relatively low number of turns, e.g., two, overlapping the bonded and compacted end portion of the first wire, leaving a short end portion which is directed axially along the terminal. The end portion of the second wire is then bonded to the terminal, the bonding operation compacting the end portion. Additional wires may next be added successively in like, overlapping manner. A strong, compact terminal and wrapped wire assembly is formed by this method.

3,663,742
METHOD OF MITIGATING SULFIDE TREES IN POLYOLEFIN INSULATED CONDUCTORS
Morikuni Hasebe; Hiroshi Nagai, and Teruo Fukuda, all of Yokohama, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan
Filed Oct. 2, 1970, Ser. No. 77,685
Claims priority, application Japan, Oct. 6, 1969, 44/79338
Int. Cl. H01b *7/02*
U.S. Cl. 174—120 SR **10 Claims**

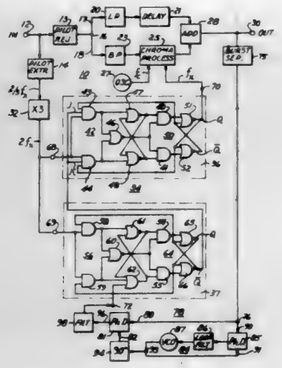


In an electric cable provided with a plastic sheath and an insulating layer consisting of polyolefin series resin applied directly or with the aid of other insulating layer on the copper conductor, polyolefin-series resin insulated electric cable provided in a desired position with a sulfide-capture layer consisting of a polyolefin-series resin composition incorporated with such powder of metals, salts of the metals, or the mixture thereof as to form water-insoluble metal sulfides by reacting with water soluble sulfides.

3,663,743
FREQUENCY DIVIDING APPARATUS
Bert H. Dana, Mountain View, Calif., assignor to Bell & Howell Company, Chicago, Ill.
Filed July 21, 1970, Ser. No. 56,788
Int. Cl. H04a *9/44*
U.S. Cl. 178—5.4 CD **7 Claims**

A frequency divider provides an output signal which has a frequency that is divided relative to the frequency of an input

signal and that displays a phase jump in response to a discontinuity in the input signal. This phase jump is sensed and a control signal is provided in response thereto. The frequency



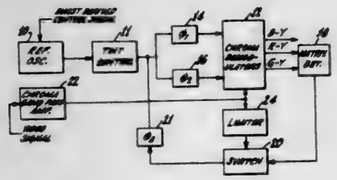
divider is constructed to adjust the phase of the output signal in response to the latter control signal so as to correct the above mentioned phase jump.

3,663,744

SELECTIVE TINT CORRECTION CIRCUITS

Leopold Albert Harwood, Somerville, N.J., assignor to RCA Corporation

Filed July 22, 1970, Ser. No. 57,280
Int. Cl. H04n 9/12
U.S. Cl. 178—5.4 HE **11 Claims**



Tint correction is provided in a color television system by altering the phase of the color subcarrier reference signal before application of this signal to color demodulators. Phase alteration is accomplished by monitoring the chrominance signals prior to demodulation to determine whether they possess phase components about the flesh axis. If such components exist, the chrominance signal is vectorially added to the reference oscillator signal to provide a new phased oscillator signal which, when applied to the demodulators, causes them to provide color signals representative of flesh tone.

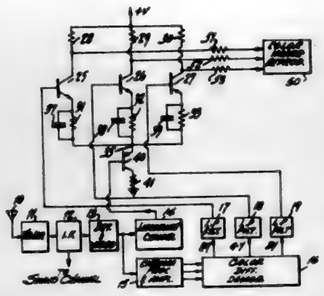
3,663,745

COMPENSATED TELEVISION MATRIX AMPLIFIERS

John J. O'Toole, Cherry Hill, N.J., assignor to RCA Corporation

Continuation of application Ser. No. 693,361, Dec. 26, 1967, now abandoned. This application Sept. 21, 1970, Ser. No. 74,135
Int. Cl. H04n 9/52
U.S. Cl. 178—5.4 MA **6 Claims**

A matrix amplifier for color television receivers employs two transistors of opposite conductivity types having their emitters coupled together. The base of a first transistor is coupled to a source of narrow band frequencies, such as color difference signals, which drives the first transistor in a common emitter mode. The base of the second transistor is coupled to a source of wideband signals, such as luminance signals. By virtue of the emitter coupling, the first transistor operates in a common base mode for the wideband signals. A



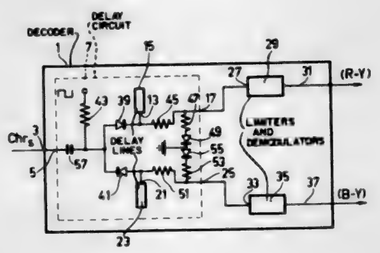
matrixed output of the narrow and wideband frequencies is taken from the collector of the first transistor.

3,663,746

DECODER FOR DECODING THE CHROMINANCE SIGNAL OF A COLOR TELEVISION SIGNAL

Franciscus Theodorus Backers, and Harry Leman Swaluw, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 24, 1969, Ser. No. 809,705
Claims priority, application Netherlands, Apr. 4, 1968, 6804788
Int. Cl. H04n 9/40
U.S. Cl. 178—5.4 S **3 Claims**



A decoder circuit for PAL and SECAM television signals which has two reflection type delay lines. A horizontal frequency switch alternately applies the chrominance signal to the delay lines. The switch may be a pair of diodes or transistors. Since each delay line is of the relecting type, it need only contain half of the delay line material normally required.

3,663,747

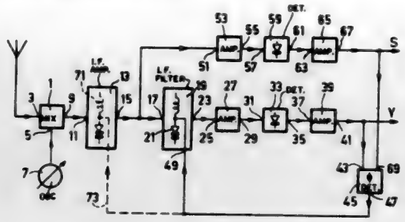
TELEVISION RECEIVER WITH PHASE DETECTOR CONTROLLED SOUND SUPPRESSION FILTER

Peter Johannes Hubertus Janssen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 3, 1969, Ser. No. 881,740
Claims priority, application Netherlands, Dec. 10, 1968, 6817659
Int. Cl. H04n 5/60
U.S. Cl. 178—5.8 R **4 Claims**

A television receiver has video and audio I.F. sections. An audio carrier trap with a varactor tuned diode is located in either a common I.F. section or the video I.F. section. A

phase detector has two inputs coupled to the audio and video sections respectively and an output coupled to the varactor



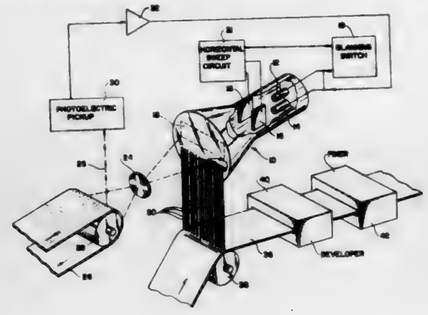
diode. Therefore, as the local oscillator is adjusted, the audio trap is always tuned to the sound carrier.

3,663,748

FACSIMILE SYSTEM UTILIZING SINGLE CRT FOR SCANNING AND IMAGE REPRODUCTION

Joseph L. Boos, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 6, 1969, Ser. No. 847,975
Int. Cl. H04n 1/12, 1/30, 1/24
U.S. Cl. 178—6.6 A **3 Claims**



An electrostatic facsimile system utilized a single cathode ray tube in performing both scanning and image reproduction operations. In one embodiment, one gun of a twin gun tube is used to produce a flying spot for scanning a document to be reproduced. The light reflected by the document is collected by a photomultiplier tube which produces an electrical image signal which is fed, through suitable monitoring means, to the second gun of the cathode ray tube. The external ends of the wire array terminate on the surface of a suitable receiving medium, where an electrostatic image is produced. Such image is then developed and fixed to produce a facsimile of the original. In a second embodiment one electron gun of a cathode ray tube is used for both scanning and image reproduction operations by providing means for switching the beam produced by the signal gun so that it alternately produces a flying spot on the document and produces an electrostatic image on the wire array.

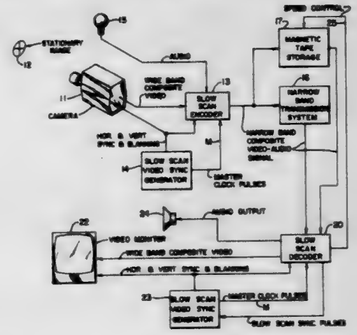
3,663,749

SLOW SCAN VIDEO METHOD AND SYSTEM

Max R. Cannon, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 24, 1969, Ser. No. 879,165
Int. Cl. H04n 7/12
U.S. Cl. 178—6.8 **10 Claims**

A digital slow scan video conversion method and system for wide band composite video signals generated by a television camera including an encoder with sampling means to progressively sample instantaneous amplitudes of the video signal, and a digital timer generates digital timing pulses quantitized in time in discrete steps relative to the wide band signal frequency to regulate the sampling for producing digital sampling pulses which form a narrow band signal that may be recorded on magnetic tape or transmitted over lines such as telephone lines. A decoder includes a disc-type storage medium storing or recording the digital sampling pulses in series, and a second digital timer generates digital timing pulses to regulate sequence and position of storage of the sampling pulses so as to gradually assemble the sampling pulses in the proper relation over a longer time interval for subsequent readout. Pulse width modulation of the narrow band video signal prior to storage improves the image detail, and pulse code modulation prior to storage provides for a totally digital form of video conversion to afford accurate timing between sampling and reproducing positions of the sampling pulses.

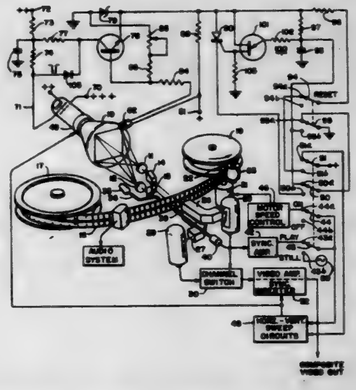


3,663,750

AUTOMATIC BEAM BLANKING CIRCUIT FOR AN ELECTRONIC VIDEO PLAYER

Emil E. Besler, Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

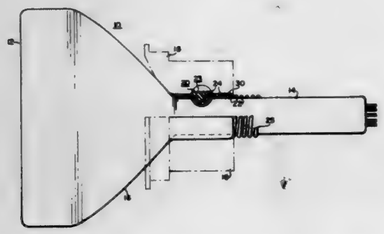
Filed Mar. 16, 1971, Ser. No. 124,789
Int. Cl. H04n 1/22
U.S. Cl. 178—7.2 **8 Claims**



An electronic video player having a flying spot scanner for producing a raster to scan the film being reproduced therein is capable of operation in a play mode, with the film continuously moving through a film gate where it is scanned, or in a still mode, where movement of the film is stopped and repeated scanning of the stopped film in the film gate is ef-

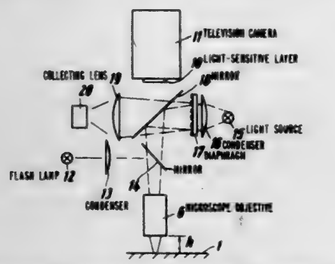
fected. The raster is collapsed for the still mode of operation, and a circuit operates automatically to cut off the beam in the flying spot scanner tube after a predetermined time of operation in the still mode to prevent excessive phosphor burn of the flying spot scanner screen for the collapsed raster.

3,663,751
POTTED ELCTRICAL COMPONENT ASSEMBLY
Albert E. Oberg, Horseheads, and Laurence E. White, Montour Falls, both of N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 16, 1970, Ser. No. 29,073
Int. Cl. H04n 5/64
U.S. Cl. 178—7.8 4 Claims



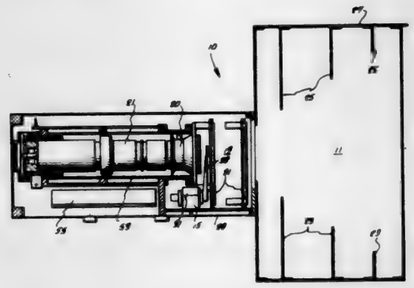
A potted electrical component assembly in which a component is secured to a device such as a cathode ray tube wherein the deflection yoke is potted to the neck of the cathode ray tube by means of a potted sleeve comprised of a cord encircling the neck of the cathode ray and a plastic potting material which solidifies to secure said deflection yoke to the tube neck positioned within the annular space between the deflection yoke and the neck of the tube. The potted sleeve may be removed by pulling out the cord in the direction of the tube axis which unwinds the cored and tears up the plastic potting material.

3,663,752
OPTICAL BULK STORAGE ARRANGEMENT FOR A DIGITAL COMPUTER
Ernst Froschle, Friedrichstr. 42, Aachen, Germany
Filed Oct. 21, 1969, Ser. No. 868,016
Claims priority, application Germany, Oct. 23, 1968, P 18 04 756.8
Int. Cl. G06k 7/00
U.S. Cl. 178—7.2 16 Claims



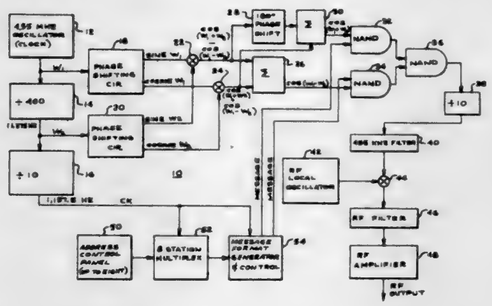
An optical bulk storage arrangement for a digital computer comprising an information carrier, an image of which is projected by means of objective lens means onto a camera device, e.g.: a television camera tube, having means for temporarily storing the image, means for varying the position of the focal plane of the objective lens means relative to the information carrier between two exposures of the camera device and means for initiating an exposure when the focal plane is just passing through the information carrier.

3,663,753
LIGHT SENSOR
George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Louis F. Schmidt, 1744 Brae Burn Road, Altadena, Calif.
Filed July 22, 1970, Ser. No. 57,252
Int. Cl. H04n 1/00
U.S. Cl. 178—7.92 8 Claims



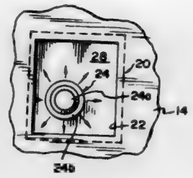
A light sensor is disclosed having an objective lens system capable of producing a backwardly curving image plane of a starfield which matches the similarly curved surface of the photocathode of an image dissector tube. The objective lens system comprises an airspaced triplet coupled to a clear glass faceplate on the image dissector tube. The triplet comprises an entrance lens having a convex-convex configuration, a second lens having a convex-plano configuration, and a third lens having a concave-convex configuration. The faceplate of the image dissector tube has a plano-concave configuration with the concave surface being the photocathode upon which the starfield is imaged.

3,663,754
COMMUNICATION SYSTEM HAVING MODULATOR FOR GENERATING ORTHOGONAL CONTINUOUS PHASE SYNCHRONOUS BINARY FSK
Drexel W. Hanna, Jr., Warminster, Pa., assignor to Totuus Communications, Inc., Horsham, Pa.
Filed May 18, 1970, Ser. No. 38,277
Int. Cl. H03c 3/38; H04b 1/04
U.S. Cl. 178—66 A 7 Claims



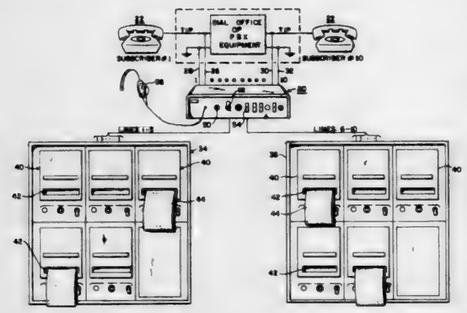
A communication system includes a modulator that generates orthogonal continuous phase synchronous binary frequency shift keying signals derived from a single oscillator without narrowband filters. Digital countdown chains are used to derive all appropriate signals. A transmitter incorporating the modulator and a receiver are also disclosed.

3,663,755
VARIABLE RESISTANCE CONTROL DEVICE
Melvin A. Lace, Prospect Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Apr. 23, 1970, Ser. No. 31,212
Int. Cl. H04r 5/00; H03g 5/12, 1/02
U.S. Cl. 179—1 D 5 Claims



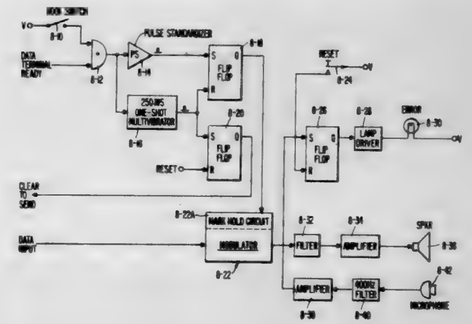
A variable impedance device for controlling a plurality of independent functions from a single control shaft means. The control shaft means has a two dimensional movement by manually sliding the shaft means within a confined space so as to change the resistive component between a contactor associated with the control shaft means and a plurality of fixed points of terminal connection formed on a flat resistance element over which the contactor moves during the adjustment. The control shaft means extends through a nonconductive plate and has associated therewith two knobs and other resistance elements which are used independent of one another and also independent of the flat resistance element.

3,663,756
DIALED NUMBER PRINTOUT SYSTEM
Ernest C. Karras, Chicago, and Lester R. Cain, Oaklawn, both of Ill., assignors to Comtech Corporation, Broadview, Ill.
Filed Oct. 27, 1969, Ser. No. 869,455
Int. Cl. H04m 15/18
U.S. Cl. 179—7.1 TP 5 Claims



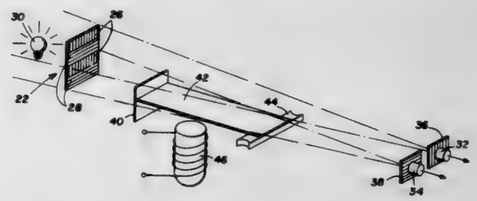
A small, portable, dialed number printout unit is provided which can be used in central offices or at the subscriber's premises to provide a print of the called number in numerical form on a record medium as soon as this number is dialed by the calling party. Printout of the called number will automatically occur approximately 20 seconds after the last digit is dialed or upon hang-up, whichever is sooner. Facilities are also provided for selectively printing only those dialed numbers which have a predetermined number of digits and rejecting all dialed numbers having digits greater or less than said predetermined number. A false digit appearing on the line before dialing is started may be automatically absorbed and not printed. Facilities are also provided for automatically advancing the record medium a predetermined amount after each printing operation such that the printed called number is immediately visible to an attendant.

3,663,757
ELECTROACOUSTIC CONVERTER
Carl R. Cassidy, Hatboro, Pa., assignor to Burroughs Corporation, Detroit, Mich.
Filed Nov. 12, 1969, Ser. No. 875,697
Int. Cl. H04m 11/06
U.S. Cl. 179—2 DP 7 Claims



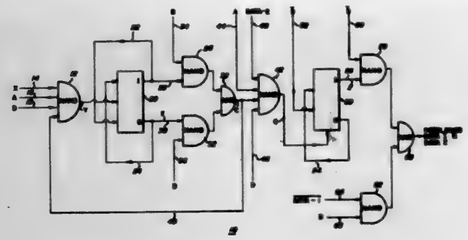
This converter enables the transmission of digital data over a standard telephone by means of a pair of audible tones. It can be used to couple a terminal machine such as a teletypewriter, with a computer at a distant location, using ordinary dial-up voice-grade telephone lines. It can be considered to be a coupler, a converter or an adapter. Functionally, it receives electrical pulses at its input, and converts them to audible tones at its output. There is, of course, no wiring connection required between the converter and the telephone itself.

3,663,758
SPEECH PATTERN RECOGNITION SYSTEM
Virgil Erbert, Albuquerque, N. Mex., assignor to Teaching Complements, Incorporated
Filed Mar. 24, 1970, Ser. No. 22,155
Int. Cl. G10l 1/00
U.S. Cl. 179—1 SA 27 Claims



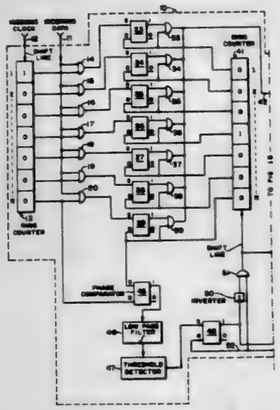
A speech pattern recognition system includes sets of radiation modulation members that transmit radiation of two different types and two radiation responsive members each for receiving one of the radiation types. A shutter is supported adjacent each set on a reed having a resonant frequency matched to the frequency of a particular segment of a spoken syllable or word. In the use of the system, the vibrational amplitudes of the shutters control the amount of each type of radiation that is received by the radiation responsive members. When the difference between the outputs of the radiation responsive members is at a maximum, the system produces an output indicative of the correct enunciation of the word or syllable.

3,663,759
AUTOMATIC PHASE CIRCUIT
Joseph F. Havel, Framingham, Mass., assignor to Raytheon Company, Lexington, Mass.
Continuation of application Ser. No. 762,109, Oct. 2, 1967, now abandoned. This application May 21, 1970, Ser. No. 41,663
Int. Cl. H04j 3/06
U.S. Cl. 179—15 BA 13 Claims



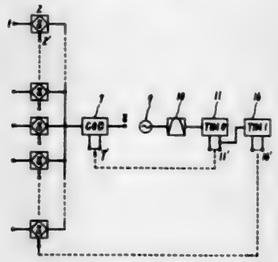
An automatic phase circuit for interleaving digital data trains, one train having an arbitrary phase relationship with a clock signal, which circuit employs a gating technique thereby eliminating the need for any delay lines.

3,663,760
METHOD AND APPARATUS FOR TIME DIVISION MULTIPLEX TRANSMISSION OF BINARY DATA
Russell G. De Witt, Berkeley Heights, N.J., assignor to The Western Union Telegraph Company, New York, N.Y.
Filed July 8, 1970, Ser. No. 53,082
Int. Cl. H04j 3/06
U.S. Cl. 179—15 BA 10 Claims



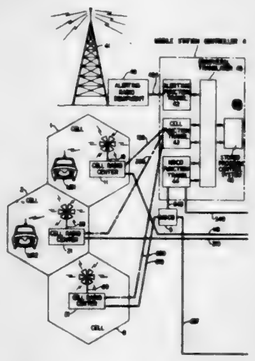
A method and apparatus for transmitting a binary data stream over a channel of a multiple channel time division multiplex transmission system wherein the channel includes N consecutively occurring transmission digit slots. Method and apparatus elements are provided for employing a pulse stuffing technique wherein the $(N-1)$th transmission digit slot is periodically stuffed high and the Nth digit slot is transmitted in the low state on each occurrence of the stuffing to signal the receiving facility of the stuffing. The $(N-1)$th slot when not stuffed and the remainder of the N digit slots are employed to transmit the binary data. The stuffing and signalling are performed sufficiently frequent to provide a long term average digit rate of the digit slots transmitting the data equal to the digit rate of the binary data stream.

3,663,761
TIME DIVISION MULTIPLEX TRANSMISSION SYSTEM
Denroku Kumagai, and Yutaka Kurahashi, both of Tokyo, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan
Continuation-in-part of application Ser. No. 470,138, July 10, 1965, now abandoned. This application Aug. 5, 1969, Ser. No. 852,528
Claims priority, application Japan, July 10, 1964, 39/39641
Int. Cl. H04j 3/00
U.S. Cl. 179—15 AT 7 Claims



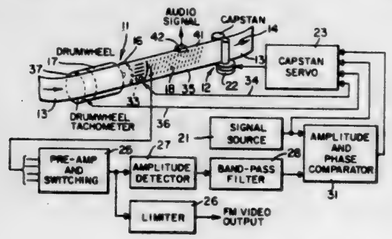
A multiplex transmission device includes pulse timing generating apparatus for generating channel sampling pulses and group sampling pulses whereby the time slots of the lowest frequency group at the input are successively divided to provide higher ordered groups of information at higher frequencies. A repeater station for combining and dropping groups or portions of groups of PCM signals in a multi-channel time division multiplex transmission system provides circuitry for generating timing control signals from groups of the multiplex signals to delay and/or inhibit select portions of selected information groups to either combine or drop selected information therein from the transmitted signal groups. The control circuitry utilizes either feed forward or feedback techniques.

3,663,762
MOBILE COMMUNICATION SYSTEM
Ames Edward Joel, Jr., South Orange, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 21, 1970, Ser. No. 99,926
Int. Cl. H04q 7/00
U.S. Cl. 179—41 A 20 Claims



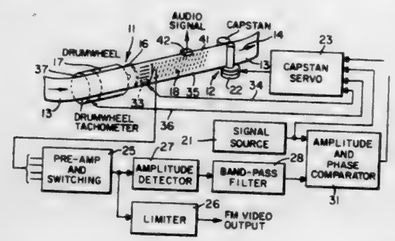
A high capacity cellular mobile communication system arranged to establish and maintain continuity of communication paths to mobile stations passing from the coverage of one radio transmitter into the coverage of another radio transmitter. A control center determines mobile station locations and enables a switching center to control dual access trunk circuitry to transfer an existing mobile station communication path from a formerly occupied cell to a new cell location. The switching center subsequently enables the dual access trunk to release the call connection to the formerly occupied cell.

3,663,763
AUTOMATIC TRACKING METHOD AND APPARATUS FOR ROTARY SCAN TAPE TRANSPORT
Allen J. Trost, Santa Clara, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Filed Apr. 6, 1970, Ser. No. 25,911
Int. Cl. G11b 15/46, 21/04
U.S. Cl. 179—100.2 T 3 Claims



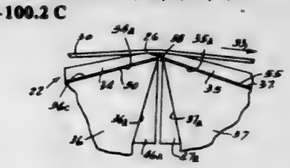
In order to provide automatic tracking during playback operation of a transverse scan tape transport, a low amplitude and low frequency signal is applied to the capstan drive in addition to the nominal playback drive signal such that the prerecorded transverse information tracks vacillate about an on-center tracking phase relationship with the rotary record/reproduce head wheel. The high frequency playback information signal from the rotary head wheel is thereby amplitude modulated in accordance with the varying tracking registration between the head wheel and transverse tracks. The amplitude modulation of the playback information signal is thereupon detected, and the frequency, phase and amplitude relationships between this detected signal and the signal employed for exciting the capstan drive are compared to provide a control signal for advancing or retarding the longitudinal tape movement until the transverse tracks and rotary head wheel are in optimum tracking phase relationship.

3,663,764
AUTOMATIC TRACKING CIRCUIT FOR TRANSVERSE SCAN MAGNETIC TAPE TRANSPORT
Allen J. Trost, Santa Clara, and Reginald W. Oldershaw, San Jose, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.
Filed Apr. 6, 1970, Ser. No. 25,910
Int. Cl. G11b 15/46, 21/04, 21/10
U.S. Cl. 179—100.2 T 1 Claim



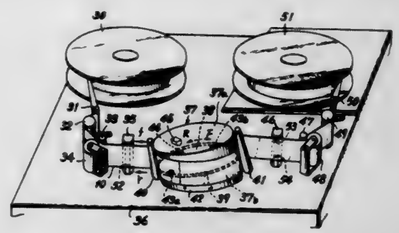
In order to provide automatic tracking during playback operation of a transverse scan tape transport, a low amplitude and low frequency signal is applied to the capstan drive in addition to the nominal playback drive signal such that the prerecorded transverse information tracks vacillate about an on-center tracking phase relationship with the rotary record/reproduce head wheel. The high frequency playback information signal from the rotary head wheel is thereby amplitude modulated in accordance with the varying tracking registration between the head wheel and transverse tracks. The amplitude modulation of the playback information signal is thereupon detected, and the frequency, phase and amplitude relationships between this detected signal and the signal employed for exciting the capstan drive are compared to provide a control signal for advancing or retarding the longitudinal tape movement until the transverse tracks and rotary head wheel are in optimum tracking phase relationship.

3,663,765
TRANSDUCER HEAD WITH LAMINATED POLE TIPS FOR WIDEBAND TRANSDUCER SYSTEM
Robert A. Schneider, Del Mar, Calif., assignor to Spin Physics, Inc., San Diego, Calif.
Continuation-in-part of application Ser. No. 23,157, Mar. 27, 1970, now Patent No. 3,614,339. This application July 30, 1970, Ser. No. 59,511. The portion of the term of the patent subsequent to Oct. 19, 1988, has been disclaimed.
Int. Cl. G11b 5/42, 5/22, 5/40
U.S. Cl. 179—100.2 C 9 Claims



A composite magnetic transducer head having laminated pole tips preferably formed of a special hot-pressed sintered iron-silicon-aluminum material with an electrical insulating layer isolating the pole tips from the ferrite core and having a thickness producing optimum high frequency response and signal to noise ratio.

3,663,766
CONTINUOUS SCANNING MAGNETIC RECORDING AND/OR REPRODUCING SYSTEM AND APPARATUS
Kunio Goto, Tokyo, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan
Filed July 29, 1970, Ser. No. 59,311
Claims priority, application Japan, July 31, 1969, 44/60023
Int. Cl. G11b 15/06, 15/44, 21/06
U.S. Cl. 179—100.2 T 12 Claims

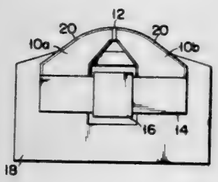


In a continuous scanning system, a rotary magnetic head scans a magnetic tape with oblique tracks from a beginning end to a terminating end of the tape. When the magnetic head has reached the end of the tape, the rotating direction of the magnetic head and the travelling direction of the magnetic tape are automatically reversed. The magnetic head again continuously and endlessly scans the tape. The magnetic head thus records or reproduces signals on the magnetic tape, upon the above scanning.

3,663,767
MAGNETIC HEAD

Kazumi Shimotori, Kawasaki-shi; Michiyasu Takagi, Yokohama-shi; Yoshihisa Kawamura, Chigasaki-shi, and Shoichi Kiyooka, Zushi-shi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Nov. 12, 1969, Ser. No. 875,937
Claims priority, application Japan, Nov. 16, 1968, 43/83666; 43/83667
Int. Cl. G11b *5/00*
U.S. Cl. 179—100.2 C 5 Claims

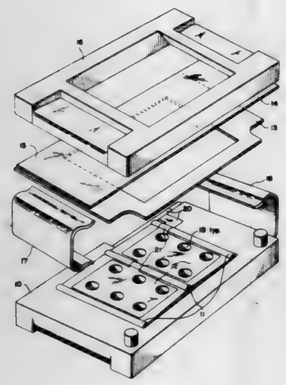


A magnetic head used in recording information in a magnetic tape or reading out the information already stored therein, which comprises a pair of head tips oppositely formed at the end with a minute gap allowed therebetween, each of the head tips being made of an alloy essentially consisting of 3 to 18 percent by weight of aluminum, 0 to 12 percent by weight of silicon, and iron and impurities as the remainder and at least part of the surface area of the head tip contacting the magnetic tape being provided with a nitride layer containing 10 to 12 percent by weight of nitrogen.

3,663,768
ELECTRET TRANSDUCER

Henning Schmidt Madsen, Hillerod, Denmark, and Cornelis Wilfred Reedyk, Ottawa, Ontario, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Jan. 15, 1971, Ser. No. 106,776
Int. Cl. H04r *19/00*
U.S. Cl. 179—111 E 7 Claims

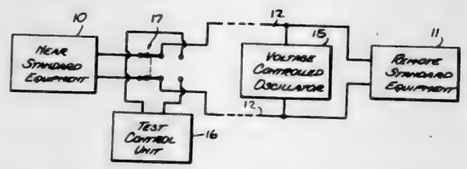


An electret transducer comprising a metallized diaphragm tensioned in juxtaposition with a metallic backplate in which the width to height of the air gap between the two is selected so that the sensitivity remains substantially constant over the life of the transducer. The backplate contains ridges over which the diaphram is tensioned.

3,663,769
METHOD AND APPARATUS FOR TESTING A COMMUNICATION LINE

John T. Boatwright, Hopkinton, and Donald L. Knight, Concord, both of N.H., assignors to Northeast Electronics Corporation, Concord, N.H.

Filed July 25, 1969, Ser. No. 844,965
Int. Cl. H04b *3/46*
U.S. Cl. 179—175.3 15 Claims

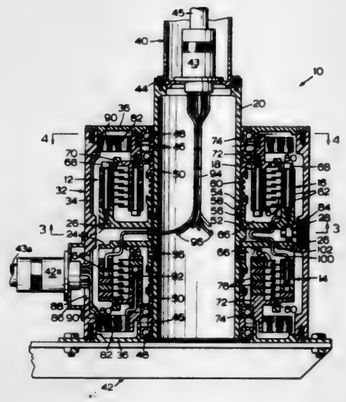


Testing of a communication line is accomplished by disposing a voltage controlled oscillator, e.g., a gas tube relaxation type, across the line at a distant point and applying a DC voltage to the line at a near point of sufficient magnitude to initiate oscillator operation, the AC signal generated by the oscillator being detected, and analyzed if desired, at the near point.

3,663,770
ELECTRICAL ROTARY JOINT

Ernest Groskopfs, Caledon East, Ontario, Canada, assignor to Spar Aerospace Products Limited, Toronto International Airport, Ontario, Canada

Filed Dec. 1, 1970, Ser. No. 93,938
Int. Cl. H01h *19/54, 27/76*
U.S. Cl. 200—11 R 20 Claims

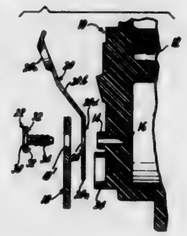


A rotary electrical joint consisting of at least one, and preferably two, rotary electrical contacts adapted to be secured to a rotating member, and at least one, preferably two, oscillating electrical contacts mounted for movement to and fro in an arc about the axis of rotation of the rotary contacts. The oscillating contacts are held in electrical engagement with the rotary contacts during at least a portion of one revolution of the rotary contacts. Circuit breaker means is provided to cyclically disengage the contacts at predetermined intervals during the rotation of the rotary contact and return drive means is provided to drive the oscillating contact in the opposite direction to the rotation of the rotary contact when the contacts are disengaged.

3,663,771
DISTRIBUTOR ROTOR WITH IMPROVED CONTACT SECURING MEANS

John Macyczko, and Endy China, both of Union Springs, N.Y., assignors to Gulf & Western Industries, Inc., New York, N.Y.

Filed Jan. 12, 1971, Ser. No. 105,820
Int. Cl. H01h *1/50, 11/06*
U.S. Cl. 200—19 DR 4 Claims

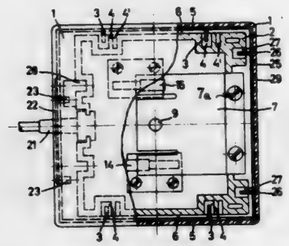


A distributor rotor is disclosed as including a blade and spring assembly enabling precise adjustment of rotor sweep diameter and rotor blade position prior to final assembly. The blade defines an elongated adjustment opening and the rotor includes a molded rotor body defining an upstanding boss. The assembly further includes a spring for assembly between the blade and the rotor body, the spring defining a boss opening for encircling the boss and a downwardly directed tooth for fixing the position of the spring when embedded into the rotor body. The elongated adjustment opening defined by the blade also fits over the boss so that the insertion of a drive screw into a central opening defined by the boss fixes the assembly. The assembly is accomplished on automatic or semi-automatic assembly equipment.

3,663,772
FOOT CONTROL FOR SWITCHING OF AN ELECTRIC DRIVE

Ulrich Grabel, and Peter Michaelis, both of Nurnberg, Germany, assignors to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt IHA, Max Grundig, Fuerth/Bay, Germany

Filed Aug. 11, 1970, Ser. No. 62,973
Claims priority, application Germany, Aug. 21, 1969, P 19 42 495.4
Int. Cl. H01h *3/14*
U.S. Cl. 200—86.5 11 Claims

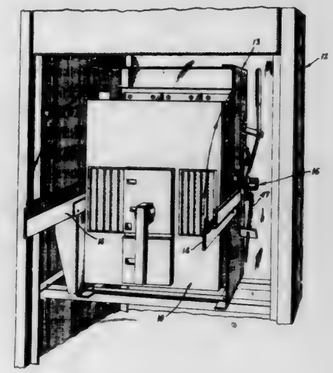


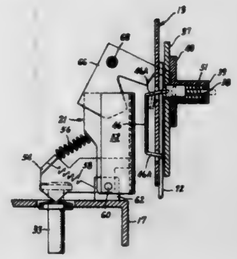
A foot control particularly for a dictating apparatus. The electric drive of the dictating apparatus is to be switched between an inoperative mode, a forward mode and a reverse mode and the switching between these modes is to be sequential. A housing includes an upwardly open lower shell section and a superimposed downwardly open shell section having two spaced marginal portions. The sections are connected with bayonet-type closures permitting the upper section to move upwardly and downwardly with reference to the lower section. A leaf spring is located in the housing and has a first end portion fixed to the lower shell section and urges the upward shell section upwardly with its remote second end portion. A spherical element is interposed between the second end portion and the upper shell sections so that the latter rocks about the spherical element with reference to the lower shell section when downward pressure is applied on one of two spaced marginal portions of the upper shell section. Pressure on one of these marginal portions causes the upper shell section to be rocked downwardly to a first position in which the drive is switched from inoperative to forward mode, and pressure on the other marginal portion causes the upper shell section to be rocked downwardly to a second position in which the drive is switched sequentially past the forward mode to a reverse mode.

3,663,773
SWITCHGEAR DRAW-OUT APPARATUS WITH CLUTCH INTERLOCK

David B. Powell, Bristol, Conn., assignor to General Electric Company

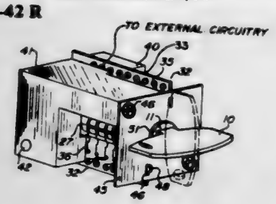
Continuation of application Ser. No. 17,021, Mar. 9, 1970, now abandoned, and a continuation of 772,305, Oct. 31, 1968, now abandoned. This application Nov. 9, 1970, Ser. No. 88,184
Int. Cl. H01h *33/48*
U.S. Cl. 200—50 AA 2 Claims





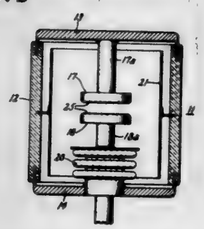
An assembly comprising an outer and an inner frame, the inner frame riding on rail portions and being cammed by a mechanism operated by a side mounted handle. Mating electrical contacts are provided on the inner and outer frames. Mechanical interlocks are provided to guard against breaking or making the load current path at the mating connectors. The interlocks disconnect the side mounted handle from the camming mechanism if electrical contacts in an electrical switching device carried by the inner frame are in the closed position.

3,663,774
KEY OPERATED SWITCH
Alvin Feder, Skokie, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Mar. 4, 1971, Ser. No. 121,095
Int. Cl. H01h 27/00
U.S. Cl. 200—42 R 13 Claims



A key operated switch is provided having a locking portion operative in response to insertion of a key to unlock and rotate. A nonconductive actuation cylinder is coupled to and rotates with the lock. This actuation cylinder has a conductive contact bar mounted therein, and has a key slot through the center. Circuit means are provided for connecting the actuation cylinder contact bar and external circuitry when the actuation cylinder is rotated. The key is provided having a first portion for insertion into the lock means for unlocking and rotating the same, and a second portion for insertion through the actuation cylinder key slot. The second portion is operative to inhibit portions of the circuit means from engaging the actuation cylinder contact bar.

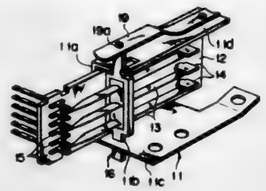
3,663,775
VACUUM INTERRUPTER WITH CONTACTS CONTAINING A MINOR PERCENTAGE OF ALUMINUM
Fordyce H. Horn, deceased, late of Schenectady, N.Y. (by Helen W. Horn, executrix); Joseph W. Porter, and Joseph L. Talento, both of Media, Pa., assignors to General Electric Company
Filed Mar. 24, 1970, Ser. No. 22,250
Int. Cl. H01h 33/66
U.S. Cl. 200—144 B 11 Claims



Discloses a vacuum-type electric circuit interrupter having its contacts formed of a porous refractory metal matrix and an alloy filling the pores of the matrix consisting essentially of copper, aluminum, and bismuth. In the alloy, the aluminum is present in a quantity of between 9 and 15 percent by weight of copper-aluminum, and the bismuth is present in a quantity of less than 5 percent by weight of the total alloy.

3,663,776
VIBRATOR ABSORBING MEANS FOR AN ELECTRICAL SWITCH
Shuji Muraki, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan
Filed May 14, 1971, Ser. No. 143,473
Claims priority, application Japan, May 19, 1970, 45/48426
Int. Cl. H01h 1/50
U.S. Cl. 200—166 H 3 Claims

An electrical switch having vibration absorbing means to eliminate mechanical and electrical click noises raised therein during a switching action, which comprises an actuating member consisting of an inner member of elastic material supporting one or more movable contact members by direct contact therewith, and an outer member of rigid material



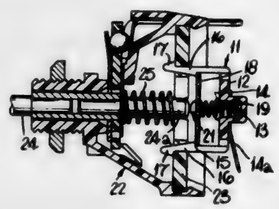
securely supporting the inner member. The elastic inner member serves to absorb and restrain the vibrations of the movable contact members, occurring during the switching action.

3,663,777
REED SWITCH
Anthony Steinmetz, and Douwe Mindert de Boer, both of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 21, 1970, Ser. No. 66,008
Claims priority, application Netherlands, Aug. 29, 1969, 691314; June 10, 1970, 7008388
Int. Cl. H01h 1/66
U.S. Cl. 200—166 C 8 Claims



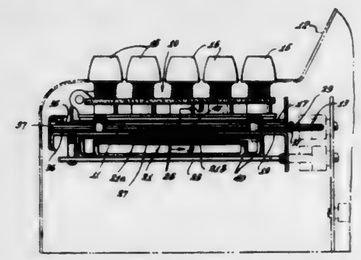
A switching device such as a reed switch having moving contacts whose outer contacting surface consists of an outer layer of metal such as ruthenium or rhodium having thickness of from 0.1 to 5.0 μm with an interrupted or non-interrupted underlayer of at least 1 percent by volume of non-metal.

3,663,778
ELECTRICAL SWITCHES
Robert Leonard Gleeson, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed July 24, 1970, Ser. No. 58,038
Claims priority, application Great Britain, Aug. 12, 1969, 40,184/69
Int. Cl. H01h 9/02
U.S. Cl. 200—168 C 5 Claims



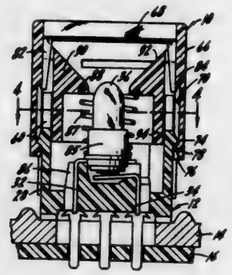
An electrical switch includes a body housing a pair of fixed contacts. A movable contact is movable into and out of engagement with the fixed contacts, and is urged out of engagement with the fixed contacts by a spring. The body of the switches provided with a pair of resilient lugs whereby the switch can be engaged with the casing of a further switch, so that an operating member of the further switch serves also to move the movable contact against the action of said spring.

3,663,779
SEALED ELECTRICAL PACKAGE
Richard K. Gerlach, Rolling Hills Estates, and Meryl E. Miller, Palos Verdes Peninsula, both of Calif., assignors to Datanetics Corporation, Redondo Beach, Calif.
Filed May 12, 1969, Ser. No. 823,785
Int. Cl. H01h 9/04
U.S. Cl. 200—168 G 24 Claims



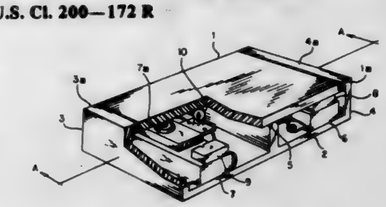
A substantially sealed and pressure compensated electrical package including a limp bladder in fluid communication with a module having electrical switching elements, the bladder being capable of substantially stress free inflation and deflation in response to changes in external environment pressures, without any fluid exchange between the module and the environment, whereby protection against toxic atmospheres is provided and inadvertent switching due to environmental pressure changes is avoided.

3,663,780
SWITCH IN A BUTTON
Bernard J. Golbeck, Crystal Lake, Ill., assignor to Oak Electro/Netics Corp., Crystal Lake, Ill.
Filed June 8, 1970, Ser. No. 44,310
Int. Cl. H01h 9/16
U.S. Cl. 200—167 8 Claims



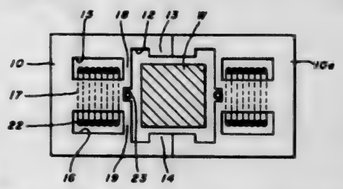
A button switch which includes a base and a button telescopically mounted on the base. The base and button are hollow and there is a spring positioned within the hollow interiors to urge the button outwardly away from the base. An interlock between the button and the base limits movement of the button. There are electrical terminals mounted on the base and movable electrical contact shoes mounted on the button and positioned for sliding contact with the terminals.

3,663,781
ELECTRICAL SWITCH HAVING A FLEXIBLE ONE-PIECE ACTUATOR
Robert C. Zimmerman, Manlius, N.Y., and James R. Lindsay, Fullerton, Calif., assignors to SCM Corporation, New York, N.Y.
Filed Nov. 23, 1970, Ser. No. 91,858
Int. Cl. H01h 3/02
U.S. Cl. 200—172 R 5 Claims



In an embodiment of an electrical switch, a rectangular translucent elastic plate having projections which extend from two opposing edges is coupled to a supporting structure. The supporting structure includes a rectangular base, two opposing side walls having projections over the base, and a fulcrum projecting from the base which is parallel to and equidistant from both walls. The plate rests on the fulcrum and the side wall projections overlap the plate projections thereby preventing clockwise rotation of one end of the plate and counterclockwise rotation of the opposing end of the plate. In each of the cavities created by the plate and supporting structure there is mounted a microswitch having a plunger which is triggered by a force responsive flexing of the plate and an indicator light which indicates the state of the microswitch.

3,663,782
LAMINATED IRON CORE INDUCTION CORNER-HEATING UNIT
William A. Emerson, Ellicott City, Md., assignor to United States Steel Corporation
Filed June 10, 1971, Ser. No. 151,667
Int. Cl. H05b 5/00
U.S. Cl. 219—10.43 6 Claims

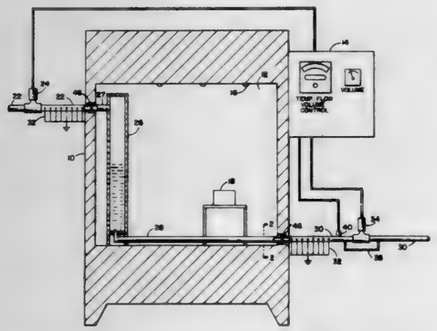


An induction heating unit for the corners of an elongated workpiece of rectangular cross section. The unit has a core formed of iron laminations, and preferably has occasional copper laminations interspersed with the iron laminations. Each lamination has a pair of windows which define a central leg and webs between the window and workpiece. A winding of copper tubing extends around the leg within the windows. The webs form an unbroken wall protecting the winding from exposure to the workpiece.

3,663,783
SAFETY LOAD AND TEMPERATURE CONTROL SYSTEM FOR MICROWAVE OVENS
Elbert L. McKague, Jr., Fort Worth, and Walter C. Cooper, Jr., Hurst, both of Tex., assignors to The United States of America as represented by the Secretary of the Army
Filed Dec. 7, 1970, Ser. No. 95,783
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 13 Claims

A safety load and temperature control system for microwave ovens wherein a variable volume of water is

passed through the oven for controlling the amount of energy received by a work piece therein. Microwave energy from magnetron tubes is introduced into the oven chamber for processing a work piece. The variable supply of water within the chamber is increased for small parts being cured and decreased for large parts being cured. The water is passed through a dielectrically transparent vessel within the chamber and is heated by the microwave energy proportional to the heated work piece or part. The temperature of the



water leaving the chamber is indicative of the rate of change of the work piece temperature. A temperature controller has upper and lower limits that increase or decrease the water in the chamber and passing therethrough to maintain the work piece heating rate within a desired range. The variable supply of water also serves as a dummy load to absorb excessive radiant energy, preventing destructive feedback to the magnetron tubes. Microwave filters at water inlet and outlet ports keep the high frequency energy within the chamber.

3,663,784

NON-TREPANNING NON-ROTARY ELECTRODE FOR ELECTRO-EROSION OF METALS

Albert Bruce Mainwaring, Phoenixville, Pa., assignor to Uniform Tubes, Inc., Collegeville, Pa.

Filed Apr. 20, 1970, Ser. No. 29,876
Int. Cl. B23p *1/08*
U.S. Cl. 219—69 E **11 Claims**



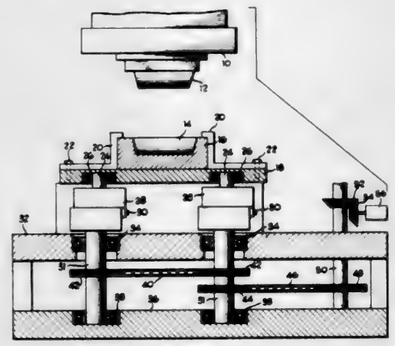
A non-rotary electrode for forming holes in metal workpieces by electro-erosion in which the through bore of passage for the dielectric fluid is spiral and generates a substantially crescent-shaped area when a cross-section is taken through the entire electrode, the maximum transverse depth of the crescent-shaped area extending up to the central axis of the electrode as a maximum so that substantially no build-up of a central plug in the workpiece occurs due to trepanning as the active end of the electrode is consumed in the process. The invention also includes electro-erosion apparatus and an electro-erosion method using the non-trepanning, non-rotary electrode.

3,663,785

METHOD OF EROSIVELY SHAPING A MASTER DIE

Elmer P. Hausermann, 4 N 224 Hawthorne, Bensenville, Ill.

Continuation-in-part of application Ser. No. 21,559, Mar. 23, 1970, now abandoned. This application Dec. 14, 1970, Ser. No. 97,993
Int. Cl. B23p *1/12*
U.S. Cl. 219—69 M **10 Claims**



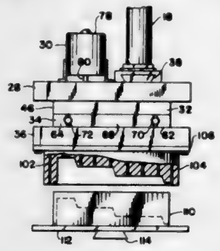
A method of shaping electrodes for use in electrical discharge machining processes comprising the steps of preparing an oversize cavity in a master die member on an apparatus that provides oscillatory rotary motion to either a die member or a model electrode member used to form the cavity of the die member, providing an abrasive surface on the cavity of master die member and utilizing in conjunction with the master die an apparatus, similar to that used to form the cavity in the master die member, to abrade and form an electrode workpiece member to an electrical discharge machining electrode of the size of the model electrode member.

3,663,786

APPARATUS FOR ELECTROEROSIVE MACHINING OF METAL

Thomas J. O'Connor, 100 Morgan Road, Ann Arbor, Mich.

Filed Apr. 27, 1966, Ser. No. 545,652
Int. Cl. B23p *1/04*, *1/08*
U.S. Cl. 219—69 V **6 Claims**



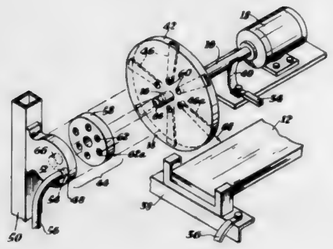
A tool for universal movement of a cutting member in a plane perpendicular to a predetermined direction of movement of the cutting member is disclosed. The tool is disclosed in conjunction with an abrasive electrode form having a shape which is the reverse image of an electrode to be produced thereby and which is constructed of abrasive particles held in a plastic matrix whereby an electrode may be abraded from electrode material on movement of the electrode form toward the electrode material in the predetermined direction. The structure for universally moving the electrode form cutting member in a plane perpendicular to the direction of movement of the cutting member includes relatively eccentric, and rotatable members positioned in two slides slidably mounted perpendicularly to each other.

3,663,787

ELECTRICALLY-ASSISTED COMBUSTION CUTTING APPARATUS

Walter T. Haswell, III; Terry O. Hockenberry, and Everard M. Williams, all of Pittsburgh, Pa., assignors to Walter T. Haswell, III; Terry O. Hockenberry and Everard M. Williams, Pittsburgh, Pa., part interest to each

Filed June 25, 1969, Ser. No. 836,528
Int. Cl. B23p *1/12*
U.S. Cl. 219—69 V **3 Claims**



Cutting apparatus comprises cutting electrode, means for moving the electrode, and means for supporting a workpiece adjacent a cutting surface of the electrode such that the cutting surface can be moved continuously in a direction substantially parallel to the face of the cut to be made in the workpiece. Means provided for translating one of the workpiece and the electrode toward and away from the other. A source of electric potential and a pulse generating circuit are connected to the electrode and workpiece to induce repetitive discharges across a gap between the electrode and workpiece. The apparatus further includes means for interjecting a combustion supporting medium into the gap whereby combustion of workpiece at the cutting face is initiated by the gap discharges.

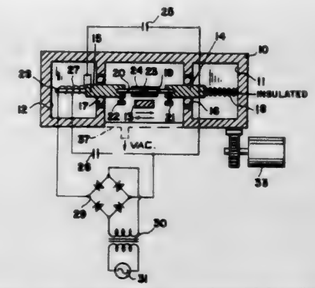
3,663,788

KINETIC DEPOSITION OF PARTICLES

Kiyoshi Inoue, 182, 3-chome, Tamagawayoga-Machi, Setagaya-ku, Tokyo, Japan

Continuation of application Ser. No. 574,056, Aug. 22, 1966, now abandoned , which is a continuation-in-part of application Ser. No. 311,061, Sept. 24, 1963, now Patent No. 3,267,710, and 508,487, Nov. 18, 1965, now Patent No. 3,512,384, dated May 19, 1970, which is a continuation-in-part of application Ser. No. 41,080, July 6, 1960, now Patent No. 3,232,085, dated Feb. 1, 1966. This application July 29, 1970, Ser. No. 64,104
Claims priority, application Japan, June 11, 1966, 41/37635; 41/45288; July 11, 1966, 41/45289; Aug. 19, 1966, 41/54709; 41/54710
Int. Cl. B23k *9/04*
U.S. Cl. 219—76 **25 Claims**

A method of coating a substrate in which a mass of particulate material is formed in situ or disposed between a pair of electrodes which produce a spark discharge to create a shock wave carrying the particles onto and bonding them to



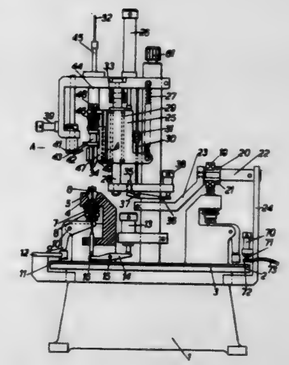
the substrate. The particles are activated by their presence within the discharge.

3,663,789

WELDING APPARATUS OF WIRE TERMINALS ON ELECTRONIC COMPONENTS

Giuseppe Camardella, Via Azio Biondi-1, 20154 Milan, Italy

Filed Mar. 15, 1971, Ser. No. 124,200
Int. Cl. B23k *9/12*
U.S. Cl. 219—79 **20 Claims**



Automatic welding apparatus of metal wire terminals on bodies of electronic components, comprising: mans for supporting said bodies in a plurality of positions on a step-by-step indexing turret; means for precision levelling or gauging the surfaces of the bodies to be welded, said levelling means operating at a fixed station with respect to the indexing turret; and means operating in a working station for feeding a preselected length of wire to a first operating position, for cutting said length of wire, for further feeding said length of wire up to contacting one of said bodies, and for welding the wire on the body by means of an electric discharge through the point of contact, the electric current being fed directly through the length of wire, on one side, and respectively through the supporting means of the bodies of the other side.

3,663,790

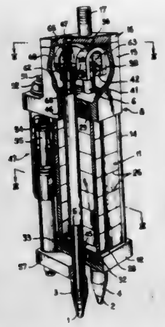
ELECTRICAL TRANSFORMER APPARATUS

Bernard Humblot, 6 Allee de la Bretoaniere, 78 Chambourcy, France

Filed May 4, 1970, Ser. No. 34,348
Claims priority, application France, May 22, 1969, 6916670
Int. Cl. B23k *9/28*
U.S. Cl. 219—86 **11 Claims**

Electrical transformer apparatus particularly well suited for use in resistance welding equipment and employing two

movable welding electrodes which together with the work piece form a single loop secondary winding in a magnetic



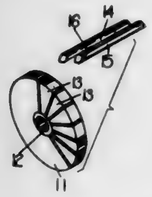
transformer. The electrodes are translated longitudinally with respect to the transformer and with respect to each other by means of a fluid operated ram.

3,663,791

DYNAMO ELECTRIC MACHINES

Brian Robert Allen, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Dec. 31, 1970, Ser. No. 103,124
Claims priority, application Great Britain, Dec. 31, 1969, 63,409/69
Int. Cl. B23k *11/04*
U.S. Cl. 219—107 6 Claims



A method of connecting the conductors of the rotor of a dynamo electric machine to the segments of the commutator of the machine includes, starting with a pair of rotor winding conductors which are physically and electrically interconnected adjacent the end of a first conductor of the pair of conductors, with the end of said first conductor projecting beyond the end of the second conductor, engaging the projecting end of the first conductor with the surface of a portion of a segment of a commutator. The commutator is formed with a shoulder which defines one end of the surface thereof, and the projecting portion of the rotor conductor is engaged with said portion of the segment at least up to said shoulder. The conductor is then resistance welded to the segment, so that the first and second conductors are electrically connected to the segment.

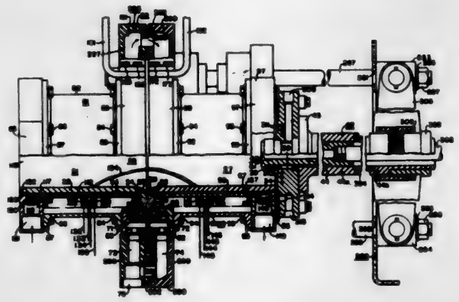
3,663,792

APPARATUS AND METHOD OF INCREASING ARC VOLTAGE AND GAS ENTHALPY IN A SELF-STABILIZING ARC HEATER

Maurice G. Fey, Turtle Creek, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 2, 1970, Ser. No. 15,597
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 P 7 Claims

The method includes admitting gas to be heated at a high velocity into an arc chamber through a narrow gap between spaced electrodes while maintaining across the electrodes a system or backup voltage sufficient at all times to cause electrical breakdown in the narrow gap between electrodes, while producing in the arc chamber a magnetic field having a preselected configuration to produce a beneficial effect or effects on the arc. The arc is periodically elongated by the high velocity gas until it attains such a length that the voltage required to sustain the arc exceeds the breakdown voltage of the gap whereupon the arc returns to the gap momentarily only to be blown out and elongated again. Gas is brought to the vicinity of the outside of the gap through a plurality of tangentially extending slots at spaced intervals around the entire periphery of the gap, whence it passes through the gap, the gas passing through the gap having a radial component and a tangential component. The high tangential flow component provides sufficiently large gas velocity to blow the arc



from the electrode gap at a greatly reduced mass flow rate which may be of the order of one-fourth the flow rate which would be required if gas were admitted solely in a radial direction through the gap. The resulting decrease in the volume of gas to be heated results in an increased enthalpy imparted to the heated gas which may be of the order of five times that which can be obtained by purely radial gas admission. A higher arc voltage, results in a greatly improved power factor, and resulting decreased arc current results in an improvement in electrode lifetimes. Centrifugal effects in the arc chamber together with the influence of the magnetic field on the arc establish conditions wherein the arc column virtually follows the center line of the heater.

Apparatus is provided for bringing gas to the gap to produce the aforementioned tangential flow coponent, and generate the magnetic field.

3,663,793

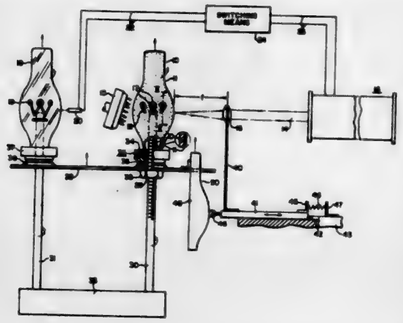
METHOD OF DECORATING A GLAZED ARTICLE UTILIZING A BEAM OF CORPUSCULAR ENERGY

James Petro, Little Falls, and Clair M. Rively, Old Bridge, both of N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 30, 1971, Ser. No. 129,438
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 LM 8 Claims

The surface of an article, such as a glass envelope for an electric lamp, is provided with a decorative pattern or indicia by coating the article with a vitreous material that includes a substance (such as lead oxide) that undergoes a permanent change in color when heated under reducing conditions, subjecting the article to a laser beam and a reducing gas flame, and varying the position of the article relative to the beam at a speed and in a manner such that the beam scans the article and thereby melts preselected portions of the vitreous coating and changes the color of such portions. In the case of a vitreous or ceramic article that is susceptible to thermally-induced fracturing, the vitreous coating material is preferably deposited on the article in the form of a frit and the article is

preheated to a temperature which is near or above its strain point, thus fusing the frit in place just before the glazed heated article is exposed to the reducing environment and laser beam.



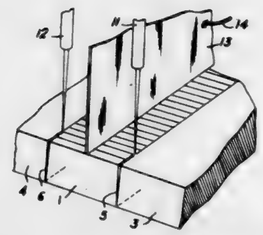
An apparatus and method for concurrently firing a glass frit on an article and color-etching the resulting glazed article with a laser having control means which includes a prototype article are also disclosed.

3,663,794

METHOD OF ELECTRON BEAM WELDING

Maurice de Cachard, Legorget 38, La Tronche, and Jean-Louis Georges, 2 rue Paul Valery 38, Grenoble, both of France

Filed May 4, 1971, Ser. No. 140,211
Claims priority, application France, May 29, 1970, 7019861
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 EM 3 Claims



Three adjacent metallic blocks comprising two lateral blocks fabricated from a metal which is different from the central block are joined together by forming weld fillets simultaneously along the two joint planes by means of two electron guns which are displaced in parallel motion respectively along each plane.

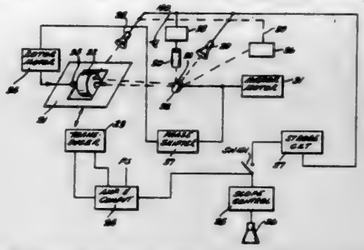
3,663,795

ROTOR BALANCER

Joe H. Myer, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 28, 1968, Ser. No. 770,983
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 26 Claims

A method and apparatus for dynamically balancing rotary bodies while rotating at operating speed. A laser beam is deflected in a circular path by a moving or nutating mirror or refracted by a wobbling lens which is made to move in synchronism with the rotation of the rotary element such that the beam constantly impinges upon the locus of imbalance of the element until sufficient energy is absorbed from the laser



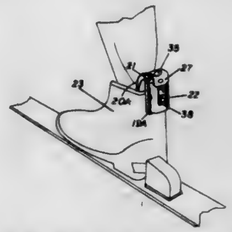
beam to melt and boil-off material from this locus to improve the balance of the rotary element such as a gyroscope rotor.

3,663,796

ELECTRICALLY HEATED BOOT SOCK AND BATTERY SUPPORTING POUCH THEREFOR

Benjamin M. Hines, Greenfield Hill, and Richard L. Johnson, Easton, both of Conn., assignors to Timely Products Corporation, Fairfield, Conn.

Filed Mar. 4, 1970, Ser. No. 16,371
Int. Cl. H05b *1/00*
U.S. Cl. 219—211 11 Claims



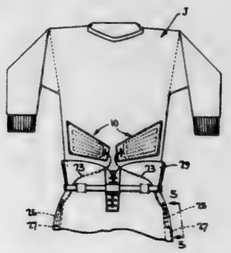
This disclosure is directed to an electrically heated boot sock and a pouch construction therefor for holding the battery. The pouch is constructed of foldable sheet material arranged to define a battery pocket and associated closure flap with contacts arranged to make positive electrical contact with the battery when the flap is closed. The pocket is formed to define a channelway extending along one side thereof through which a conductor connecting with one of the contacts is threaded, and a hooking means is attached to the pocket for detachably connecting the battery pouch to the boot of the wearer.

3,663,797

WEATHERGUARD JERSEY

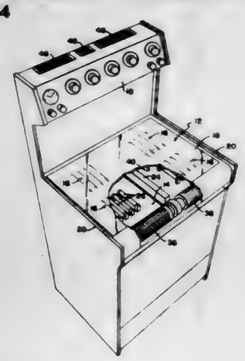
Roscoe C. Marsh, 3622 Mohegan Drive, San Antonio, Tex.

Filed Aug. 14, 1970, Ser. No. 63,780
Int. Cl. H05b *1/00*
U.S. Cl. 219—211 2 Claims



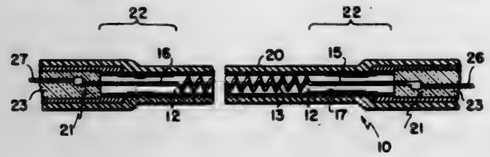
A garment usable as an outer jersey having pockets with heating elements embedded therein for maintaining the hands of the wearer sufficiently warm.

3,663,798
AN INFRARED HEATING SURFACE
Thomas O. P. Speidel, Bedford; Edward E. Trotter, Holliston, and Paul K. Shefsiek, Acton, all of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.
Filed Aug. 25, 1969, Ser. No. 852,609
Int. Cl. H01b 3/44, 3/74; H01c 1/02
U.S. Cl. 219—464 14 Claims



A heating or cooking system which includes an infrared heating source disposed below a surface transparent to infrared radiation which is directed upwardly through the surface. The surface may be maintained at a cool temperature by circulating air beneath the surface as radiation is passed through it. The heat source includes a resistance element for generating infrared radiation operated in an inert environment and a reflector to direct the infrared radiation toward and through the surface.

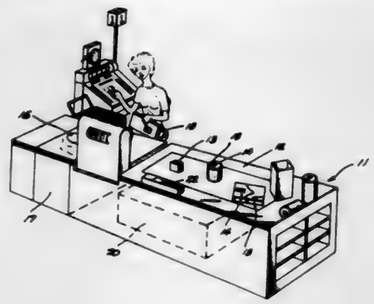
3,663,799
FLUOROPLASTIC ENCAPSULATED ELECTRICAL RESISTANCE HEATERS
Angus H. McArn, P.O. Box 11127, Pittsburgh, Pa.
Filed Oct. 12, 1970, Ser. No. 79,885
Int. Cl. H05b 3/06
U.S. Cl. 219—523 2 Claims



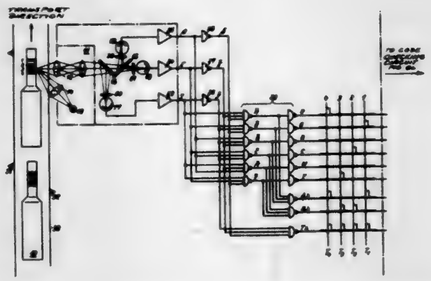
An electrical resistance immersion heater in which a resistance heater unit including an attached cold extension is encapsulated in a thin fluoroplastic sheathing. The cold extension and heater are capable of being formed in various shapes, the end of which is enclosed by means of a molded terminal ending.

3,663,800
OPTICAL LABEL READER AND DECODER
Jon H. Myer, Woodland Hills; Robert L. Haselinger, Culver, and Francis P. Webster, Simi, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Continuation of application Ser. No. 716,534, Mar. 27, 1968, now abandoned. This application Jan. 21, 1971, Ser. No. 108,626
Int. Cl. G06k 7/14, 19/06, 9/13; G01n 21/30
U.S. Cl. 235—61.11 E 11 Claims

A coded label having a leader, a unique preamble word and data words coded thereon, a system for optically reading the label, including a rotary bar scan optics for continually scanning a label from different incremental angles and generating pulse signals in response to a code thereon, and a decoder coupled to receive the pulse signals which is responsive to the leader and to the unique preamble before decoding the data words of the label, wherein the data will be decoded and displayed only after the label data words have been read twice and compared and the data is complete.



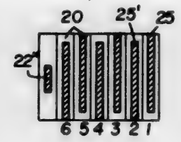
3,663,801
METHOD AND APPARATUS FOR EVALUATING COLOR-CODED INFORMATION
Robert Wahli, Unterengstringen, Switzerland, and Ciba Limited, Basel, Switzerland
Filed July 7, 1969, Ser. No. 839,455
Claims priority, application Switzerland, July 16, 1968, 10605/68
Int. Cl. G06k 7/12
U.S. Cl. 235—61.11 E 7 Claims



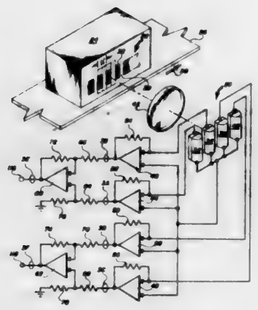
Method and apparatus for converting color-coded information into binary coded information and checking the latter against itself and/or a reference code, the original information being coded in the primary colors red, green and blue and the complementary colors cyan, magenta and yellow. By the conversion there is produced a first supplemental signal each time a primary color is detected and a second supplemental signal each time a complementary color is detected. The first and second supplemental signals are utilized to check the binary coded information converted from the color-coded original information.

3,663,802
RECORD FOR MACHINE SCANNING
Ernest Wildhaber, 124 Summit Drive, Rochester, N.Y.
Filed Mar. 9, 1970, Ser. No. 17,791
Int. Cl. G06k 7/10, 7/08, 9/02
U.S. Cl. 235—61.12 N 6 Claims

The characters of this record are made up of varying numbers of straight bars placed side by side. The bars are in positions selected among equally spaced bar positions. They are arranged in a binary code and bars in alternate positions in the character space may be displaced heightwise with respect to the other bars for further distinction.



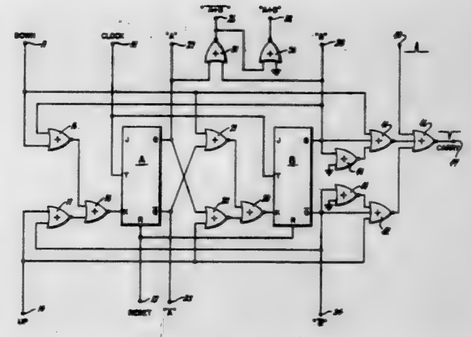
3,663,803
PITCH MATCHING DETECTING AND COUNTING SYSTEM
William L. Mohan, and Samuel P. Willits, both of Barrington, Ill., assignors to Spartanics, Ltd., Palatine, Ill.
Continuation-in-part of application Ser. No. 780,367, Dec. 2, 1968, now Patent No. 3,581,067, dated May 25, 1971. This application June 22, 1970, Ser. No. 47,962
Int. Cl. G06m 1/272
U.S. Cl. 235—92 V 11 Claims



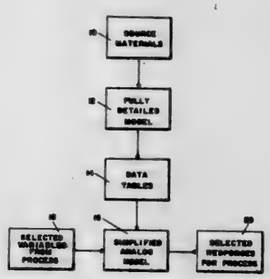
An apparatus for sensing and automatically decoding data printed or otherwise marked on objects moving past the apparatus. The coded data is in the form of one or more data channels each comprising a plurality of substantially uniform width stripes of alternating contrast characteristics. Each channel has a sensor array associated with it. Sensing of the coded data present in each channel is accomplished by matching sensor width to that of the coded data stripes and by utilizing sensor arrays that accomplish spatial filtering and signal reinforcement of the data present on each coded channel. Logic circuits sequentially determine the binary or numerical value of elements of coded data as they pass before the apparatus.

3,663,804
REVERSIBLE TERNARY COUNTER
Richard M. Newell, Livermore, Calif., assignor to Zeta Research, Inc., Lafayette, Calif.
Filed Aug. 18, 1970, Ser. No. 64,775
Int. Cl. G06m 3/04
U.S. Cl. 235—92 LG 11 Claims

Reversible ternary counter utilizing standard flip-flops and logic gates to provide a low cost counter having an easily decoded output. Means is included for generating a carry pulse whenever the counter overflows in either counting direction and for generating a rounding pulse if the counter is reset while in its high output state. A plurality of stages incorporating the invention can be cascaded to provide a counter having 3^N output states, where N is the number of stages cascaded.



3,663,805
METHOD AND APPARATUS FOR MONITORING PROCESSES
Norman L. Carr, Allison Park, and Donald L. Stahlfeld, Glenshaw, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Filed Sept. 1, 1967, Ser. No. 664,976
Int. Cl. G05b 17/00; C10g 13/00
U.S. Cl. 235—151.12 20 Claims

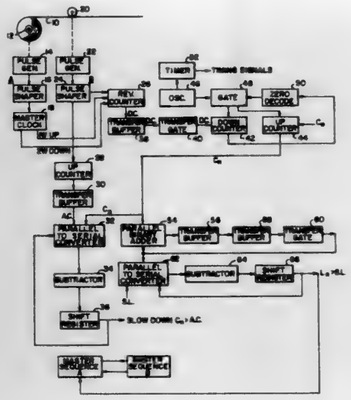


A method of and apparatus for monitoring a complex chemical process comprising the use of a detailed model and intermediate steps to generate a simplified monitoring model for use with the process which will anticipate process responses.

3,663,806
APPARATUS FOR CALCULATING AND DISPLAYING DYNAMIC COIL PARAMETERS
Veit C. Drankhan, Hamburg, and Frank Di Nicolantonio, Williamsville, both of N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 3, 1971, Ser. No. 112,228
Int. Cl. G06f 15/46
U.S. Cl. 235—151.32 10 Claims

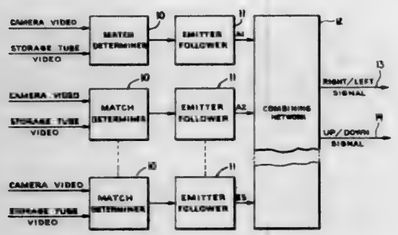
This disclosure relates to a system for calculating and dis-

playing coil parameters in a dynamic system in which materi-



al is being payed from a coil or reel.

3,663,807
STATISTICAL CORRELATING DEVICE
Klaus J. Hecker, Oberursel, Taunus, Germany, assignor to The United States of America as represented by the Secretary of the Navy
Filed Aug. 24, 1966, Ser. No. 575,225
Int. Cl. G06f *15/34*
U.S. Cl. 235—181 1 Claim



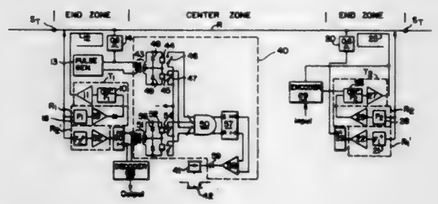
A statistical correlating device for comparing signal elements of a video image received from a camera pickup tube with previously stored signal elements of a video image simultaneously received from a storage tube, for determining the relative spatial deviation between respective signal elements of the two video images. The device employs a plurality of input channels for simultaneously receiving the two video image signals to be spatially compared, each channel including a match determiner comparing circuit for forming the absolute value of the difference between the two input signals, and an emitter follower circuit for providing a necessary low driving impedance. The plurality of channels terminate in a combining network resistor matrix which multiplies the difference signals representative of spatial deviation between the two video images by values representing the spatial location of the source of the stored video image signal in each channel. A pair of differential amplifiers within the combining network combine the signals into left/right and up/down control signals which may be used for positioning the gimbals of the pickup camera in such manner as to cause the spatial deviation between the camera and stored video images to be reduced to zero.

3,663,808
ILLUMINATED SAFETY CURBING
Wilfried Bastz, Bellevue, Wash., assignor to Traffic & Safety Control Systems, Inc., Seattle, Wash.
Filed June 8, 1970, Ser. No. 44,235
Int. Cl. F21v *33/00*
U.S. Cl. 240—2 10 Claims



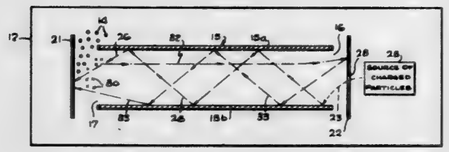
An illuminated safety curbing construction which utilizes a diving bell configuration to protect illuminators from damage by water entering the structure and employing hidden fastening means to secure its translucent cover to its base. Single- or double-faced elongated illuminated curbing sections are adapted to be combined in various configurations with a nose section to form curbings and dividers for different traffic separator situations. Special fastening means provide flexibility and ruggedness to withstand the impact of vehicle wheels.

3,663,809
DETECTION OF END ZONES IN ALTERNATING TRACK CIRCUITS
Henry C. Sibley, Adams Basin, N.Y., assignor to General Signal Corporation, Rochester, N.Y.
Filed May 4, 1970, Ser. No. 34,237
Int. Cl. B61l *23/30*
U.S. Cl. 246—34 CT 9 Claims



A continuous rail track circuit apparatus having termination shunts at each end detects the presence of a railroad vehicle shunt across the rails and indicates vehicle presence. Shunt means near one end of the track circuit periodically introduces a test shunt across the track, and receiver means coupled to the rails near the other end of the track circuit is sensitive to changes in track circuit parameters occasioned by the test shunt and respondingly introduces a reply test shunt in accordance with the period of the shunt means. Means at the first end of the circuit sensitive to changes in track circuit parameters occasioned by the reply test shunt provides indication of vehicle presence when the change in track circuit parameters ceases.

3,663,810
ELECTRON-MULTIPLIER-IONIZER MASS SPECTROMETER
Donald R. Cone, Palo Alto, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.
Filed Feb. 14, 1969, Ser. No. 799,363
Int. Cl. H01j *39/36*
U.S. Cl. 250—41.9 TF 7 Claims



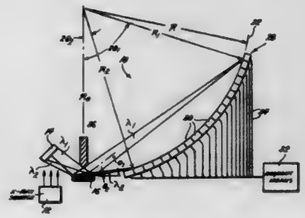
An electron multiplier used together with additional elements to form a simple spectrometer for mass distribution studies. The multiplier is used to multiply a few electrons to provide an electron cascade at the multiplier output end which provides a trigger pulse, serving as a time reference and to ionize molecules at the output end. The multiplier serves as a path for positive ions which accelerate towards the multiplier's input end, whereat they collide with a surface to produce secondary electrons, which are then multiplied by the multiplier as they accelerate to the output end to provide output pulses, whose time displacements from the trigger are indicative of the mass to charge ratio of the created ions.

3,663,811
METHOD FOR DETERMINING A RESTRICTIVE AIR FILTER
Frederick L. Voelz, 16133 118th Avenue, Orland Park, Ill.
Filed Oct. 21, 1970, Ser. No. 82,864
Int. Cl. G01n *15/00*
U.S. Cl. 250—43.5 R 8 Claims



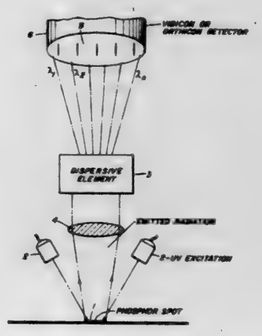
A method for determining whether a carburetor air filter element unduly restricts the flow of combustion air to an internal combustion engine is disclosed. This method comprises analyzing exhaust gases from an internal combustion engine operated at no load conditions on the main carburetion circuit both with and without the air filter element being tested in the air intake system. If the carbon monoxide concentration of the exhaust gases obtained without the element in the system is substantially reduced in comparison with the carbon monoxide concentration of the exhaust gases obtained with the element in the system, the air filter element unduly restricts the flow of air to the engine.

3,663,812
X-RAY SPECTROGRAPHIC MEANS HAVING FIXED ANALYZING AND DETECTING MEANS
Jude H. Koenig, San Jose, Calif.; James A. Schoeffel, Alton, Ill.; Gene J. Carron, St. Louis County, and Lionel K. Walford, St. Louis, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.
Filed Feb. 27, 1969, Ser. No. 802,962
Int. Cl. G01n *23/20*
U.S. Cl. 250—49.5 PE 25 Claims



Means for analyzing the composition of materials including an excitation source of relatively high energy particles or radiations, and means for directing the particles or radiations from said source at a sample of the material to be analyzed so that X-rays of wavelengths that are characteristic of the sample constituents are given off. The subject means also include specially bent crystal means which are positioned to intercept and diffract the characteristic X-rays in an ordered manner, and detector means onto which the diffracted characteristic X-rays are directed, said X-rays producing responses at the detector means from which qualitative and quantitative information about the characteristic X-rays and hence about the constituents of the sample can be obtained.

3,663,813
OPTICAL READER FOR LUMINESCENT CODES LUMINESCING IN DIFFERENT WAVELENGTHS
Robert Frank Shaw, Bloomfield Hills, Mich., assignor to American Cyanamid Company, Stamford, Conn.
Filed Jan. 19, 1970, Ser. No. 3,992
Int. Cl. G01j *3/06*
U.S. Cl. 250—71 R 4 Claims



Symbols formed by marking a substrate with coded inks, the coding represented by the absence or presence in one or more levels of one or more photoluminescent components, are irradiated with ultraviolet light and the photoluminescence from the various coding components is projected through a dispersing agent, such as a prism or a grating, onto the sensitive surface of a television camera tube, such as a vidicon or orthicon, the output of the camera tube producing electrical pulses in each scan corresponding to the position of

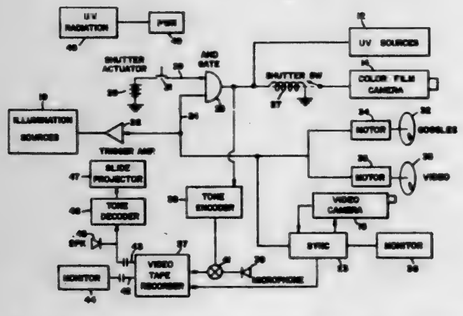
the various photoluminescent colors. The output can be read out on an oscilloscope or other readout device synchronized with the television camera electron scan. The presence of coding components are represented by pulses in corresponding positions and the height of the pulses can represent the level of component concentration if it is present in more than one concentration.

3,663,814

SYSTEM FOR DELINEATING SELECTIVE RESPONSE OF A MATERIAL TO RADIATION IN PRESENCE OF VISIBLE ILLUMINATION

Andrew Madsen, Alamo, Calif., assignor to Resource Data Corporation, Denver, Colo.

Filed Jan. 29, 1969, Ser. No. 795,119
Int. Cl. G01n *21/00*
U.S. Cl. 250—83.3 UV **4 Claims**



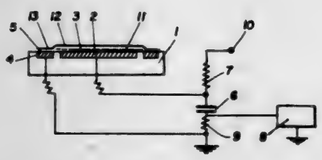
A pulsed visible illumination source illuminates a material to allow, for example, a helicopter pilot to fly over the surface of the earth in darkness. The visible light is interrupted to allow a pulsed ultraviolet source to stimulate luminescent reradiation from the material which reradiation is detected by observers and/or cameras. Both observers and camera are shielded by goggles or shutters so that the stimulated luminescence produced by the ultraviolet is not masked by the visible illumination. Such shutters are synchronized with the visible illumination pulses.

3,663,815

METHOD AND APPARATUS FOR COUNTING RADIATION DAMAGE TRACKS IN SHEET MATERIAL USING A CAPACITIVE DISCHARGE DEVICE

William Gunn Cross, Deep River, Ontario, and Luigi Tommasino, Toronto, Ontario, both of Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Province of Ontario, Canada

Filed Apr. 23, 1969, Ser. No. 828,411
Claims priority, application Canada, Feb. 18, 1969, 043,252
Int. Cl. G01t *1/02*
U.S. Cl. 250—83.3 CD **6 Claims**



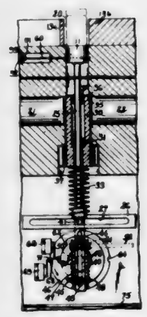
Fission fragment tracks produced in sheet mica and other electrical insulating materials of radiation dosimeters are counted by leaching the tracks so that they provide electrical discharge paths through the sheet, placing an aluminum foil on top of the sheet, applying a voltage between an electrode covering the underside of the sheet and the foil to sequentially puncture the foil by electrical discharges through the tracks and counting the discharges.

3,663,816

SAMPLE-CONVEYING MECHANISM FOR SCINTILLATION COUNTING

Walter O. Scherzer, Wallingford, Conn., and Edward W. Thomas, Northport, N.Y., assignors to Beckmann Instruments, Inc., Fullerton, Calif.

Filed May 20, 1966, Ser. No. 551,714
Int. Cl. G01t *1/20, 7/02*
U.S. Cl. 250—106 **6 Claims**



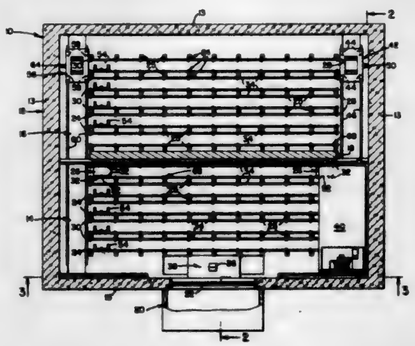
A conveying mechanism for transporting a sample vial from an external loading platform into a light-tight counting chamber of a scintillation counter. The invention comprises a wall defining a counting chamber having an elongated passage, the wall having a shoulder, a sample platform, having a shaft coupled thereto to position the platform through the passage and into the counting chamber, and a sleeve movable about said shaft for engaging the shoulder to prevent external light from entering the counting chamber.

3,663,817

RADIOACTIVE WASTE STORAGE SYSTEM AND METHOD

Robert P. Sayers, Chicago, Ill., assignor to FMC Corporation, San Jose, Calif.

Filed July 28, 1969, Ser. No. 845,360
Int. Cl. G21h *5/00*
U.S. Cl. 250—106 **26 Claims**



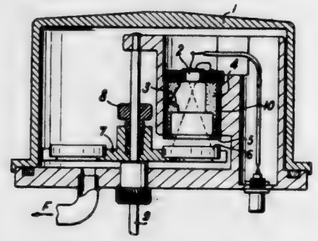
A system and method for storing radioactive waste, wherein the waste is placed in receptacles and the receptacles are moved selectively along a plurality of storage paths. The receptacles are retained selectively on said paths for periods of time dependent upon the periods required for the radioactivity of the waste therein to decay to predetermined levels.

3,663,818

METHOD AND APPARATUS FOR DETERMINATION OF A HIGHLY ACTIVE ELEMENT BY ALPHA PARTICLE

Marcel Guery, 31 bis, avenue Saint-Laurent, 91 Orsay, France, assignor to Commissariat A l'Energie Atomique, Paris, France

Filed Dec. 30, 1969, Ser. No. 889,156
Claims priority, application France, Jan. 14, 1969, 6900457
Int. Cl. G01t *1/00*
U.S. Cl. 250—106 SC **2 Claims**



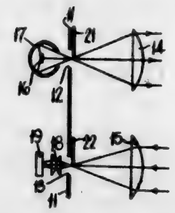
A method of determination of an element having high alpha activity and diluted in a substance having low alpha activity by alpha particle spectrometry of a source having a thickness at least equal to the path of the alpha particles which provide a spectral curve or so-called degraded spectrum having a practically rectilinear portion, wherein said method consists in determining the quantity of said high-alpha activity element contained in said source by measuring the area of one section of the degraded spectrum which is comprised between two fixed energies located between the limits of said rectilinear portion, said area after subtraction of the background and the contribution of the substance which has a low alpha activity being proportional to the content to be determined.

3,663,819

ROAD VEHICLE LIGHTING SYSTEM IN WHICH SAME SHUTTER OBSCURES PHOTOCELL WHEN SYSTEM IS OPERATIVE AND WHEN IT IS NOT ENERGIZED

Harris Vernon Hicks, Lichfield, and Roger William Nolan, Redditch, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed July 15, 1970, Ser. No. 55,018
Claims priority, application Great Britain, July 23, 1969, 36,946/69; Nov. 14, 1969, 50,312/69
Int. Cl. B60q *1/02*; F21v *11/18*; G01i *1/20*
U.S. Cl. 250—201 **8 Claims**



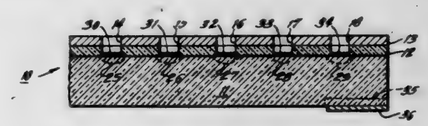
A lighting system for a road vehicle has the projector for producing a beam of light illuminating the road in front of the vehicle and a receiver with a photocell for receiving light from an oncoming vehicle. There is a first shutter movable to progressively cut off the projected beam, and a second shutter movable to progressively mask the photocell from light from an oncoming vehicle, so that the system achieves a condition wherein sufficient of the projected beam is cut off to avoid dazzling the driver of the oncoming vehicle. The second shutter is returned to a rest position, wherein the photocell is masked, when the projector is not energized, and means is provided for moving the second shutter, when the projector is energized to an inoperative position wherein light can fall on the photocell. This prevents saturation of the photocell during daylight hours.

3,663,820

DIODE ARRAY RADIATION RESPONSIVE DEVICE

Joseph Burns, Pequannock, N.J., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Oct. 7, 1970, Ser. No. 78,734
Int. Cl. H01j *39/12*
U.S. Cl. 250—211 J **6 Claims**



A silicon wafer has a plurality of spaced diode junctions formed in its upper surface and through openings in a silicon dioxide layer. A conductive grid is disposed over the silicon dioxide layer and has openings exposing the elemental diode surfaces. The top of the exposed diode surfaces are cesiated. Each of the diodes is reverse biased and the cesiated surfaces of the diodes emit electrons, appropriately adjusting their potential in response to radiation applied to the adjacent rear surface of the wafer.

3,663,821

IMAGE INTENSIFIER DEVICE AND METHOD FOR RECEIVING RADIANT ENERGY IMAGES FOR CONVERSION AND INTENSIFICATION

Jack Finkle, 918 East 14th Street, Brooklyn, N.Y.

Continuation-in-part of application Ser. No. 306,897, Sept. 5, 1963, now Patent No. 3,436,550, and 459,529, May 24, 1965, now Patent No. 3,482,104. This application Mar. 11, 1969, Ser. No. 806,323
Int. Cl. H01j *31/50*
U.S. Cl. 250—213 VT **7 Claims**

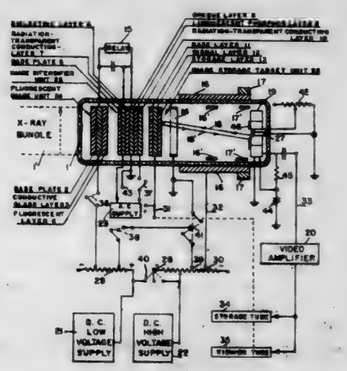


Image intensifier device and method for image intensification in which a bundle of ionizing radiation containing an intelligence pattern impinges upon a fluorescent layer of an

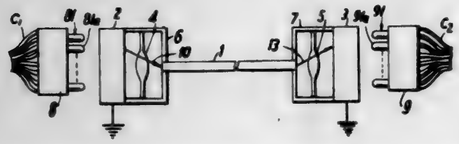
anode luminary structure to produce fluorescence and whose fluorescent output excites the further emission of photons from an adjacent image intensifier structure of the solid state type, the latter being connected in series with a unipotential source of high voltage and high frequency and said high voltage effecting further light emission from said intensifier structure, said unipotential source being further connected to a conducting layer of said fluorescent anode and to an actuating relay in a series arrangement such that said unipotential of high frequency is released to said image intensifier in an instantaneous "surge flow" concurrent with the transmission of the ionizing bundle through the face of an evacuated tube containing said fluorescing anode luminary unit and said image intensifier structure in cascade arrangement and further; said image intensifier being connected to a source of high alternating field frequency to further activate said image intensifier to produce light emission and an intensified image therefrom; the said activation being due to excitation of a dielectric layer so that the ionizing bundle evokes "charge transport" therethrough to an adjoining radiation-transparent opaque layer, and a photoelectro—luminescent phosphor layer, said activation being reinforced by the concurrently applied high voltage potentials to the conductor boundary layers of said intensifier structure, to produce a stored conductivity pattern upon an image target having a long-time storage function for scansion by a cathode-ray beam of electrons, said pattern being a replica of the original image inherent in the ionizing bundle of rays.

3,663,822

MULTI-TERMINAL OPTICAL CABLE UTILIZING A FLEXIBLE GRADED OPTICAL FIBER

Teiju Uchida, Tokyo, Japan, assignor to Nippon Selfoc Company Limited, Tokyo, Japan

Filed Dec. 23, 1970, Ser. No. 101,039
Claims priority, application Japan, Dec. 29, 1969, 44/105248
Int. Cl. G02b 5/14; H01j 39/12
U.S. Cl. 250—217 S **9 Claims**



A multi-terminal optical cable includes an optical focusing fiber having a refractive index distribution in which the index varies in substantial inverse proportion to the square of the radial distance form the central longitudinal axis of the fiber to its outer periphery. A plurality of input electrical signals are converted into corresponding light signals at one end of the fiber. Those light signals are imaged by the fiber in a one-to-one relationship on an array of light-sensing elements at the other end of the fiber at which the light images are reconverted to electrical signals, corresponding to the input electrical signals.

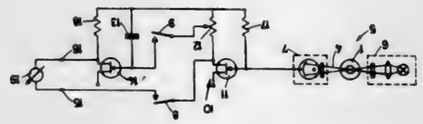
3,663,823

METHOD AND APPARATUS FOR PHOTOMETRIC ANALYSIS

Lars Erik Ohlin, Stocksund, and Jan Olof Lofvenmark, Huddinge, both of Sweden, assignors to Linson Instrument Aktiebolag, Stockholm, Sweden

Filed Dec. 16, 1968, Ser. No. 783,822
Claims priority, application Sweden, Dec. 18, 1967, 17342/67
Int. Cl. G01n 21/26
U.S. Cl. 250—218 **3 Claims**

A method and an apparatus for sequentially testing a series of samples in respect of the absorbency or another optical characteristic by means of a single-beam photometric system. The photometric system has a sample cell which is displaceable between a first position, in which it is in the path of light between the light source and the light-sensitive detector of the photometric system, and a second position, in which it is clear of the path of light. Immediately prior to each test a reference signal is generated with the sample cell in the second position and using the air in the path of light as a



reference sample. This reference signal is stored by means of a capacitor and when the actual sample is tested with the sample cell in the first position, the stored reference signal is retrieved and compared with the signal obtained on the test. Before the testing of the series of samples is commenced the photometric system is calibrated by means of a blank sample to give equal signals for the blank sample and the air used as a reference sample.

3,663,824

LENS APPARATUS FOR INSPECTION SYSTEM

William H. Blaisdell, Rochester, and Edward C. Cornelius, Fairport, both of N.Y., and Howard J. Emerson, Deerfield Beach, Fla., assignors to Eastman Kodak Company, Rochester, N.Y.

Original application Apr. 1, 1969, Ser. No. 812,107, now Patent No. 3,556,664, dated Jan. 19, 1971. Divided and this application Sept. 10, 1970, Ser. No. 71,044
Int. Cl. G01n 21/18, 21/30, 21/16
U.S. Cl. 250—219 R **2 Claims**



Light is disclosed as being directed at and through a photographic web, the dispersed light exiting from such web being gathered by a cylindrical lens which is so masked that it may be employed, without modification, for webs of various widths.

3,663,825

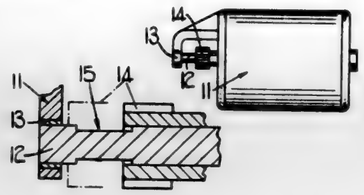
STARTER MOTORS FOR INTERNAL COMBUSTION ENGINES

Roy Price Bowcott, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Nov. 10, 1970, Ser. No. 88,365
Claims priority, application Great Britain, Nov. 20, 1969, 56,822/69
Int. Cl. F02n 11/14
U.S. Cl. 290—38 **7 Claims**

A starter motor for an internal combustion engine includes a rotatable shaft and a pinion assembly rotatable with the shaft. The pinion assembly is movable axially relative to the shaft from a rest position to an operative position wherein in use the pinion of the pinion assembly engages the toothed wheel of the engine which is to be started. The portion of the shaft along which the pinion assembly moves includes a region of reduced diameter which commences adjacent the pinion of the pinion assembly, when the pinion assembly is in its rest position, and which terminates within the pinion assembly when the pinion assembly is in its operative position.

The region of reduced diameter may be constituted by



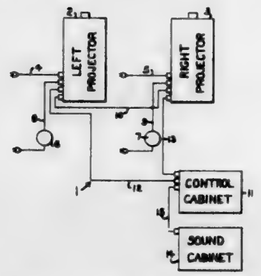
several smaller regions spaced apart by lands the diameter of which is equal to the diameter of the remainder of the shaft.

3,663,826

AUTOMATIC CONTROL SYSTEM FOR PROGRAMMING ELECTRICALLY OPERATED THEATER EQUIPMENT

Robert J. Schumann, Leawood, and Wayne A. Priest, Kansas City, both of Kans., assignors to Durwood, Inc., Kansas City, Mo.

Filed July 13, 1970, Ser. No. 54,210
Int. Cl. H02j 1/00
U.S. Cl. 307—39 **7 Claims**



An automatic control system for selectively programming electrically operated theater equipment, such as sound equipment, house lights, curtain movement controls, screen size controls, special effects, and a plurality of film projectors wherein the control system includes an electrical circuit for activating equipment to perform its respective function in response to a signal from a counter circuit. The counter circuit is operative to produce a signal at each of a plurality of spaced time increments and the equipment activating circuits have inhibit means for holding the counter at a selected time increment during operation of the selected equipment and the equipment activating circuits have inhibit cancel means built into motor start and picture changeover circuits to prevent inhibit or stopping on these functions. A film break circuit is electrically connected to each of the film projector activating circuits for signaling the respective projector to stop in the event of a film break and a cueing circuit is electrically connected to each of the film projectors and to the counter for restarting the counter in response to a cue signal.

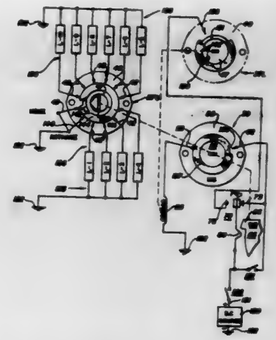
3,663,827

STEPPING ASSEMBLY AND CIRCUIT

Frederick M. Ford, Carpentersville, and Raymond J. Silhavy, Cary, both of Ill., assignors to Oak Electro/Netics Corp.

Original application May 22, 1969, Ser. No. 826,894, now Patent No. 3,582,579. Divided and this application May 27, 1970, Ser. No. 51,404
Int. Cl. H01h 43/14
U.S. Cl. 307—41 **5 Claims**

An intervalometer uses a rotary switch mounted to base through shafts which maintain concentricity. An offset stepping mechanism drives the switch under control of a drive energizing circuit having interrupter contacts on the switch. A load energizing circuit includes additional contacts on the switch for sequentially energizing a plurality of independent loads, while shunting all nonenergized loads. Separate switch sections separate the drive energizing circuit from the load energizing circuit. When the switch is in a home position, it must be manually rotated to another position before automatic sequential stepping can occur.

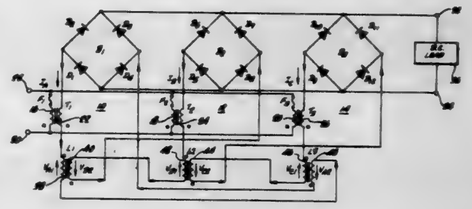


3,663,828

FAILSAFE MULTIPLE TRANSFORMER CIRCUIT CONFIGURATION

George M. Low, Deputy Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Horacio Eduardo Gavira, 11350 E. Walcroft St., Lakewood, Calif.

Filed Oct. 20, 1970, Ser. No. 82,280
Int. Cl. G05f 1/48
U.S. Cl. 307—83 **11 Claims**

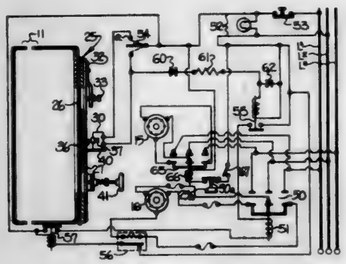


A failsafe multiple transformer circuit configuration, useful in providing power to electrical loads is disclosed. A circuit configuration for applying power to direct current loads includes a plurality of transformer circuits connected in parallel. Each transformer circuit includes a diode bridge rectifier circuit having the input terminals thereof connected across a secondary coil and the output terminals thereof mutually coupled in parallel with the output terminals of all other transformer circuits. Equalizing reactors are connected in series with the secondary coils to compensate for voltage imbalances that may be developed in the respective transformer circuits. A direct current load may be connected across the mutually coupled output terminals of the respective transformer circuits.

Alternating current loads are accommodated by a plurality of parallel coupled transformer circuits each including a transformer having a pair of secondary coils. The respective secondary coils are parallel connected in two sets, one set for each half cycle. A diode rectifier is connected in series with each secondary coil and a silicon-controlled rectifier (SCR), associated with each set of secondary coils, is serially con-

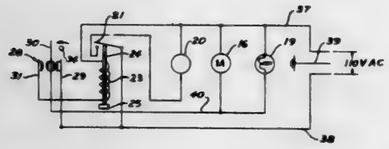
nected with an alternating current load. Equalizing reactors are employed in both sets of secondary coil circuits in the same manner as they were employed in the direct current configuration.

3,663,829
PRESSURE SENSITIVE CONTROL APPARATUS
Arnold Broadbent, Shaw, England, assignor to Parks-Cramer (Great Britain) Ltd., Oldham, Lancashire, England
Original application May 21, 1969, Ser. No. 826,550. Divided and this application Sept. 14, 1970, Ser. No. 71,661
Int. Cl. H01h *35/18*
U.S. Cl. 307—118 **4 Claims**



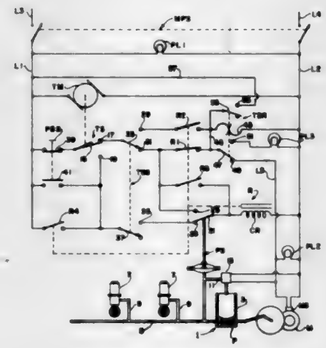
The control apparatus of this invention is for controlling the operation of a mechanism in response to repeated long-term changes in fluid pressure; e.g., a fiber-conveying air stream, wherein the fluid also is subject to short-term pressure changes such as are attendant to turbulence of an air stream, for example. The apparatus comprises a flexible diaphragm movable in response to both repeated long-term and repeated short-term pressure changes and also includes time delay means connecting a movable means, which is movable between first and second positions by the diaphragm, to the mechanism for effecting a desired response in the mechanism at such times that the movable means occupies a selected one of the first and second positions for a predetermined long-term period of time established by the time delay means and thereby avoiding rapidly repeated intermittent responses of the mechanism as a result of the short-term pressure changes acting on the diaphragm.

3,663,830
ELECTRIC TIMER
Clifford E. Miller, 5307 East 14th St., Oakland, Calif.
Filed June 29, 1970, Ser. No. 50,457
Int. Cl. H01h *43/14*
U.S. Cl. 307—141 **6 Claims**



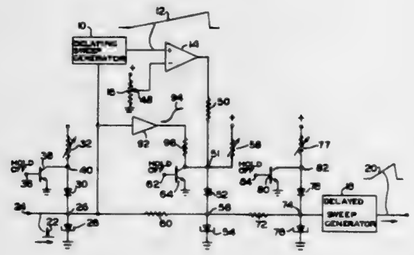
An electric timer for measuring predetermined time intervals to which the timer can be manually set. The timer includes a motor-driven main timing shaft equipped with an indicator hand moved by the shaft about a calibrated face subdivided into time intervals. The shaft is equipped with a knob to facilitate manual positioning of the hand at any selected time interval, and the timer is placed in operation by manual displacement of such knob, shaft, and hand from a zero time position into any time-measuring calibration. A light providing a visual indicator is included, and it is energized concurrently with the timer motor to provide indicia that the timer is in operation. A buzzer or other audible indicator is also included, and it becomes operative at a predetermine instant in any timing interval being measured to provide indicia that the timing cycle has been or is nearing completion. The timer is arranged so that both the visual and audible indicators are energized concurrently for a brief interval of predetermined duration, and all of the various states of the timer are generally responsive to and determined by the condition of a main control switch which is sequentially changed from a normal-run, to an alarm-run, and then to a non-run condition in accordance with predetermined angular position of the timing shaft during a timing cycle.

3,663,831
CONTROL CIRCUIT FOR LUBRICATING APPARATUS
John F. Cook, St. Louis, Mo., assignor to McNeil Corporation, Akron, Ohio
Filed Dec. 4, 1970, Ser. No. 95,303
Int. Cl. H01h *7/08*
U.S. Cl. 307—141 **11 Claims**



A control for periodically initiating operation of pumping apparatus of a lubricating system and stopping the pumping apparatus in response to development of a predetermined lubrication pressure in the system. The control includes an initiating switch which is periodically actuated, e.g., by a timer, a pressure-responsive switch which is actuated in response to development of the predetermined pressure, and a relay including sets of normally open and normally closed contacts. Circuitry includes a switch which is selectively operable to provide a first mode connecting normally closed contacts of the relay in a power circuit with the pumping apparatus for actuation thereof and also connecting the relay in an operating circuit with the pressure-responsive switch and with the timer switch to cause energization of the relay when the predetermined pressure is developed and deenergization thereof when the time switch is actuated. The switch also provides a second mode of operation connecting normally open contacts of the relay in the power circuit with the pumping apparatus for actuation thereof and also connecting the relay in an operating circuit with the pressure-responsive switch and with the timer switch to cause energization of the relay when the timer switch is actuated and deenergization thereof when the predetermined pressure is developed. Accordingly, in the first mode, operation of the pumping apparatus is initiated for an initial lubrication cycle when the power is turned on, i.e., applied across the power circuit, and thereafter operation of the pumping apparatus is at periodic lubrication intervals determined by the timer. In the second mode, operation of the pumping apparatus is solely at lubrication intervals determined by the timer.

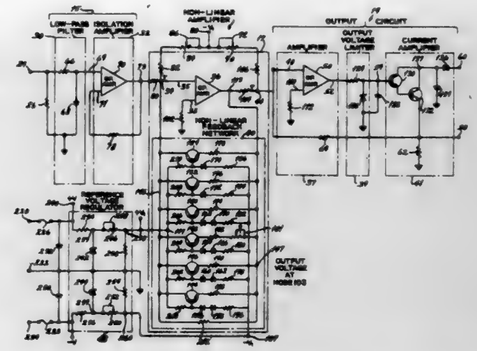
3,663,832
DELAY PICKOFF CIRCUIT
William J. De Vey, Beaverton, and Lester L. Larson, Portland, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.
Filed Mar. 17, 1971, Ser. No. 125,211
Int. Cl. H03k *4/08*
U.S. Cl. 307—228 **7 Claims**



A delay pickoff circuit initiates the generation of the ramp voltage of a delayed sweep generator of an oscilloscope in response to a comparison of an adjustable voltage from a delay time multiplier in a voltage comparator with the ramp voltage of a delaying sweep generator. The circuit utilizes a delaying sweep start gate voltage, which initiates the generation of the ramp voltage of the delaying sweep generator, to cause starting of the delayed sweep generator with less time delay after the start of the delaying sweep generator than is possible in prior circuits. This delaying sweep start gate voltage is employed to supply current to a tunnel diode which causes the tunnel diode to change from its low to high voltage state to thereby cause production of a delayed sweep start gate voltage when this operation of the tunnel diodes is enabled by a signal from the comparator as a result of setting the delay time multiplier at its zero delay setting. Current derived from the delaying sweep start voltage also conditions the tunnel diode for a similar change as a result of a signal from the comparator produced by a voltage comparison when the multiplier is set for substantially greater delays. A voltage derived from the delaying sweep start gate voltage and having a lesser rise time than the delaying sweep start gate voltage is employed to supply a part of this current to the tunnel diode in order to smooth the transition between these two conditions of operation of the tunnel diode.

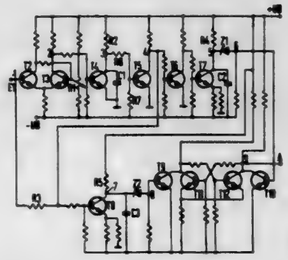
3,663,833
SQUARE ROOT EXTRACTOR FOR A PROCESS CONTROL SYSTEM
Robert K. C. Pao, and Louis H. Fricke, Jr., both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.
Filed Apr. 2, 1970, Ser. No. 25,126
Int. Cl. G06g *7/12*
U.S. Cl. 307—229 **11 Claims**

A square root extractor circuit adapted for operation in a process control loop wherein a differential pressure transducer generates a process variable signal which is proportional to the square of the flow rate of the process being controlled. The square root extractor circuit includes a nonlinear amplifier having a nonlinear feedback network therein including a plurality of parallel connected electroresponsive devices. These electroresponsive devices are successively biased into conduction in response to an increasing level of the input signal applied to the nonlinear amplifier, so that the



amplifier has a smooth, exponentially shaped voltage gain characteristic which approximates the square root function.

3,663,834
CIRCUIT ARRANGEMENT FOR LEVEL SUPERVISION IN TRANSMISSION SYSTEMS WITH FREQUENCY-OR PHASE MODULATION
Joachim Siglow, Wolfratshausen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Munich, Germany
Filed July 28, 1970, Ser. No. 58,870
Claims priority, application Germany, July 29, 1969, P 19 38 510.5
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 **5 Claims**

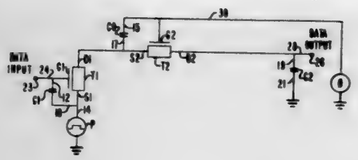


Circuitry is described for supervising the signal levels in frequency or phase modulation transmission systems by means of an evaluation circuit which emits a first signal if a predetermined threshold level is exceeded by the carrier frequency. A second signal is emitted if the carrier frequency undershoots said threshold level. A threshold circuit recognizes when the carrier frequency exceeds the predetermined threshold level and operates to actuate a first time element which is designed to determine whether the carrier signal has failed to reach the threshold level during a specified time period.

3,663,835
FIELD EFFECT TRANSISTOR CIRCUIT
William K. Hoffman, Shelburne, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 28, 1970, Ser. No. 6,495
Int. Cl. H03k *17/00*
U.S. Cl. 307—246 **7 Claims**

A circuit has a field effect transistor (FET) with source, drain and gate electrodes, and a capacitor connecting the

source and gate electrode. Means is provided for applying a sufficient pulse to the source electrode and through the



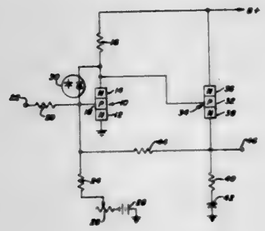
capacitor to the gate electrode to give an output signal at the drain electrode independent of any signal information which may be stored on the gate electrode.

3,663,836

PHASE SHIFTER FOR ULTRAHIGH FREQUENCIES

Rafael Fernandez-Sein, San Germar, P.R., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 9, 1970, Ser. No. 45,103
Int. Cl. H03k 1/12
U.S. Cl. 307—262 **5 Claims**



A circuit is described for obtaining a controllable phase shift with very little amplitude variation at ultrahigh frequencies, the circuit being entirely solid state and readily integrated. This is achieved by a shunt-series feedback pair of transistors wherein the output of a first transistor is applied through a second emitter follower transistor and a feedback path to the base of the first transistor, together with a variable capacitance diode connected in shunt with the collector-base junction of the first transistor.

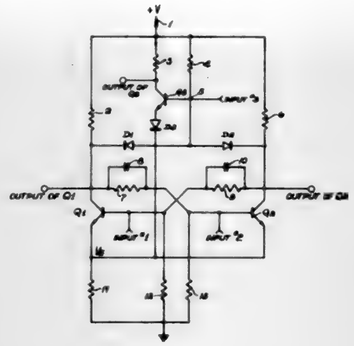
3,663,837

TRI-STABLE STATE CIRCUITRY FOR DIGITAL COMPUTERS

George Epstein, Malibu, and Hideki Yamanaka, Los Angeles, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 24, 1971, Ser. No. 146,034
Int. Cl. H03k 3/14
U.S. Cl. 307—289 **8 Claims**

A tri-stable circuit preferably instrumented in solid state components. The circuit resembles a modified ECCLES-JORDAN "flip-flop" with an extra stage providing a third stable state. The circuit responds to the combination of three input logic values, each in straightforward binary form. Three unique logical output combinations also in binary form are



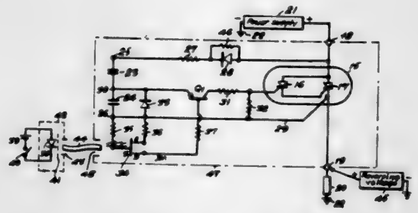
available in response to a like number of possible input combinations.

3,663,838

OPTICALLY TRIGGERED THYRISTOR

Eberhart Reimers, 7700 Random Run L. #201, Falls Church, Va.

Filed Oct. 16, 1970, Ser. No. 81,308
Int. Cl. H03k 17/00
U.S. Cl. 307—311 **5 Claims**



A thyristor circuit employing optical triggering of the thyristor and wherein the new circuit configuration thereof provides complete isolated gate triggering of the thyristor without implementation of direct or electromagnetic gate coupled triggering means.

3,663,839

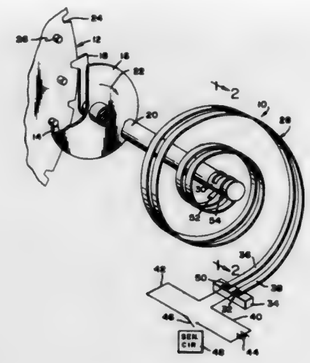
THERMAL MOTOR

George M. Low, Acting Administrator of the National Aeronautics and Space Administration in respect to an invention of; Lloyd J. Derr, 4624 Wille Lee, La Crescenta, Calif., and Robert A. Tobias, 1523 Harding Avenue, Pasadena, Calif.

Continuation-in-part of application Ser. No. 856,415, Sept. 9, 1969, now Patent No. 3,562,575. This application Feb. 24, 1971, Ser. No. 118,270
Int. Cl. H02m 7/00
U.S. Cl. 310—4 **5 Claims**

An electrically powered actuator for providing a rotational or large linear motion, which is simple and highly reliable, including a bi-metallic strip with a slot extending along its length from one end to a position near the opposite end. In a rotational actuator, the strip is bent into a spiral, with the inner turn fixed to the shaft which is to be rotated and the outer turn fixed to a support and connected to electrical

leads. Current passed through the leads and through the slotted strip heats it to make it uncoil or to make it coil



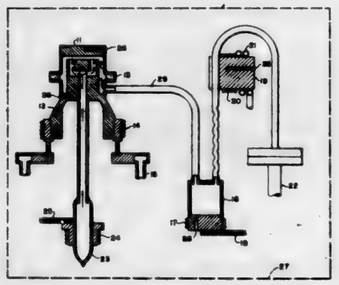
further, the several rotations of the strip resulting in a large rotation of the shaft.

3,663,840

THERMIONIC CONVERTER WITH ADDITIVES

Firooz Rufeh; David P. Lieb, both of Lexington, and Robert C. Howard, Wayland, all of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed Oct. 24, 1968, Ser. No. 770,325
Int. Cl. H01j 45/00
U.S. Cl. 310—4 **4 Claims**



A method and device for providing both electronegative and electropositive adsorbates to the emitter and collector surfaces of thermionic converters. The adsorbates are contained in a single reservoir and are provided at a temperature which is compatible with that at which the converter operates.

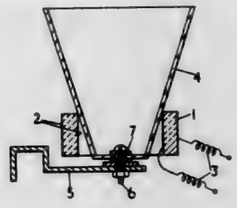
3,663,841

ULTRASONIC TRANSDUCERS

Joseph Donald Parker, London, England, assignor to Electro-Mechanical Design Limited, London, England

Filed Apr. 22, 1970, Ser. No. 30,702
Int. Cl. H01V 7/100
U.S. Cl. 310—8.2 **5 Claims**

An ultrasonic transducer which includes a piezo-electric element of annular form having electrodes provided upon its inner and outer curved surfaces to permit the crystal to be vibrated in the circumferential mode, wherein a radiating member in the form of a cup or tube closed at one end is



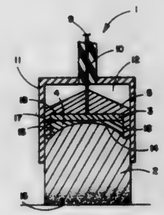
fitted to the annulus, support means being attached to the bottom of the cup or tube.

3,663,842

ELASTOMERIC GRADED ACOUSTIC IMPEDANCE COUPLING DEVICE

Darrow L. Miller, Los Angeles, Calif., assignor to North American Rockwell Corporation

Filed Sept. 14, 1970, Ser. No. 72,057
Int. Cl. H01v 7/00
U.S. Cl. 310—8.3 **7 Claims**

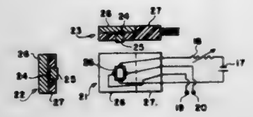


An ultrasonic probe has a solid, flexible, elastic, graded acoustical impedance coupling device having fine geometrical and naturally shaped, metal and glass component powders, with their characteristic acoustic impedance values, disposed in graded varying concentrations in solid, elastomeric silicones, polyurethane, or the like low acoustic impedance, solid elastomers, providing a shaped, composite matrix coupling or a delay line. The graded matrix of component fine shaped powder in an elastomer provides a proximate matching impedance adjacent to the interface with the flat piezoelectric transducer at one device end, and a similar matching impedance near the interface to the inspected workpiece at the other device end, with intermediate low-loss graded impedance values inbetween. When a lens is employed, an effective tapered impedance can be obtained at the interface with the test article by graduating the solid concentrations primarily at the workpiece end. The elasticity of the device provides close conformation with the inspected workpiece surface, and reduces the acoustic reflection due to surface roughness and irregularities.

3,663,843
HALL EFFECT TRANSDUCER

David L. Smith, Hampton, Va., assignor to The United States of America as represented by the administrator of the National Aeronautics and Space Administration

Filed Mar. 19, 1971, Ser. No. 125,979
Int. Cl. H01c 7/16
U.S. Cl. 310—10 7 Claims

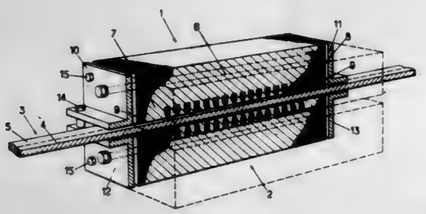


A Hall effect transducer that produces output voltages directly proportional to rotary shaft displacements. The linearity of this transducer is extended to a range of input shaft rotation up to ±50° by means of a special Hall probe.

3,663,844
ASYNCHRONOUS MACHINE HAVING AN OPEN MAGNETIC CIRCUIT

Michel Kant, Paris, and Robert Bonneffille, Issy-les-Moulineaux, both of France, assignors to ANVAR Agence Nationale De Valorisation De La Recherche, Tour Aurore, Paris-Defense, Courbevare, France

Filed Mar. 15, 1971, Ser. No. 124,359
Claims priority, application France, Mar. 13, 1970, 7009032
Int. Cl. H02k 41/02
U.S. Cl. 310—13 3 Claims



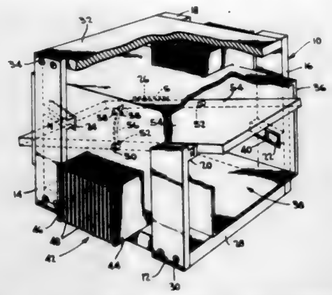
Asynchronous machine having an open magnetic circuit comprises a field member including central and end sections. The central section is fully wound with a polyphase winding and a monophase winding. The end sections are unwound or partially wound with a monophase winding. The central section has an odd or fractional number of poles and the length of the end sections are from zero to 1 pole pitch long.

3,663,845
FLUIDIC GENERATOR

Maurice Apstein, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 18, 1971, Ser. No. 116,364
Int. Cl. H02k 35/06
U.S. Cl. 310—15 10 Claims

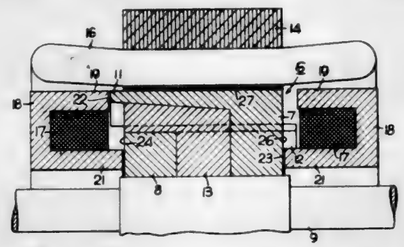
A fluidic electric generator having a balanced reed positioned as a rocking member in an air conduit. A spring connected between the reed and the conduit biases the reed in a balanced position. Air flow through the conduit causes the reed to rock at a resonant frequency due to the biasing action of the spring. As the reed rocks, it changes the magnetic reluctance between sets of opposing magnetic poles and causes reversal of flux through the reed thereby inducing an AC signal in surrounding windings. The oscillating reed is oriented in non-impeding relation to the fluidic flow.



3,663,846
CLAW-TOOTH ROTOR DYNAMOELECTRIC MACHINE

Paul D. Wagner, 549 Ludlow Ave., Cincinnati, Ohio, and John J. Keuper, 7 Alanna Drive, Cold Springs, Ky.

Filed June 7, 1971, Ser. No. 150,685
Int. Cl. H02k 1/22
U.S. Cl. 310—164 2 Claims



A synchronous machine having a Lundell-type rotor is provided with a stationary excitation winding positioned at the axial end of the rotor with a continuous annular magnetic flux collector core surrounding the winding. This collector provides a dual, relatively shorter, continuous flux path between alternate poles of the rotor as it sweeps past the flux collector without including the stator yoke or housing in the flux path.

3,663,847
INTERMEDIATE BEARING CONSTRUCTION

Edward J. Schaefer, Bluffton, Ind., assignor to Franklin Electric Co., Inc., Bluffton, Ind.

Filed Sept. 18, 1970, Ser. No. 73,443
Int. Cl. H02k 5/16
U.S. Cl. 310—90 13 Claims

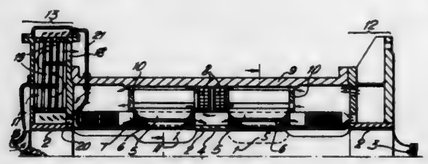


An intermediate bearing for a motor of great length, comprising an inner annular member secured to the shaft of the motor, and an outer annular member. Bearing surfaces are provided on the inner and outer members. The inner member is secured to the shaft and rotates with the shaft in the outer member. The outer member is secured within the cavity of the stator of the motor by projections on the bearing which engage the stator to prevent the outer member of the bearing from rotating. The projections may engage axial slots formed in the stator, thus preventing rotation of the bearing but permitting axial displacement of the bearing to accommodate thermal expansion of the motor parts. The projections may be fixed in position, or may expand into engagement with the stator upon exposure to certain liquids, or may be cammed into engagement with the stator.

3,663,848
HIGH-SPEED ALTERNATING CURRENT GENERATORS

Kalman Nagy Lehoczky, Brobekk Terrasse 10, 3024 Hyggen, Norway

Filed Feb. 2, 1971, Ser. No. 111,836
Claims priority, application Norway, Feb. 11, 1970, 478/70
Int. Cl. H02k 7/08
U.S. Cl. 310—90 6 Claims

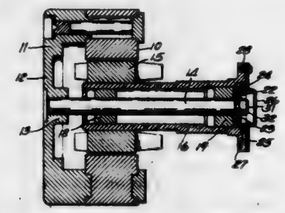


A high-speed alternating current generator, for example, a gas turbine driven generator, presents complex of constructional problems. The high-speed alternating current generator of the invention is of the equi-pole type having magnetizing coils in the stator and, two or more pole units of the same polarity arranged in sequence on a common rotor. At least one bearing is formed along the rotor, the bearing being so formed that the respective part of the stator, stator laminate and/or winding are provided with a non-magnetic and/or electrically insulating lining which is permanently anchored to the stator laminate and/or other rigid construction elements, and the lubricant in the bearing is a gas or liquid in the space between rotor and stator. An evaporation-cooling system is chosen, being separated from the gas space surrounding the rotor. A twin unit construction is also disclosed.

3,663,849
SNAP-ON RETAINER FOR MOTOR ROTOR SHAFT

Norvel J. Heob, Sturtevant, Wis., assignor to MSL Industries, Inc., Chicago, Ill.

Filed Dec. 31, 1970, Ser. No. 103,105
Int. Cl. H02k 7/08
U.S. Cl. 310—90 7 Claims

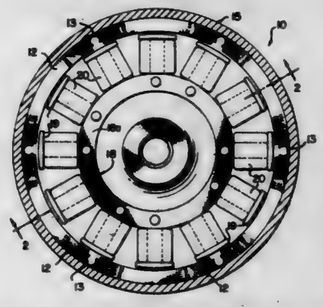


Retaining and positioning mechanism for the rotor of an electric motor. The rotor axle is provided with a groove and the rotor assembly is provided with a snap-on thrust retainer with prongs which will bend axially to snap into the axle groove, thus to key the rotor to the stator and contain end play of the rotor in both axial directions. End play control is unitized at the retainer. The invention makes it possible to preassemble the rotor with its retaining and positioning mechanism prior to final assembly of the rotor with the stator. Final assembly consists simply of snapping the rotor into place on its axle.

3,663,850
FIELD MEANS FOR A DYNAMOELECTRIC MACHINE, MAGNET PREASSEMBLY FOR USE THEREIN

Russell E. Phelon, Rio Piedras, P.R., assignor to R. E. Phelon Company, Inc., East Longmeadow, Mass.

Filed Aug. 3, 1970, Ser. No. 60,296
Int. Cl. H02k 21/22
U.S. Cl. 310—153 16 Claims



The rotor of an electric alternator includes permanent magnet material for establishing a magnetic field which rotates with the rotor. The permanent magnet material may be in the form of a single ring of such material magnetically charged to provide a plurality of angularly spaced magnetic poles. The magnetic material may also be in the form of a plurality of separate magnets arranged in a generally end face to end face, spaced relationship to form an annular ring. The magnetic material is a ceramic material and the magnets directly provide pole faces for cooperation with the stator poles and are radially magnetically charged to include more than one magnetic pole on each pole face. When a plurality of magnets are used to form the magnet ring a compressible resilient spacer or spring member is placed between two magnets to hold them in assembly with a temporary shipping band or with the rotor part in which they are finally installed. In assembling a magnet ring made of a plurality of magnets, a deformable insert may be placed between two adjacent magnets and then deformed to enlarge the gap in which it is received, thereby compressing the spring member. If the magnets are first formed into a preassembly with a shipping band for later assembly with a rotor part, and if a deformable insert is used to control the compression of the spring member, the deformable insert in forming the preassembly is preferably deformed only to a degree sufficient to hold the preassembly in assembly with only a degree of tightness sufficient to withstand normal handling, and after the magnets are inserted in the final rotor part and the shipping band removed, the deformable insert is deformed to a further extent to hold the magnets in assembly with the rotor part with a greater degree of tightness.

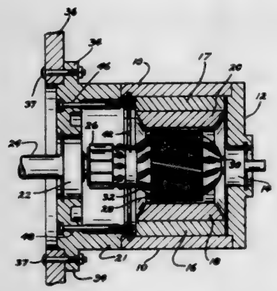
3,663,851
D.C. MOTOR

Erland K. Persson, Minneapolis, Minn., assignor to Electro-Craft Corporation, Hopkins, Minn.

Filed Sept. 21, 1970, Ser. No. 73,796
Int. Cl. H02k 21/26
U.S. Cl. 310—154 10 Claims

A d.c. motor having large, semicylindrical, chamfered pole pieces of soft magnetic material for focusing the magnetic

flux of two permanent magnets onto the armature of the motor to provide an increased flux density. the armature has skewed slots and the edges of the pole pieces are skewed in opposition to the skewed slots to achieve the effect of a complete slot pitch skew in a short armature stack without



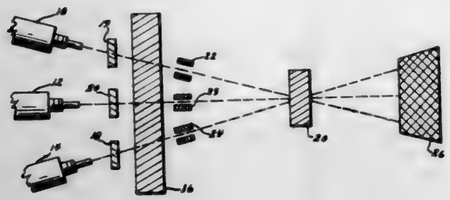
having the loss of wire space normally associated with the severe skew angle previously utilized. The motor is mounted in an improved housing that has a removable brush cap attached to a retaining ring which is rotatable within a slot in the housing transverse to the axis of armature rotation to permit rotary adjustment of the brush cap.

3,663,852

DOUBLE CELL HIGH INTENSITY ION SOURCE

John S. Luce, Danville, Calif., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Apr. 1, 1970, Ser. No. 24,941
Int. Cl. H01J 27/00, 39/00
U.S. Cl. 313—63 9 Claims



The instant invention involves a system for generating high current density charged particle beams. The system includes a plurality of high intensity ion sources in combination with two charge exchange cells aligned linearly with one another. The ions are converted from one type of charge to an opposite charge in two stages. In the first stage, several beams of positive ions, for example, derived from a plurality of positive ion sources are beamed into a charge exchange cell and converted into neutrals. The several beams of neutrals from the first cell are then directed into a second charge exchange cell where the neutrals are converted into negative ions.

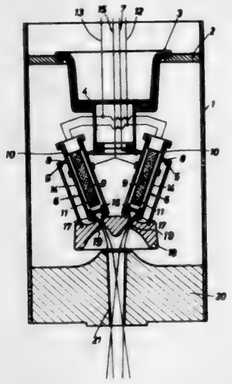
3,663,853

TRIODE ELECTRON GUN WITH POSITIVE GRID AND MODULAR CATHODE

Jean Sommeria, Annecy, France, assignor to Societe Alsacienne De Constructions Atomiques De Telecommunications Et D'Electronique "Alcatel,", Paris, France

Filed July 29, 1970, Ser. No. 59,224
Claims priority, application France, July 29, 1969, 6925987
Int. Cl. H01J 29/04, 29/48, 29/56
U.S. Cl. 313—82 R 5 Claims

Triode electron gun with positive control grid, with emitting cathode, and with acceleration anode, providing a concentration and emission of electrons directed along straight and parallel paths. Thus gun includes several elementary guns distributed around a single axis, the axes of the guns converging toward one and the same point on the axis situated at the entrance to an axial conical conduit drilled in



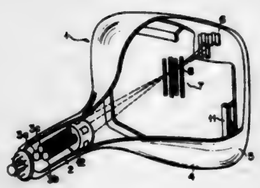
the anode. The electrons produced in each elementary gun by an emitting pellet go through a concentrator and then through a conduit in alignment with the axis of each gun and perforated in a single thick grid. The invention can be applied in metallurgy for melting and heating.

3,663,854

SHADOW-MASK HAVING RECTANGULAR APERTURES

Asahide Tsuneta, Kawasaki, and Makoto Ikegaki, Saitama-ken, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Feb. 12, 1970, Ser. No. 10,978
Claims priority, application Japan, Feb. 17, 1969, 44/11084
Int. Cl. H01J 29/06, 31/20, 29/30
U.S. Cl. 313—85 S 4 Claims



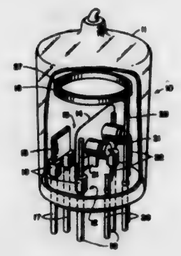
The electron gun unit housed in a neck portion of a tube envelope consists of three electron guns corresponding to red, green and blue. The electron gun corresponding to blue is smaller in diameter than the remaining electron guns, and the axes of said electron guns are arranged to form an isosceles triangle in such a manner that the electron gun having a small diameter has its axis on the apex of the isosceles triangle. Fluorescent dots upon which electron beams emitted from said electron guns impinge are substantially in the form of thin rectangles or ellipses which extend substantially at right angles to the beam scanning direction. Adjacent to said fluorescent dots is disposed a shadow-mask having a plurality of rectangularly shaped beam passing holes.

3,663,855

COLD CATHODE VACUUM DISCHARGE TUBE WITH CATHODE DISCHARGE FACE PARALLEL WITH ANODE

Gordon E. Boettcher, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Atmoic Energy Commission

Filed Feb. 24, 1967, Ser. No. 619,137
Int. Cl. H01J 19/44, 19/70
U.S. Cl. 313—178 7 Claims



A cold cathode vacuum discharge tube having an anode separated from a cold cathode by a vacuum discharge gap, a gas generating trigger probe contiguous with said cathode and gettering means, together with various embodiments and circuitry.

3,663,856

CURRENT LIMITING SPARKGAP WITH MEANS FOR REGULATING GAP VOLTAGE

Stanley A. Miske, Jr., Pittsfield, Mass., assignor to General Electric Company

Filed Aug. 17, 1970, Ser. No. 64,299
Int. Cl. H01J 17/00, 21/00
U.S. Cl. 313—325 10 Claims



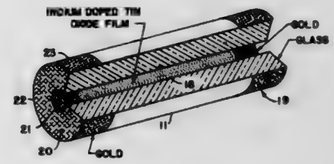
A surge voltage arrester, such as a lightning arrester, is provided with a sparkgap assembly having a plurality of matched pairs of arc-confining chambers that are operable to regulate movement of arcs formed within the chambers of the assembly to prevent the assembly from developing undesirably high peak voltages when a surge voltage is discharged through it, and also to maintain the arc-quenching voltage rating of the assembly at a substantially constant value following repeated surge current discharges. A narrow passageway is provided between each of the matched pairs of arc-confining chambers in order to allow small-current arcs to move between the two chambers while confining large-current arcs to a single one of the chambers, thus, one of the chambers is protected from exposure to destructive erosion and contamination by large-current arcs.

3,663,857

ELECTRON EMITTER COMPRISING METAL OXIDE-METAL CONTACT INTERFACE AND METHOD FOR MAKING THE SAME

Arthur M. Soellner, Cape Girardeau, Mo.; James F. Sprouse, North Little Rock, and Tripuntkura A. Raju, Little Rock, both of Ark., assignors to Avco Corporation, Tulsa, Okla.

Filed Feb. 13, 1969, Ser. No. 799,056
Int. Cl. H01J 1/20
U.S. Cl. 313—339 1 Claim



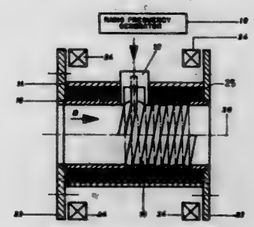
The electron emitter herein disclosed comprises a tubular glass capillary substrate, on the interior of which is deposited an indium-doped tin oxide film. Gold ohmic contacts embrace the ends of the capillary, traversing the end edges and overlapping both the exterior of the capillary and the end margins of the film. A high-resistance region exists at the interface between at least one of the contacts and the oxide. It is formed by applying increased voltage across the contacts until there is a current increase independently of applied voltage, followed by a decrease in film conductivity.

3,663,858

RADIO-FREQUENCY PLASMA GENERATOR

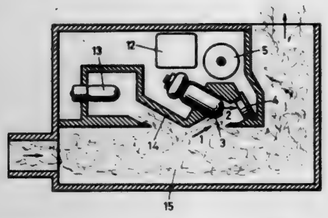
Giuseppe Lisitano, Max-Planche-Strasse 7, Garching near Munich, Germany

Filed Nov. 6, 1970, Ser. No. 87,534
Claims priority, application Germany, Nov. 6, 1969, P 19 55 914.9
Int. Cl. H01J 7/46, 19/80
U.S. Cl. 315—39 5 Claims



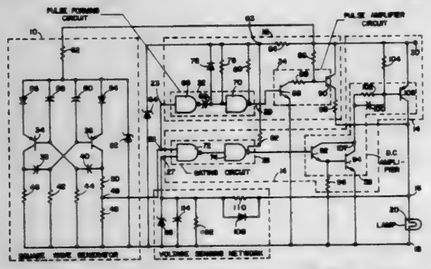
A plasma generator which utilizes radio frequency power and is of the kind having a slotted transmission line consisting of a hollow tubular body electrically matched to an RF generator, in which the hollow body makes up a delay line in which the RF energy is caused to propagate with a time delay in the direction of the axis of said hollow body the radiofrequency power, by enabling heating of the plasma independent of the intensity of a magnetic field used for confining the plasma, provides a highly dense plasma.

3,663,859
SENSITIVE LIGHT AND SMOKE DETECTING DEVICE WITH MEMORY SYSTEM
Shiaji Saito, 1-306, Maita-cho, Minami-ku, Yokohama, Japan
Continuation-in-part of application Ser. No. 785,835, Oct. 18, 1968, now abandoned. This application Nov. 23, 1970, Ser. No. 91,782
Claims priority, application Japan, Oct. 25, 1967, 42/68326
Int. Cl. G08b 17/10
U.S. Cl. 315—151 4 Claims



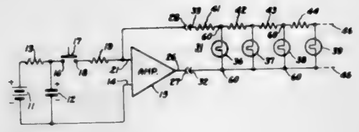
This invention discloses a novel sensitive light and smoke detecting device using a photoelectric element connected in series with a parallel circuit of a discharge tube and a resistance. The decrease in resistance of the photoconductor by reason of an incoming small amount of light dimly lights said discharge tube by increasing the divided current of the parallel circuit and the resulting radiating light from the discharge tube further reduces the resistance of the photoconductor until both photo-electric element and discharge tube mutually react to the fullest extent whereby the discharge tube provides a positive optical feed back to the photoconductor to denote the presence of light and smoke. The circuit provides a signal even after removal of the initially detected light or smoke. The small amount of initial light may be furnished by a dimly lit pilot lamp which is secluded by a wall between the photoconductor and the discharge tube but light can reach the photoconductor by reflection of small amount of incoming smoke and initiate action of the device of this invention.

3,663,860
SHORT CIRCUIT PROOF FLASHER CIRCUIT
Robert A. Phillips, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Feb. 25, 1970, Ser. No. 14,015
Int. Cl. H05b 37/00
U.S. Cl. 315—200 11 Claims



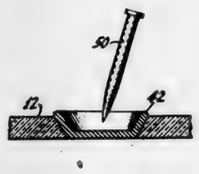
Load current control circuitry including means for generating a driving signal with a predetermined duty cycle. Current control circuit means are connected between a load terminal and the generating means and provide different and selected levels of load current to an electrical load which is connected to the load terminal. The first level of current is that required during the initial energization of the load, and this initial current is provided by a starting network within the current control circuit means. The current control circuit means also includes a load steady state current supply and short circuit protection circuit which is connected between the generating means and the electrical load. The latter circuit is responsive to a predetermined voltage developed across the electrical load for providing a steady state DC current to the load after the latter has been initially energized.

3,663,861
CIRCUIT UTILIZING FEEDBACK AMPLIFIER FOR SEQUENTIALLY FLASHING PHOTOFLASH LAMPS
Sang-Chul Kim, Cleveland Heights, Ohio, assignor to General Electric Company
Filed Dec. 28, 1970, Ser. No. 101,797
Int. Cl. H05b 41/34
U.S. Cl. 315—232 7 Claims



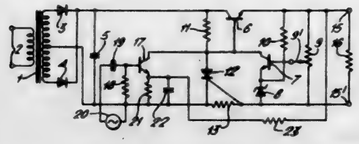
A circuit combination of impedance devices and a feedback amplifier for causing sequential flashing of a plurality of photoflash lamps by sequential firing voltage pulses. The amplifier is connected between the source of firing pulses and the impedance network formed by the impedance devices and flash lamp filaments, and the impedance network is connected to provide inverse feedback to the amplifier to vary its gain in accordance with changing impedance of the impedance network as the various lamps are flashed, so that the lamps will be flashed by equal amounts of firing pulse energy.

3,663,862
METHOD OF REBUILDING AN EVACUATED ELECTRON TUBE
Alan Paul Haines, Lancaster, Pa., assignor to RCA Corporation
Filed Apr. 30, 1970, Ser. No. 33,388
Int. Cl. H01j 9/50
U.S. Cl. 316—2 4 Claims



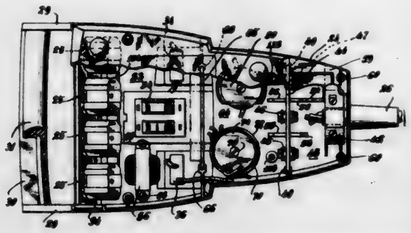
A method of rebuilding a cathode ray tube, including the penetration of a metallic part of the tube by means of a pointed tool, for example. Defective parts of the vented tube can be replaced or the re-usable parts thereof can be reclaimed. The opening in the metallic part of the tube can be hermetically sealed with a frit material or by sealing to the metallic part a pin that is inserted in the opening therein.

3,663,863
OVERCURRENT PROTECTOR
Ichiro Arimura, Kyoto; Hiroshi Goto, Oaza-Hoshida; Hiroshi Matsushima, Osaka, and Yoshikazu Nakae, Hirakata, all of Japan, assignors to Matsushita Electric Ind., Co. Ltd., Kadoma City, Osaka Prefecture, Japan
Filed Oct. 8, 1970, Ser. No. 79,220
Claims priority, application Japan, Oct. 8, 1969, 44/80942
Int. Cl. H02h 3/08
U.S. Cl. 317—22 10 Claims



An overcurrent protector including a thyristor which detects an overcurrent condition in a load and turns on, thereby making a current-controlling transistor cut off in order to protect the load from said overcurrent. The improvement lies in the provision of a switching element connected to the thyristor, which, upon elimination of the overcurrent condition, automatically functions to turn off the thyristor without any manual operation.

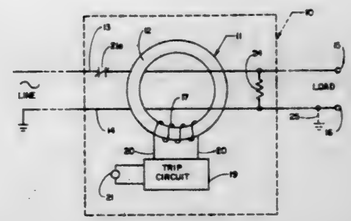
3,663,864
PORTABLE GOUND FAULT INTERRUPTER APPARATUS
Ernest R. Carlson, Fairfield; Czeslaw Mackiewicz, Trumbull, and Paul C. Mirmina, Milford, all of Conn., assignors to Harvey Hubbell, Incorporated, Bridgeport, Conn.
Filed Apr. 15, 1970, Ser. No. 28,576
Int. Cl. H02b 1/02
U.S. Cl. 317—101 DH 12 Claims



A housing and component mounting assembly is described for a hand-portable ground fault interrupter apparatus. The housing comprises a base member and a cover member which includes a readily demountable electric receptacle plate. The components are arranged for compartmentizing the housing. The described arrangement enhances portability and receptacle replacement as well as increasing protection from electrical shock hazards.

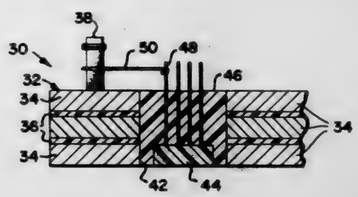
3,663,865
DIFFERENTIAL GROUND FAULT PROTECTION SYSTEM
Harris I. Stanbeck, Lexington, Ky., assignor to Square D Company, Park Ridge, Ill.
Filed July 14, 1970, Ser. No. 54,766
Int. Cl. H02h 3/28
U.S. Cl. 317—18 D 3 Claims

A ground fault protection system using a differential current transformer. So that an inadvertent low impedance ground of the grounded neutral conductor on the load side of a differential transformer will cause a tripping potential to be developed across the secondary winding of the differential



transformer, a resistor is connected across the load conductors at the transformer.

3,663,866
BACK PLANE
Michael F. Iesue, Danielson, Conn.; Ronald F. Robinson, Wayne, Pa.; Paul L. Anderson, Rockville, and Edwin P. Ziebrowski, Putnam, both of Conn., assignors to Rogers Corporation, Rogers, Conn.
Filed Mar. 27, 1970, Ser. No. 23,170
Int. Cl. H05k 1/04
U.S. Cl. 317—101 CM 9 Claims

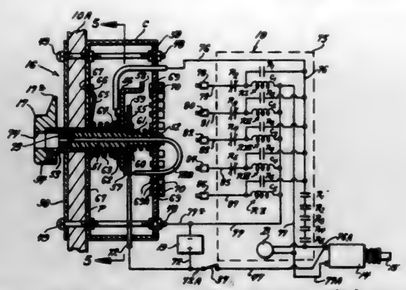


A back plane for use as a power bus which supports and electrically energizes microcircuit chips. The back plane is formed by a laminated structure in which are mounted wire wrap pins that form terminals for the microcircuits. The laminates are sheets of conductive material insulated from one another and the wrap pins are mounted in the laminated structure so that electrical contact for each pin is made with only one of the conductive laminates. There are sufficient wrap pins to provide electrical contact with each of the respective conductive laminates. The laminates also include channels in which microcircuit chips may be mounted. The leads from the chips can be wrapped around the terminal pins which are connected respectively to the laminates energized at appropriate voltage levels.

3,663,867
GENERAL PURPOSE PRESETTABLE ELECTRO-MECHANICAL COMBINATION SAFETY LOCK DEVICE
Louis P. Fister, 470 Lake Ave., St. Louis, Mo.
Filed Aug. 24, 1970, Ser. No. 66,330
Int. Cl. H01h 47/22
U.S. Cl. 317—134 6 Claims

A general purpose presettable electro-mechanical combination lock and safety device to replace locks on doors, safes and the like, and to prevent automobile thefts. The device comprises an electrically responsive lock or other electro-mechanical means which is commanded to operate by a preselected numerical combination of several digits in a sequential series through a presettable electronic circuit. The

operation of the lock or electro-mechanical means is controlled by a presettable command circuit and activated by a



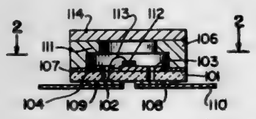
numerical selecting means or by a by-pass switch means, depending on the requirements of the protection desired.

3,663,868

HERMETICALLY SEALED SEMICONDUCTOR DEVICE

Shozo Noguchi, and Yoshiyuki Nanko, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1970, Ser. No. 81,464
Claims priority, application Japan, Oct. 17, 1969, 44/82769
Int. Cl. H01l 3/00, 5/0
U.S. Cl. 317—234 R 6 Claims





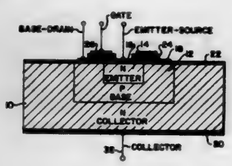
A hermetically sealed container for a semiconductor device or the like comprises a peripheral wall portion surrounding the semiconductor device and secured, such as by brazing, at its lower end to an insulating substrate. The upper section of the wall portion is thicker than its lower portion to thereby permit increased mechanical contact strength.

3,663,869

BIPOLAR-UNIPOLAR TRANSISTOR STRUCTURE

Gene Strull, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 26, 1971, Ser. No. 109,845
Int. Cl. H01l 15/00
U.S. Cl. 317—235 6 Claims



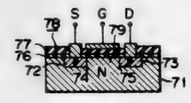
A unipolar-bipolar amplifying structure which combines the use of a photosensitive thin film unipolar transistor structure with a conventional single crystal bipolar structure whereby the bipolar transistor characteristics can be varied in response to changes in radiation incident on the unipolar thin film device.

3,663,870

SEMICONDUCTOR DEVICE PASSIVATED WITH RARE EARTH OXIDE LAYER

Tadashi Tsutsumi, Tokyo, and Takeshi Matsuo, Yokohama-shi, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Nov. 10, 1969, Ser. No. 875,223
Claims priority, application Japan, Nov. 13, 1968, 43/82578; Oct. 21, 1969, 44/83606
Int. Cl. H01l 3/00, 5/06, 7/58
U.S. Cl. 317—235 R 10 Claims



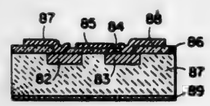
In a semiconductor device comprising a semiconductor substrate, at least one junction dividing the substrate into at least two regions to define an interface therebetween, the end of the junction being exposed on a surface of the substrate, and an insulating film covering the exposed end of the junction. At least a layer of the film consists essentially of one oxide of an element selected from the group of yttrium, scandium, europium, samarium, terbium, and dysprosium.

3,663,871

MIS-TYPE SEMICONDUCTOR READ ONLY MEMORY DEVICE AND METHOD OF MANUFACTURING THE SAME

Sho Nakazuma; Tohru Tsujide, and Toshio Wada, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Feb. 16, 1970, Ser. No. 11,426
Claims priority, application Japan, Feb. 18, 1969, 44/2020
Int. Cl. H01l 11/14
U.S. Cl. 317—235 R 2 Claims



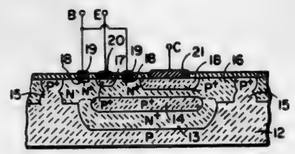
A metal-insulator-semiconductor (MIS) semiconductor read-only memory element employs, as the gate insulator film, an alumina film formed through a novel hydrolytic deposition process.

3,663,872

INTEGRATED CIRCUIT LATERAL TRANSISTOR

Takayuki Yanagawa, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jan. 19, 1970, Ser. No. 3,773
Claims priority, application Japan, Jan. 22, 1969, 44/4928
Int. Cl. H01l 11/06
U.S. Cl. 317—235 R 4 Claims



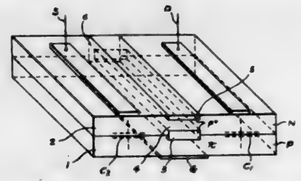
A lateral transistor serving as a minority transistor in an integrated circuit has a region buried in the base region and having an opposite conduction type to the base region.

3,663,873

FIELD EFFECT TRANSISTOR

Hajime Yagi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of application Ser. No. 580,752, Sept. 20, 1966, now abandoned. This application Jan. 27, 1969, Ser. No. 802,717
Claims priority, application Japan, Oct. 8, 1965, 40/61745
Int. Cl. H01l 11/14
U.S. Cl. 317—235 R 8 Claims



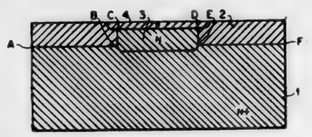
Field effect transistor and method of making same, the transistor having a high resistance layer of one conductivity type an epitaxially grown layer of the opposite conductivity ty, on the first layer, and a low resistance semiconductor layer formed between the two layers and extending partly into both layers, the low resistance layer being of the same conductivity type as the first-mentioned layer, with a channel between the low resistance layer and the second semiconductor layer.

3,663,874

IMPATT DIODE

Yukio Fukukawa, Tokyo, and Masaichi Shinoda, Sagamihara-shi, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 6, 1969, Ser. No. 864,015
Claims priority, application Japan, Oct. 17, 1968, 43/75978
Int. Cl. H01l 5/00
U.S. Cl. 317—235 T 4 Claims



A high resistance semiconductor epitaxial layer of opposite conductivity type is provided on a lower resistance semiconductor substrate of one conductivity type. A first diffusion layer of the one conductivity type and of cylindrical configuration extends through the epitaxial layer from the substrate in a limited area. A second diffusion layer of the opposite conductivity type and of disc-like configuration extends from the outer surface of the first diffusion layer a limited distance into the first diffusion layer in a manner whereby the junction between the first and second diffusion layers is planar and is embedded in the diode and has a breakdown voltage which is lower than that of the junction between the substrate and the epitaxial layer. Avalanche breakdown occurs substantially at the junction between the first and second diffusion layers.

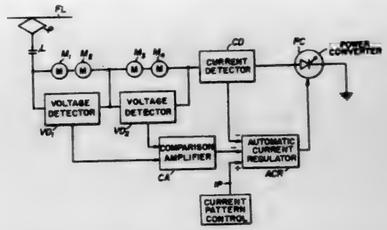
3,663,875

CONTROL SYSTEM FOR ELECTRIC VEHICLES

Masahiro Ashiya, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1970, Ser. No. 5,814
Claims priority, application Japan, Jan. 30, 1969, 44/6900
Int. Cl. H02p 5/50
U.S. Cl. 318—52 3 Claims

Four DC traction motors are serially connected to one another and divided into two groups. Upon the occurrence of a slip, a difference between voltages across the two motor groups is detected and applied to a current regulator along with a current flowing through the motors and a current pattern for normally determining that current. Then a magnitude of current fed back to the motor current is determined and the motor current decreases until the slip terminates. After the slip has terminated, the normal operation is performed.



3,663,876

MOTOR CONTROL SYSTEM UTILIZING A HIGH INDUCTANCE CAPACITOR

Lyle E. McBride, Jr., Norton, and Daniel R. Pimentel, Seekonk, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 4, 1970, Ser. No. 86,660
Int. Cl. H02p 1/44
U.S. Cl. 318—221 D 12 Claims



A control system is disclosed in which a selectively energizable load such as one or more motor windings are coupled to a source of power by a high inductance capacitor through a selectively energizable switch means. The capacitor is arranged such that it has a relatively significant value of resistance or inductance sufficient to limit the rate of energy transfer therethrough and hence through the switch means upon charging and discharging so as to protect the switch means against potentially adverse affects of high rates of energy transfer therethrough.

3,663,877

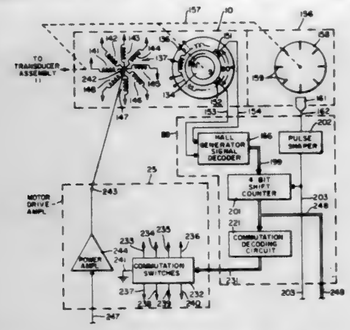
BRUSHLESS DC MOTOR INCLUDING TACHOMETER COMMUTATION CIRCUIT

Harold V. Clark, Palo Alto, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 2, 1970, Ser. No. 25,054
Int. Cl. H02k 29/00
U.S. Cl. 318—254 7 Claims

A DC motor formed of a stationary segmented armature winding and a two pole permanent magnet rotor, wherein a pair of Hall effect generators are mounted 90° apart within the armature winding to develop a pair of quadrature related sinusoidal signals and wherein a tachometer is disposed to generate a plurality of pulses for each revolution of the rotor. Commutation for the armature windings is achieved by an electronic switching circuit connected to receive the Hall generator signals and the tachometer pulse signal and

respond to the phase relationships between these various signals to develop multiple phase switching signals in which the phase angles thereof are precisely correlated to the angle of rotation of the rotor. The motor is illustrated in the environment of a servo controlled magnetic tape transport, wherein the commutation signals or switching signals associated therewith serve as multi-phase tachometer or angular position indicating signals in a special servo controlled operation.

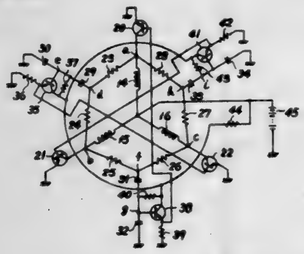


3,663,878

DIRECT CURRENT MOTOR COMMUTATION SYSTEM RESPONSIVE TO C.E.M.F.

Takao Miyasaka, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa-ku, Yokohama, Kanagawa-ken, Japan

Filed Aug. 26, 1970, Ser. No. 66,911
Claims priority, application Japan, Aug. 28, 1969, 44/67577
Int. Cl. H02k *29/00*
U.S. Cl. 318—254 7 Claims



A commutatorless type direct current (DC) motor which has a rotor made of permanent magnet. Stator windings are sequentially passed with a current of constant phase rotation and thereby the rotor is initiated to rotate. After starting, counter electromotive forces induced in the stator windings are used for detecting the rotation angle of the rotor. Adequate currents are thereby made to flow in the stator windings and a steady rotation of the rotor is continuously performed.

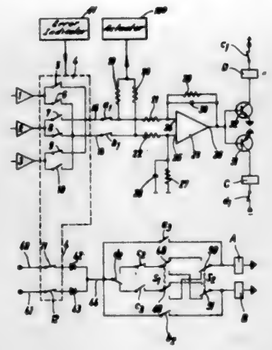
3,663,879

CIRCUIT FOR DETERMINING DEFECTIVE CONTROL CIRCUITS IN A PLURAL CIRCUIT FLIGHT CONTROL SYSTEM

Wolfgang Salamon, and Werner Fath, both of Bremen, Germany, assignors to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Germany

Filed Aug. 18, 1970, Ser. No. 64,750
Int. Cl. G05b *9/02*
U.S. Cl. 318—564 9 Claims

In a flight control redundancy system for aircraft, any two control circuits that remained operative after dropout or others, are connected to provide sum and difference of their outputs, the sum to provide actuator control, the difference to detect any error in the operation of one of the two circuits. In case of such error, resulting reaction together with polarity of error detection is used to select the faulty one and disconnect same from the system, so that actuation control is provided by the remaining circuit alone.

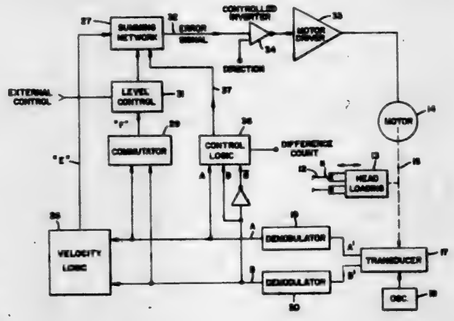


3,663,880

APPARATUS FOR CONTROLLING THE RELATIVE POSITION BETWEEN TWO RELATIVELY MOVABLE MEMBERS

Andrew Gabor, Danville, Calif., assignor to Diablo Systems, Inc., Hayward, Calif.

Filed Sept. 14, 1970, Ser. No. 71,894
Int. Cl. G05b *1/01*
U.S. Cl. 318—603 11 Claims



Apparatus for bringing the read/write heads of a magnetic disk unit to a stop over a predetermined track where quadrature position signals are utilized to provide a symmetrical logic signal which in conjunction with a difference count provides the coincidence indication of the stopping point.

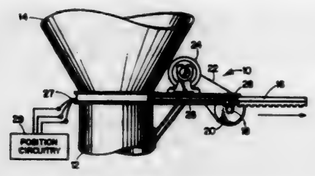
3,663,881

CONTINUOUS POSITION SENSING SYSTEM

Albert D. Ehrenfried, Concord; John Niejadlik, Littleton, and Norton T. Pierce, Concord, all of Mass., assignors to Metrtape, Inc., West Concord, Mass.

Filed Dec. 12, 1969, Ser. No. 884,598
Int. Cl. G05b *1/06*
U.S. Cl. 318—663 24 Claims

A system for the precise and spatially-continuous determination of position along a predetermined path, capable of efficient operation even over relatively large distances. The system employs a unique elongated sensor capable of providing a signal directly related to the position of an actuating force applied thereto. The tape sensor is positioned along a path of travel, and means for actuating the sensor is coupled to an object whose position is to be determined. The system is operative to provide position control as well as position indication and can be adapted to provide self-monitoring during system operation.

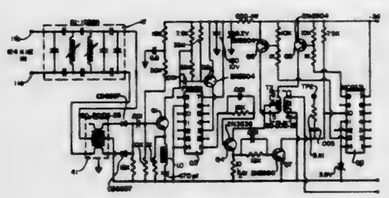


3,663,882

HARMONIC GENERATOR

William Henry Eschner, San Carlos, Calif., assignor to Farinon Electric, San Carlos, Calif.

Filed July 13, 1970, Ser. No. 54,093
Int. Cl. H03k *5/08*
U.S. Cl. 328—33 2 Claims



A harmonic generator in which a sinewave input signal drives a pulse generator whose output is applied to the mid-point of the primary of a transformer. Switching means are connected to opposite ends of the primary and operate such that unipolar pulses applied to the mid-point flow alternately in opposite halves of the transformer. The output from the secondary of the transformer is a bipolar pulse train having a high odd harmonic content.

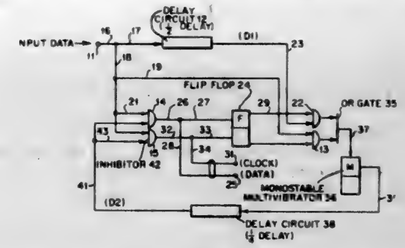
3,663,883

DISCRIMINATOR CIRCUIT FOR RECORDED MODULATED BINARY DATA SIGNALS

Mitsuo Oiso, Yokohama-shi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 28, 1969, Ser. No. 880,560
Claims priority, application Japan, Dec. 4, 1968, 43/88785
Int. Cl. H03k *17/28*
U.S. Cl. 328—72 6 Claims

A discriminator circuit discriminates recorded modulated binary data signals represented in accordance with whether a clock pulse is present in the interval between bits and a pulse is simultaneously present at the center of a bit. The discriminator circuit derives a data window signal for separating clock pulses and data pulses from the input data in a manner whereby when a pulse is absent from the center of a preceding bit the data window signal is derived in accordance with a pulse present in the interval between bits and when a pulse is present at the center of a preceding bit the data window signal is derived in accordance with the pulse at the preceding bit.



3,663,884

FREQUENCY DIFFERENCE DETECTOR

Tamas I. Pattantyus, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 24, 1969, Ser. No. 869,268
Int. Cl. H03b *3/04*
U.S. Cl. 328—134 5 Claims

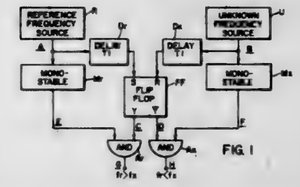


FIG. 1

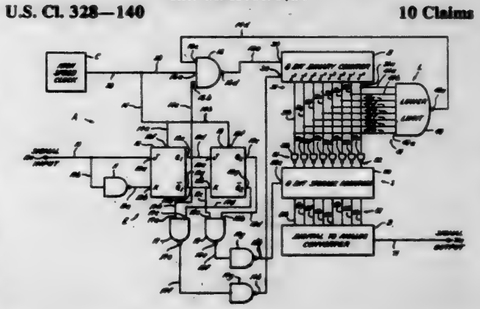
A system for detecting a frequency difference between a known reference frequency and an unknown frequency wherein both frequencies are delayed and respectively applied to a bistable element whose output state is utilized to control respectively a pair of AND logic elements which also receive signals as inputs respectively in response to the undelayed frequencies, an output from either of the AND elements being indicative that a frequency difference exists and the direction of the difference.

3,663,885

FAMILY OF FREQUENCY TO AMPLITUDE CONVERTERS

Carrington H. Stewart, Houston, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

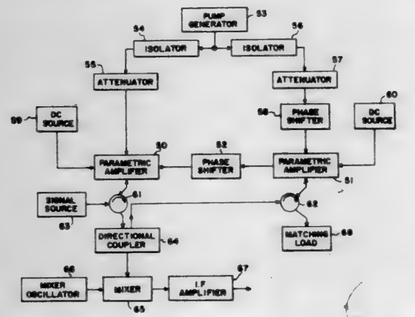
Filed Apr. 16, 1971, Ser. No. 134,573
Int. Cl. H03k *5/20*
U.S. Cl. 328—140 10 Claims



A family of frequency to amplitude converters is disclosed which convert an incoming signal of a complex waveform

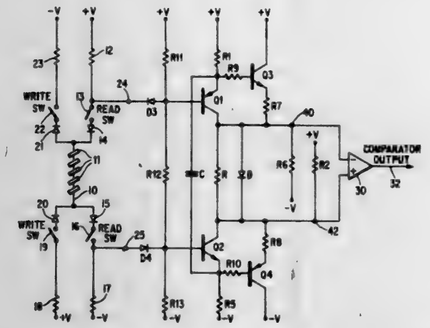
and unknown frequency into an output signal corresponding in amplitude to the unknown frequency of the input signal thereby permitting accurate determination of the frequency of the complex input signal waveform.

3,663,886
PARAMETRIC AMPLIFIERS WITH IDLER CIRCUIT FEEDBACK
Hans-Juergen C. Blume, Hampton, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Dec. 17, 1970, Ser. No. 99,175
Int. Cl. H03f 7/04
U.S. Cl. 330—4.5 **6 Claims**



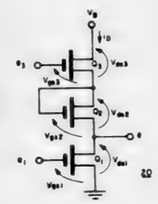
Two parametric amplifiers connected such that there is feedback from the idler circuit of one of the amplifiers to the idler circuit of the other amplifier to effect noise reduction.

3,663,887
MEMORY SENSE AMPLIFIER INHERENTLY TOLERANT OF LARGE INPUT DISTURBANCES
Westley Vayne Dix, Wellesley Hills, Mass., assignor to RCA Corporation
Filed Aug. 14, 1970, Ser. No. 63,757
Int. Cl. H03f 3/18
U.S. Cl. 330—13 **3 Claims**



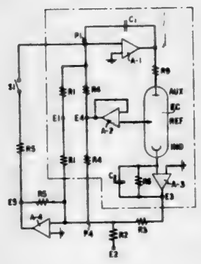
A memory sense amplifier is disclosed which is particularly useful for detecting small sense signals which appear on a memory selection drive pulse pedestal. A first transistor, a balanced output circuit and a second transistor of opposite conductivity type are connected in series between plus and minus power supply terminals. The base electrodes of the transistors are coupled to respective opposite ends of the memory line, which are normally at plus and minus power supply voltages. The balanced output terminals are normally at ground potential. A memory drive pulse which causes the transistor base voltages to go toward ground results in a surge of current from a capacitor connected between the transistor emitters. The output circuit includes a diode poled to conduct the current surge and limit the output voltage. Thereafter, the conduction returns to the normal value, the output voltage level returns to zero and the amplifier is ready to fully amplify a small information signal from the memory.

3,663,888
ALL-FET LINEAR VOLTAGE DIFFERENCE AMPLIFIER
Richard M. Greene, Smithtown, N.Y., assignor to GTE Laboratories Incorporated
Filed Feb. 16, 1970, Ser. No. 11,598
Int. Cl. H03f 3/16
U.S. Cl. 330—18 **6 Claims**



A linear voltage difference amplifier circuit which utilizes a plurality of field-effect devices having substantially identical operating characteristics. The devices are connected in a series arrangement with the source electrode of each device coupled to the drain electrode of its adjacent device. Each of the devices except a first and a second of the devices has its gate electrode coupled to its drain electrode. Input terminals are coupled to the gate electrodes of the first and second devices and an output terminal is coupled to the drain electrode of one of the devices. In one embodiment of the invention the amplifier consists of three devices and the output voltage is equal to the voltage applied to the first input terminal minus twice the voltage applied to the second input terminal.

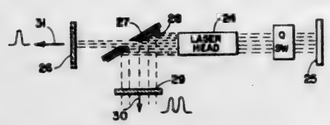
3,663,889
COMBINATION CURRENT CONTROL - VOLTAGE CONTROL CIRCUIT
Stanley Bruckenstein, Amherst, N.Y., and Barry Miller, Murray Hill, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Mar. 30, 1970, Ser. No. 23,851
Int. Cl. H03f 1/36
U.S. Cl. 330—102 **2 Claims**



A single control amplifier in combination with two loop control paths, one of which includes a switch, provides selec-

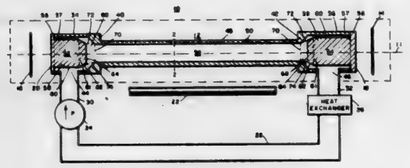
tively for establishing a preselected voltage or a preselected current without distorting the output by either limiting or transients. Operation of the switch allows shifting between the voltage control mode and the current control mode.

3,663,890
TWO CAVITY LASER
Carl William Schultheis, Pomona, and Eduard Gregor, Pacific Palisades, both of Calif., assignors to Union Carbide Corporation, New York, N.Y.
Filed Apr. 27, 1970, Ser. No. 31,978
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 **8 Claims**



A laser system includes a single laser material with means defining a first optical cavity for producing regeneration of radiation of a first oscillating mode and additional means defining a second optical cavity for the same laser material providing regeneration of radiation of a second oscillating mode. By this arrangement, distinct first and second output beams of different mode oscillations and of the same frequency are provided from a single laser material.

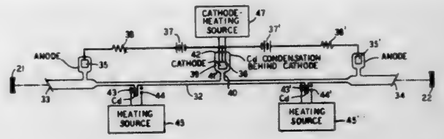
3,663,891
CELL FOR USE IN A CIRCULATING LIQUID LASER
Robert C. Kocher, Great Neck, and Harold Samelson, Sea Cliff, both of N.Y., assignors to GTE Laboratories Incorporated
Filed June 12, 1970, Ser. No. 45,821
Int. Cl. H01s 3/05, 1/04; G01n 1/10
U.S. Cl. 331—94.5 **11 Claims**



A cell for use in a circulating liquid laser comprising an elongated cylindrical active region and an input and an output chamber mounted coaxially at opposite ends of the active region. A window is positioned coaxially in each chamber. Liquid active material entering the input chamber flows around the window so that large scale disturbances which may exist in the entering liquid are smoothed prior to the liquid entering the active region.

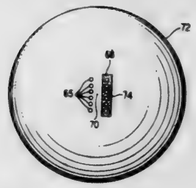
3,663,892
METAL ION LASER HAVING AN AUXILIARY GAS
Marvin Bertrand Klein, Long Beach, and Thomas Patrick Sosnowski, Colts Neck, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed June 15, 1970, Ser. No. 46,097
Int. Cl. H01s 1/06, 3/09
U.S. Cl. 331—94.5 **10 Claims**

There are disclosed cadmium ion lasers in which gettering of helium by cadmium deposited on walls near the discharge is counteracted by maintaining the coolest region frequented by cadmium ions above about 100° C, although preferably about 150° C, and away from the discharge. One embodiment employs a tube having an enlarged region or sidearm to remove the coolest region from the discharge. A preferred embodiment disposes the cathode in a housing of larger diameter than the diameter of the tube around the discharge,



the cathode being at a position in the housing establishing a variation in wall temperature to compel the spent cadmium to be deposited behind the cathode with respect to the discharge.

3,663,893
HIGH-EFFICIENCY DIODE-PUMPED LASERS
Frederick William Ostermayer, Jr., New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 13, 1970, Ser. No. 54,538
Int. Cl. H01s 3/09
U.S. Cl. 331—94.5 **2 Claims**

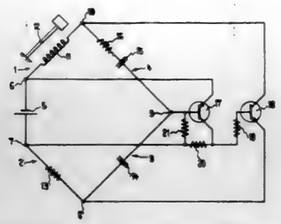


Certain practical difficulties are encountered in positioning a pump source comprising very-small-diameter electroluminescent diodes in direct physical contact with an associated laser rod. These difficulties are surmounted by positioning the diodes and the rod in a spaced-apart relationship and imaging the emitting areas of the diodes to positions slightly within the rod. In addition, a major portion of the surface of the rod is coated with a reflective material whereby radiation that enters the rod is multiply reflected therein. In this way the radiant output of the diodes is coupled to the rod in a highly efficient manner by means of a structure that is easily realized.

3,663,894
ELECTROMECHANICAL OSCILLATOR FOR TIME MEASUREMENT
Max Hetzel, Bienne, Switzerland, assignor to Omega Louis Brandt & Frere S.A., Bienne, Switzerland
Filed Nov. 20, 1970, Ser. No. 91,321
Claims priority, application Switzerland, Dec. 2, 1969, 17,902/69
Int. Cl. H03b 5/42
U.S. Cl. 331—110 **2 Claims**

This invention relates to an electromechanical oscillator for time measurement, wherein the oscillation of a mechanical resonator is sustained through a coil coupled with the resonator, the coil being connected in one branch of a feedback bridge circuit connected between the input and output of an amplifier. In order to avoid a compensating inductance for said coil a specific network of resistors and condensers is

provided including a compensating resistance for the ohmic component of the coil impedance and a supplemental re-



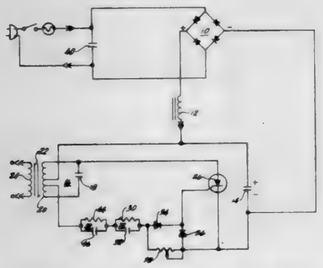
sistance for compensation of the inductive component of the coil impedance.

3,663,895

FREE RUNNING L-C OSCILLATOR USING SILICON-CONTROLLED RECTIFIER

Jerome S. Hochheiser, Northridge; Louis Zermeno, Los Angeles, and Galen Sitler, Duarte, all of Calif., assignors to Hochheiser Electronics Corporation, Burbank, Calif.

Filed Nov. 12, 1970, Ser. No. 88,871
Int. Cl. H03b *5/12, 11/00*
U.S. Cl. 331—117 R **5 Claims**



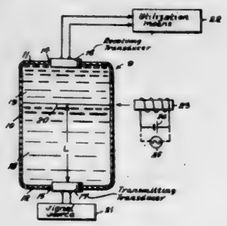
There is described an oscillator circuit utilizing a tank circuit and a silicon-controlled rectifier connecting a portion of the tank circuit across a DC potential source. The gate electrode of the silicon-controlled rectifier is controlled from a voltage taken off the tank circuit through a delay network to provide the correct phase relationship between the triggering of the silicon-controlled rectifier and the voltage across the tank circuit.

3,663,896

FERROFLUID ULTRASONIC SIGNAL MODULATOR

Jack G. Parks, Troy, Mich., assignor to The United States of America as represented by the Secretary of the Army

Filed Aug. 17, 1970, Ser. No. 64,425
Int. Cl. H03c *1/08*
U.S. Cl. 332—51 M **5 Claims**



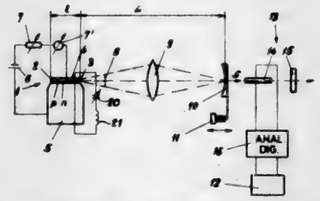
A ferrofluid ultrasonic signal modulator consisting of a closed hollow member having a transmitting transducer affixed in one end and a receiving transducer affixed in an opposite end. The closed member forms an interferometer chamber in which are placed two immiscible liquids. One of the liquids is a ferrofluid adjacent the receiving transducer and partially filling the chamber and the other is a liquid possessing low attenuation for the ultrasonic waves, filling the remainder of the chamber and in contact with the transmitting transducer. When a magnetic field is applied to the interface formed by the two liquids the path length through the said other liquid between the transmitting transducer and the interface is changed due to distortions produced in the ferrofluid by the magnetic field. This change shifts the resonance spike position in the frequency domain resulting in amplitude modulation of the ultrasonic signal transmitted through the chamber.

3,663,897

METHOD OF MODULATING A LASER BEAM AND RELATED APPARATUS

Ronald Francis Johnston Broom, Zurich, Switzerland, assignor to Institut Fur Angewandte Physik Der Universitat Bern, Bern, Switzerland

Filed Feb. 6, 1970, Ser. No. 9,368
Claims priority, application Switzerland, June 6, 1969, 1841/69
Int. Cl. H01s *3/18, 3/12*
U.S. Cl. 332—7.51 **11 Claims**



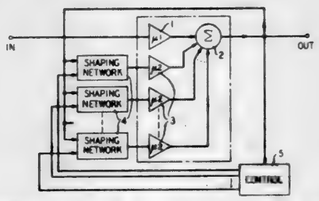
A laser technique by which an additional resonator is coupled to a diode laser provided with a first resonator and driven by an adjustable current, the laser beam traversing the additional resonator and emerging through a semi-translucent component thereof. The emerging beam can be passed through a light switch controlled by a communication source.

3,663,898

EQUALIZER

Chih-Yu Kao, Lawrence, and Carl F. Kurth, Andover, both of Mass., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 17, 1969, Ser. No. 885,798
Int. Cl. H04b *3/14*
U.S. Cl. 333—18 **2 Claims**



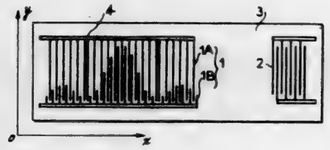
A multibump equalizer having a main path which comprises an amplifier and a summing network and a plurality of feedback paths each including an individual amplifier and shaping network connected from the output of the equalizer to individual inputs to the summing network. All amplifiers and the summing network can be realized with a single operational amplifier.

3,663,899

SURFACE-WAVE ELECTRO-ACOUSTIC FILTER

Eugene Dieulesaint, and Pierre Hartemann, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 2, 1970, Ser. No. 25,158
Claims priority, application France, Apr. 16, 1969, 6911765
Int. Cl. H03h *9/02, 9/32*
U.S. Cl. 333—70 T **12 Claims**



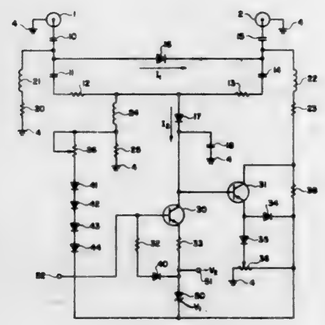
An electro-acoustic surface-wave (Rayleigh waves) device comprises a piezoelectric plate equipped with two transducers one at least of which is constituted by two comb-shaped electrodes having interleaved teeth. At least one of the electrodes have teeth of a dissimilar length the envelope of which is the curve representing the Fourier transform of the transfer function of the device when operated as a filter. The device finds application in the fields of radar, telecommunications, data processing, and the like.

3,663,900

VOLTAGE CONTROLLED ATTENUATOR

Olav Petersen, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Feb. 16, 1971, Ser. No. 115,622
Int. Cl. H01p *1/22*
U.S. Cl. 333—81 R **6 Claims**



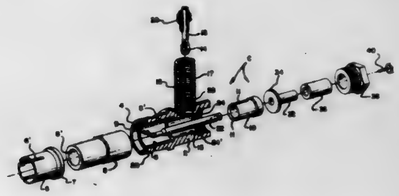
The circuit controls two direct currents in two PIN diodes of an attenuator so that the product of the two currents is constant. In the circuit, an emitter-follower controls the direct current in one PIN diode in proportion to a control voltage. The direct current in the other PIN diode is controlled as dictated by the response curve of a transistor, the emitter of which is in series with a diode, in approximate proportion to the reciprocal of the voltage being developed across the one PIN diode. A bridged-T attenuator is thus controllable from a single control voltage source so that it exhibits a constant image impedance over a wide range of insertion loss.

3,663,901

TUNED COAXIAL DEVICE

Edgar Wilmot Forney, Jr., Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 27, 1970, Ser. No. 15,168
Int. Cl. H01p *5/04;* **H01r** *11/02, 17/18*
U.S. Cl. 333—97 R **4 Claims**



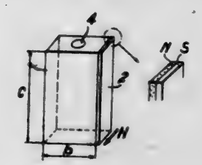
The disclosure relates to a tuner device in a coaxial connector to readily adjust VSWR of an RF system by a structure which is of improved sensitivity and is practical and usable in the field.

3,663,902

METHOD FOR MODIFYING THE CHARACTERISTICS OF A MICROWAVE AND DEVICE FOR THE APPLICATION OF SAID METHOD

Guy Deutscher, 6, Square Charles Laurent, Paris 15e, and Georges Waysand, 172, Rue R. Losserand, Paris XIV, both of France

Filed Feb. 22, 1971, Ser. No. 117,463
Claims priority, application France, Feb. 27, 1970, 7007133
Int. Cl. H01v *11/12;* **H01p** *7/06, 9/00*
U.S. Cl. 333—99 S **10 Claims**



In a microwave structure, a magnetic field is applied in a direction parallel to one or more elements consisting of two superposed metallic layers which are in good electrical contact and one of which is superconducting. The magnetic field intensity is varied in order to modify the thickness of the zone of superconductivity which is induced in the non-superconducting metallic film-layer and consequently in order to modify the depth of penetration of the microwave in the element.

3,663,903

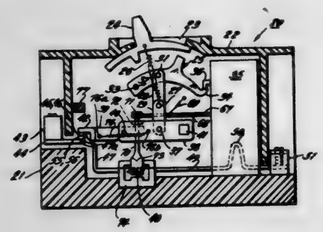
TRIPPING SYSTEM FOR CIRCUIT BREAKER

Frank W. Kussy, Haverford, and Gustave E. Heberlein, Jr., King of Prussia, both of Pa., assignors to ITE Imperial Corporation, Philadelphia, Pa.

Filed May 20, 1971, Ser. No. 145,175
Int. Cl. H01h *77/10*
U.S. Cl. 335—16 **16 Claims**

A current limiting circuit breaker is constructed to achieve more rapid tripping in the medium fault current range by utilizing a magnetic tripping device which imparts physical motion to the movable contact under particular fault current conditions. In the lowest fault current range above the thermal tripping range the magnetic tripping unit automatically

operates or releases the spring operating mechanism thereby causing contact separation. As fault current increases the magnetic tripping means is effective to assist the operating mechanism to physically move the movable contact, and at still higher currents the magnetic tripping means moves the movable contact to its fully open position before any movement is imparted to the movable contact by the spring



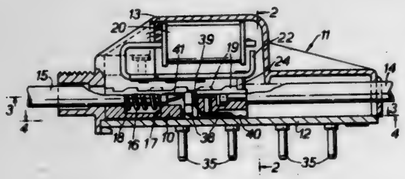
operating mechanism. As fault currents increase still further, electrodynamic forces assist the magnetic means to physically move the movable contacts, and in the very highest fault current range electrodynamic operation moves the movable contact essentially to its fully opened position, before the magnetic trip means for the operating mechanism is active in moving the movable contact.

3,663,904

ELECTRO-MECHANICAL CONTROL APPARATUS

Alec John Heap, Burnley, England, assignor to Joseph Lucas Industries Limited, Birmingham, England

Filed Nov. 23, 1970, Ser. No. 92,042
Claims priority, application Great Britain, Dec. 18, 1969, 61,642/69
Int. Cl. H01h 51/10
U.S. Cl. 335—138 7 Claims



An apparatus for providing step-by-step movement has a block which is urged by an external bias to slide within a body. The block has two rows of staggered projections which are respectively engageable by a pair of electromagnetically operated latches. The block co-operates with the body to provide a sequential switching arrangement for the latches alternately, whereby operation of one latch allows the block to move to a position at which the switching arrangement operates the next latch. Means is provided for over-riding the stepping action of the apparatus.

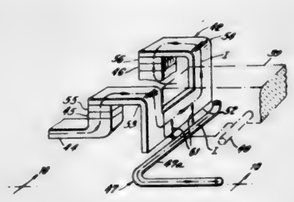
3,663,905

CONTACT BRIDGE SYSTEM FOR CIRCUIT BREAKER

Frank W. Kussy, Haverford, and Gustave E. Heberlein, Jr., King of Prussia, both of Pa., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed May 20, 1971, Ser. No. 145,176
Int. Cl. H01h 77/10
U.S. Cl. 335—195 11 Claims

A circuit breaker bridging contact is constructed as a U-shaped member having L-shaped arms to more efficiently utilize electrodynamic forces to achieve current limiting action. Upon circuit opening parallel arcs re drawn between the bridging contacts and the spaced stationary contacts. The currents flowing in these arcs are in directions opposite to current flowing in those portions of the bridging contact arms that are parallel to the arcs and relatively close thereto, so that electrodynamic forces tend to drive the arcs away from



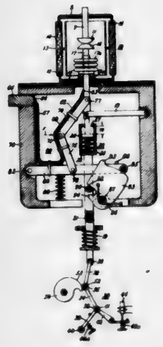
the separating contacts. Speed of contact separation is improved by having the web of the bridging contact in close proximity and parallel to a rigidly held conductor section through which current flows in a direction opposite to that of current flowing through the bridging contact web.

3,663,906

ELECTRIC CIRCUIT BREAKER WITH MAGNETICALLY ASSISTED CLOSING MEANS

Philip Barkan, and Klaus M. Skreiner, both of Media, Pa., assignors to General Electric Company

Filed Oct. 9, 1969, Ser. No. 865,046
Int. Cl. H01h 3/42
U.S. Cl. 335—195 16 Claims



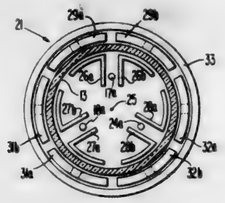
An electric circuit breaker containing electromagnetic-assist means for opposing the contact-repulsion forces developed when a high current flows through the breaker. The electromagnetic-assist means comprises a rigid support member which when restrained in a fixed position renders the assist means capable of transmitting closing force to the movable contact but which, when released, disable the assist means. Releasable latching means restrains the support member in said fixed position when the contacts are engaged. This latching means is controlled by the motion of a contact-operating member that is coupled to the movable contact through a suitable wipe mechanism.

3,663,907

BEAM CONVERGENCE EXCITER FOR SHADOW MASK COLOR PICTURE TUBE

William Henry Barkow, Pennsauken, N.J., assignor to RCA Corporation

Filed Dec. 8, 1970, Ser. No. 96,003
Int. Cl. H01f 3/12
U.S. Cl. 335—211 5 Claims



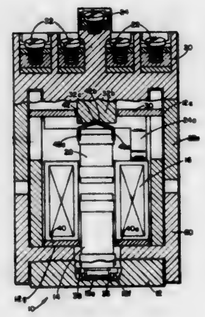
The exciter, mounted closely behind the deflection yoke on the neck of the tube, has three pairs of external coils which are respectively associated with three pairs of internal pole pieces and are enveloped by a ferromagnetic core.

3,663,908

RELAY MAGNETIC FRAME AND ARMATURE ARRANGEMENT

Hugh Kane, and George W. Richardson, both of Freeport, Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 11, 1970, Ser. No. 71,457
Int. Cl. H01f 7/08
U.S. Cl. 335—271 7 Claims



An arrangement for the magnetic frame and armature of a relay which upon impact of the armature against the frame allows for a wiping action between the engaging faces of the frame and the armature.

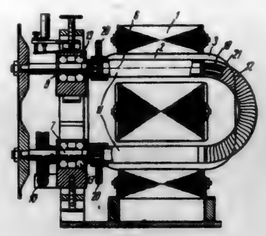
3,663,909

TRANSFORMER WITH MEANS FOR CONVEYING ELECTRIC ENERGY TO ROTARY CURRENT-COLLECTING DEVICES

Igor Vladimirovich Pentegov, Zadorozhny Pereulok, 6, kv. 14; Stephan Ivanovich Semergeev, ulitsa Filatova, 1/22, kv. 13; Sheikovsky, Dmitry Alexeevich, ulitsa Aari Barbjusa, 5a, kv. 22; Sergei Nikolaevich Meocheryak, ulitsa Yanvarskogo Vosstania, 17a, kv. 6; Evgeny Petrovich Stemkovsky, ulitsa Brigadirskaya, 27, kv. 1; Leonid Vladimirovich Litvin, ulitsa Vernadskago, 61, kv. 3, and Nikolai Antonovich Sheiest, ulitsa Uritskogo, 39, kv. 78, all of Kiev, U.S.S.R.

Filed Mar. 2, 1971, Ser. No. 120,194
Claims priority, application U.S.S.R., Mar. 6, 1970, 140745
Int. Cl. H01f 17/06
U.S. Cl. 336—55 7 Claims

A transformer with means for conveying electric energy to rotary current-collecting devices, having a stationary core carrying a primary winding and at least one secondary winding having at least one turn free to rotate about a curved axis



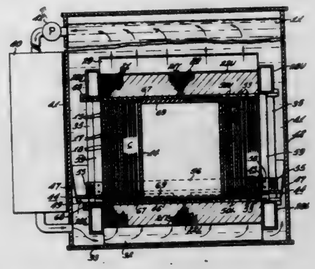
which is the locus of the centers of gravity of the cross-sections of this turn, and wherein the leads of the turn are made fast to said current-collecting devices.

3,663,910

SHUNT REACTOR HAVING IMPROVED INSULATING FLUID CIRCULATING MEANS

Robert L. Grubb, New Berlin, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed May 25, 1970, Ser. No. 40,016
Int. Cl. H01f 27/08
U.S. Cl. 336—57 16 Claims



A shunt reactor immersed in oil within a rectangular casing has cylindrical coils with vertical axes aligned in a common plane and a closed rectangular magnetic shield having laminations in vertical planes surrounding the coils. Annular washers with apertures therethrough and radial spacers on each surface are disposed between the ends of the coils and the magnetic shield and form radial ducts communicating with vertical cooling ducts in the coils. Barrier means form a closed chamber at the bottom of the casing and block flow of oil in paths which bypass the coils and shield and force increased flow of oil into the radial ducts and through the vertical ducts in the coils, and such barrier means include angle collars surrounding the lower end of each coil, baffle members which at one end overlap the angle collars and at the other end project horizontally outward, and flexible elongated steel members affixed to the casing sidewalls which extend inwardly and downwardly of the casing and interfere with and are pushed outwardly by the horizontal baffle member when the reactor is lowered into the casing, thereby forming dams preventing upward movement of oil along the casing sidewalls.

3,663,911

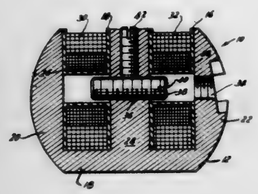
VARIABLE SCALE DIFFERENTIAL TRANSFORMER

Jacob Chass, Forest Hills, N.Y., assignor to Pickering & Company, Inc., Plainview, L. I., N.Y.

Filed Apr. 22, 1971, Ser. No. 136,390
Int. Cl. H01f 21/06
U.S. Cl. 336—132 6 Claims

A variable scale differentiator transformer is provided, including a yoke of magnetic material having two cavities

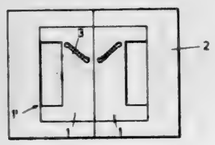
therein. First and second nonmagnetic bobbins, each carrying a primary and secondary winding thereabout are provided in the cavities in axial alignment. The two primary windings are connected in series bucking relationship and the two secondary windings are connected in series aiding relationship. A bore, coaxial with the bobbin, extends through the portion of the yoke separating the cavities and an elongated magnetic core is provided in the bore. Means are also provided for longitudinally adjusting the position of the core to vary the length of the portions of the core extending into each of the cavities.



3,663,912
CORE ARRANGEMENT HAVING SLOTTED LAMINATIONS

Ernst Wiesner, Dornbirn, Austria, assignor to Walter Zumtobel, Dornbirn, Austria

Filed Dec. 2, 1970, Ser. No. 94,226
Claims priority, application Austria, Dec. 10, 1969, 476
Int. Cl. H01f 17/06
U.S. Cl. 336—178 9 Claims



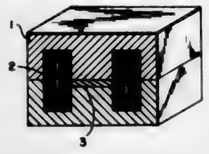
The core laminations of an inductor or transformer are slotted at an angle of 45° to the direction of magnetic flux, the ends of the slots being spaced from edges of the laminations extending in that direction. When two slots are provided, they form a chevron pattern symmetrical relative to a plane extending in that direction, and the laminations may be split in that plane. The slots are wider than the laminations are thick and have approximately circularly enlarged ends.

3,663,913
CORE COIL HAVING A IMPROVED TEMPERATURE CHARACTERISTIC

Umaki Kato, and Hisao Nishino, both of Yokohama, Japan, assignors to Tohoku Metal Industries Limited, Yokohama-shi, Japan

Continuation-in-part of application Ser. No. 786,080, Dec. 23, 1968, now abandoned. This application Feb. 2, 1970, Ser. No. 8,042
Claims priority, application Japan, Dec. 22, 1967, 42/82091
Int. Cl. H01f 15/16
U.S. Cl. 336—179 8 Claims

The temperature characteristics of a core and winding assemblage are improved by including within the magnetic circuit of the core an auxiliary core which is composed of a mixture of magnetic powders of various Curie points,

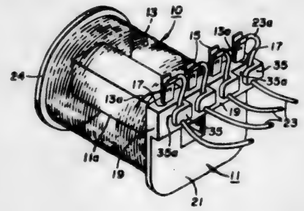


whereby the inductance of the core assemblage remains constant over a wide range of temperature.

3,663,914
BOBBIN WOUND COIL ASSEMBLY AND ELECTRICAL TERMINALS THEREFOR

Homer P. Lane, Indianapolis, Ind., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed June 14, 1971, Ser. No. 152,877
Int. Cl. H01f 15/10
U.S. Cl. 336—192 9 Claims



An electrical bobbin wound coil assembly has electrical terminals secured within recesses formed in at least one flange of the bobbin, with the terminals being adapted for making welded connections thereto of either insulated or stripped terminating ends of coils and associated external leads. Each terminal is readily formed out of strip stock, bent at a sharp angle into an essentially V-shaped configuration, and has a stop-defining protruberance and a stop-defining bend formed at different points along at least one leg of the terminal. These stops, in conjunction with the inherent spring-bias clamping action of the legs of the terminal, temporarily position and hold the coil and lead ends at different desired elevations prior to their being permanently secured, preferably by welding, to the terminal. An L-shaped slot, associated with each terminal, extends outwardly from and is integral with a flange of the bobbin. The slot provides a means to firmly anchor an external lead to the bobbin in a manner which protects the lead-terminal connection from deleterious stresses which could otherwise be encountered during assembly, handling or use.

3,663,915
ELECTRIC CARTRIDGE FUSES WITH BLOWN FUSE INDICATOR

Frederick J. Kozacka, South Hampton, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed Dec. 15, 1970, Ser. No. 98,423
Int. Cl. H01h 85/30
U.S. Cl. 337—244 3 Claims

A cartridge fuse provided with a blown fuse indicator arranged in coaxial relation with the casing of the fuse and forming an integral part of the fuse. The blown fuse indicator includes an indicator housing arranged in coaxial relation to

the casing of the fuse and defining a shoulder abutting against the end surface of one of the pair of terminal caps by which the casing of the fuse is closed. The indicator housing

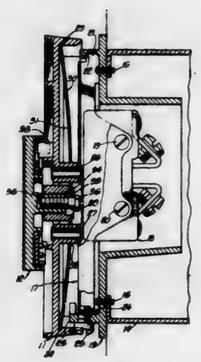


has a sleeve-like extension overlapping the lateral surface of one of said pair of terminal caps and affixed to said one of said pair of terminal caps.

3,663,916
SENSITIVE HIGH CAPACITY ROOM THERMOSTAT

Roland D. Bock, La Crescenta, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 2, 1968, Ser. No. 749,715
Int. Cl. H01h 37/12, 37/22, 37/46
U.S. Cl. 337—396 5 Claims



The invention comprises a plastic face plate which senses ambient temperature and operates a metal amplifier plate which bows outwardly of the face plate to actuate a thermostat switch. The differential expansion of the two plates causes the switch actuation.

3,663,917
DISPOSABLE TEMPERATURE-SENSING DEVICE

Parviz Mahmoodi, White Bear, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 7, 1970, Ser. No. 1,248
Int. Cl. G01k 7/22
U.S. Cl. 338—28 4 Claims

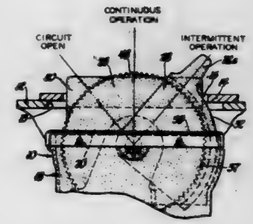


A temperature-sensing device comprising generally an elongated temperature-sensing probe having a thermistor on one end, means on the opposite end of the probe for connecting it with the temperature metering device, an impervious disposable sheath comprising a low thermal-conducting, elongated sleeve having a high thermal-conducting metal tip sealing one end thereof adapted to intimately receive the thermistor-containing probe, and means for removably holding said sheath on said probe. When the device is to be used, the sheath is placed over the probe and held thereon, the thermistor-containing end of said probe being urged into intimate contact with the metal tip, allowing rapid thermal transfer between the temperature source and the thermistor so that temperature may be read in degrees on the metering device. The disposable sheath prevents cross-contamination among patients in clinical use.

3,663,918
WINDSHIELD WIPER AND WASHER CONTROL SYSTEM

Clark Lincoln, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 12, 1971, Ser. No. 142,604
Int. Cl. H01c 1/16
U.S. Cl. 338—200 3 Claims



In a preferred form, this disclosure relates to a switch assembly having a housing which carries a first switch means or rheostat for controlling operation of an electric circuit means and a second switch for controlling the energization of other electric circuits. The first switch has a manually manipulatable first actuator supported thereon for movement in opposite directions and which is disposed in an opening of the housing. The second switch includes a manually manipulatable second actuator which is rotatably supported by the housing for movement in opposite directions between circuit open and circuit closed positions and which projects through the opening of the housing. The second actuator includes a cover portion which covers the first actuator when the second actuator is in the circuit open position and which progressively exposes the first actuator when it is moved from its circuit open position toward its circuit closed position to permit manual manipulation of the first actuator only when the second actuator has been moved to the circuit closed position.

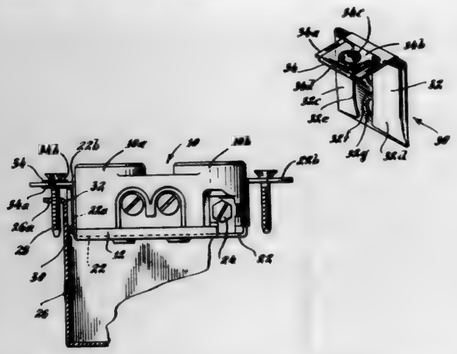
3,663,919
GROUNDING SPRING FOR ELECTRICAL FIXTURES

Frank C. Jaconette, Trumbull, Conn., assignor to Harvey Hubbell Incorporated, Bridgeport, Conn.

Filed June 16, 1970, Ser. No. 46,606
Int. Cl. H01r 3/06
U.S. Cl. 339—14 R 10 Claims

A substantially L-shaped grounding member having a resilient main body, is affixed to the forwardly extending end arm of a substantially U-shaped metallic mounting yoke of an electrical fixture adapted to be mounted in a grounded standard metal outlet box. The resilient main body of the grounding member is operative to be wedgedly clamped between

the end arm of the yoke and a juxtaposed portion of the metal box to thereby provide a direct and low resistance



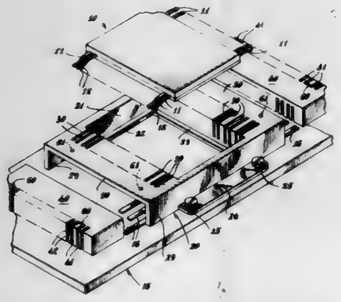
grounding path between the grounding circuit of the fixture and the metal box.

3,663,920

MOUNTING FOR INTEGRATED CIRCUITS

Thomas B. Lapham, Milford, Conn., and Leonard H. Feldberg, Spring Valley, N.Y., assignors to Burndy Corporation, Norwalk, Conn.

Filed July 27, 1970, Ser. No. 58,522
Int. Cl. H01r *13/54*; H05k *1/02*
U.S. Cl. 339—17 CF **8 Claims**



A large integrated circuit package is dropped into a housing that is attached to a printed circuit board in particular alignment with lead terminals on said board. Leads from the package are applied to the lead terminals when the package is properly positioned in the housing. A securing device having individual cams is moved into a position where it is assembled to the board and receiving means for applying camming pressure against said leads and lead terminals. The leads so engage the lead terminals that they are held against lateral movement during the camming action.

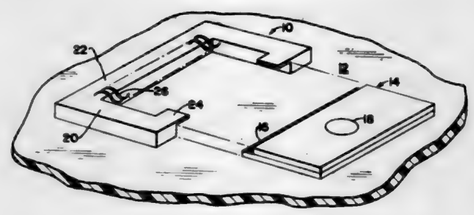
3,663,921

RECEPTACLE FOR CONNECTING SEMICONDUCTORS TO A CIRCUIT BOARD

Donald F. Richard, Saratoga, Calif., assignor to American Micro-Systems, Inc., Santa Clara, Calif.

Filed July 7, 1970, Ser. No. 52,803
Int. Cl. H05k *1/02*
U.S. Cl. 339—17 CF **2 Claims**

A receptacle for installation on one surface of a circuit board for supporting a semiconductor package of the type having bonding pads along one side and providing an interconnection being the package and the circuit board. The receptacle has a generally channel-shaped planform with a series of contact members spaced apart along a central body



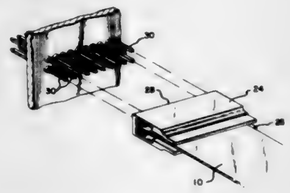
section. The contact members extend upwardly and outwardly from one side and register with bonding pads of the package. The lower ends of the contact members extend through the circuit board for connection with lead terminals on its other surface.

3,663,922

FLAT CABLE CONNECTORS HAVING TWO ROWS OF CONTACTS

Tilman Harrison Foust, Jr., Bryn Mawr, and Dale Richard Zell, Elizabethtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 18, 1971, Ser. No. 107,299
Int. Cl. H05k *1/04*
U.S. Cl. 339—17 F **9 Claims**



A connector for a flat cable has two opposed rows of contacts. The flat cable has signal conductors and a flat shield member which is terminated further from the end of the cable than the signal conductors. A row of signal contacts are crimped onto the signal conductors. The shield contacts extend beyond the signal contacts. The signal contacts can be crimped onto the signal conductors without making contact with the shield member. The shield contacts carry a shield connection through the connector for each signal conductor. In this way the impedance mismatch at the termination of the cable is reduced and impedance continuity through the conductor is improved.

3,663,923

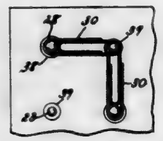
ELECTRIC CIRCUIT BOARD AND CONNECTORS THEREFOR

Eugene H. Primoff, 15 Whitfield Terrace, New Rochelle, N.Y., and Alfred Eichner, 21 Warwick Avenue, Scarsdale, N.Y.

Filed Apr. 7, 1971, Ser. No. 128,610
Int. Cl. H01r *25/00*; H05k *1/02*
U.S. Cl. 339—18 C **4 Claims**

An electric circuit board for toy, kit or general use characterized in the provision of a plurality of contact terminals arranged in one or more parallel rows such that each terminal is spaced from an adjoining terminal a fixed predetermined distance, a first plurality of terminals having a first given

diameter, corresponding to the loop formed at one end of a conventional paper clip, and a second plurality of terminals alternately spaced with respect to said first plurality of terminals being of a second effective diameter corresponding to the inner diameter of a second end loop of the same paper clip, so that any pair of juxtaposed terminals may be interconnected for the conducting of a current therethrough by slipping the ends of the paper clips over said terminals to be resiliently retained thereby. In one embodiment of the invention, the terminals are provided with one or more parallel grooves extending into the cylindrical surface of the terminals to utilize the axial component of resiliency present in the paper clip.

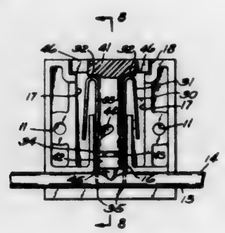


3,663,924

SAFETY OUTLET

Matthew E. Geriat, 1334 North 123 St., Wauwatosa, Wis.

Filed Jan. 29, 1971, Ser. No. 111,043
Int. Cl. H01r *11/20*
U.S. Cl. 339—28 **12 Claims**



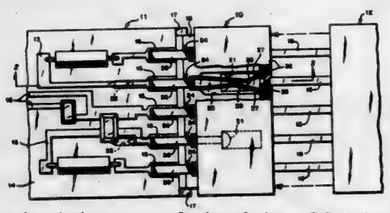
The device disclosed is an outlet which may be connected to a standard rubber insulated lamp cord without stripping the insulation and may be positioned at any point along the length of the cord. The cord piercing contacts are arranged to move with a clamp member which provides strain relief and which is so formed as to block the use of the outlet before the strain relief and the contacts are engaged and is further shaped to prevent the strain relief and the cord piercing contacts from being disengaged while a plug occupies the outlet.

3,663,925

ELECTRICAL CONNECTOR

Richard D. J. Proctor, Portsmouth, R.I., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 20, 1970, Ser. No. 39,693
Int. Cl. H01r *13/62*
U.S. Cl. 339—65 **9 Claims**



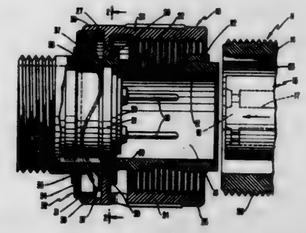
An electrical connector for interfacing a PC (printed circuit) board with external circuits. A nonconductive core, formed to engage the edge of the PC board adjacent to the printed circuit terminals, receives two rows of opposed contact springs, each spring having a bifurcated portion in the core for receiving a contact pin of an external circuit and a base portion extending outwardly for engaging either side of the circuit board at selected terminals. The bifurcated portions of each spring are inwardly inclined from their respective ends to form pin contact points developed from each other along their length. A nonconductive cover removably fitted over the core and springs provides accessibility for spring replacement and protection against contact pin damage.

3,663,926

SEPARABLE ELECTRICAL CONNECTOR

David S. Brandt, Onconta, N.Y., assignor to The Bendix Corporation

Filed Jan. 5, 1970, Ser. No. 633
Int. Cl. H01r *13/54*
U.S. Cl. 339—89 R **10 Claims**



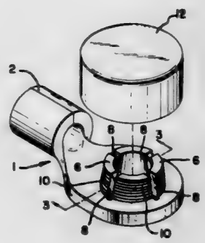
A separable electrical connector having two units held together in mated relationship by a nut. Means is provided for securely but releasably retaining the nut from rotation with respect to the mated units, thereby preventing the nut from being accidentally loosened from its fully tightened position.

3,663,927

BATTERY TERMINAL

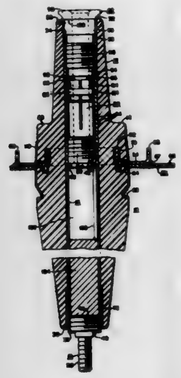
Peter Martin Bruner, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 19, 1970, Ser. No. 12,792
Int. Cl. H01r *11/26*
U.S. Cl. 339—95 B **1 Claim**



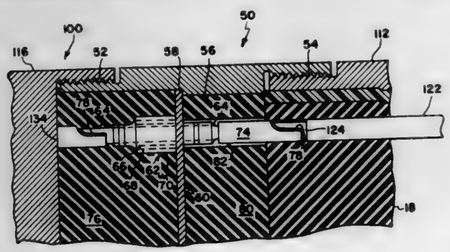
The disclosure relates to a battery terminal which can quickly and easily be secured to a battery post without the aid of tooling and which is resistant to battery acids relative to prior art battery terminals. This is provided by the use of a threaded connector element which is inwardly compressable by a threaded cap, resistant to battery acids and the like, which is threaded on to the connector and compresses the portions thereof inwardly to make a frictionally locking contact with the battery post.

3,663,928
ELECTRICAL BUSHING ASSEMBLY
August I. Keto, Sharpsville, Pa., and Kenneth R. Klein, Niles, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 771,707, Oct. 30, 1968, now abandoned. This application Jan. 9, 1970, Ser. No. 1,828
Int. Cl. H01r 13/52
U.S. Cl. 339—111 9 Claims



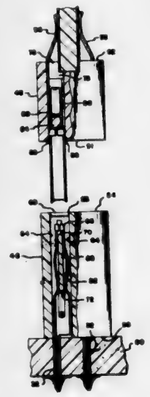
A load break bushing assembly for receiving a plug-in cable connector or termination. The bushing assembly includes an insulating body member, a conductive sleeve member, a replaceable contact disposed within the conductive sleeve member, and an arc confining and extinguishing member. In one embodiment of the invention a protective tube is disposed to span the contact and arc confining and extinguishing member, to protect the conductive sleeve member from arcing by-products and maintain the replaceable characteristic of the contact. The conductive sleeve member has a chamber sealed at one end with a terminal stud, with this chamber functioning as a gas surge expansion chamber when the plug-in cable connector is operated to make or break load current, making it unnecessary to vent the load break bushing into the enclosure of its associated apparatus.

3,663,929
RADIO FREQUENCY FILTER DEVICE
Jerrold L. Miertschin, Arlington, Tex., and David H. Butler, Grafton, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed May 28, 1970, Ser. No. 41,347
Int. Cl. H01r 13/66
U.S. Cl. 339—143 R 1 Claim



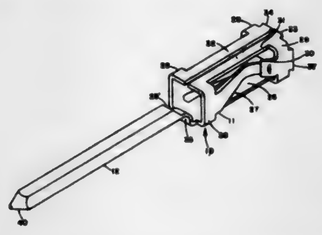
An electrical connector utilizing a pin assembly wherein the pin is coated with a dielectric and has a radio frequency energy absorbing sleeve around the dielectric and which is held in place by a solder coating. At the outer end of the radio frequency energy absorbing sleeve the pin grouping is adapted to receive an RF shield.

3,663,930
DISENGAGEABLE ELECTRICAL CONNECTOR
Homer Ernst Heuchen, Carlisle; Clifton Wesley Huffnagle, Camp Hill, and Dale Richard Zell, Elizabethtown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Dec. 17, 1970, Ser. No. 99,188
Int. Cl. H01r 33/76, 13/06
U.S. Cl. 339—192 R 4 Claims



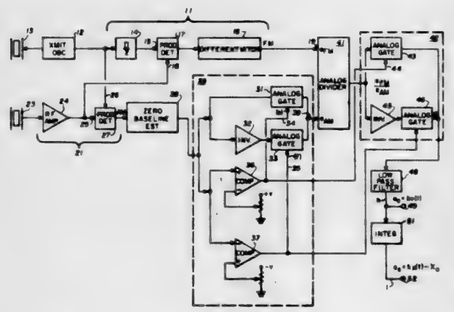
Disengageable connector assembly comprises one connector part having channel shaped female pins therein and second connector part having male spring contacts which are adapted to move between the sidewalls of the channels. Channel contacts extend beyond the mating face of the one connector part and spring contacts are recessed in cavities in the second connector part.

3,663,931
PIN AND SOCKET CONTACT ELECTRICAL INTERCONNECT SYSTEM
Elvin E. Brown, Cedar Rapids, Iowa, assignor to Collins Radio Company, Dallas, Tex.
Filed Nov. 25, 1970, Ser. No. 92,772
Int. Cl. H01r 9/08
U.S. Cl. 339—218 R 19 Claims



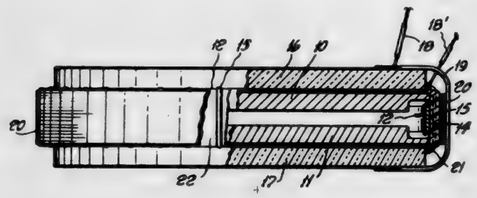
A combined unitary pin and socket contact, receivable in a housing, designed for providing electrical interconnect between parallel stacked circuit boards, with guided entry of pins into contact sockets, and opposite side spring socket contact arms resiliently engaging opposite sides of an inserted pin throughout the entire range of pin lateral float.

3,663,932
RECONSTRUCTION OF REFLECTING SURFACE VELOCITY AND DISPLACEMENT FROM DOPPLER SIGNALS
Bruce Elson Mount, Diamond Bar, Calif., and Harold Lee Massle, Hightstown, N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.
Continuation-in-part of application Ser. No. 830,681, June 5, 1969, now abandoned. This application July 15, 1970, Ser. No. 54,983
Int. Cl. G01s 9/66
U.S. Cl. 340—1 R 16 Claims



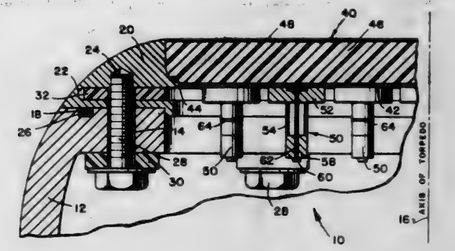
A method and apparatus for accurate measurement of velocity and displacement of a moving surface by reconstructing the velocity-versus-time and displacement-versus-time functions comprising the steps of detecting the AM and FM or phase information of a Doppler echo signal from the surface to be measured, dividing the FM information by the AM information to obtain the velocity function, and, then, if desirable, performing an integrating step to obtain the relative displacement function.

3,663,933
PROTECTIVE BAND FOR BILAMINAR TRANSDUCER WITH SLOTTED SPACER RING
Theodore C. Madison, Santa Barbara, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed July 2, 1970, Ser. No. 52,038
Int. Cl. G01v 1/16
U.S. Cl. 340—8 5 Claims



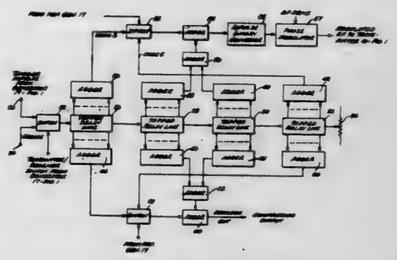
An improvement in bilaminar sonar transducers which employ slotted, compliant, outer spacer rings, the improvement comprising filling the slots with a plastic resin, such as epoxy resin, having a low modulus of elasticity as compared with that of the spacer ring, and banding the spacer ring with a wrapping of fiberglass tape which is impregnated with epoxy resin and cured.

3,663,934
SELF-SUPPORTING TRANSDUCER ASSEMBLY
Harper John Whitehouse, Hacienda Heights, and Shelby F. Sullivan, Arcadia, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed Oct. 8, 1969, Ser. No. 864,814
Int. Cl. H04b 11/00
U.S. Cl. 340—9 7 Claims



A self-supporting transducer assembly, mounted, for example, on the nose section shell of a torpedo, comprising an attachment ring; a diaphragm consisting of: (1) a tension-carrying skin, sealably connected to the inner periphery of the attachment ring, and forming with it a dish-shaped cavity; (2) an acoustically non-refractive and non-reflective composite material in the dish-shaped cavity; (3) a vapor seal, sealably connected to the inner periphery of the attachment ring, serving, with the tension-carrying skin, to confine the composite material to the dish-shaped cavity; an acoustic isolation joint, mounted on the torpedo, for acoustically isolating the transducer assembly from the torpedo; and at least one transducer element bonded directly to the tension-carrying skin.

3,663,935
PULSE COMPRESSION CODE SEQUENCING SYSTEM
Alexander MacMullen, Palos Verdes, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed June 5, 1967, Ser. No. 643,514
Int. Cl. G01s 9/233
U.S. Cl. 343—17.2 R 13 Claims



A pulse recognition coding and decoding system for use in a binary phase coded high resolution radar, wherein a transmitter of a high resolution radar is modulated with different codes at successive pulse repetition periods. By selection of predetermined codes which are alternately coded, transmitted, received and decoded, a wide pulse is transmitted and then compressed. The codes are provided by alternate selection of portions of a tapped delay line wherein the selected coded pulses are presented to the transmitter. On receive, the same delay lines are used to present the alternate codes t o a memory device. The selected codes are alternate-

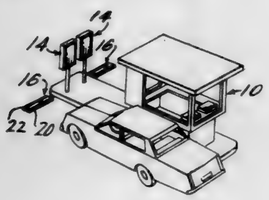
ly applied to a memory device where they are combined. The memory device performs the averaging process, suppressing the sidelobes and adding at the main lobes in the well known manner.

3,663,936

ADMISSION SYSTEM FOR DRIVE-IN ENTERPRISES

Angelo Boudouris, Sylvania, and Stanley J. Kulish, Jr., Heiland, both of Ohio, assignors to Eprad Incorporated, Toledo, Ohio

Filed Nov. 5, 1969, Ser. No. 874,360
Int. Cl. G08g 1/065
U.S. Cl. 340—31 R 12 Claims



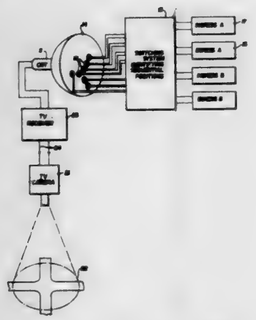
An admission system is designed for use with drive-in enterprises wherein patrons enter the premises in automobiles. The admission system has a number of unique features including a cumulative counter for automatically totalling the number of patrons entering the premises at each predetermined admission rate. The system also includes a lock-out feature for preventing premature operation of the system as an automobile approaches the entrance. Further, the system has additional counters for totalling all automobiles entering the premises and all transactions completed.

3,663,937

INTERSECTION INGRESS-EGRESS AUTOMATIC ELECTRONIC TRAFFIC MONITORING EQUIPMENT

Thomas E. Bolner, Fayetteville, Tenn., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed June 8, 1970, Ser. No. 44,491
Int. Cl. G08g 1/04
U.S. Cl. 340—38 P 8 Claims



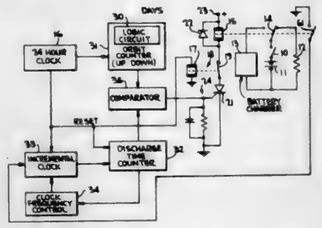
An electronic detection circuit identifies several traffic paths through an intersection as a vehicle passes over a predetermined sequence of discrete separated positions identifying a path. A television camera can view the intersection and the paths be identified on a receiving cathode ray tube screen by placing a series of light detectors over desired patterns. A switching circuit responsive to the detectors then identifies and counts only those vehicles passing one complete sequence of the positions identifying a particular path.

3,663,938

SYNCHRONOUS ORBIT BATTERY CYCLER

David A. Baer, Silver Spring, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed May 3, 1971, Ser. No. 139,528
Int. Cl. H02j 7/00; G06f 7/38; G01n 27/42
U.S. Cl. 320—48 7 Claims



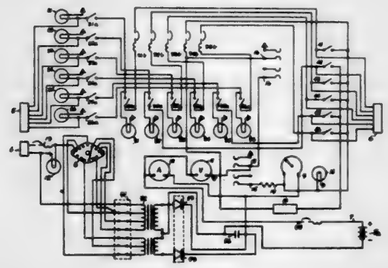
A device is activated into first and second different states for differing time intervals in response to periodic pulses from a first clock pulse source which increments a first counter. A second counter is reset by each pulse of the first clock source and is incremented by pulses from a second clock source having a frequency greater than the frequency of the pulses derived from the first clock source. In response to the counts of the two counters being the same, a comparator derives an output response. The device is activated to the first state during the time interval between pulses from the first clock source and the output response and is activated into the second state for a time interval between the derivation of the output response and the next succeeding pulse from the first clock source. In one particular use, the system is employed for alternately connecting a battery to a battery charger and load for simulating the charging and discharging characteristics, respectively, of the battery as if it were located on a synchronous artificial earth satellite.

3,663,939

COMBINATION TEST BOX AND BATTERY CHARGER

Hans Olsson, 40 Merrll Street, San Francisco, Calif.

Filed Dec. 21, 1970, Ser. No. 99,894
Int. Cl. G01r 31/02
U.S. Cl. 320—48 2 Claims



This invention comprises a portable test box for checking the electrical circuits between a tractor and a trailer, as employed in typical diesel or other tractor-trailer arrangements. Essentially a maintenance device, it is constructed so as to be connectible between the wires coming from the tractor and those leading to the trailer so that by proper manipulation of switches rapid indication of open, grounded, or short circuits in the lighting and other wiring is readily indicated. The novel construction permits use of either the vehicle's battery

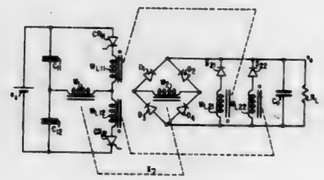
as a source of power for testing or an outside source of power. The novel construction and circuitry permits also the use of the device for charging of the vehicle battery from an outside source.

3,663,940

CONTROLLABLE, LOAD INSENSITIVE POWER CONVERTERS

Francis Schwarz, Weston, Mass., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed May 21, 1970, Ser. No. 39,342
Int. Cl. H02m 3/32
U.S. Cl. 321—2 18 Claims



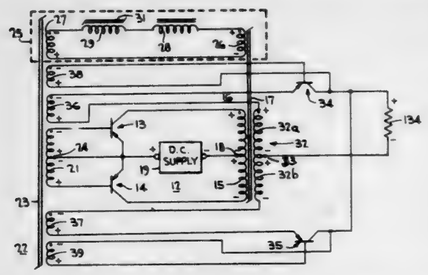
Circuitry for converting DC or AC voltage to a higher or lower DC or AC voltage by directing current alternately through a pair of inductive-capacitive loops. A portion of the inductance of each loop is magnetically coupled to another inductance whose current is rectified and supplied to a load. Voltage sensing circuits are utilized to time the flow of current through the pair of loops. Energy is magnetically coupled from the load circuit to the inductance of the pair of loops to improve starting and overload operating conditions.

3,663,941

DC TO AC TO DC CONVERTER HAVING TRANSISTOR SYNCHRONOUS RECTIFIERS

Edward R. Pasciutti, Beltsville, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 16, 1970, Ser. No. 98,640
Int. Cl. H02m 3/14; H03k
U.S. Cl. 321—2 11 Claims



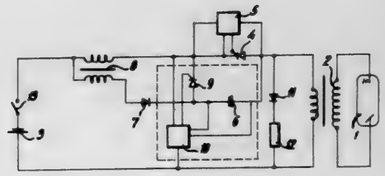
A DC to AC inverter including a pair of transistors driven in push-pull by means of coupling through first and second transformers, each having a saturable core, drives a DC load through a synchronous rectifier. The synchronous rectifier includes a pair of transistors, the emitter collector junctions of which are driven with the same waveshape as the emitter base junctions of the inverter. A circuit connecting the two transformers together includes a saturable reactor, whereby the base drive for the transistors of the inverter and the synchronous rectifier is a waveform having two relatively steep transitions in opposite directions at the moment of switch on to remove charge stored on the bases and a further relatively steep transition prior to cut off to minimize charge stored on the bases during conducting intervals of the transistors.

3,663,942

CIRCUIT ARRANGEMENT FOR TRANSFORMING THE VOLTAGE OF A DC VOLTAGE SOURCE INTO A PULSATING VOLTAGE

Niels Jakobsen, Kastrup, Denmark, assignor to Picker-Andrex X-ray A/S, Copenhagen, Denmark

Filed Oct. 30, 1970, Ser. No. 85,632
Claims priority, application Denmark, Nov. 7, 1969, 5914/69
Int. Cl. H02m 1/18; G05f
U.S. Cl. 321—14 5 Claims



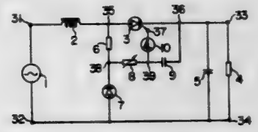
A circuit arrangement for supplying a load, e.g. an X-ray tube, with a pulsating voltage by means of a DC voltage source connected in series with the load and a controllable rectifier, which is extinguished by means of the charge on a commutating capacitor, which, via a current transformer, is charged by the leading edges of the load current, and the discharge of which is controlled, via a timing device, by the voltage across the commutating capacitor. Means may be provided for reducing the time constant of the timing device when the load current exceeds a given value.

3,663,943

AUTOMATIC VOLTAGE REGULATING SYSTEM FOR A DC LOAD

Tsutaka Nakajima; Tomoyuki Okubo; Manabu Kobayashi, and Kimio Yoshioka, all of Kawasaki-shi, Japan, assignors to Fuji Denki Seizo Kabushiki Kaisha, Kawasaki-shi, Japan

Filed Sept. 15, 1970, Ser. No. 72,729
Claims priority, application Japan, Aug. 5, 1969, 44/61925; 44/61926; 44/61927; Mar. 20, 1970, 45/23800; Apr. 8, 1970, 45/29886; Apr. 20, 1970, 45/33654; May 25, 1970, 45/44682
Int. Cl. H02m 7/20; G05f 1/64
U.S. Cl. 321—18 4 Claims

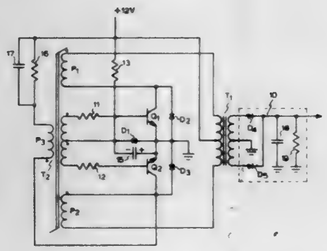


For automatic voltage regulation for a DC load, fed from an AC source via a three-terminal thyristor or a silicon-controlled rectifier, a constant-voltage element is connected in parallel to the AC source via a nonvariable resistance, and a capacitor is provided which is charged, via a variable resistance, with a voltage corresponding to a difference between the constant voltage of the aforesaid constant-voltage element and the voltage of the DC load, the voltage of said capacitor being impressed to the control terminals of the three-terminal thyristor, i.e., the gate and cathode terminals of the silicon-controlled rectifier, via a threshold-value element (e.g., a Shockley diode) that becomes conductive when the voltage of the capacitor reaches a predetermined threshold value.

3,663,944
INVERTER OSCILLATOR WITH VOLTAGE FEEDBACK

George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of; Kurt Willner, 6317 Maryland Drive, Los Angeles, Calif., and William T. McLyman, 2129 Lark Bay Lane, Lakewood, Calif.

Filed Mar. 29, 1971, Ser. No. 129,071
Int. Cl. H02m 3/28
U.S. Cl. 321—45 R 8 Claims

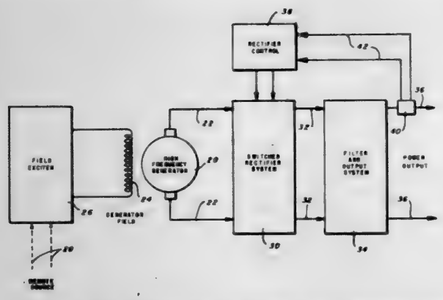


An oscillator is disclosed for use in an inverter for a wide range of load using two transistors connected in a push-pull amplifier configuration having current feedback through primary windings of a saturable transformer connected in series with an output transformer between collectors of the transistors. Voltage feedback is provided through a third primary winding of the saturable transformer connected in series with a resistor between the collector of one transistor and a center tap in the primary winding of the output transformer.

3,663,945
APPARATUS FOR PROVIDING AC ELECTRICAL ENERGY AT A PRESELECTED FREQUENCY

William L. Hughes; Hamel J. Allison, and Ramachandra G. Ramakumar, all of Stillwater, Okla., assignors to Oklahoma State University, Stillwater, Okla.

Filed Sept. 4, 1970, Ser. No. 69,675
Int. Cl. H02m 5/00
U.S. Cl. 321—61 13 Claims

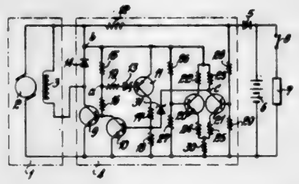


A method and apparatus for providing AC electrical energy at a preselected frequency including a driven AC generator having an externally excitable field, means connected to the generator field for exciting the field at the preselected frequency whereby the generated AC output is modulated at the preselected frequency, and rectifier means connected to the generator output by which the modulated generator output is rectified to obtain AC output at the preselected frequency, the frequency of the AC output being independent of the speed of rotation of the AC generator.

3,663,946
GENERATOR ARRANGEMENT WITH REGULATED OUTPUT

Katsutaro Iwaki, Aichi Ken, Japan, assignor to Nippon Denso Kabushiki Kaisha, Aichi Ken, Japan

Filed Nov. 13, 1970, Ser. No. 89,353
Claims priority, application Japan, Nov. 14, 1969, 44/108800
Int. Cl. H02p 9/30
U.S. Cl. 322—23 15 Claims

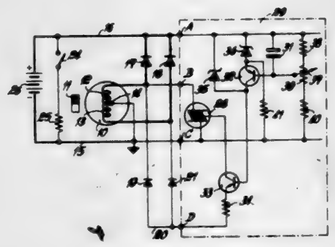


Connected to a DC generator is a regulating circuit having a first transistor in series with the generator field winding and rendered non-conductive whenever the voltage output of a generator reaches a predetermined maximum or the generator output current reaches a maximum that increases in value as the ambient temperature falls. A differential amplifier is connected to a positive temperature coefficient resistor, carrying at least part of a load current, to furnish differential voltage of increasing value as the voltage drop across the positive temperature coefficient resistor increases, for rendering the first transistor non-conductive when this difference voltage reaches a sufficient value. A second transistor is turned on when the generator output voltage reaches a predetermined value, thereby turning off the first transistor.

3,663,947
VOLTAGE REGULATOR ARRANGEMENT FOR GENERATORS WITH PERMANENT MAGNETIC EXCITATION

Peter Pfeiffer, Lauffen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed June 25, 1970, Ser. No. 49,761
Claims priority, application Germany, July 4, 1969, P 19 33 948.1
Int. Cl. H02p 9/30
U.S. Cl. 322—26 13 Claims

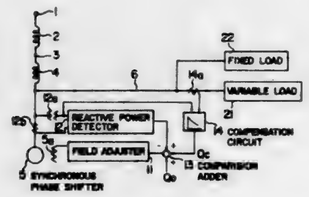


A voltage regulating arrangement in which an alternating current generator with means for permanent magnetic excitation, has two output windings magnetically intercoupled. The junction between the two windings is connected to ground potential, whereas the remaining terminals of the output winding are connected to two rectifying circuits. A triac is connected in parallel with one of the windings, and one of the rectifying circuits provides a negative control voltage which is applied to the triac through a control circuit containing complementary transistors. The rectifying circuits provide a DC output voltage, and the triac is switched to the conducting state through the negative control voltage, whenever the rectified DC output voltage exceeds a predetermined level.

3,663,948
APPARATUS FOR CONTROLLING POWER DISTRIBUTION IN SUBSTATION

Masaomi Nagae, and Sumio Yokowa, both of Kawasaki, Japan, assignors to Fuji Denki Seizo Kabushiki Kaisha, Kawasaki-shi, Japan

Filed Oct. 7, 1970, Ser. No. 78,861
Claims priority, application Japan, Oct. 11, 1969, 44/81339
Int. Cl. G05f 1/12
U.S. Cl. 323—8 3 Claims

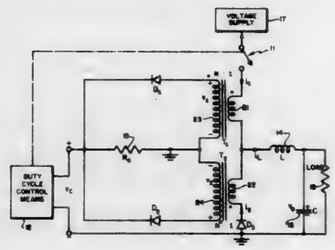


An apparatus for controlling voltage flicker in power distribution in a substation, comprising a synchronous condenser, a field adjuster for the synchronous condenser and a compensation circuit, said apparatus being adapted to compensate the distribution voltage flicker due to a large load variation in said substation and being able to adjust a predetermined distribution voltage within an allowable range. The compensation circuit may include an incomplete differential circuit and means for feeding the sum of the products respectively obtained by multiplying the variable part of the respective power of each load and its respective weight coefficient.

3,663,949
CURRENT SENSING OF INDICATOR CURRENT IN SERIES WITH TRANSFORMER WINDING

Thomas A. Froeschle, Framingham, Mass., assignor to Bose Corporation, Natick, Mass.

Continuation-in-part of application Ser. No. 869,520, Oct. 27, 1969. This application Nov. 30, 1970, Ser. No. 93,529
Int. Cl. G05f 1/20
U.S. Cl. 323—17 5 Claims

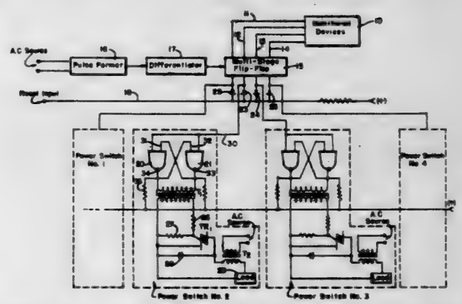


In a two-state current-controlled system, a power switch is connected in series with the primary of a first transformer in series with an output inductor connected to the output terminal. The primary of a second transformer is connected in series with a diode connected to ground and the inductor. The secondaries of the first and second transformers are connected in series with respective controlled avalanche reset diodes that are connected to a current sensing resistance having its other end connected to ground so that the voltage across the current sensing resistance is representative of the current through the inductor.

3,663,950
QUAD AC POWER SWITCH WITH SYNCH

Peter G. Bartlett, Davenport, Iowa, assignor to Struthers-Dunn, Inc., Pitman, N.J.

Filed Jan. 19, 1970, Ser. No. 3,801
Int. Cl. G05f 5/00
U.S. Cl. 323—24 2 Claims

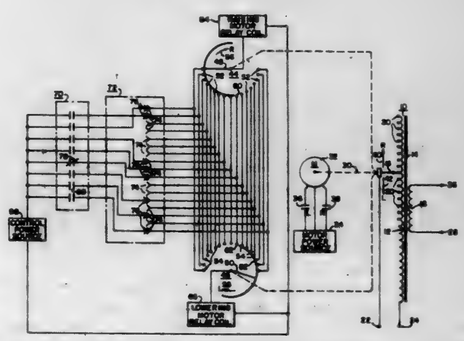


Circuit for controlling the energization of an alternating-current load in which the load is electrically isolated from the controlling input. Energization of the load is controlled by a bi-directional thyristor whose gate electrode is energized with a high frequency, square-wave voltage provided by a pair of interconnected NAND gates. A synchronizing signal obtained from the alternating-current power source controls the NAND gates so that they become effective to produce a square-wave signal for the gate electrode of the thyristor as the alternating-current source goes through zero amplitude, and the thyristor again becomes cut off when the current through the load approaches zero, with the result that switching of the load is timed to occur when it will produce the fewest transients and noise throughout the system.

3,663,951
MOTOR OPERATED TAP CHANGER EMPLOYING CONTACT DRUM SWITCHES

Herbert L. Prescott, Brookfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 7, 1971, Ser. No. 141,147
Int. Cl. H02p 13/06; G05f 1/14
U.S. Cl. 323—43.5 R 4 Claims



Tap position selector device for controlling a motor operated tap changing mechanism. A selector switch is con-

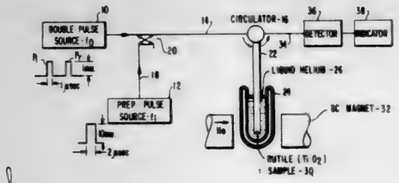
nected to two multiple contact drum switches. The drum switches are interconnected so that one drum switch conducts only when the selector switch requires that the tap position be raised and the other drum switch conducts only when the selector switch requires that the tap position be lowered. The movable contacts of both drum switches move with the tap changing mechanism.

3,663,952

ELECTRON SPIN ECHO SYSTEM HAVING RF PULSE INVERSION PREPARATION OF THE SPIN ECHO SAMPLE

Donald A. Bozanic, Baltimore; Ronald W. Minarik, Lutherville, and Dickron Mergerian, Baltimore, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 30, 1970, Ser. No. 51,143
Int. Cl. G01n *27/78*
U.S. Cl. 324—0.5 R 12 Claims



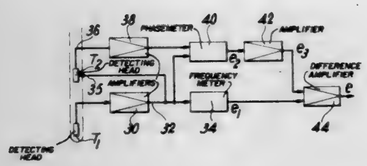
Method and apparatus for inverting the population of a pair of adjacent spin levels associated with a spin-echo sample when situated in a unidirectional magnetic field by means of a preparatory inversion RF pulse of a different RF frequency from the RF frequency of the input and recall RF pulses necessary for the generation of a spin-echo signal.

3,663,953

HELICOPTER CARRIED MAGNETOMETER ASSEMBLY COMPENSATED FOR THE PARASITIC FIELD OF THE HELICOPTER

Antoine Salvi, Fontaine, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Sept. 17, 1970, Ser. No. 73,106
Int. Cl. G01r *33/02*
U.S. Cl. 324—43 R 9 Claims



A magnetometer assembly for detection of ferromagnetic targets carried by a helicopter is compensated for the parasitic magnetic field generated by the helicopter. First and second magnetometer heads are carried by the helicopter and located at points aligned with the axis of the main rotor. An electric control signal representative of the difference of the total magnetic fields at the first and second heads is obtained and is used to compensate the parasitic component due to the helicopter in the magnetic field at one of the points. The distance between the heads and the rotor is large as compared to the variations of the position of the magnetic center of gravity of the helicopter and as compared to the distance between the heads.

3,663,954

SYSTEM FOR MEASURING HIGHER ORDER NONLINEARITIES OF A SIGNAL/TRANSMITTING NETWORK

Dietrich-Ekkehard Alker, Esingen, Germany, assignor to Wandel & Goltermann, Reutlingen and Franz-Josef Landwehr, Munster, Germany, part interst to each

Filed July 10, 1970, Ser. No. 53,948
Claims priority, application Germany, July 11, 1969, P 10 35 205.7
Int. Cl. G01n *27/00*
U.S. Cl. 324—57 R 4 Claims



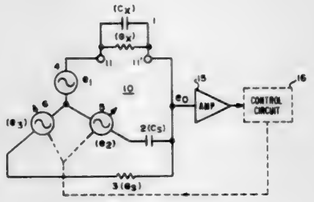
The output of a random-noise generator is modulated with the aid of two fixed reference frequencies G_1, G_2 (one of which may be zero) to yield two mutually transposed but correlated noise bands overlapping in a frequency range which substantially coincides with a band of signal frequencies to be transmitted through a test circuit to be examined for second-order and third-order nonlinearities. With the sum or difference of any two correlated signal frequencies f_1', f_1'' in the two noise bands equal to a primary beat frequency $F_1 = G_2 \pm G_1$, the amplitude of a signal of this beat frequency in the output of the test circuit receiving the two wholly or partly coincident noise bands is a measure of second-order nonlinearity of that test circuit throughout the signal band. The superposition of a pilot oscillation of frequency G_3 (lying within the pass band of the test circuit) upon the primary beat frequency F_1 gives rise to a secondary beat frequency $F_2 = F_1 \pm G_3$ whereby the amplitude of another output signal, having this frequency F_2, is a measure of third-order nonlinearity of the test circuit.

3,663,955

APPARATUS FOR DETECTING ERROR DIRECTION TO ESTABLISH THE BALANCED STATE OF A BRIDGE CIRCUIT

Takeo Shimizu, Tokyo, Japan, assignor to Yokogawa-Hewlett-Packard, Ltd., Tokyo, Japan

Filed Oct. 23, 1970, Ser. No. 83,313
Claims priority, application Japan, Oct. 24, 1969, 44/85558
Int. Cl. G01r *27/00*
U.S. Cl. 324—57 R 3 Claims



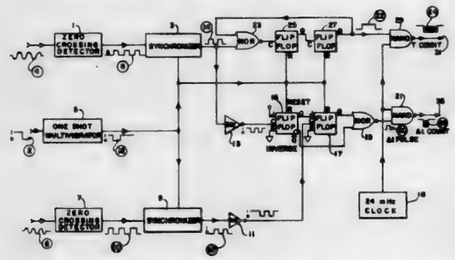
The balanced state of a bridge circuit, for example, which measures the capacitance of an unknown capacitor by means of a self-balancing type transformer bridge, or the like, is determined from comparison of two split phase components with suitable reference levels as the bridge is automatically adjusted to a balanced condition.

3,663,956

DIGITAL PHASE MEASUREMENT COMPUTATION CIRCUIT

Bruce W. Purdy, Bristol, and Donato Perti, Portsmouth, both of R.I., assignors to Ocean Data Equipment Corp., East Providence, R.I.

Filed July 1, 1970, Ser. No. 51,588
Int. Cl. G01r *25/00*; H03d *13/00*
U.S. Cl. 324—83 D 14 Claims



Circuitry for accurately measuring the phase angle between two sinusoidal signals is disclosed. The two sinusoidal signals are squared by separate axis or zero crossing detectors. The two squared signals are further processed to obtain a first pulse T, the duration of which is equal to the period of the signals under test and a second signal Δt, the duration of which is equal to the time difference between the two signals under test. The T and Δt pulses are used to gate a high frequency clock and the resulting clock pulses, or counts, are incremented into two binary counters (a T counter and a Δt counter). Thus, a number proportional to the period T of the signals under test (T count) is stored in the T counter and a number proportional to the time difference between the two signals under test (Δt count) is stored in the Δt counter. The T and Δt counts are preset into respective binary programmable dividers. The programmable dividers have the property of dividing the frequency of an input clock (fc) by the preset number. Thus, the output of one divider is fc/T and the output of the other counter is $fc/\Delta t$. The fc/T count is fed into a binary to decimal counter and the $fc/\Delta t$ count is fed into a binary counter. Both counters are disabled when 3,600 $fc/\Delta t$ clock pulses have been counted in the binary counter. The number stored in the binary to decimal counter is the phase angle in tenths of a degree since the following computation has been performed: $\theta = \Delta t/T \times 3{,}600$. A decimal display device is connected to the output of the binary coded decimal counter to provide a visual display of the phase angle reading.

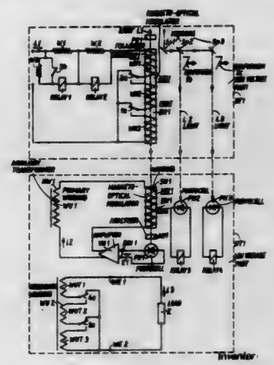
3,663,957

MAGNETO-OPTICAL MODULATOR MEANS FOR MEASURING CURRENTS IN HIGH VOLTAGE CONDUCTORS WITH RANGE CHANGING FEATURES

Klaus Molleubeck, and Joachim Benzel, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Munich, Germany

Filed June 19, 1970, Ser. No. 47,712
Claims priority, application Germany, June 24, 1969, P 19 33 044.0
Int. Cl. G01r *31/00*
U.S. Cl. 324—96 13 Claims

A magneto-optical modulator at high voltage potential rotates the plane of polarization of light supplied thereto in accordance with the magnitude of a current to be measured. The modulator comprises a core component and a field winding wound around a core component for rotating the plane of polarization of light supplied to the core component. The field winding comprises a plurality of component windings thereby providing a wide range of measurement. Switches interconnect the component windings of the field winding of the modulator for varying the number of component windings connected in circuit thereby varying the magnetic field produced thereby in the manner of an independent measuring range switch in accordance with the magnitude of the current to be measured. A photoelectric



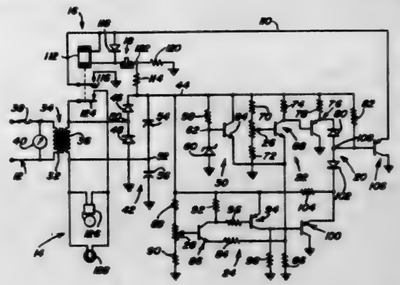
evaluating circuit converts light passing through the core component of the modulator into an electrical quantity proportional to the current to be measured. The photoelectric evaluating circuit includes another winding comprising a plurality of component windings for coupling the load to the measuring device thereby providing a range switch of low voltage potential corresponding to the measuring range switch at high voltage potential.

3,663,958

VOLTAGE MONITORING DEVICE HAVING A PAIR OF DIFFERENTIAL AMPLIFIERS

Harold E. Crane, Resco Inc., 805 Central Avenue, New Orleans, La.

Filed June 24, 1970, Ser. No. 49,491
Int. Cl. G01r *19/14*; G08b *21/00*
U.S. Cl. 324—133 9 Claims



The output of an electrical power source is continuously monitored by voltage comparing circuits to which a reference voltage is applied through a low impedance driver. The reference voltage is compared with adjustably reduced values of the variable voltage of the source being continuously sampled to establish upper and lower voltage limits. When these limits are exceeded, a resettable alarm circuit is triggered into operation.

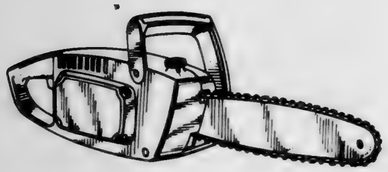
ERRATUM

For Class 343—17 R see:
Patent No. 3,663,935

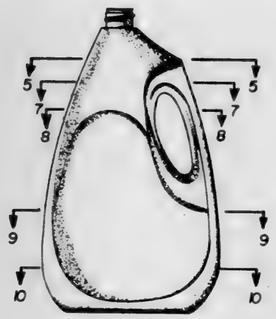
DESIGNS

MAY 16, 1972

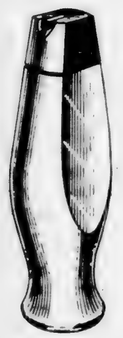
223,600
CHAIN SAW
Marnie C. Averitt, Timonium, Md., assignor to DESA Industries, Inc., Cockeysville, Md.
Filed Oct. 9, 1970, Ser. No. 25,420
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—65



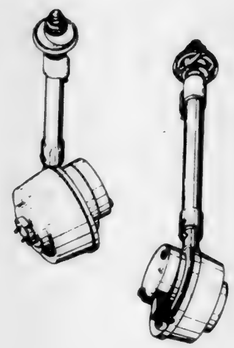
223,601
JUG
Roland E. Johnson, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed July 23, 1970, Ser. No. 24,075
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—42



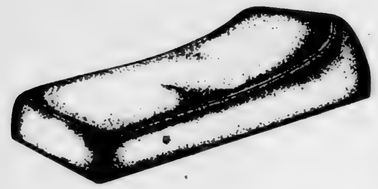
223,602
COMBINED BOTTLE AND DISPENSING CLOSURE
Harold Clarence Hoffman, Naperville, Ill., assignor to The Gillette Company, Boston, Mass.
Filed Dec. 29, 1970, Ser. No. 26,697
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—2



223,603
POWER DRIVEN RADIO ANTENNA FOR AUTOMOBILE
Nobuyoshi Takagi, Aichi, and Tadashi Hattori, Kariya, Japan, assignors to Nippondenso Kabushiki Kaisha, Kariya-shi, Japan
Filed Dec. 22, 1970, Ser. No. 26,617
Term of patent 14 years
Int. Cl. D12—*14*; D14—*03*
U.S. Cl. D14—6



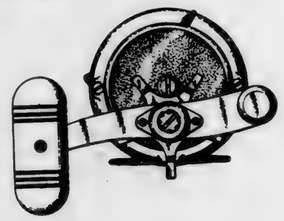
223,604
SNOWMOBILE SEAT
Anthony MacKeen and Yves Anselme Lapointe, Valcourt, Quebec, Canada, assignors to Bombardier Limited, Valcourt, Quebec, Canada
Filed Oct. 7, 1969, Ser. No. 19,452
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—24



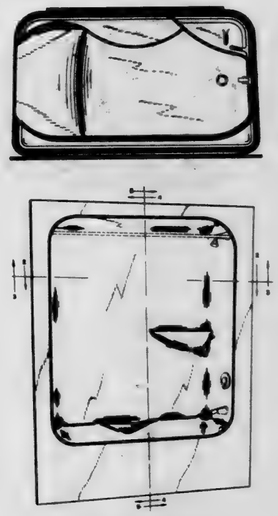
223,605
FISHING REEL
Koji Endo, Tokyo, and Tsuneharu Fukazawa, Saitama, Japan, assignors to True Temper Corporation, Cleveland, Ohio
Filed Nov. 2, 1970, Ser. No. 25,778
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



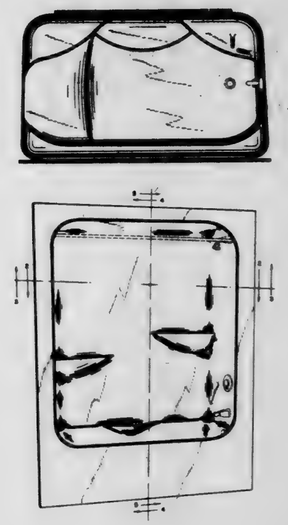
223,606
FISHING REEL
Roy P. Hess, Cleveland Heights, Ohio, assignor to True Temper Corporation, Cleveland, Ohio
Filed Jan. 4, 1971, Ser. No. 103,957
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



223,607
COMBINED BATHTUB AND SHOWER MODULE
Michael Lax, New York, N.Y., assignor to Formica Corporation, Cincinnati, Ohio
Continuation-in-part of design application Ser. No. 20,348, Dec. 3, 1969. This application July 1, 1970, Ser. No. 23,789
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—49

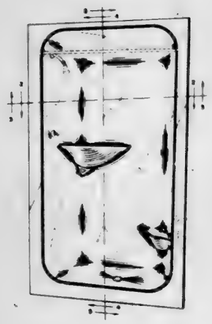


223,608
COMBINED BATHTUB AND SHOWER MODULE
Michael Lax, New York, N.Y., assignor to Formica Corporation, Cincinnati, Ohio
Continuation-in-part of design application Ser. No. 20,337, Dec. 3, 1969. This application July 1, 1970, Ser. No. 23,791
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—49

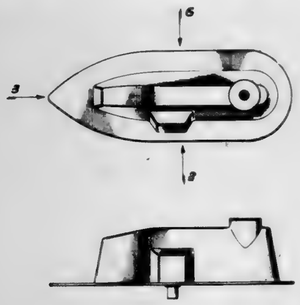


223,609
MODULAR SHOWER STALL
Michael Lax, New York, N.Y., assignor to Formica Corporation, Cincinnati, Ohio
Continuation-in-part of design application Ser. No. 20,336, Dec. 3, 1969. This application July 1, 1970, Ser. No. 23,790
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—57

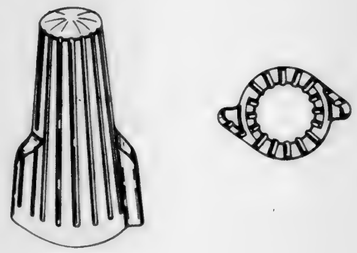




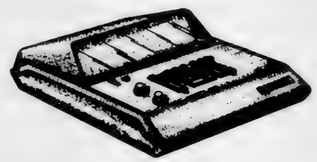
223,610
ANTENNA MATCHING MODULE OR SIMILAR ARTICLE
Jerry C. Walderat, Buena Park, Calif., assignor to Communications Components Corporation, Long Beach, Calif.
Filed July 23, 1970, Ser. No. 24,097
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



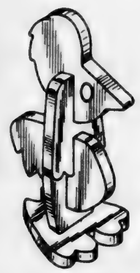
223,611
ELECTRICAL WIRE CONNECTOR
Gail A. Anderson, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Dec. 21, 1970, Ser. No. 26,607
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1



223,612
DESK ELECTRONIC CALCULATOR
Tetsuo Kashiwagi, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 6, 1970, Ser. No. 25,852
Claims priority, application Japan May 16, 1970
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



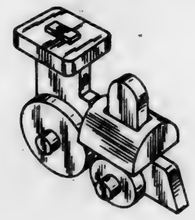
223,613
TOY CHICKEN FIGURE
Harry Meth, Cincinnati, Ohio, assignor to General Mills Fun Group, Inc., Minneapolis, Minn.
Filed Oct. 26, 1970, Ser. No. 25,666
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2



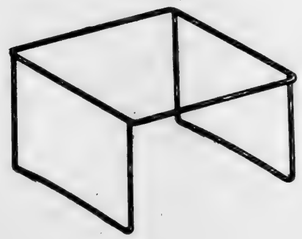
223,614
EXERCISE ROD OR SIMILAR ARTICLE
Jan Andre Koolbergen, Bentveld, Netherlands, assignor to Compret N.V., Amsterdam, Netherlands
Filed Jan. 11, 1971, Ser. No. 105,787
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



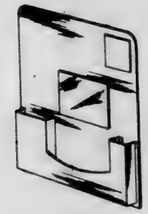
223,615
TOY TRAIN ENGINE
Harry Meth and Susan Lake, Cincinnati, Ohio, assignors to General Mills Fun Group, Inc., Minneapolis, Minn.
Filed Oct. 26, 1970, Ser. No. 25,667
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



223,616
FILE RACK
David Woods, Quakertown, Pa., assignor to J. G. Furniture Company, Inc., New York, N.Y.
Original design application Jan. 2, 1969, Ser. No. 15,184. Divided and this application May 19, 1969, Ser. No. 17,201
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D33—3



223,617
STORAGE RACK FOR ATTACHMENT TO WALL LOCKERS OR THE LIKE
Donald E. Smith, 1671 South 50 West, Bountiful, Utah 84010, and Amasa Merrill Linford, 1720 Michigan Ave., Salt Lake City, Utah 84108
Filed July 9, 1970, Ser. No. 23,872
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D33—3



223,618
COMBINED DIAL AND HANDS FOR A WATCH OR THE LIKE
Sondra J. Sicherman, Fresh Meadows, N.Y., assignor to Startime Watch Co., Inc., Roslyn, N.Y.
Filed Nov. 4, 1970, Ser. No. 25,805
Term of patent 3½ years
Int. Cl. D10—*07*
U.S. Cl. D42—1



223,619
COMBINED DIAL AND HANDS FOR A WATCH OR THE LIKE
Sondra J. Sicherman, Fresh Meadows, N.Y., assignor to Startime Watch Co., Inc., Roslyn, N.Y.
Filed Nov. 4, 1970, Ser. No. 25,806
Term of patent 3½ years
Int. Cl. D10—*07*
U.S. Cl. D42—1



223,620
COMBINED DIAL AND HANDS FOR A WATCH OR THE LIKE
Sondra J. Sicherman, Fresh Meadows, N.Y., assignor to Startime Watch Co., Inc., Roslyn, N.Y.
Filed Nov. 4, 1970, Ser. No. 25,808
Term of patent 3½ years
Int. Cl. D10—*07*
U.S. Cl. D42—1



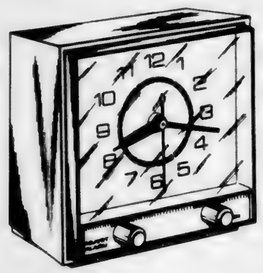
223,621
COMBINED DIAL AND HANDS FOR A WATCH OR THE LIKE
Sondra J. Sicherman, Fresh Meadows, N.Y., assignor to Startime Watch Co., Inc., Roslyn, N.Y.
Filed Nov. 4, 1970, Ser. No. 25,809
Term of patent 3½ years
Int. Cl. D10—*07*
U.S. Cl. D42—1



223,622
COMBINED DIAL AND HANDS FOR A WATCH OR THE LIKE
Sondra J. Sicherman, Fresh Meadows, N.Y., assignor to Startime Watch Co., Inc., Roslyn, N.Y.
Filed Nov. 4, 1970, Ser. No. 25,811
Term of patent 3½ years
Int. Cl. D10—*07*
U.S. Cl. D42—1



223,623
CLOCK OR SIMILAR ARTICLE
Walter C. Anderson, Redding, Conn., assignor to General Electric Company
Filed Sept. 2, 1970, Ser. No. 24,814
Term of patent 3½ years
Int. Cl. D10—*01*
U.S. Cl. D42—7



223,624
COMBINED DIAL AND HANDS FOR A WATCH OR THE LIKE
Sondra J. Sicherman, Fresh Meadows, N.Y., assignor to Startime Watch Co., Inc., Roslyn, N.Y.
Filed Nov. 4, 1970, Ser. No. 25,815
Term of patent 3½ years
Int. Cl. D10—*07*
U.S. Cl. D42—1



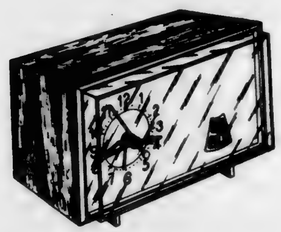
223,625
COMBINED DIAL AND HANDS FOR A WATCH OR THE LIKE
Sondra J. Sicherman, Fresh Meadows, N.Y., assignor to Startime Watch Co., Inc., Roslyn, N.Y.
Filed Nov. 4, 1970, Ser. No. 25,813
Term of patent 3½ years
Int. Cl. D10—*07*
U.S. Cl. D42—1



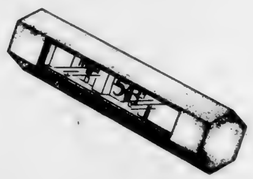
223,626
COMBINED DIAL AND HANDS FOR A WATCH OR THE LIKE
Sondra J. Sicherman, Fresh Meadows, N.Y., assignor to Startime Watch Co., Inc., Roslyn, N.Y.
Filed Nov. 4, 1970, Ser. No. 25,814
Term of patent 3½ years
Int. Cl. D10—*07*
U.S. Cl. D42—1



223,627
CLOCK OR SIMILAR ARTICLE
William V. Judson, Westport, Conn., assignor to General Electric Company
Filed Oct. 6, 1970, Ser. No. 25,357
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7



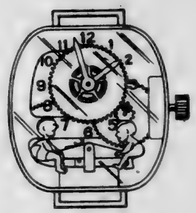
223,628
CALENDAR CLOCK OR SIMILAR ARTICLE
Riki Watanabe, Tokyo, Japan, assignor to Kabushiki Kaisha Koparu, Tokyo, Japan
Filed Jan. 5, 1971, Ser. No. 104,189
Claims priority, application Japan July 8, 1970
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7



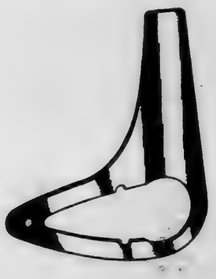
223,629
CLOCK OR SIMILAR ARTICLE
Franklin M. Wills, Chicago, Ill., assignor to Burwood Products Company, Chicago, Ill.
Filed Feb. 16, 1971, Ser. No. 115,903
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7



223,630
WATCH
Bruce A. Kock, Oakland, Calif., assignor to Leisure Dynamics, Inc., Minneapolis, Minn.
Filed Oct. 7, 1970, Ser. No. 25,368
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D42—8



223,631
AIRCRAFT NAVIGATION LIGHT INDICATOR
Lloyd W. Spiro, 20510 Napa St., Los Angeles, Calif. 91306
Filed Sept. 23, 1970, Ser. No. 25,167
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32



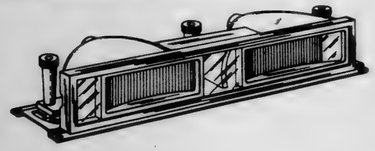
223,632
LIGHT STANDARD OR SIMILAR ARTICLE
Robert W. Selden, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
Original design application Oct. 20, 1969, Ser. No. 19,634. Divided and this application July 2, 1970, Ser. No. 23,804
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31



223,633
LIGHT STANDARD OR SIMILAR ARTICLE
Robert W. Selden, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
Original design application Oct. 20, 1969, Ser. No. 19,636, now Patent No. 220,531, dated Apr. 20, 1971. Divided and this application Aug. 24, 1970, Ser. No. 24,651
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31



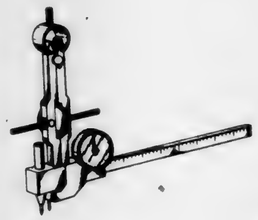
223,634
HOUSING FOR AUTOMOTIVE LAMP OR THE LIKE
Pierre Cibie, Paris, France, assignor to Projecteurs Cibie, Bobigny, Seine-St.-Denis, France
Filed Dec. 1, 1969, Ser. No. 20,324
Claims priority, application France May 30, 1969
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32



223,635
BUBBLE LEVEL
Wing G. Lew, Los Angeles, Calif., assignor of a fractional part interest to Jack Bazz, Lynnwood, Calif.
Filed July 1, 1970, Ser. No. 23,788
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6



223,636
CALIBRATED COMPASS
Richard O. Finley, 2608 Graham Ave., Apt. C, Redondo Beach, Calif. 90278
Filed Feb. 4, 1971, Ser. No. 112,849
Term of patent 14 years
Int. Cl. D10—*04*; D19—*06*
U.S. Cl. D52—6



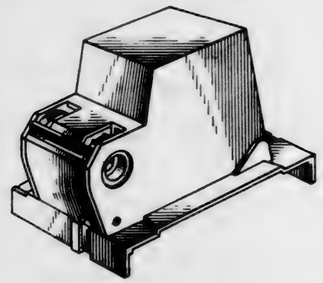
223,637
CRADLE SUPPORT FOR A CAMERA
Harry E. Mazur, Los Angeles, Calif. (2280 Araby Drive, Palm Springs, Calif. 92262)
Filed June 10, 1970, Ser. No. 23,417
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1



223,638
UNIVERSAL TRIPOD
David B. Smith, 42 Ridgedale Ave., Madison, N.J. 07940
Filed Feb. 1, 1971, Ser. No. 23,861
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1



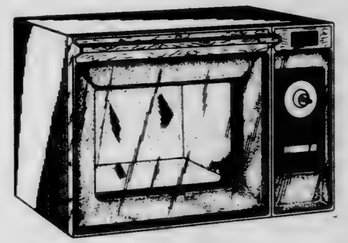
223,639
AUDIO-VISUAL CARTRIDGE FOR A STRIPFILM PROJECTOR
Frank C. Badalich, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Sept. 24, 1970, Ser. No. 25,183
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1



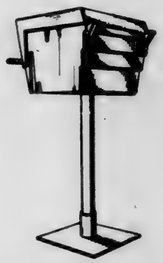
223,640
LETTER HOLDER
Margaret J. Kemp, 6006 Baudry, Houston, Tex. 77035
Filed Feb. 26, 1971, Ser. No. 119,438
Term of patent 14 years
Int. Cl. D19—*099*
U.S. Cl. D74—2



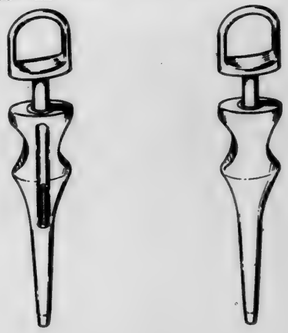
223,641
PORTABLE MICROWAVE OVEN OR SIMILAR ARTICLE
Thomas J. Binzer, Charles H. Schmitt, and Peter H. Wooding, Jefferson County, Ky., assignors to General Electric Company
Filed Aug. 26, 1970, Ser. No. 24,702
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—4



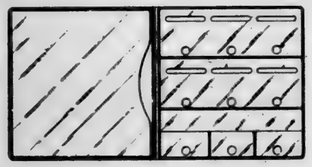
223,642
BARBECUE COOKER
Roger T. Shaper and John E. Germann, Houston, Tex., assignors to Metal Window Products, Inc.
Filed Aug. 6, 1970, Ser. No. 24,349
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—10



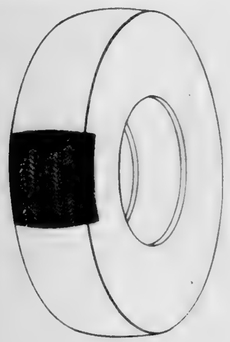
223,643
SYRINGE
Luis H. Tejera, Central Islip, N.Y., assignor to Mallinckrodt Chemical Works, St. Louis, Mo.
Filed June 10, 1970, Ser. No. 23,423
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D83—12



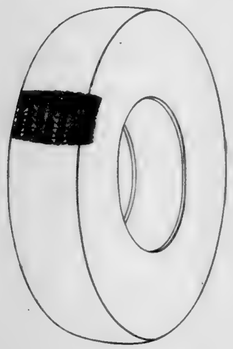
223,644
TRAVEL CASE FOR MEMENTOES OR THE LIKE
Alexander Croon, Hans-Carossa-Strasse 5, Stockdorf, near Munich, Germany
Filed Mar. 9, 1970, Ser. No. 21,800
Claims priority, application Germany Dec. 18, 1969
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1



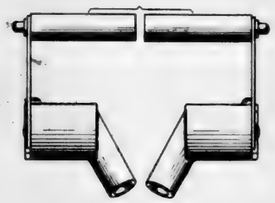
223,645
PNEUMATIC TIRE
Dale J. Beaudoin, Opelika, Ala., and William K. Pope, Mount Clemens, Mich., assignors to Uniroyal, Inc., New York, N.Y.
Filed Sept. 8, 1970, Ser. No. 24,879
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



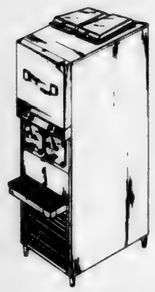
223,646
PNEUMATIC TIRE
William K. Pope, Mount Clemens, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Oct. 28, 1970, Ser. No. 25,705
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



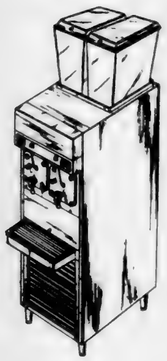
223,647
DOUBLE FLAVOR DRINK DISPENSING VALVE UNIT OR SIMILAR ARTICLE
Richard T. Cornelius, Minneapolis, Minn., assignor to The Cornelius Company, Anoka, Minn.
Filed June 23, 1970, Ser. No. 23,633
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D94—3



223,648
BEVERAGE DISPENSER OR SIMILAR ARTICLE
Robert B. Hartley, Columbia Heights, Minn., assignor to The Cornelius Company, Anoka, Minn.
Filed Nov. 9, 1970, Ser. No. 25,903
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D94—3



223,649
BEVERAGE DISPENSER OR SIMILAR ARTICLE
Robert B. Hartley, Columbia Heights, Minn., assignor to The Cornelius Company, Anoka, Minn.
Filed Nov. 9, 1970, Ser. No. 25,902
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D94—3



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF MAY, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abbott Laboratories: *See—*
Crovetti, Aldo J.; and Winn, Martin, 3,663,623.
Michaels, Raymond John, Jr.; and Zaugg, Harold Elmer, 3,663,549.

Abplanalp, George W.; and Corson, Steve. Blocking circuit for inboard engine ignition. 3,662,727, Cl. 123-179.

ACF Industries, Incorporated: *See—*
Randolph, Robert W.; and Terlecky, Boris S., 3,662,899.

Acme Precision Products, Inc.: *See—*
McCarroll, Raymond A., 3,663,064.

Adachi, Teruho, to Sumitomo Chemical Co., Ltd. Preparation of aromatic polyamides by interfacial polycondensation. 3,663,517, Cl. 260-78.

Adams, Edward J., to Gillette Company, The. Apparatus for mounting caps. 3,662,519, Cl. 53-329.

Adams, Phillip: *See—*
Merianos, John J.; Shay, Edward Griffin; Adams, Phillip; and Petrocci, Alfonso N.,3,663,620.

Adams, Robert D.; and Shariand, Ian J. Muffled tool for vibratory or impact machines. 3,662,855, Cl. 181-33.00a

Adams, Robert J.; and Overhults, Wendell C., to Johnson & Johnson. Adhesive cement. 3,663,501, Cl. 260-41.

Aday, Roy W., Jr.; and Lu, Maoyeh, to Beckman Instruments, Inc. Resilient mounting structure for moving at least two optical elements in precise optical alignment. 3,663,097, Cl. 350-271.

Addressograph-Multigraph Corporation: *See—*
Zerfahs, Arthur S., 3,663,102.

Adie, William: *See—*
Wheeler, Donald J.; and Adie, William,3,662,639.

Adler, Laszlo; and Whaley, Hubert L., to United States of America, Atomic Energy Commission. Ultrasonic flaw determination by spectral analysis. 3,662,589, Cl. 73-67.800

Aerojet-General Corporation: *See—*
Walker, Lloyd A.; and Peterson, Rudolph A., 3,663,148.

Aeroquip Corporation: *See—*
Contreras, Gilbert E.; and Graves, Robert, 3,663,044.

Aga Aktiebolag: *See—*
Johannisson, Dag Olof Alfred; and Lundberg, Gustaf Silas Staffan, 3,662,774.

Agence National de Valorisation de la Recherche (ANVAR): *See—*
Deutscher, Guy; and Waysand, Georges, 3,663,902.

Agfa-Gevaert Aktiengesellschaft: *See—*
Hellmig, Ehrhard; and Reckziegel, Erich, 3,663,220.
Herzhoff, Peter; Gref, Hans; Maus, Fritz; Wasser, Willi; Friedsam, Josef; and Schweicher, Wolfgang, 3,663,292.
Meeussen, Louis Achilles; Stievenart, Emile Frans; Schranz, Karl-Wilhelm; Busch, Josef; Froch, Siegfried; and Bruck, Herbert, 3,662,665.
Neudecker, Karl; and Winkler, Friedrich, 3,662,666.
Schmierl, Richard; and Maas, Dieter, 3,662,663.

Ahearn, George P., to Esso Production Research Company. Dilatant aqueous polymer solutions. 3,663,477, Cl. 252-311.500

Air Cushion Vehicles, Inc.: *See—*
Ramsey, Harry E., 3,662,851.

Air Products and Chemical Inc.: *See—*
Upson, Lawrence L.; and Wood, Ronald T., 3,663,456.

Air Products and Chemicals, Inc.: *See—*
Barrer, Richard M.; Cole, John F.; and Sticher, Hans, 3,663,164.
Tedeschi, Robert J., 3,663,628.

Airco, Inc.: *See—*
Shrader, Robert Leland, 3,662,708.
Terrell, Ross C., 3,663,714.
Terrell, Ross C., 3,663,715.

Airdo, Joseph, to Bishop Freeman Company. Fiber surfaced garment and fabric pressing device. 3,662,479, Cl. 38-66.

Aisin Seiki Kabushiki Kaisha: *See—*
Hirozawa, Koichiro, 3,662,621.
Ochiai, Chiaki; and Fujii, Takashi, 3,662,552.

Aiuppa, Francesco. Turf roller for tractor. 3,662,657, Cl. 94-50.00r

Ajinomoto Co., Inc.: *See—*
Kono, Kageaki; Oki, Toshikazu; Kitai, Atsuo; and Ozaki, Asaichiro, 3,663,370.
Yoshida, Ryonosuke; Takehara, Masahiro; Akiba, Hitoshi; and Usuba, Yasunori, 3,663,459.

Akamatsu, Kiyoshi; and Fukui, Hisaaki, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for preparing steric block with liquid photopolymerizable composition. 3,663,222, Cl. 96-35.100

Akamatsu, Takashi: *See—*
Kenmochi, Hirohito; Hotta, Seiji; and Akamatsu, Takashi,3,663,537.

Aker, Ludwig E.: *See—*
Skanes, Frederick A.; Aker, Ludwig E.; and Kraemer, Ronald G.,3,662,847.

Akerstrom, Stig Hjalmar Johannes, to U.S. Philips Corporation. Substituted thiocyano pyrroles, fungicidal preparations containing these compounds as active ingredients and methods of using the same. 3,663,701, Cl. 424-274.

Akgulian, Sahag C.; and Haffner, Donald G., to Jacobsen Manufacturing Company. Roller for reel type lawn mowers. 3,662,528, Cl. 56-249.000

Akiba, Hitoshi: *See—*
Yoshida, Ryonosuke; Takehara, Masahiro; Akiba, Hitoshi; and Usuba, Yasunori,3,663,459.

Aktiebolaget Armerad Betong: *See—*
Andersson, Artur Lennart, 3,663,132.

Akzona Incorporated: *See—*
Schwaller, Lando J.; and Razal, Albert J., 3,662,573.

Alberts Plating Works, Inc.: *See—*
Schumacher, Walter, 3,663,410.

Albrecht, Gerd: *See—*
Augustin, Guenter; and Albrecht, Gerd,3,663,133.

Albright, Robert L., to Rohm & Haas Company. Porous polymers based on trimethylolpropane trimethacrylate and related materials. 3,663,467, Cl. 260-2.5

Alexander, Paul M.: *See—*
Vasas, Martin M.; White, John C.; and Alexander, Paul M.,3,662,769.

Alkalay, Jorge; and Alkalay, Oton. Apparatus for attaching strip labels to top and neck of a container. 3,663,336, Cl. 156-485.

Alkalay, Oton: *See—*
Alkalay, Jorge; and Alkalay, Oton,3,663,336.

Alker, Dietrich-Ekkehard, 33 1/3 % to Wandel & Goltermann, and 66 2/3% to Franz-Josef Landwehr. System for measuring higher order nonlinearities of a signal/transmitting network. 3,663,954, Cl. 324-57.

Allegheny Ludlum Steel Corporation: *See—*
Bloom, William M., 3,662,997.
Kindlimann, Lynn E., 3,663,312.

Allen, Brian Robert, to Lucas, Joseph, (Industries) Limited. Dynamo electric machines. 3,663,791, Cl. 219-107.000

Allen, Edwin L.; and Willoughby, Donald A., to United States of America, Army, mesne. Thermal conductivity apparatus. 3,662,587, Cl. 73-15.00a

Allen, Joseph Stevens; and Bulla, Zeb Vance, Jr. Electronic musical apparatus. 3,662,641, Cl. 84-1.01

Allied Chemical Corporation: *See—*
Anello, Louis Gene; and Sweeney, Richard Francis, 3,663,590.
Figiel, Francis J., 3,663,475.
Lohr, Thomas E.; and Stephenson, Robert L., 3,663,057.

Allington, Trevor Richard; and McClellan, James Richard, to RCA Corporation. Method of adjusting the resistivity of thick-film screen-printed resistors. 3,663,276, Cl. 117-201.000

Allis-Chalmers Manufacturing Company: *See—*
Grubb, Robert L., 3,663,910.

Allison, Hansel J.: *See—*
Hughes, William L.; Allison, Hansel J.; and Ramakumar, Ramachandra G.,3,663,945.

Allsop, Ivor J. Ratcheting buckle for ski boots and the like. 3,662,435, Cl. 24-70.

Alpert, Jacob J.: *See—*
Spruegel, Walter, 3,662,627.

Alpert, Jacob J. Button-forming device. 3,662,626, Cl. 79-4.

Altenstaedter, Georg, 1/2 to Lewis, Terry. Apparatus for the vibratory finishing of workpieces. 3,662,496, Cl. 51-7.

Aluminum Company of America: *See—*
Hunsicker, Harold Y., 3,663,216.

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Toth, Mihaly; and Imrefi, Jozsef, 3,663,419.

Alvarez, Francisco, to Syntex Corporation. Di-(6-methoxy-2-naphthyl)zinic and 6-methoxy-2- naphthylzinic halide. 3,663,584, Cl. 260-429.9

Amarante, Joseph A.; and Montgomery, Robert E., to Corometrics Medical Systems, Inc. Pressure transducer for catheter pressure measurement. 3,662,743, Cl. 128-2.

Ambli, Andrew. Split header for open top trucks. 3,663,053, Cl. 296-40.000

American Can Company: *See—*
Joosten, Richard Leo, Sr., 3,662,944.
Shmerling, Zvi; Kiron, Israel; and Merold, Robert Lee, 3,662,919.

American Chain & Cable Company, Inc.: *See—*
Ross, Ivan L., 3,662,873.

American Coleman Company: *See—*
Hanna, Bruce, 3,662,427.

American Cyanamid Company: *See—*
Howell, Charles Frederick; Hardy, Robert Allis Jr.; and Quinones, Nicanor Quinones, 3,663,696.
Koral, Jerry Norman; and Blank, Werner Joseph, 3,663,389.
Miller, Mary Lucy, 3,663,288.
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Takeya, Kenji; Okazaki, Mitsutoshi; and Kobashi, Toshiyuki, 3,663,631.
Takeya, Kenji; Okazaki, Mitsutoshi; and Kobashi, Toshiyuki, 3,663,632.
Witheford, John Maurice, 3,663,375.

American Hoechst Corporation: *See—*
Eichel, Hermann J.; Hickey, Kenneth R.; and Springman, Frank R., 3,663,690.
Meyer, Ronald J.; Horsley, Orville E.; and Eichel, Herman J., 3,663,703.

American Home Products Corporation: *See—*
McCaully, Ronald J.; and Conklin, George L., 3,663,605.
Meierhoefer, Eugene J., 3,662,930.
Sulkowski, Theodore S., 3,663,532.
Yardley, John P.; Bright, Royal E.; Rees, Richard W.; and Smith, Herchel, 3,663,552.

American Hospital Supply Corporation: *See—*
Dabolt, Laurence L., 3,662,759.

American Micro-Systems, Inc.: *See—*
Richard, Donald F., 3,663,921.

American Optical Corporation: *See—*
Revoir, William H.; and Jones, John A., 3,662,523.

Ammco Tools, Inc.: *See—*
Mitchell, Wallace F., 3,663,045.

AMP Incorporated: *See—*
Bruner, Peter Martin, 3,663,927.
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Anderson, Alton D. Method and apparatus for measuring range utilizing superimposition or alignment of images. 3,663,105, Cl. 356-4.

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Andoh, Toshiro; and Andoh, Hachiro. Metal ring for fastening parts by means of ocean wave force. 3,662,413, Cl. 9-16.000

Anello, Louis Gene; and Sweeney, Richard Francis, to Allied Chemical Corporation. Novel polyhaloorgano halsulfates. 3,663,590, Cl. 260-456.

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Arrigo, Joseph T.; and Christensen, Nils J., to Universal Oil Products Company. Hydrogenation of arylaehydes. 3,663,626, Cl. 260-613.

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Augustin, Horst; Klussendorf, Siegfried; and Kofer, Konrad, to Lever Brothers Company. Surface cleaning and defatting composition. 3,663,445, Cl. 252-117.

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Barenyi, Bela; Sacco, Bruno; and Renner, Hermann, to Daimler-Benz Aktiengesellschaft. Safety frame structure for motor vehicles, especially passenger motor vehicles. 3,663,034, Cl. 280-106.

Barkalow, Clare E.; and Folkerth, Ilden R., to Michigan Instruments, Inc. Automatic respirator-inhalation therapy device. 3,662,751, Cl. 128-145.8

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Blanco, Francisco. Smoker's pipe. 3,662,764, Cl. 131-207.000

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Block, Burton P.; Sprout, Oliver S., Jr.; and Dahl, Gerd H., to United States of America, Navy, mesne. Method of minimizing accumulation of electrostatic charge on polyethylene. 3,663,274, Cl. 117-138.80e

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Boeters, Karl-Ernst; Streit, Klaus; Conselmann, Gerhard; Schmid, Hermann; and Fleischer, Hans-Joachim, to Bosch, Robert, G.m.b.H. Fuel injection arrangement for internal combustion engines. 3,662,720, Cl. 123-32.

Boettcher, Gordon E., to United States of America, Atomic Energy Commission. Cold cathode vacuum discharge tube with cathode discharge face parallel with anode. 3,663,855, Cl. 313-178.000

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Brand, William J., to Varian Associates. Cryostat having heat exchanging means in a vent tube. 3,662,566, Cl. 62-514.

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Broecker, Bernhard, to Reichhold-Albert-Chemie Aktiengesellschaft. Process for the production of binders for aqueous coatings. 3,663,485, Cl. 260-19.

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Resource Data Corporation: *See—*
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Retallick, Lawrence A.; Limpel, Lawrence E.; and Bluestone, Henry, to Diamond Shamrock Corporation. Oximino esters of organophosphorus and organothiophosphorus compounds. 3,663,664, Cl. 260-944.

Reteff, Arthur L.: *See—*
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Retrum, Fergus, to Mini Pro Sports, Inc. Football catapult. 3,662,728, Cl. 124-1.

Revoir, William H.; and Jones, John A., to American Optical Corporation. Adsorbents for removal of mercury vapor from air or gas. 3,662,523, Cl. 55-387.000

Reynolds Metals Company: *See—*
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Richard, Donald F., to American Micro-Systems, Inc. Receptacle for connecting semiconductors to a circuit board. 3,663,921, Cl. 339-17.

Richard, Louis A.: *See—*
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Richey, Clarence B., to Massey-Ferguson Inc. Two-way plow with hydraulic trip and reset. 3,662,840, Cl. 172-224.

Ridgway, Kenneth, to Fisons Limited. Agitator for belt conveyor. 3,662,806, Cl. 259-2.

Riedel, Wolfgang, to Silma S.p.A. Film threading and transporting mechanism for use in cinematographic apparatus. 3,662,971, Cl. 242-192.000

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Ringdal, Lars. Method of moulding shaped articles with hollow walls. 3,663,680, Cl. 264-294.

Rionda, Jose A., to Esso Research and Engineering Company. Process for making a bagasse pith composite structure. 3,663,673, Cl. 264-113.

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Ripley Screen and Strainer Company: *See—*
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Rising, Bradley D., to Eastman Kodak Company. Apparatus responsive to optical density wherein an unknown sample density is compared to a stored valve. 3,663,110, Cl. 356-203.000

Rittenhouse, Charles T., to Unidynamics/Phoenix, mesne. Di-silver aminotetrazole perchlorate. 3,663,553, Cl. 260-299.

Ritzi, Jack Henry, to Chemed Corporation. Formulation and method for brightening aluminum. 3,663,327, Cl. 156-21.000

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Robbins, John E.; Willbond, William F.; Tutt, Kingsley J.; Hall, Dennis S.; and Hanson, Raymond, to USM Corporation. Apparatus for moulding plastic articles. 3,663,139, Cl. 425-147.

Robel & Company: *See—*
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Roberts, Lawrence B.: *See—*
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Robinson, David S.; and Gavagan, James A., to Siegler, Lear, Inc. Six-way seat track. 3,662,984, Cl. 248-394.000

Robinson, Jacques D.: *See—*
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Rolls-Royce Limited: *See—*
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Roos, Ernst; and Wagner, Klaus, to Farbenfabriken Bayer Aktiengesellschaft. Benzo-tris-thiophenes. 3,663,568, Cl. 260-330.5

Roos, Ernst; and Wagner, Klaus, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of aromatic lactones. 3,663,575, Cl. 260-343.3

Rosano, Joseph George, Jr.; and Coffman, J. D., to Gamon-Calmet Industries, Inc. Fluid meter. 3,662,600, Cl. 73-257.000

Rose, John W., to General Motors Corporation. Masking to prevent autodoping of epitaxial deposits. 3,663,319, Cl. 148-175.

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Rosenthal, Rudolph; Bonetti, Giovanni A.; and Shalit, Harol, to Atlantic Richfield Company. Synthesis of isoprene. 3,663,642, Cl. 260-681.

Ross, Ivan L., to American Chain & Cable Company, Inc. Conveyor system. 3,662,873, Cl. 198-78.

Ross, Stanley E., to Stevens, J. P., & Co., Inc. Process for producing carbonized fibrous products. 3,663,173, Cl. 23-209.4

Ross, William C., to Grace, W. R., & Co. Apparatus for production of textile, letter press and printing blankets. 3,663,340, Cl. 156-555.

Rossetti, Marta: *See—*
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Rossler, Kurt, to Bohmter Maschinenfabrik G.m.b.H. & Co. K.G. Comminuting machine. 3,662,964, Cl. 241-222.000

Rossmann, Rudolf H. Method of reinforcing a knitted or woven fabric. 3,663,329, Cl. 156-148.

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Rotta Research Laboratorium S.p.A.: *See—*
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Roumejon, Leon. Floating hull to maintain a cushion of air. 3,662,700, Cl. 114-67.

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Ruble, Raymond J., to Texaco Development Corporation. Isoparaffin alkylation with dialkyl sulfates including the absorption, extraction and acid-treatment thereof. 3,663,648, Cl. 260-683.61

Rudszinat, Willy: *See—*
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Rufeh, Firooz; Lieb, David P.; and Howard, Robert C., to Thermo Electron Corporation. Thermionic converter with additives. 3,663,840, Cl. 310-4.000

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Rupp, Hans-Dieter: *See—*
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Ruscitti, Tomaso, to Coster Tecnologie Speciali S.p.A. Device for evacuating the interior of an aerosol material container on the inlet or mouth of which a bottom provided with dispensing. 3,662,791, Cl. 141-65.000

Russin, Nicholas C.: *See—*
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Ruter, Hermann, deceased (by Ruter, Elisabeth Ruter, Edla, heirs); Cherdron, Egon; Haerter, Manfred; and Bayer, Gerhard, to Gebr. Giulini G.m.b.H. Process for manufacture of pig iron or steel. 3,663,202, Cl. 75-38.000

Ryan, Kelly P., to Blair Manufacturing Co., Inc. Feed conveyor flight. 3,662,800, Cl. 146-129.

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Sachs, Sidney. Modular animal cage system. 3,662,713, Cl. 119-18.000
Sadran, Gerard: *See—*
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Salomon, Jacob. Apparatus for arranging substantially laminar articles into spaced groups. 3,662,875, Cl. 198-180.000
Saltzberg, Bernard; Lustick, Leonard S.; and Heath, Robert G. Apparatus for detecting, analyzing and recording bioelectric potentials. 3,662,746, Cl. 128-2.06
Salvi, Antoine, to Commissariat a l'Energie Atomique. Helicopter carried magnetometer assembly compensated for the parasitic field of the helicopter. 3,663,953, Cl. 324-43.00r
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Sarkisian, Robert. Poster display device. 3,662,482, Cl. 40-125.
Saro, Karl; and Troedorff, Willi, to Jagenberg-Werke AG. Apparatus for aligning longitudinal glue seam of a tubular cardboard box blank. 3,662,655, Cl. 93-36.
Sarten, Paula; and Mair, Winfried, to Messerschmitt-Bolkow Gesellschaft mit beschrankter Haftung. Hypergolic solid fuels of high storage stability for hybrid rocket engines and process for making the same. 3,663,322, Cl. 149-19.
Sarto, Jorma O., to Chrysler Corporation. Cool exhaust recycling. 3,662,722, Cl. 123-119.00a
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Sato, Shui; Ishihara, Masao; Sakamoto, Eiichi; Shono, Masayuki; and Sugino, Osakazu, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide photographic emulsions. 3,663,230, Cl. 96-107.000
Sato, Shui; Nakajima, Tomio; Shono, Masayuki; and Kagami, Teruo, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide photographic material containing as a stabilizer a hydroimidazo- s-triazine. 3,663,209, Cl. 96-109.000
Sato, Shui; Sakamoto, Eiichi; Saito, Shizuo; Sakazume, Kaiichiro; and Kaneko, Tokuzo, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide supersensitized photographic material. 3,663,210, Cl. 96-124.000
Sato, Yasunobu; Kobayashi, Yutaka; Takagi, Hiromu; Kumakura, Seiji; Nakayama, Koichi; and Oshima, Takeshi, to Sankyo Company Limited. Coumarin derivatives. 3,663,570, Cl. 260-343.20r
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Saxon, Daniel I., to Eastman Kodak Company. Heat transfer roll with separate temperature zones for processing materials. 3,662,821, Cl. 165-89.000
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Schneider, Robert A., to Spin Physics, Inc. Transducer head with laminated pole tips for wideband transducer system. 3,663,765, Cl. 179-100.2
Schnepel, Lawrence S. Torque release adapter. 3,662,628, Cl. 81-52.4
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Schoen, Alan H., to United States of America, National Aeronautics and Space Administration. Honeycomb panels formed of minimal surface periodic tubule layers. 3,663,347, Cl. 161-68.000
Schonbeck, Rupert; and Kloimstein, Engelbert, to Osterreichische Stickstoffwerke Aktiengesellschaft. Process for the preof pyridazone derivatives. 3,663,546, Cl. 260-250.
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Zimmerle, Wilbur J., to General Motors Corporation. Vehicle bumper installation. 3,663,048, Cl. 293-84.000

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German, Dale F. Re. 27,364.
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Crown Rubber Co.: *See*—
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Dessert, Edward P. Molded case circuit breaker and mounting means therefor. Re. 27,365, 5–16–72, Cl. 200—168.
Dunn, Edwin R., to Crown Rubber Co. Process of making solid foams from polymer emulsions. Re. 27,366, 5–16–72, Cl. 260—2.5.
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Olson, Richard J. Re. 27,362.
Garland, Charles, to Sun Shipbuilding & Dry Dock Co. Buoyant device. Re. 27,372, 5–16–72, Cl. 9—8.
German, Dale F., to The Aro Corp. Valved/safety/speed coupler. Re. 27,364, 5–16–72, Cl. 251—149.6.
Higonnet, Rene A.: *See*—
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Iwata, Kazutomo, and T. Maeoka, by Matsushita Electric Industrial Co. Ltd. Intermediate frequency transformer. Re. 27,363, 5–16–72, Cl. 336—87.
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McNaugher, John R. Automatic shape control system for bar mill. Re. 27,370, 5–16–72, Cl. 72—8.
Milner, Leonard F., to Integrated Ceilings Inc. Ceiling light diffuser system. Re. 27,369, 5–16–72, Cl. 240—9.
Moyroud, Louis M., and R. A. Higonnet. Type composing apparatus. Re. 27,374, 5–16–72, Cl. 95—4.5.
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Rondel Ltd.: *See*—
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Von Seggern, Ernest A. and H. E. Full pressure cycle engine with excess air. Re. 27,367, 5–16–72, Cl. 123—65.
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Daniel, William H., to Purdue Research Foundation. Kentucky bluegrass (poa pratensis). 3,175, 5–16–72, Cl. 88.
Daniel, William H., to Purdue Research Foundation. Kentuckly bluegrass (poa pratensis). 3,176, 5–16–72, Cl. 88.
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Paul, Ronald. Peach tree. 3,179, 5–16–72, Cl. 43.
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Averitt, Marnie C., to Desa Industries, Inc. Chain saw. 223,600, 5–16–72, Cl. D8—65.
Badalich, Frank C., to Bell & Howell Co. Audio-visual cartridge for a stripfilm projector. 223,639, 5–16–72, Cl. D61—1.
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Binzer, Thomas J., C. H. Schmitt, and P. H. Woodling, to General Electric Co. Portable microwave oven or similar article. 223,641, 5–16–72, Cl. D81—4.
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Smith, David B. Universal tripod. 223,638, 5–16–72, Cl. D61—1.
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ISSUED MAY 16, 1972

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94	3,663,199
118	3,663,200
CLASS 72	
8	Re.27,370
21	3,662,575
	3,662,576
56	3,662,577
75	3,662,578
105	3,662,579
217	3,662,580
305	3,662,581
367	3,662,582
370	3,662,583
411	3,662,584
445	3,662,585
CLASS 73	
15A	3,662,587
15R	3,662,586
23	3,662,588
67.8	3,662,589
71.5	3,662,590
99	3,662,591
104	3,662,592
132	3,662,593
133	3,662,594
141R	3,662,595
143	3,662,596
146	3,662,597
194E	3,662,598
205D	3,662,599
257	3,662,600
337.5	3,662,601
381R	3,662,602
398R	3,662,603
421.5R	3,662,604
	3,662,605
514	3,662,606
CLASS 74	
2	3,662,607
5	3,662,608
	3,662,609
10.2	3,662,610
22	3,662,611
75.2E	3,662,622
355	3,662,612
371	3,662,613
393	3,662,614
416	3,662,615
492	3,662,616
501R	3,662,617
527	3,662,618
572	3,662,619
573	3,662,620
731	3,662,621
752	3,662,622
805	3,662,623
865	3,662,624
866	3,662,625
CLASS 75	
33	3,663,201
38	3,663,202
43	3,663,203
49	3,663,204
345	3,662,565
60	3,663,205
	3,663,206
77	3,663,207
123CB	3,663,212
124	3,663,213
125	3,663,208
126A	3,663,214
128C	3,663,215
142	3,663,216
165	3,663,217
177	3,663,218
CLASS 79	
4	3,662,626
	3,662,627
CLASS 81	
52.4	3,662,628
	3,662,629
97	3,662,630
CLASS 82	
2.5	3,662,631
36	3,662,632
101	3,662,633
CLASS 83	
1	3,662,634
23	3,662,635
71	3,662,636
201.15	3,662,637
367	3,662,638
456	3,662,639
530	3,662,640
CLASS 84	
1.01	3,662,641
	3,663,733
1.11	3,663,735
1.24	3,663,736
1.26	3,6 63,737
423	3,663,738
CLASS 85	
8.8	3,662,642
46	3,662,643
69	3,662,644
CLASS 89	
1.5R	3,662,645
33SF	3,662,646
40J	3,662,647
	3,662,649
44	3,662,648
CLASS 90	
3	3,662,650
CLASS 91	
165	3,662,651
411R	3,662,652
CLASS 92	
15	3,662,653
57	3,663,226
83	3,662,654
CLASS 93	
36SQ	3,662,655
CLASS 94	
1	3,662,656
48	3,662,658
50R	3,662,657
CLASS 95	
4.5	Re.27,374
10CD	3,662,659
11L	3,662,666
12.5	3,662,661
31FM	3,662,663
44A	3,662,662
63	3,662,664
86	Re.27,362
89R	3,662,660
94R	3,662,665
CLASS 96	
1.4	3,663,219
6	3,663,220
22	3,663,221
35.1	3,663,222
36.2	3,663,223
38.4	3,663,224
48	3,663,225
61	3,663,227
67	3,663,229
74	3,663,228
107	3,663,230
109	3,663,209
124	3,663,210
138	3,663,211
CLASS 98	
40R	3,662,667
40V	3,662,668
60	3,662,669
119	3,662,670
CLASS 99	
7	3,663,719
17	3,662,671
	3,662,672
	3,662,673
85	3,663,232
107	3,663,233
111	3,663,234
123	3,663,235
134	3,663,236
137	3,663,717
140R	3,663,237
	3,663,238
171	3,663,239
174	3,663,240
204	3,663,718
236CC	3,663,231
283	3,662,674
289	3,662,675
360	3,662,676
450.1	3,662,677
CLASS 100	
4	3,662,678
127	3,662,679
229A	3,662,680
CLASS 101	
68	3,662,681
219	3,662,682
CLASS 102	
42C	3,662,683
56	3,662,684
70.2R	3,662,685
93	3,662,686
CLASS 104	
7	3,662,687
88	3,662,688
148SS	3,662,689
172C	3,662,690
173	3,662,691
CLASS 105	
358	3,662,692
CLASS 106	
1	3,663,241
	3,663,242
14.5	3,663,243
49	3,663,244
52	3,663,245
53	3,663,246
	3,663,247
58	3,663,248
75	3,663,249
84	3,663,250
90	3,663,251
104	3,663,252
204	3,663,253
271	3,663,254
279	3,663,281
285	3,663,255
287	3,663,282
288	3,663,283
300	3,663,284
308Q	3,663,285
314	3,663,286
315	3,663,287
CLASS 108	
131	3,662,694
CLASS 110	
8R	3,662,695
182.5	3,662,696
CLASS 112	
79R	3,662,697
426	3,662,698
CLASS 113	
55	3,662,699
CLASS 114	
67A	3,662,700

68 3,662,701
CLASS 115
37 3,662,702
CLASS 116
34 3,662,703
70 3,662,704
114R 3,662,705
114 3,662,706
CLASS 117
4 3,663,289
7 3,663,288
8 3,663,290
17.5 3,663,291
34 3,663,292
36.2 3,663,256
36.8 3,663,257
3,663,258
37R 3,663,259
47A 3,663,260
59 3,663,261
62.1 3,663,262
63 3,663,263
68 3,663,264
70R 3,663,720
76A 3,663,269
76P 3,663,267
76T 3,663,268
76 3,663,266
93.1GD 3,663,265
98 3,663,270
100A 3,663,271
102A 3,663,272
107.1 3,663,273
138.8E 3,663,274
144 3,663,275
201 3,663,276
3,663,277
212 3,663,279
217 3,663,280
234 3,663,278
CLASS 118
7 3,662,707
49 3,662,708
318 3,662,709
324 3,662,710
637 3,662,711
CLASS 119
17 3,662,712
18 3,662,713
3,662,714
28 3,662,715
CLASS 122
6A 3,662,716
7R 3,662,717
32 3,662,718
235R 3,662,719
CLASS 123
32AE 3,662,721
32EA 3,662,720
65R Re.27,367
119A 3,662,722
119B 3,662,723
3,662,724
136 3,662,725
146.5A 3,662,726
179B 3,662,727
CLASS 124
1 3,662,728
11 3,662,729
17 3,662,730
CLASS 125
11R 3,662,732
11 3,662,731
13 3,662,733
16R 3,662,734
CLASS 126
85B 3,662,735
91R 3,662,736
92R 3,662,737
110R 3,662,738
263 3,662,739
3,662,740
3,662,741
344 3,662,742
CLASS 128
2E 3,662,745
2N 3,662,744
25 3,662,743
2.06R 3,662,746
24 3,662,747
57 3,662,748
58 3,662,749
75 3,662,750
145.8 3,662,751
214R 3,662,752
218M 3,662,753
221 3,662,754
303.1 3,662,755
360 3,662,756
416 3,662,757
419E 3,662,758
419P 3,662,759
535 3,662,760

CLASS 130
6 3,662,762
27P 3,662,763
CLASS 131
207 3,662,764
265 3,662,765
CLASS 132
5 3,662,766
9 3,662,767
53 3,662,768
88.7 3,662,769
CLASS 133
5R 3,662,770
CLASS 134
11 3,663,293
CLASS 135
16 3,662,771
CLASS 136
6 3,663,294
3,663,295
3,663,721
24 3,663,296
30 3,663,297
31 3,663,298
83R 3,663,299
86E 3,663,300
107 3,663,301
114 3,663,302
122 3,663,303
157 3,663,304
176 3,663,305
202 3,663,306
204 3,663,307
CLASS 137
81.5 3,662,772
100 3,662,773
115 3,662,774
344 3,662,775
3,662,776
355.17 3,662,777
375 3,662,778
489 3,662,779
543.17 3,662,781
543.19 3,662,761
590 3,662,780
596 3,662,782
596.14 3,662,783
625.62 3,662,784
CLASS 139
122N 3,662,785
125 3,662,786
422 3,662,787
CLASS 140
71.5 3,662,789
103 3,662,788
123.6 3,662,790
CLASS 141
65 3,662,791
198 3,662,792
3,662,793
290 3,662,794
CLASS 143
38 3,662,795
159H 3,662,796
CLASS 144
320 3,662,797
326 3,662,798
CLASS 146
11 3,662,799
129R 3,662,800
CLASS 148
1.5 3,663,308
9 3,663,309
11.5R 3,663,311
12 3,663,310
3,663,312
16.5 3,663,315
23 3,663,313
36 3,663,314
3,663,316
103 3,663,317
105 3,663,318
172 3,663,722
175 3,663,319
3,663,320
181 3,663,321
CLASS 149
3 3,662,801
19 3,663,322
3,663,323
36 3,662,802
90 3,663,324
CLASS 150
52R 3,662,803
CLASS 151
14 3,662,804
41.73 3,662,805
CLASS 156
2 3,663,325
3 3,663,326

21 3,663,327
75 3,663,328
148 3,663,329
179 3,663,723
181 3,663,331
190 3,663,330
217 3,663,332
256 3,663,333
309 3,663,334
345 3,663,724
380 3,663,335
485 3,663,336
499 3,663,337
515 3,663,338
540 3,663,339
555 3,663,340
CLASS 160
135 3,662,807
206 3,662,808
CLASS 161
6 3,663,341
14 3,663,342
39 3,663,343
59 3,663,344
64 3,663,345
68 3,663,346
3,663,347
3,663,348
116 3,663,349
130 3,663,350
151 3,663,351
159 3,663,352
173 3,663,353
184 3,663,354
186 3,663,355
210 3,663,356
225
CLASS 162
65 3,663,357
70 3,663,358
105 3,663,359
CLASS 164
53 3,662,809
57 3,662,810
113 3,662,811
193 3,662,812
273 3,662,813
283 3,662,814
292 3,662,815
366 3,662,816
CLASS 165
1 3,662,817
23 3,662,818
26 3,662,819
51 3,662,820
89 3,662,821
CLASS 166
.5 3,662,822
.6 3,662,823
72 3,662,824
84 3,662,829
152 3,662,825
3,662,826
187 3,662,827
293 3,662,830
295 3,662,831
302 3,662,832
312 3,662,828
314 3,662,833
3,662,834
CLASS 169
1R 3,662,835
31R 3,662,836
CLASS 172
20 3,662,837
224 3,662,840
266 3,662,839
804 3,662,838
3,662,841
CLASS 173
1 3,662,842
131 3,662,843
CLASS 174
36 3,663,739
92 3,663,740
94R 3,663,741
120SC 3,663,742
CLASS 175
18 3,662,844
CLASS 176
3 3,663,360
3,663,361
4 3,663,362
19LD 3,663,363
38 3,663,725
65 3,663,364
68 3,663,366
77 3,663,365
78 3,663,367
CLASS 177
25 3,662,845
70 3,662,846

CLASS 178
5.4CD 3,663,743
5.4HE 3,663,744
5.4MA 3,663,745
5.4S 3,663,746
5.8R 3,663,747
6.6A Re.27,371
3,663,748
6.8 3,663,749
7.2 3,663,750
3,663,752
7.8 3,663,751
7.92 3,663,753
66A 3,663,754
CLASS 179
18A 3,663,758
1D 3,663,755
2DP 3,663,757
7.1TP 3,663,756
15AT 3,663,761
15BA 3,663,759
3,663,760
41A 3,663,762
100.2C 3,663,765
3,663,767
100.2T 3,663,763
3,663,764
3,663,766
111E 3,663,768
175.3 3,663,769
CLASS 180
9.2R 3,662,847
51 3,662,848
54E 3,662,849
90 3,662,850
116 3,662,851
117 3,662,852
121 3,662,853
3,662,854
CLASS 181
33A 3,662,855
CLASS 182
108 3,662,856
CLASS 184
6.2 3,662,857
103R 3,662,858
193 3,662,812
CLASS 187
12 3,662,859
29R 3,662,860
3,662,861
95 3,662,862
CLASS 188
1A 3,662,863
72.2 3,662,864
196F 3,662,865
CLASS 192
.02 3,662,866
43 3,662,867
CLASS 195
4 3,663,368
31 3,663,369
49 3,663,370
66R 3,663,371
3,663,372
96 3,663,373
103.5R 3,663,374
CLASS 197
180 3,662,868
CLASS 198
1 3,662,869
29 3,662,870
30 3,662,871
33AA 3,662,872
78 3,662,873
155 3,662,874
180 3,662,875
219 3,662,876
CLASS 200
11R 3,663,770
19DR 3,663,771
42R 3,663,774
50AA 3,663,773
86.5 3,663,772
144B 3,663,775
166C 3,663,777
166H 3,663,776
167 3,663,780
168C Re.27,365
3,663,778
168G 3,663,779
172R 3,663,781
CLASS 203
15 3,663,375
91 3,663,382
CLASS 204
15 3,663,376
30 3,663,377
43 3,663,384
49 3,663,378
56 3,663,379

59 3,663,380
78 3,663,381
99 3,663,385
141 3,663,386
3,663,387
146 3,663,388
158HE 3,663,390
159.18 3,663,392
159.22 3,663,391
162R 3,663,393
168 3,663,394
180R 3,663,395
181 3,663,383
3,663,389
3,663,396
3,663,397
3,663,398
3,663,399
3,663,400
3,663,401
3,663,402
3,663,403
3,663,404
3,663,405
3,663,406
3,663,407
192 3,663,408
195P 3,663,409
213 3,663,410
225 3,663,419
243R 3,663,411
257 3,663,412
272 3,663,416
275 3,663,413
290F 3,663,414
299 3,663,415
301 3,663,417
314 3,663,418
CLASS 206
3 3,662,877
19.5C 3,663,432
45.33 3,662,878
65E 3,662,879
CLASS 208
8 3,663,420
3,663,421
28 3,663,422
59 3,663,423
3,663,424
60 3,663,425
65 3,663,426
87 3,663,427
97 3,663,428
108 3,663,429
111 3,663,430
143 3,663,431
210 3,663,434
213 3,663,433
CLASS 209
73 3,662,880
3,662,881
111.5 3,662,882
111.7 3,662,883
129 3,662,884
161 3,662,885
250 3,662,886
CLASS 210
44 3,663,435
131 3,662,887
167 3,662,888
169 3,662,889
195 3,662,890
242 3,662,891
3,662,892
3,662,893
315 3,662,894
330 3,662,895
439 3,662,897
523 3,662,896
CLASS 211
49 3,662,898
CLASS 213
1R 3,662,899
CLASS 214
1QC 3,662,903
1C 3,662,904
6F5 3,662,902
6B 3,662,900
6H 3,662,901
16.1CD 3,662,905
41 3,662,906
77R 3,662,907
83.24 3,662,909
83.3 3,662,908
302 3,662,910
334 3,662,911
CLASS 219
10.43 3,663,782
10.55 3,663,783
69E 3,663,784
69M 3,663,785
69V 3,663,786
3,663,787
76 3,663,788

79 3,663,789
86 3,663,790
107 3,663,791
121EM 3,663,794
121LM 3,663,793
121P 3,663,792
121 3,663,795
211 3,663,796
3,663,797
242 3,662,892
464 3,663,798
523 3,663,799
CLASS 220
9R 3,662,912
23 3,662,913
24A 3,662,914
27 3,662,915
54 3,662,916
55.3 3,662,917
85R 3,662,918
CLASS 221
162 3,662,920
251 3,662,919
312A 3,662,921
CLASS 222
46 3,662,922
55 3,662,923
64 3,662,924
80 3,662,925
95 3,662,926
146HE 3,662,927
211 3,662,928
386.5 3,662,929
564 3,662,930
CLASS 223
1.1 3,662,931
CLASS 224
9 3,662,932
42.1E 3,662,933
CLASS 225
97 3,662,934
3,662,935
CLASS 226
51 3,662,936
89 3,662,937
90 3,662,938
CLASS 227
19 3,662,939
CLASS 228
2 3,662,941
15 3,662,940
25 3,662,942
CLASS 229
2.5 3,662,943
14B 3,662,944
38 3,662,945
52B 3,662,946
CLASS 233
47R 3,662,947
CLASS 235
61.11E 3,663,800
3,663,801
61.12N 3,663,802
92LG 3,663,804
92V 3,663,803
151.12 3,663,805
151.32 3,663,806
181 3,663,807
CLASS 236
46 3,662,948
92 3,662,949
3,662,950
CLASS 238
281 3,662,951
310 3,662,952
CLASS 239
112 3,662,953
134 3,662,954
145 3,662,955
201 3,662,956
265.39 3,662,957
274 3,662,958
400 3,662,960
533 3,662,959
CLASS 240
2 3,663,808
9R Re.27,369
CLASS 241
56 3,662,961
101M 3,662,962
186R 3,662,963
222 3,662,964
CLASS 242
1 3,663,684
4B 3,662,965
47.01 3,662,966
54 3,662,967
76 3,662,968
84.8 3,662,969
180 3,662,970

192 3,662,971
197 3,662,972
CLASS 244
23A 3,662,973
46 3,662,974
58 3,662,975
77D 3,662,976
114R 3,662,977
122A 3,662,978
CLASS 246
34CT 3,663,809
CLASS 248
154 3,662,979
161 3,662,980
278 3,662,981
309 3,662,982
373 3,662,983
394 3,662,984
CLASS 249
219R 3,662,985
CLASS 250
41.9TF 3,663,810
43.5R 3,663,811
49.5PE 3,663,812
71R 3,663,813
83.3CD 3,663,815
83.3UV 3,663,814
106SC 3,663,818
106 3,663,816
3,663,817
201 3,663,819
211J 3,663,820
213VT 3,663,821
217S 3,663,822
218 3,663,823
219R 3,663,824
CLASS 251
139 3,662,987
144 3,662,986
149.6 Re.27,364
276 3,662,988
CLASS 252
28 3,663,436
3,663,437
3,663,438
3,663,726
49.9 3,663,439
62.9 3,663,440
79.4 3,663,441
95 3,663,442
99 3,663,443
3,663,444
117 3,663,445
156 3,663,447
174 3,663,449
180 3,663,448
301.4F 3,663,474
301.6P 3,663,473
309 3,663,475
311.5 3,663,477
314 3,663,478
429B 3,663,450
429 3,663,479
431C 3,663,480
431R 3,663,451
438 3,663,452
441 3,663,453
442 3,663,454
443 3,663,455
455Z 3,663,456
463 3,663,457
518 3,663,458
529 3,663,476
539 3,663,446
546 3,663,459
CLASS 254
8R 3,662,989
93R 3,662,990
3,662,994
172 3,662,991
192 3,662,992
CLASS 256
65 3,662,993
CLASS 259
2 3,662,806
CLASS 260
2BP 3,663,461
2P 3,663,460
2.5AC 3,663,465
2.5AM 3,663,468
2.5BE 3,663,469
2.5FP 3,663,463
3,663,464
2.5B 3,663,466
3,663,467
2.5F 3,663,470
3,663,489
2.5L Re.27,366
3,663,462
6 3,663,472
14 3,663,481
17B 3,663,482
17.2 3,663,483

19EP 3,663,484
3,663,485
19 3,663,486
23EP 3,663,487
23H 3,663,488
29.2N 3,663,728
29.3 3,663,491
29.6TA 3,663,490
30.2 3,663,492
31.8M 3,663,493
37PC 3,663,494
37N 3,663,495
38 3,663,496
3,663,497
40R 3,663,498
3,663,499
3,663,500
40 3,663,471
41R 3,663,501
41 3,663,502
45.7P 3,663,504
45.8N 3,663,503
45.85 3,663,506
45.9R 3,663,505
49 3,663,507
3,663,508
3,663,509
65 3,663,510
75NQ 3,663,511
75NT 3,663,513
75R 3,663,512
77.5AN 3,663,515
77.5AQ 3,663,516
77.5AT 3,663,514
78R 3,663,517
80.3N 3,663,518
80.7R 3,663,727
80.8I 3,663,519
87.5R 3,663,520
88.2 3,663,660
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3	3,663,114	291	3,663,124	45	3,663,689		3,663,703	3	3,663,131	250	3,663,145
79	3,663,115	294	3,663,125	94	3,663,690	279	3,663,704	65	3,663,132	287	3,663,144
130	3,663,138	300	3,663,126	121	3,663,691	281	3,663,705	72	3,663,133	301	3,663,146
143	3,663,116	372	3,663,127	153	3,663,692	300	3,663,707		3,663,134	327	3,663,151
	CLASS 415	516	3,663,129	229	3,663,693		3,663,708	73	3,663,135	345	3,663,147
116	3,663,117		**CLASS 418**	238	3,663,694		3,663,709	116	3,663,136	405	3,663,148
	3,663,118	31	3,663,130	249	3,663,695	301	3,663,710	147	3,662,437		**CLASS 431**
	CLASS 416		**CLASS 424**	250	3,663,696	309	3,663,711		3,663,139	2	3,663,149
157	3,663,119	1	3,663,684	251	3,663,697	330	3,663,712	148	3,663,137	66	3,663,150
224	3,663,120		3,663,685		3,663,698	333	3,663,713	154	3,663,140	307	3,663,128
	CLASS 417		3,663,686	254	3,663,706	342	3,663,714	175	3,663,141	344	3,663,152
48	3,663,121		3,663,687	266	3,663,699		3,663,715	186	3,662,438	351	3,663,153
269	3,663,122			274	3,663,700	343	3,663,716	217	3,663,142	353	3,663,154
					3,663,701						

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D 9—	2 223,602	D26—	1 223,611		223,619		223,627	D52—	6 223,635	D83—	12 223,643
	42 223,601		5 223,612		223,620		223,628		223,636	D87—	1 223,644
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	223,608		15 223,615								

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PATENTS

1 : 3,662,555	3,662,874	3,663,379	3,663,933	3,663,866	3,662,479
3,662,587	3,662,888	3,663,388	3,663,934	3,663,919	3,662,486
3,662,877	3,662,891	3,663,395	3,663,935	3,663,920	3,662,488
3,663,542	3,662,900	3,663,409	3,663,939	10 : 3,662,817	3,662,493
4 : 3,662,404	3,662,902	3,663,424	3,663,944	3,662,943	3,662,550
3,662,985	3,662,911	3,663,431	8 : 3,662,427	3,663,167	3,662,559
3,663,324	3,662,917	3,663,434	3,662,795	3,663,181	3,662,567
3,663,553	3,662,929	3,663,442	3,662,824	3,663,241	3,662,570
3,663,860	3,662,945	3,663,452	3,662,890	3,663,250	3,662,631
5 : 3,662,694	3,662,949	3,663,464	3,663,017	3,663,318	3,662,647
3,662,742	3,662,950	3,663,478	3,663,749	3,663,427	3,662,676
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3,662,414	3,662,956	3,663,543	3,662,472	3,663,525	3,662,725
3,662,462	3,662,967	3,663,584	3,662,483	3,663,569	3,662,763
3,662,466	3,662,968	3,663,588	3,662,523	3,663,624	3,662,777
3,662,480	3,662,982	3,663,594	3,662,582	3,663,653	3,662,803
3,662,481	3,663,015	3,663,609	3,662,603	3,663,658	3,662,805
3,662,515	3,663,024	3,663,622	3,662,626	3,663,670	3,662,808
3,662,527	3,663,044	3,663,625	3,662,627	3,663,676	3,662,858
3,662,553	3,663,046	3,663,659	3,662,662	3,663,739	3,662,869
3,662,563	3,663,060	3,663,681	3,662,703	11 : 3,662,441	3,662,913
3,662,566	3,663,075	3,663,713	3,662,743	3,662,547	3,662,916
3,662,578	3,663,081	3,663,720	3,662,749	3,662,973	3,662,922
3,662,591	3,663,085	3,663,725	3,662,750	3,663,753	3,662,940
3,662,592	3,663,090	3,663,735	3,662,769	12 : Re.27,374	3,663,025
3,662,594	3,663,097	3,663,740	3,662,781	3,662,420	3,663,027
3,662,604	3,663,099	3,663,743	3,662,866	3,662,424	3,663,036
3,662,606	3,663,109	3,663,763	3,662,939	3,662,471	3,663,045
3,662,624	3,663,115	3,663,764	3,662,957	3,662,583	3,663,058
3,662,693	3,663,148	3,663,765	3,662,965	3,662,712	3,663,061
3,662,698	3,663,163	3,663,779	3,662,978	3,662,764	3,663,066
3,662,708	3,663,168	3,663,795	3,663,020	3,662,797	3,663,071
3,662,718	3,663,184	3,663,800	3,663,035	3,662,960	3,663,102
3,662,730	3,663,197	3,663,804	3,663,083	3,662,988	3,663,105
3,662,741	3,663,198	3,663,810	3,663,192	3,663,021	3,663,129
3,662,754	3,663,223	3,663,812	3,663,218	3,663,199	3,663,138
3,662,759	3,663,236	3,663,814	3,663,233	3,663,272	3,663,154
3,662,760	3,663,243	3,663,828	3,663,367	3,663,523	3,663,162
3,662,766	3,663,265	3,663,830	3,663,389	13 : 3,662,430	3,663,178
3,662,780	3,663,270	3,663,837	3,663,613	3,662,497	3,663,232
3,662,793	3,663,294	3,663,842	3,663,645	3,662,901	3,663,260
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3,662,799	3,663,321	3,663,880	3,663,706	17 : 3,662,405	3,663,363
3,662,823	3,663,343	3,663,882	3,663,712	3,662,429	3,663,372
3,662,827	3,663,345	3,663,890	3,663,716	3,662,444	3,663,425
3,662,828	3,663,350	3,663,895	3,663,773	3,662,453	3,663,429
3,662,831	3,663,360	3,663,916	3,663,796	3,662,470	3,663,518
3,662,840	3,663,374	3,663,921	3,663,816	3,662,475	3,663,547
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PATENT OFFICE NOTICES

Examination

Pursuant to the provisions of Rule 341(c), an examination for persons seeking registration before the United States Patent Office as patent attorneys or agents will be held on Tuesday, September 12, 1972.

With the exception of those former patent examiners for whom the examination is waived, all persons recognized for practice before the Patent Office in patent cases must, pursuant to the noted rule, pass the examination. Those passing the examination do not thereby qualify for recognition for practice before the Patent Office in trademark cases. Recognition for practice in trademark cases is governed by Rule 2.12 of the Trademark Rules of Practice, which does not require the passing of an examination.

The examination will be given under the supervision of the Civil Service Commission, and may be taken in any of the cities in which the Civil Service Commission regularly conducts examinations. Applications to take the examination must be filed in the Patent Office together with a $35 fee not later than August 7, 1972.

Application blanks may be obtained from the Clerk of the Patent Office Committee on Enrollment, Bldg. 3, 11th Floor, Room C16, Crystal Plaza, Arlington, Va., or by mail addressed to the Commissioner of Patents, Washington, D.C., 20231, and directed to the attention of the Clerk of the Committee on Enrollment.

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office either on the basis of 4 years or more service in the Examining Corps or under Rul 341(e) of the "Rules of Practice of the United States Patent Office in Patent Cases."

Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before June 12, 1972.

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Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

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3,556,291, D. W. Kosterka, PHONOGRAPH RECORD ALBUM PACKAGE, filed Apr. 5, 1971, D.C., S.D.N.Y., Doc. 71–C–1521, *Album Graphics, Inc.* v. *Buddah Records, Inc.* Stipulation and order action be dismissed with prejudice, Sept. 10, 1971.

Re. 25,950, Bloch and Hansen, METHOD AND MEANS FOR CHEMICAL ANALYSIS BY NUCLEAR INDUCTIONS, filed Dec. 4, 1968, D.C.N.J. (Camden), Doc. C-1278–68, *Eugene J. Levy et al.* v. *Varian Associates.* Consent order of dismissal, with prejudice, Dec. 17, 1971.

Re. 25,406, Byrne and Cruger, AIRCRAFT ARRESTING SYSTEM, filed Dec. 29, 1964, D.C., W.D.N.Y. (Buffalo), Doc. C–11,234, *E. W. Bliss Company* v. *Buffalo Weaving & Belting Company.* Order of dismissal filed Nov. 5, 1971.

Re. 26,220, L. R. Records, METHOD AND APPARATUS FOR WELL CONTROL, filed Jan. 17, 1968, D.C., S.D. Tex. (Houston), Doc. 68–H–52, *Drilling Well Control, Inc.* v. *Dresser Industries, Inc.* Judgment, claims 4, 18, 20 and 21 valid; claim 13 invalid; defendant's manufacture, use and sale of its apparatus and the practice of its method here in controversy, has not been and is not an infringement of any of claims 4, 13, 18, 20 and 21, Dec. 30, 1971.

D. 192,510, W. F. Stembridge, TAIL FOR FISHING LURE, filed Dec. 9, 1971, D.C. La. (Shreveport), Doc. 17407–S, *Stembridge Products Inc.* v. *Championship Tackle, Inc., Doyle Wise and Hugh O. Rinkle.*

D. 200,771, G. Saltzman, DIAMOND, filed Nov. 23, 1971, D.C., S.D.N.Y., Doc. 71–C–5119, *George Saltzman and Joseph Waldman* v. *Harry W. Lieb.*

D. 212,372, Trimble and Rottman, GOAL POST, filed Dec. 28, 1971, D.C., M.D. Fla. (Tampa), Doc. 71–574–C, *Triman Tele-Goal, Inc.* v. *Pinellas County School Board et al.*

D. 220,911, C. McGrady, TRANSPARENT BOOK STAND, filed Dec. 7, 1971, D.C., S.D.N.Y., Doc. 71–C–5389, *Corinne McGrady* v. *Dione Lucas.*

D. 220,925, H. Boomer, BOAT DECK, filed Dec. 23, 1971, D.C., M.D. Fla. (Orlando), Doc. 71–269–Orl–C, *Gemini Marine, Inc.* v. *Helios Marine Inc. and Ronald E. Alberty.*

D. 221,883, C. M. Peasley, BATTERY POWERED LIGHTING FIXTURE FOR WALL, CEILING OR THE LIKE, filed Dec. 17, 1971, D.C. Mass. (Boston), Doc. 71–3028–F, *Curtiss M. Peasley* v. *Chadwick-Miller, Inc.*

Certificates of Correction for the Week of May 23, 1972

Re. 27,138	3,598,662	3,620,671	3,623,932
3,344,108	3,599,878	3,620,721	3,623,966
3,471,452	3,600,642	3,620,732	3,624,052
3,500,461	3,600,893	3,620,740	3,624,073
3,501,485	3,600,922	3,620,741	3,624,091
3,511,960	3,601,322	3,620,742	3,624,131
3,539,556	3,602,024	3,620,759	3,624,276
3,541,458	3,602,309	3,620,782	3,624,424
3,551,612	3,602,323	3,620,790	3,624,432
3,552,561	3,602,553	3,620,802	3,624,442
3,552,652	3,602,855	3,620,805	3,624,454
3,556,229	3,603,143	3,620,820	3,624,471
3,556,667	3,603,182	3,620,829	3,624,630
3,562,059	3,604,482	3,620,901	3,624,802
3,562,226	3,606,187	3,620,927	3,624,988
3,565,852	3,607,509	3,620,943	3,625,029
3,568,726	3,608,232	3,620,970	3,625,263
3,569,815	3,608,326	3,620,971	3,625,387
3,570,006	3,608,575	3,620,974	3,625,493
3,571,582	3,608,922	3,620,981	3,625,842
3,571,743	3,609,024	3,620,989	3,625,860
3,573,334	3,609,983	3,620,991	3,625,910
3,574,516	3,610,026	3,621,003	3,625,911
3,575,434	3,611,369	3,621,004	3,625,958
3,575,792	3,611,858	3,621,007	3,626,001
3,576,785	3,612,461	3,621,016	3,626,043
3,577,187	3,614,583	3,621,022	3,626,450
3,577,259	3,615,228	3,621,029	3,626,577
3,577,536	3,615,652	3,621,039	3,626,868
3,577,901	3,615,741	3,621,044	3,626,908
3,579,557	3,615,746	3,621,045	3,627,013
3,581,941	3,616,066	3,621,047	3,627,089
3,583,726	3,616,216	3,621,063	3,627,409
3,583,970	3,617,189	3,621,090	3,627,709
3,584,742	3,617,497	3,621,092	3,627,715
3,584,942	3,618,132	3,621,102	3,627,761
3,585,399	3,618,467	3,621,171	3,628,003
3,585,567	3,618,614	3,621,180	3,628,279
3,585,915	3,618,732	3,621,264	3,628,408
3,586,292	3,618,972	3,621,274	3,628,499
3,586,523	3,619,215	3,621,284	3,628,589
3,586,872	3,619,274	3,621,301	3,628,937
3,586,966	3,619,350	3,621,383	3,628,962
3,587,054	3,620,077	3,621,347	3,629,280
3,588,806	3,620,223	3,621,373	3,629,408
3,588,818	3,620,243	3,621,375	3,629,824
3,589,077	3,620,288	3,621,390	3,630,354
3,589,173	3,620,292	3,621,394	3,630,408
3,589,225	3,620,332	3,621,401	3,630,779
3,589,858	3,620,350	3,621,421	3,630,821
3,590,053	3,620,353	3,621,446	3,631,111
3,590,071	3,620,404	3,621,552	3,631,434
3,590,490	3,620,437	3,621,640	3,631,623
3,591,498	3,620,454	3,622,062	3,631,716
3,591,541	3,620,473	3,622,202	3,631,844
3,591,638	3,620,476	3,622,333	3,631,870
3,591,920	3,620,481	3,622,452	3,632,004
3,592,629	3,620,486	3,622,465	3,632,010
3,593,193	3,620,488	3,622,521	3,632,026
3,593,231	3,620,521	3,622,538	3,632,074
3,593,508	3,620,532	3,622,568	3,632,094
3,593,806	3,620,546	3,623,010	3,632,145
3,594,417	3,620,571	3,623,055	3,632,862
3,595,438	3,620,584	3,623,064	3,633,560
3,595,471	3,620,592	3,623,159	3,634,474
3,596,034	3,620,632	3,623,795	
3,596,308	3,620,670	3,623,860	

Patents Available for Licensing or Sale

D. 198,860. SKIN DIVER'S HAND RAKE. J. Fedorka, 193 E. High St., Somerville, N.J., 08876.

2,995,619. SYSTEM OF TELEVISION TRANSMISSION AND PHOTOGRAPHIC REPRODUCTION OF THE TELEVISED IMAGE. Samuel Freeman, 18 Birchwood Court, E., Syosset, N.Y., 11791.

3,525,099. HAND GUIDED WALK-BEHIND SELF-PROPELLED MATERIAL CONVEYING CaRT. John Fuhrmann. Correspondence to: Robert C. Weber, 1022 Ellicott Square, Buffalo, N.Y. 14203.

3,568,259. TYING CLIP. Paul Gaudlits, Hamburg, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,570,507. ICE FISHING TENT. Morris Kashuba, 1563 Main St., Peckville, Pa., 18452.

3,625,664. PROCESS FOR THE PRODUCTION OF RICH FUEL TO REPLACE NATURAL GAS BY MEANS OF CATALYTIC HYDROGASIFICATION UNDER PRESSURE OF FLUID HYDROCARBONS. Carlo Padovani. Correspondence to: Murphy & Dobyns, 2001 Jefferson Davis Highway, Suite 807, Arlington, Va., 22202.

3,635,265. DUAL ACTION COPYING LATHE. Jose L. Cortes, 9050 E. Jeff St., Bellflower, Calif., 90706.

3,641,682. HAIR DRYER WITH REMOVABLE LAY ON RESILIENT CUSHION. Georgia E. Glints, 2909 University Ave., Des Moines, Iowa, 50311.

3,649,018. BLOCK ASSEMBLY GAME. Danny J. Beam, Box 64, Lockport, Ill., 60441.

3,652,508. VISCOSITY STABLE ALIPHATIC POLYURETHANE COMPOSITIONS AND METHOD OF PREPARATION. Donald L. Segur, et al. Correspondence to: Henry B. Townsend, General Latex and Chemical Corp., Research Center, High St., North Billerica, Mass., 01862.

3,659,896. APPARATUS FOR MAKING CONCRETE PRODUCTS. Nathan L. Gelbman. Correspondence to: Henry E. Lippert, 130 SE. 12th St., Miami, Fla., 33130.

Cerebro-Dynamics, Inc., offers to sell or license the following 2 patents on reasonable terms.

Inquiries should be directed to: Richard L. Bohanon, Cerebro-Dynamics, Inc., 1405 City National Bank Tower, Oklahoma City, Okla., 73120.

3,592,006. ISOLATION DEVICE.

3,653,215. METHOD AND APPARATUS FOR CONFINING AND COLLECTING OIL LEAKAGE.

General Motors Corporation is prepared to grant non-exclusive license under the following patent upon reasonable terms.

Applications for license may be addressed to: The Director, Patent Section, General Motors Building, 3044 W. Grand Blvd., Detroit, Mich., 48202.

3,473,477. ROTARY PUMP.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 42 patents.

Inquiries respecting licenses under the following patents should be addressed to RCA Corporation, Staff Vice President, Domestic Licensing, 1133 Avenue of Americas, New York, N.Y., 10036.

3,649,887. AC LINE OPERATION OF MONOLITHIC CIRCUIT.

3,649,901. HIGH VOLTAGE HOLD-DOWN CIRCUIT.

3,649,937. ELECTRONICALLY TUNED ULTRA HIGH FREQUENCY TELEVISION TUNER.

3,650,595. REDUNDANT, SPECKLE-FREE HOLOGRAM RECORDING APPARATUS.

3,650,603. LIQUID CRYSTAL LIGHT VALVE CONTAINING A MIXTURE OF NEMATIC AND CHOLESTRIC MATERIALS IN WHICH THE LIGHT SCATTERING EFFECT IS REDUCED WHEN AN ELECTRIC FIELD IS APPLIED.

3,651,250. TELEVISION CAMERA UTILIZING A PARALLEL STRIPED COLOR ENCODING FILTER.

3,651,328. BOWLING PIN DETECTOR.

3,651,339. FEEDBACK CLIPPER.

3,651,342. APPARATUS FOR INCREASING THE SPEED OF SERIES CONNECTED TRANSISTORS.

3,651,346. ELECTRICAL CIRCUIT PROVIDING MULTIPLE V(SUB)BE BIAS VOLTAGES.

3,651,347. SIGNAL TRANSLATING STAGE PROVIDING DIRECT VOLTAGE TRANSLATION INDEPENDENT OF SUPPLIED OPERATING POTENTIAL.

3,651,409. ELECTRONICALLY TUNED ULTRA HIGH FREQUENCY TELEVISION TUNER WITH FREQUENCY TRACKING TUNABLE RESONANT CIRCUITS.

3,651,418. SYNCHRONOUS DETECTOR CONTROL.

3,651,419. PEAK DEMODULATOR.

3,651,421. GATED AMPLIFIER.

3,651,488. INFORMATION STORAGE SYSTEM EMPLOYING OPTICAL ENTRY AND REMOVAL OF INFORMATION.

3,652,323. PROCESS FOR COATING FLATLIKE SURFACES.

3,652,938. DUAL LOOP RECEIVER TUNING AND FREQUENCY TRACKING SYSTEM.

3,653,054. SYMMETRICAL TROUGH WAVEGUIDE ANTENNA ARRAY.

3,653,056. COMBINED VHF-UHF DIPOLE ANTENNA ARRAY.

3,646,666. FABRICATION OF SEMICONDUCTOR DEVICES.

3,647,280. LIQUID CRYSTAL DISPLAY DEVICE.

3,647,438. METHOD OF MAKING HIGH AREA-DENSITY ARRAY PHOTOMASKS HAVING MATCHING REGISTRY.

3,647,579. LIQUID PHASE DOUBLE EPITAXIAL PROCESS MANUFACTURING LIGHT EMITTING GALLIUM PHOSPHIDE DEVICES.

3,647,940. CONTROL SYSTEM.

3,647,944. KINESCOPE BIAS ARRANGEMENT TO PROVIDE BOTH CONSTANT AMPLITUDE D.C. RESTORATION PULSES AND ARC DISCHARGE PROTECTION.

3,647,945. COLOR ENCODING SYSTEM UTILIZING TWO FILTERS ALTERNATELY FOR MINIMIZING EFFECTS OF IMAGE MISREGISTRATION AND IMAGE PICKUP DEVICE LAG.

3,647,952. AUTOMATIC BEAM FOCUSING SYSTEM.

3,657,965. COLOR PHASER FOR TELEVISION VIDEO SIGNALS.

3,648,116. MULTICIRCUIT HYBRID MODULE AND METHOD FOR MAKING.

3,648,135. REMOTE CONTROLLED TELEVISION TUNER MOTOR SWITCHING CIRCUIT.

3,648,153. REFERENCE VOLTAGE SOURCE.

2,648,167. FLUID COOLED APPARATUS FOR TESTING POWER SEMICONDUCTOR DEVICES.

3,648,197. MICROWAVE LIMITER THAT SUPPRESSES LEADING EDGE SPIKE OF RADIO FREQUENCY SIGNALS.

3,648,279. MULTI-ELECTRODE TRANSDUCER ELEMENT.

3,649,309. DARK FOSTERITE CERAMIC COMPOSITION.

3,649,382. DOUBLE EPITAXIAL SOLUTION REGROWTH PROCESS AND DEVICE MADE THEREBY.

3,649,749. APPARATUS PERMITTING RELIABLE SELECTION OF TRANSMITTED TELEVISION MESSAGE INFORMATION.

3,649,750. CONTROL SIGNAL GENERATING APPARATUS TO PERMIT RELIABLE SELECTION OF TRANSMITTED TELEVISION MESSAGE INFORMATION.

3,649,847. ELECTRICALLY CONTROLLED ATTENUATION AND PHASE SHIFT CIRCUITRY.

3,649,848. VOLTAGE TRANSLATION CIRCUIT FOR MNOS MEMORY ARRAY.

3,649,881. HIGH POWER SEMICONDUCTOR DEVICE ASSEMBLY.

Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung, is prepared to grant licenses under the following 24 patents upon reasonable terms.

Applications for license may be addressed to: Ralf H. Siegemund, 4262 Wilshire Blvd., Suite 320, Los Angeles, Calif., 90010.

3,084,888. IMPROVEMENT IN OR RELATING TO VTOL AIRCRAFT.

3,150,784. DISPLACEABLE LIFTING PLATFORM FOR AUTOMOTIVE VEHICLES.

3,223,251. DISPLACEABLE JACK FOR AUTOMOTIVE VEHICLES.

3,223,354. VERTICAL TAKE OFF AND LANDING AIRCRAFT.

3,223,360. VTOL AIRCRAFT JET INSTALLATION.

3,276,547. STATIONARY HYDRAULIC LIFTING APPARATUS.

3,277,848. LOADING PALLETTS.

3,443,777. REGULATING ARRANGEMENT FOR AIRCRAFT.

3,455,523. AIRCRAFT TAIL.

3,462,099. VTOL AIRCRAFT.

3,476,336. BODY FOR FLIGHT AT HIGH SUBSONIC SPEED.

3,486,721. AIRCRAFT CLOSURE FLAPS.

3,506,223. AIRPLANE WITH AT LEAST ONE LIFTER DRIVING.

3,509,800. PORTABLE GROUND COVER FOR STARTING AND LANDING SURFACES FOR VERTICALLY AND SHORT-STARTING AND LANDING VEHICLES.

3,520,636. CONTROL MECHANISM FOR HELICOPTERS.

3,525,485. FLIGHT CONTROL FOR VERTICALLY STARTING AND LANDING MULTI-ENGINE AIRPLANES.

3,532,306. DEVICE FOR MAINTAINING EQUILIBRIUM OF THE MOMENTS AROUND THE TRANSVERSE AXIS OF AN AIRPLANE.

3,537,464. DEVICE FOR DISPLACING THE FRONT PORTION OF AN AIR INLET OF JET VALVES.

3,545,795. JOINT.

9,552,880. BLADE CONNECTION FOR HELICOPTERS.

3,578,263. VERTICALLY STARTING AND LANDING AIRPLANE.

3,581,995. DEVIATING DEVICE FOR PARTICULARLY HOT EXHAUST GAS JETS OF AIR VEHICLE DRIVING MECHANISMS.

3,580,531. RETRACTABLE MAIN CARRIAGE FOR VERTICALLY STARTING AIRPLANES AND AIRPLANES STARTING ON A SHORT RUNWAY.

3,651,704. ARRANGEMENT OF THE OPENINGS TO LOADING COMPARTMENTS IN VERTICAL TAKE OFF AND LANDING AIR VEHICLES.

General Electric Company is prepared to grant non-exclusive licenses under the following 53 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following 12 patents may be addressed to: Patent Counsel, Major Appliance Business Group, General Electric Co., Appliance Park, Louisville, Ky., 40225.

3,373,576. SINGLE EVAPORATOR, SINGLE FAN REFRIGERATOR INCLUDING CONTROL MEANS.

3,618,148. HEAT SHRINK METHOD OF FACILITATING THE DISPOSAL OF TRANSFER AGENT.

3,621,165. CLOSURE-OPERATED SAFETY SWITCH FOR AUTOMATIC APPLIANCE.

3,621,293. ELECTRONIC DRYER CONTROL.

3,621,668. REFRIGERATOR INCLUDING AN AUTOMATIC ICE MAKER AND A DOOR MOUNTED ICE RECEPTACLE.

3,622,215. REFRIGERATOR CABINET CONSTRUCTION.

3,622,754. GLASS PLATE SURFACE HEATING UNIT WITH EVEN TEMPERATURE DISTRIBUTION.

3,624,741. RACK SLIDING SURFACES FOR CATALYTIC COATED OVEN.

3,624,743. GAS-COOKING OVEN WITH OVEN SCAVENGING MEANS.

3,626,135. ELECTRONIC OVEN WITH FERRITE RF REJECTION FILTERS.

3,632,983. SMOOTH SURFACED, HEATED COOKTOP.

3,633,491. DRIVE MEANS FOR A ROTISSERIE SPLIT.

Applications for license under the following 41 patents may be addressed to: Patent Counsel, Electronics Laboratory, General Electric Company, Bldg. 3, Room 216, Electronics Park, Syracuse, N.Y., 13201.

3,108,158. SYNCHRONOUS DETECTION MULTIPLEX SYSTEM.

3,108,255. CODED INFORMATION TRANSMIT-RECEIVE COMMUNICATION SYSTEM.

3,117,241. TRANSMIT-RECEIVER SWITCH UTILIZING RESONANT CIRCUITS AND OPPOSITELY POLED PARALLEL DIODES FOR ISOLATION.

3,127,607. METHOD AND APPARATUS FOR RECORDING OF RADAR SIGNALS.

3,132,325. ELECTRO-OPTICAL SHIFT REGISTER.

3,144,566. TIME BASE FREQUENCY DIVIDER CIRCUIT.

3,144,638. TIME COMPRESSION STORAGE CIRCUIT.

3,149,241. TUNNEL DIODE SWITCHING CIRCUITS.

3,163,763. ELECTROLUMINESCENT-PHOTOCONDUCTOR DEVICES HAVING IMPROVED INPUT-OUTPUT ISOLATION.

3,163,775. TUNNEL DIODE LOGIC CIRCUIT.

3,177,350. TRANSISTORIZED STEP MULTIPLIER.

3,177,422. LOW LEVEL TRANSISTOR CHOPPER CIRCUIT.

3,181,002. PARAMETRIC SUBHARMONIC OSCILLATOR UTILIZING A VARIABLE SUPERCONDUCTIVE CORE INDUCTANCE.

3,189,826. METHOD AND APPARATUS FOR DEMODULATING MULTIPHASE MODULATED SIGNALS.

3,205,375. ELECTRONICALLY ADJUSTABLE NANOSECOND PULSE GENERATOR UTILIZING STORAGE DIODES HAVING SNAP-OFF CHARACTERISTICS.

3,205,376. VARIABLE WIDTH NANOSECOND PULSE GENERATOR UTILIZING STORAGE DIODES HAVING SNAP-OFF CHARACTERISTICS.

3,207,905. TOUCH-SENSITIVE OPTOELECTRONIC CIRCUITS INDICATORS.

3,211,900. ANALOG MULTIPLIER CIRCUITS USING AN ELECTROLUMINESCENT ELEMENT.

3,211,931. ELECTROMECHANICAL TRANSDUCER MOTORS.

3,227,972. APPARATUS IN WHICH PHONON ENERGY IS EFFICIENTLY GENERATED BY MAGNETOSTRICTIVE EFFECTS.

3,349,818. D.C. POWER DISTRIBUTION ARRANGEMENT FOR HIGH FREQUENCY APPLICATIONS.

3,267,394. CLOCK POWER DISTRIBUTION ARRANGEMENT FOR HIGH SPEED LOGIC SYSTEMS.

3,290,623. APPARATUS FOR THE GENERATION OF PHONONS BY PIEZOELECTRIC EFFECTS.

3,292,000. ULTRA HIGH SPEED PARAMETRIC DIGITAL CIRCUITS.

3,205,673. OPTOELECTRONIC COMPUTATIONAL DEVICES.

3,325,750. HIGH RESOLUTION TIME INTERVAL MEASURING CIRCUIT EMPLOYING A BALANCED CRYSTAL OSCILLATOR.

3,337,755. PULSE GENERATOR.

3,348,197. SELF-REPAIRING DIGITAL COMPUTER CIRCUITRY EMPLOYING ADAPTIVE TECHNIQUES.

3,371,281. FREQUENCY MODULATION RECEIVER COMBINING FREQUENCY FEEDBACK AND SYNCHRONOUS DETECTION.

3,392,236. AUTOMATIC BEAM CONTROL FOR CAMERA TUBE.

3,422,277. MAGNETIC SECOND HARMONIC ANALOG DEVICE.

3,425,263. APPARATUS FOR MEASURING SOME MECHANICAL PROPERTIES OF A MATERIAL.

3,428,828. SAMPLE AND HOLD CIRCUIT.

3,433,721. METHOD OF FABRICATING THIN FILMS.

3,439,283. FREQUENCY SHIFT KEYED DISCRIMINATING CIRCUITS.

3,439,349. CONTINUOUS THIN MAGNETIC FILM STORAGE DEVICE.

3,543,862. APPARATUS FOR MEASURING SOME MECHANICAL PROPERTIES OF A MATERIAL.

3,462,745. APPARATUS FOR TRAVERSING DIGITAL INFORMATION ACROSS BAND-PASS TRANSMISSION MEDIA.

3,465,137. ANALOG COMPUTATION FOR GENERATION OF DYNAMIC CORRECTION SIGNALS FOR CATHODE RAY TUBES.

3,479,517. SOLID STATE LIGHT EMITTING DISPLAY WITH MEMORY.

3,486,076. PRINTED CIRCUIT ASSEMBLY WITH INTERCONNECTION MODULES.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 2, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-01-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	3-01-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	3-01-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-06-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	9-07-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	2-11-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-04-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	4-15-71
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	2-26-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	1-18-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	3-11-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	2-02-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	2-03-71
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	4-21-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	3-18-71

Expiration of patents: The patents within the range of numbers indicated below expire during May 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 82nd Congress, approved August 23, 1954 (68 Stat. 784), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 2,707,277 to 2,709,807, inclusive
Plant Patents ..... Numbers 1,389 to 1,395, inclusive

PLANT PATENTS

GRANTED MAY 23, 1972

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,182
APPLE TREE

Clifford S. Nakamura, Misuyo Nakamura, and George Nakamura, Hood River, Oreg.; said Misuyo Nakamura assignor to said Clifford S. Nakamura and to said George Nakamura, as joint tenants

Filed Jan. 8, 1970, Ser. No. 1,572
Int. Cl. A01h 5/00

U.S. Cl. Plt.—35 1 Claim

1. A new and distinct variety of apple tree, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a general resemblance of the fruit to that of the Mood Apple variety (unpatented), but having a much earlier coloring habit, with the coloring developing to a full red color approximately a month before maturity, and commencing to color approximately two weeks before the "Topred" variety, Plant Patent 1,916, developing stripes prominent and distinct in color by the middle of July and having good keeping quality of about 120 days in ordinary storage.

3,183
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed July 27, 1970, Ser. No. 58,749
Int. Cl. A01h 5/00

U.S. Cl. Plt.—79 1 Claim

1. A new and distinct variety of pompon chrysanthemum characterized particularly as to novelty by a unique orange-bronze color, greater flower production per stem, an open terminal spray, lateral flowering down the stem, excellent breaking action on pinched crops during high temperature periods, and a uniform response at all periods, with an earlier response during high temperature periods.

3,184
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duzett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed July 27, 1970, Ser. No. 58,750
Int. Cl. A01h 5/00

U.S. Cl. Plt.—80 1 Claim

1. A new and distinct variety of pompon chrysanthemum characterized particularly as to novelty by a unique pink color, greater flower production per stem, more open terminal sprays, lateral flowering down the stem, excellent breaking action on pinched crops, especially during high temperature periods, and a more uniform response to all periods, with an earlier response during high temperature periods.

3,185
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed July 27, 1970, Ser. No. 58,751
Int. Cl. A01h 5/00

U.S. Cl. Plt.—79 1 Claim

1. A new and distinct variety of pompon chrysanthemum characterized particularly as to novelty by a unique golden-bronze color, a relatively larger flower, increased flowers produced per stem, with an open terminal spray, lateral flowering down the stem, a superior breaking action, especially during high temperature periods, and a uniform, early response.

3,186
BLUEGRASS PLANT

Josephus J. Barenbrug and Cornelis W. H. M. Schaepman, Arnhem, Netherlands, assignors to Barenbrug's Zaadhandel N.V., Arnhem, Netherlands

Filed Sept. 3, 1970, Ser. No. 69,507
Int. Cl. A01h 5/00

U.S. Cl. Plt.—88 1 Claim

A Kentucky bluegrass plant—Baron—having a unique red panicle and characterized by a broad leaf of dark green color, and being a dwarf variety is highly suitable for establishing sports grounds.

3,187
ILEX PLANT

John R. Bearss, Cairo, Ga., assignor to Wight Nurseries, Inc., Cairo, Ga.

Filed Sept. 9, 1970, Ser. No. 70,942
Int. Cl. A01h 5/00

U.S. Cl. Plt.—65 1 Claim

A new and distinct variety of Ilex plant which was originated as a bud mutation of *Ilex cornuta Rotunda*.

3,188
AZALEA PLANT

Henry W. Motzkau, Whitewater, Wis., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Sept. 11, 1970, Ser. No. 71,631
Int. Cl. A01h 5/00

U.S. Cl. Plt.—57 1 Claim

1. A new and distinct variety of azalea characterized particularly by its rapid growth, its unique color habit of intensifying its color during the high light periods of the year, its habit of bearing flowers in clusters, its trait of superior keeping quality under home conditions, its non-shattering, its mid-season profuse flowering, its adaptability to year round flowering programs, its evergreen type foliage, its ability to perform under sub-optimum growing conditions, and the ability of its leaves to withstand crowding and long term cold storage without turning yellow or dropping off the plant.

3,189
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Sept. 23, 1970, Ser. No. 74,941
Int. Cl. A01h 5/00

U.S. Cl. Plt.—74 1 Claim

1. A new and distinct variety of chrysanthemum characterized particularly by its unique pastel color which ranges from gloden bronze in cooler, darker weather to honey yellow in high light, high temperature periods; its superb and improved lasting qualities both as a cut flower and a pot plant; its excellent pot habit, unique in presently existing daisy types; its more uniform and faster response under low and high temperature conditions, compared to the cultivar Tuneful; and its tendency for

plants to establish themselves 4–7 days earlier than Tuneful for pinching.

3,190
CHRYSANTHEMUM PLANT

Harry B. Wilfong, Newton, N.C., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Sept. 23, 1970, Ser. No. 74,942
Int. Cl. A01h 5/00

U.S. Cl. Plt.—77 1 Claim

1. A new and distinct variety of chrysanthemum characterized particularly as to improved traits over the parent variety, White Pink Chief, by having 4" to 6" more vigor than parent, one inch larger flowers, larger foliage, heavier caliper stems and one week later response.

3,191
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Sept. 23, 1970, Ser. No. 74,943
Int. Cl. A01h 5/00

U.S. Cl. Plt.—78 1 Claim

1. A new and distinct variety of chrysanthemum characterized particularly as to uniqueness by a strong rigid stem habit, superior uniformity of growth and response, tightly incurved form, superior form retention, uniform size and grade, resistance to high temperatures, and an intense golden yellow color.

3,192
CHRYSANTHEMUM PLANT (POLAR BEAUTY)

Leonard H. Shoesmith, Westfield-Woking, Surrey, England, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Oct. 5, 1970, Ser. No. 78,311
Int. Cl. A01h 5/00

U.S. Cl. Plt.—77 1 Claim

A new variety of chrysanthemum plant of the standard semi-incurved type producing very large white blossoms, when disbudded, and being suitable for year-around flowering with a ten week response period. The plant has a vigorous and strong upright growth habit and the blossom is durable and long lasting with a large amount of petalage which appears cream color as it opens, later turning to pure white.

3,193
ORNAMENTAL PEAR TREE

William T. Straw, 47 McCullum Road, Independence, Ky. 41051

Filed Oct. 5, 1970, Ser. No. 78,312
Int. Cl. A01h 5/03

U.S. Cl. Plt.—36 1 Claim

An ornamental pear tree of the Pyrus calleryana variety is disclosed. The thornless tree is characterized by leaves which are three to four inches in length, two to three inches wide and ovate in shape. The branches of the tree are substantially horizontal from the trunk with slight upward sweeps near their tips. The annual growth color of new branches is brown with a touch of red. The leaves of the tree during the summer are medium to dark green with a very glossy top surface.

3,194
CHRYSANTHEMUM PLANT (ONWARD)

Leonard H. Shoesmith, Westfield-Woking, Surrey, England, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Oct. 5, 1970, Ser. No. 78,313
Int. Cl. A01h 5/00

U.S. Cl. Plt.—79 1 Claim

A new variety of chrysanthemum plant of standard type having large blooms of a rich bronze coloring that do not sunburn, a nine weeks year-around response to photoperiod culture, a vigorous growth habit during all seasons, and good retention of coloring under high temperature.

3,195
CHRYSANTHEMUM PLANT (ELDORADO)

Leonard H. Shoesmith, Westfield-Woking, Surrey, England, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Oct. 5, 1970, Ser. No. 78,314
Int. Cl. A01h 5/00

U.S. Cl. Plt.—78 1 Claim

A new variety of standard chrysanthemum plant having very large yellow blooms of the semi-incurved type produced on long strong stems, distinguished by its uniform response and capability of being flowered the year-around under greenhouse culture, and by its resistance to Botrytis.

3,196
POINSETTIA PLANT

Paul Ecke, Encinitas, Calif., assignor to Paul Ecke, Inc., Encinitas, Calif.

Filed Nov. 13, 1970, Ser. No. 89,537
Int. Cl. A01h 5/00

U.S. Cl. Plt.—86 1 Claim

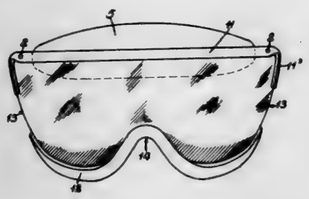
1. A new and distinct variety of poinsettia plant, substantially as herein shown and described, characterized particularly as to novelty by a unique combination of characteristics which are substantially identical in all respects to those of the poinsettia variety known as #C–1 (Plant Patent No. 2,923) except for its bract color, said bracts being a distinctive and attractive white color corresponding to near Creamy White as distinguished from the normal red color of the bracts of the variety #C–1.

PATENTS

GRANTED MAY 23, 1972

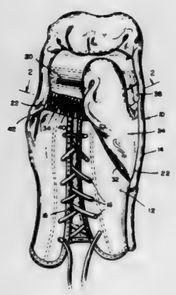
GENERAL AND MECHANICAL

3,663,959
SNOW-GOGGLES
Rene Loubeyre, 13 bis rue du Moulin-Lacrotx, Saint Claude, Jura, France
Filed Oct. 31, 1969, Ser. No. 872,965
Claims priority, application France, Nov. 18, 1968, 50631
Int. Cl. A61f *9/02*
U.S. Cl. 2—14 N 4 Claims



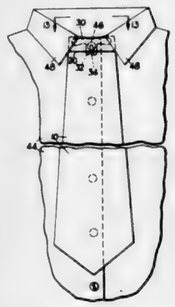
Snow-goggles comprising a visor adapted to be disposed substantially above the eyes and to project away from the forehead of a wearer, a transparent screen pending from the forward edge of said visor and adapted to pivot thereon so that the bottom portion of the screen moves away from the face of the wearer, a protective band made of soft material mounted about the lower edge and part of the sides of the screen, the said band adapted to rest on the nose of the wearer and provide interstices at both ends of the band between thc screen and the face of the wearer.

3,663,960
BOXING GLOVE
Bert Kennedy, P.O. Box 58, Caroga Lake, N.Y.
Filed Apr. 12, 1971, Ser. No. 133,231
Int. Cl. A41d *13/10*
U.S. Cl. 2—18 6 Claims



A boxing glove in which the movement of the thumb enclosing section away from the mitt section of the glove is resiliently restrained by an elastic band which connects the thumb enclosing secton directly to the outer side of the glove; the elastic band being leather covered. Another band connects the opposite side of the thumb enclosing section to the opposite side of the glove.

3,663,961
NECKTIE
John L. Piper, 250 N.E. 181st St., Portland, Oreg.
Filed June 25, 1970, Ser. No. 49,666
Int. Cl. A41d *25/08*
U.S. Cl. 2—153 4 Claims



The upper end portion of a single tail necktie has a perforation through which projects the bifurcated tab of a button clip secured in a rearwardly folded and stitched section of the upper portion of the tie.

3,663,962
PROCESS FOR PRODUCING PANTIES
William H. Burger, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Sept. 24, 1970, Ser. No. 75,193
Int. Cl. A41b *9/04*
U.S. Cl. 2—224 A 8 Claims



A panty having a reinforced elastic waist is made from a single sheet of approximately rectangular shaped fabric material.

3,663,963
WAIST BAND ASSEMBLY
Samuel E. Miller, Winnetka, Ill., assignor to Quick Service Textiles, Inc., Chicago, Ill.
Filed Sept. 8, 1970, Ser. No. 70,270
Int. Cl. A41d *1/06*
U.S. Cl. 2—237 7 Claims

A waist band assembly for an article of wearing apparel, e.g. trousers, which includes a woven strip to preclude rolling over of the outer edge portion of the waist band. In order to perform its function, the strip has a degree of inherent rigidity but is flexible in the sense that its presence does not discommode the wearer or detract from the appearance of the article. These characteristics are obtained by using a comparatively stiff thread in the weft, usually monofilament

of nylon. In the present disclosure the strip so characterized is rendered longitudinally stretchable by the use of an elastic

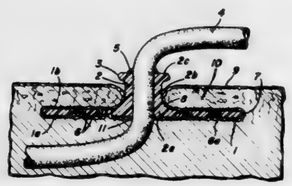


yarn, e.g. a crimped yarn, in the warp which extends in the longitudinal direction of the strip, and the warp and weft are locked by an elastic substance.

3,663,964
METHOD OF GARMENT MANUFACTURE
Michael J. Novak, Brookfield, Ill., assignor to Hart Schaffner & Marx, Chicago, Ill.
Continuation-in-part of application Ser. No. 739,845, June 25, 1968, and a continuation-in-part of 759,528, Sept. 12, 1968. This application Nov. 16, 1970, Ser. No. 90,011
Int. Cl. A41d
U.S. Cl. 2—243 R 1 Claim

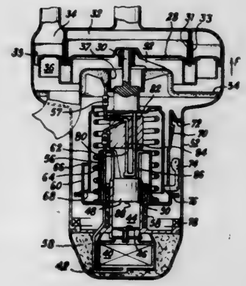
A method of garment manufacture in which fabric material is treated with a polymeric resin, pieces of the fabric are joined together while the resin is in its uncured state, and the resin is cured by steam pressing so that any puckering or wrinkling o the fabric is removed while the material is stabilized.

3,663,965
BACTERIA-RESISTANT PERCUTANEOUS CONDUIT DEVICE
Henry L. Lee, Jr., 745 Sierra Madre Blvd., San Marino, Calif.; Culp, Gordon W., 12802 Collins St., North Hollywood, Calif., and David E. Ocumpaugh, 1134-1/2 26 Street, Santa Monica, Calif.
Filed June 8, 1970, Ser. No. 44,166
Int. Cl. A61f *1/00*; A61m *25/00*
U.S. Cl. 3—1 5 Claims



A percutaneous device for facilitating passage of wires, tubes, and other electrical or fluid conductors through the skin of an animal, in a manner such that the wires, tubes, or other conductors are immobilized with respect to the skin and a fluid and bacterial seal is obtained. The device comprises a generally cylindrical, elongated percutaneous conduit element having a central passageway therethrough and a subcutaneous fenestrated flange disposed in generally surrounding relationship to the conduit element. The subcutaneous flange is provided with a series of holes suitably spaced and sized to facilitate growth of tissue therethrough. The conduit element and the flange are contoured to facilitate the proliferation of the external epidermis down along the outer surfaces of the conduit, out, over and under the surfaces of the subcutaneous flange, through the holes in the flange, and up the passageway in the conduit element. Thus, the epidermis provides, in effect, an exteriorization of the flange and a sphincter around the passageway to immobilize wires, tubes and other electrical or fluid conductors extending through the passageway.

3,663,966
IMPLANTABLE ARTIFICIAL HEART
Pierre Lavigne, Grenoble, France, assignor to Commissariat a L'Energie Atomique, Paris, France
Filed Dec. 21, 1970, Ser. No. 100,255
Claims priority, application France, Dec. 31, 1969, 6945780
Int. Cl. A61f *1/24*; A61m *1/03*; F04b *45/00*
U.S. Cl. 3—1 18 Claims

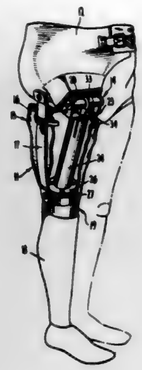


An implantable artificial heart (without extra-corporal circulation) includes a prime mover consisting of a Rankine or Hirn steam engine and a boiler heated by a radioisotopic source. A relaxation mechanism is interposed between the piston of the engine and a hydraulic transmission device and comprises a spring enclosed between two components which are respectively connected to the driving piston and to the driving member of the hydraulic device. Abutment means limit spreading apart of said components to a value at which the compression of the spring corresponds to maintenance of the blood pressure normally prevailing at the end of the systole phase. The component which is connected to the driving piston is temporarily locked at the end of the forward stroke of the piston and unlocked upon substantially complete expansion of the spring.

3,663,967
JOINT MOVEMENT LIMITING ARRANGEMENT FOR PROSTHETIC LEGS
Clarence W. Vermillion, 4457 S.W. Stella Street, Roseburg, Oreg.
Filed Sept. 6, 1968, Ser. No. 758,031
Int. Cl. A61f *1/08*, *1/04*
U.S. Cl. 3—15 3 Claims

A stop arrangement for a joint of an artificial leg is described which normally limits pivotal movement of a leg portion connected to the joint to a predetermined extent commensurate with stable walking on the leg. The arrangement includes a stop in the joint which prevents over travel of the leg portion connected to the joint and buckling of the

leg under the amputee. The stop mechanism is selectively releasable to permit full pivotal movement of the joint as

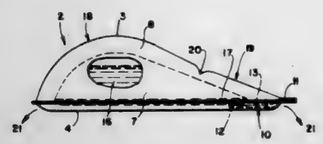


required for sitting, or the like and, if desired, may be locked in the released position.

3,663,968
ARTIFICIAL BREAST

Wilhelm Mohl, Grossburgwedel, and Heinz Kruger, Thonse, both of Germany, assignors to F. A. Otto Thamert Textil-u Kunststoff GmbH & Co., KG, Grossburgwedel, Germany

Filed Oct. 6, 1969, Ser. No. 863,877
Claims priority, application Germany, June 20, 1969, P 19 31 428.4
Int. Cl. A41c *3/10*
U.S. Cl. 3—36 3 Claims



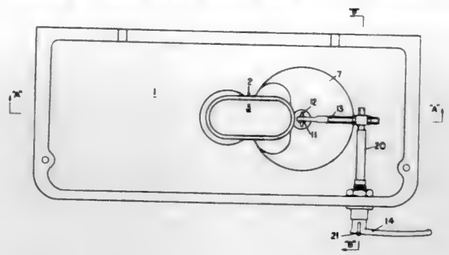
An artificial breast is disclosed which is made up of two approximately similar but differently sized plastic bags, one disposed inside the other. The inner bag is filled with a liquid substance adapted to impart to its wearer the feeling of the weight of a natural breast. The outer bag is inflated by air blown into the space between the inner and the outer bag through a flap valve which is part of the outer bag. Inflating serves for adjusting the size and shape of the artificial breast to the size and shape of the remaining natural breast.

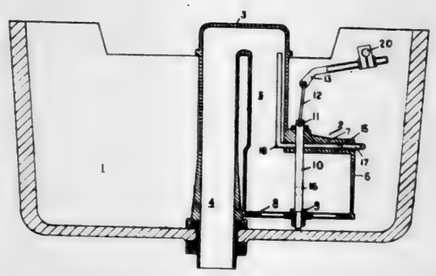
3,663,969
WATER CLOSET CISTERN

Thomas Edward Younger, 36 Cherry Crescent, North Kilbowie, Clydebank, Scotland

Filed Sept. 21, 1970, Ser. No. 73,861
Int. Cl. E03d *1/08*
U.S. Cl. 4—46 4 Claims

A siphon discharge cistern is provided in which the cistern can be discharged either partially or fully with the necessity of the operator waiting until the flushing action is completed. The partial discharge is provided by the introduction of air into the siphon unit at a predetermined level of discharge by selective actuation of an operating handle incorporating pawl mechanism said pawl mechanism when in operative position allowing a piston in the siphon unit to rise a predetermined



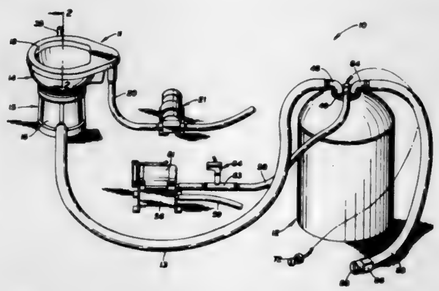


distance whereby a passage is provided for air to enter the siphon unit.

3,663,970
APPARATUS FOR PNEUMATIC TRANSPORTATION OF SANITARY WASTE FROM A TOILET TO A HOLDING TANK

Alfred J. Drouhard, Jr., Mansfield, and Joseph B. Stinson, Fremont, both of Ohio, assignors to Mansfield Sanitary, Inc., Perrysville, Ohio

Filed Mar. 30, 1970, Ser. No. 23,761
Int. Cl. A47k *11/02*
U.S. Cl. 4—111 14 Claims

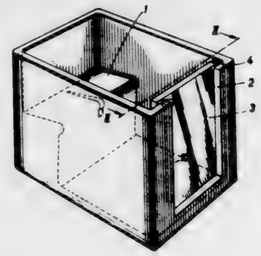


A system for pneumatically transporting sanitary waste from a toilet to a holding tank. The holding tank communicates with the toilet through a relatively small diameter transfer conduit. The toilet has a trapless bowl portion with a valve means selectively to open and close a drain in the bowl portion. Beneath the bowl portion is a macerating portion. A vacuum pump is provided to reduce the pressure within the holding tank, transfer conduit and the macerating portion of the toilet below atmospheric. The effluent is swept through the transfer conduit to the holding tank in a series of pulsations that mark the discontinuous entrance of the heterogeneous agglomeration into the orifice means. The tank itself includes a discriminating means to prevent the material therein from being pumped out by the vacuum pump.

3,663,971
BATHTUB

Andre Bonbote, Avenue de la Gare 4, Neuchatel, Neuchatel, Switzerland

Filed June 25, 1970, Ser. No. 49,741
Claims priority, application Switzerland, July 4, 1969, 10286/69
Int. Cl. A47k *3/00*
U.S. Cl. 4—173 10 Claims

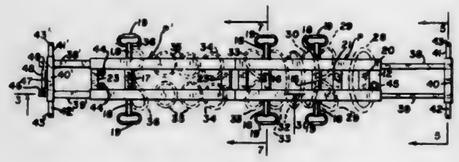


This invention involves a bathtub having a door in one wall so hinged as to swing inwardly. A seal is maintained between the door and the opening in the tub wall, and this seal is reinforced by the water in the tub. A drain stopper is provided which is carried by the door and which cannot be put into drain stopping position unless the door is closed.

3,663,972
LIGHTWEIGHT STRETCHER

William E. Denton, 275 Franklin St., Loveland, Colo.

Filed Apr. 9, 1970, Ser. No. 26,970
Int. Cl. A61g *1/00*
U.S. Cl. 5—82 11 Claims

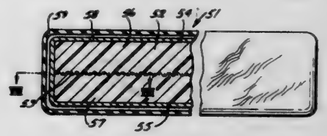


This lightweight stretcher has tubular side rails formed of a light metal, such as aluminum. A cross rail is provided with a laterally extensible slide at each side, which preferably carry handles, while interlocking means permit the cross rail to be moved longitudinally when the slides are in inward position, but to be locked on the side rails when the slides are pulled out laterally. In one form, the side rails are continuous and only one cross rail is provided, while in another form, the side rails are longitudinally separable, with retractable connectors extending from each portion of the side rail into the opposite portion. The side rails are connected to the ends by a head bar and a foot bar. A narrow pad, as of foam rubber, is supported by a metal strip over each side rail, while a pair of cross pieces extend between the pads, to support the head of the patient. The spacing between the cross pieces is such that, with the patient face down, the nose will extend between the cross pieces, so that the patient may breathe. The support for the pad also has cross bars which extend beneath the cross pieces of the pad and also at spaced longitudinal positions.

3,663,973
CUSHION STRUCTURE

Wayman R. Spence, Waco, Tex., assignor to Stryker Corporation, Kalamazoo, Mich.

Continuation-in-part of application Ser. No. 621,056, Mar. 6, 1967, now Patent No. 3,548,420, which is a continuation-in-part of application Ser. No. 515,525, Dec. 22, 1965, now Patent No. 3,308,491. This application Dec. 16, 1970, Ser. No. 98,816
Int. Cl. A47c *27/08*; A61f *5/04*
U.S. Cl. 5—348 10 Claims



A cushion structure constructed of a gel-like substance, such as an organosiloxane gel comprising the reaction product of an organosiloxane and a hydrogenosiloxane which is preferably a copolymer of a particular combination of siloxanes combined with an additive such as dimethylpolysiloxane. The gel is preferably covered, at least on one side, by sheet material which may be cloth, rubber, leather, foamed plastic or paper, depending upon the particular use. A flexible mesh-like member, such as dacron net, is preferably embedded within the cushion. The cushion structure is used to at least minimize pressure necrosis.

3,663,974
TREATMENT OF A CROSS-LINKING AGENT-IMPREGNATED CELLULOSIC FABRIC WITH A GASEOUS ACID CATALYST

Kumao Watanabe; Tooru Matumoto, and Tamio Nakagawa, all of Moriguchi, Japan, assignors to Toyo Spinning Co., Ltd., Kita-ku, Osaka, Japan

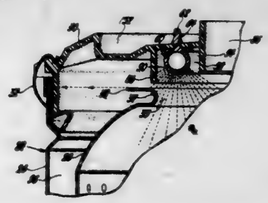
Continuation of application Ser. No. 238,294, Nov. 16, 1962, now abandoned. This application Mar. 6, 1968, Ser. No. 711,136
Claims priority, application Japan, Nov. 28, 1961, 36/43158
Int. Cl. D06m *1/16*, *13/14*
U.S. Cl. 8—116.4 8 Claims

A fabric comprising cellulose or a blend thereof which may or may not be premercerized or prealkylated is impregnated with an aldehyde or an aldehyde liberating compound and thereafter exposed to acidic vapors to catalyze the reaction. Softening agents, bluing agents, formaldehyde catchers, optical brighteners, etc., may be included in the impregnating bath.

3,663,975
METHOD OF SUPPLYING RINSE WATER TO A PAIR OF OPEN-TOP TUBS

Austin D. Fish, Tipp City; William G. Fisher, Vandalia, and Robert F. Brubaker, Eaton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed July 17, 1970, Ser. No. 55,813
Int. Cl. D06f *39/06*
U.S. Cl. 8—158 2 Claims



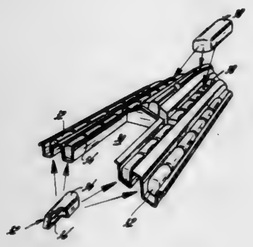
A domestic clothes washer has a pair of nested tubs one of which is imperforate to retain the washing fluid, the other of

which is perforated an rotatable to centrifuge the washing fluid from clothes being washed therein. A peripheral fill system includes a fill tube circumscribing the top of the nested pair of tubs. The fill tube has transverse rectangular slots to provide a circumferential series of fan-shaped sprays for improved wetting and immersing of the clothes at the start of a clothes washing cycle, for flushing suds from the nested pair of tubs prior to rinsing and for faster release of the tub-adhered clothes during rinse fill. The peripheral fill system includes a vacuum breaker directly connecting a domestic water supply to the fill tube for effecting pressurized sprays to the tubs without back siphoning of washing fluid.

3,663,976
GRILLAGE FOR A BOAT

Ned K. Momany, Dickson, Tenn., assignor to Winner Boats, Dickson, Tenn.

Filed Jan. 20, 1970, Ser. No. 4,284
Int. Cl. B63b *43/10*
U.S. Cl. 9—6 3 Claims

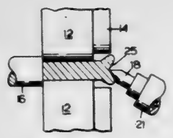


Reinforcing and flotation grillage for a boat of the fiberglass type. The grillage is configured complementary with the bilge interior, so as to define a plurality of longitudinally extended flotation compartments and includes air pressurized floats wedged into flotation compartments and laminate deck covering so that the boat is both strengthened and buoyed by grillage.

3,663,977
ROLLING ARTICLES

Jacob Marcovitch, Johannesburg, Republic of South Africa, assignor to Rotary Profile Anstalt, Vaduz, Liechtenstein

Filed July 7, 1969, Ser. No. 839,544
Claims priority, application South Africa, July 18, 1968, 68/4607
Int. Cl. B21h *3/04*
U.S. Cl. 10—26 11 Claims

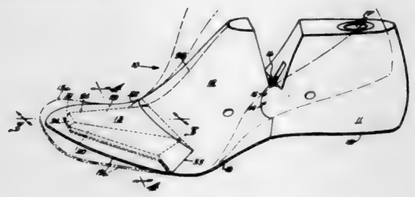


This invention relates to a method of forming headed articles such as bolts from round bar. The bar is rotated in the throat between two rollers and has a part extending beyond the roller surface. A stylus is pressed against the face of the projecting end to form an indentation in this face of the rolling bar and as the indentation increases in size a head is formed on the bar. The head can be subjected to further working if necessary.

3,663,978
MASTER SHOE LAST WITH CHANGEABLE TOE TIP PORTION

Daniel Meszaros, 113 North Market St., Martinsburg, Pa.

Filed Nov. 9, 1970, Ser. No. 88,051
Int. Cl. A43d *3/00*
U.S. Cl. 12—133 B 9 Claims

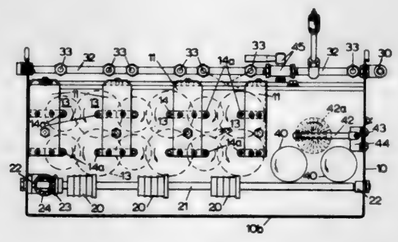


The master shoe last with removable and changeable tip portion for the manufacturing of a variety of shoes of given sizes is described. The master shoe last has three co-operative parts, the back part, the instep part, and the removable and changeable tip. The instep portion of the master shoe last is formed with a forwardly extending wedge-like projection, which is especially designed to precisely fit the removable and changeable toe of a large variety of styles. This projection is adapted to receive selectively a plurality of toe tip members of various shapes and styles to complete the master shoe last for a particular style of shoe in the size to be manufactured. The wedge is constructed to fit into a large variety of styles of toe portion and made with an interconnection that will insure substantial, rigid inter-attachment with the toe portion, thereby minimizing any possibility of shifting or misalignment of the master shoe last components during the manufacturing of the shoe. The zone of separation of the toe member from the instep part is designed in such a manner as to permit the use of composite, wood or metal materials for the making of the last. The zone of separation also is designed in such a manner that any of the usual range of heel heights can be manufactured using the same toe portion on the master shoe last, whether the last be for women's, men's or children's shoes.

3,663,979
DISH WASHING MACHINES

Walter Shaw, Chester, England, assignor to French, Thomas & Sons Limited, Lancashire, England

Filed Mar. 20, 1969, Ser. No. 808,811
Claims priority, application Great Britain, Mar. 29, 1968, 15,367/68
Int. Cl. A47l *15/00*
U.S. Cl. 15—74 6 Claims



This invention consists in a dish washing machine comprising an open fronted (in use) casing, at least one set of rotary brushes mounted close together within said casing on parallel or substantially parallel axes and arranged so as to define a washing zone or area, means for rotatably supporting an article to be washed within said washing zone, spraying means for spraying water into said washing zone, means for collecting and draining away used water, and power means for operatively rotating said brushes.

3,663,980
DOOR MAT

Roland H. Conklin, 1915 Springer Rd., Mountain View, Calif.

Filed Sept. 23, 1970, Ser. No. 74,560
Int. Cl. A47l *23/22*
U.S. Cl. 15—215 1 Claim

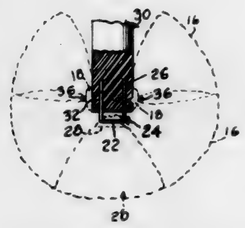


A door mat includes a base member of a relatively heavy gage plastic, and a soft fabric panel for wiping shoes and boots. The fabric panel is replaceable, and is releasably bonded to the base member by strips of hooked fabric. The hooked fabric may engage a complementary strip of matted fabric; or alternatively, the fabric panel may be of a tufted or matted fabric which will bond directly to the hooked fabric.

3,663,981
MOP HAVING COILED CLEANING ELEMENTS

Malquis S. Du Crest, and Stephen W. Du Crest, both of Box 95, Tensas Parish, St. Joseph, La.

Continuation-in-part of application Ser. No. 30,145, Apr. 20, 1970, now abandoned. This application Aug. 26, 1970, Ser. No. 66,995
Int. Cl. A47l *17/04*
U.S. Cl. 15—225 8 Claims



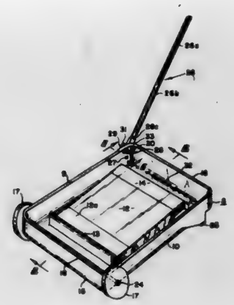
A plurality of cleaning elements, two or more, are formed of long strips of nylon net gathered lengthwise centrally of the lengths of the strips and then rolled and the gathered centers of the elements fixed, whereupon one of such elements is fixed with respect to a socket, handle or other element therebelow in such a manner as to protect a surface being cleaned from direct contact with the socket or holder. The remaining elements are secured around the lower portion of the socket or holder and blend with each other and with the lower element to appear as one fluffy cleaning unit of substantial size.

3,663,982
UTILITY CADDY FOR ROLLER PAINTING

David M. Hayden, 3646-H Falling Spring Rd., Columbia, S.C.

Filed Dec. 10, 1970, Ser. No. 96,832
Int. Cl. B05c *11/16*
U.S. Cl. 15—257 8 Claims

A utility caddy or portable carrier for paint roller pans and accessories comprising a relatively deep tray, a raised platform adapted to support and retain paint roller pans of varying sizes, large wheels supporting the forward end of the tray, a friction heel supporting the rear end of the tray, and an adjustable handle for pushing the caddy from place to place.

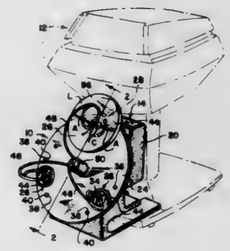


Drip troughs surrounding the raised platform catch paint spilled while filling the roller pan or wetting the roller and are also adapted to carry and store the paint roller and miscellaneous painting tools.

3,663,983
LENS BLOCKING APPARATUS

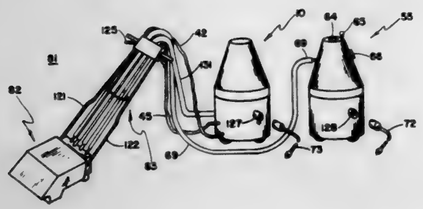
Hamilton B. Bole, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed June 5, 1970, Ser. No. 43,684
Int. Cl. B24b *19/00*
U.S. Cl. 51—277 5 Claims



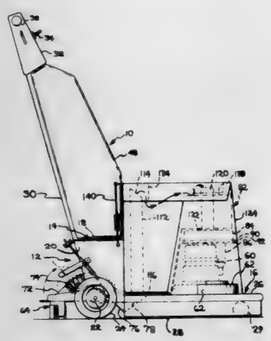
Apparatus for molding a lens block directly upon one side of a lens blank for use in conjunction with other apparatus for performing manufacturing operations upon the blank. The blocking apparatus comprises, in general, an axially rotatable disc upon one side of which a number of block-forming molds are disposed adjacent its periphery. The molds each have one open side against which a lens blank is clamped and a lateral opening through which a suitable blocking material may be introduced into the mold at a blocking station. The blocking station is reached by rotatably indexing the disc until alignment of a particular mold therewith is accomplished. Lens aligning indecia associated with each block-forming mold are illuminated at the block-forming station so as to facilitate centering and cylinder axis alignment of a particular lens blank relative to a block to be formed thereon at the molding station.

3,663,984
PORTABLE VACUUM CARPET AND UPHOLSTERY CLEANING APPARATUS
Peter C. Anthony, Waltham; James G. Colt, Belmont, and Solon Fournarakis, Waltham, all of Mass., assignors to Carpetech Corp., Everett, Mass.
Filed Apr. 3, 1970, Ser. No. 25,521
Int. Cl. A47l 7/00
U.S. Cl. 15—321 6 Claims



Apparatus for cleaning carpets, upholstery and the like comprising a separate reservoir system for supplying under pressure to a remote cleaning head a heated cleaning solution and a separate vacuum pick-up system for picking up via the cleaning head and storing cleaning solution applied to a carpet or the like. The reservoir system includes means to continuously heat the cleaning solution in the reservoir and a fluid pump and an air pump driven by an electric motor. The vacuum system includes a vacuum pump which is driven by a second electric motor on an electrical circuit separate and distinct from that of the motor in the reservoir system. Both motors are of a size and design that they may be separately started up and operated at full load on separate residential electrical circuits without blowing the fuses for these circuits. The vacuum system may also include means for directing the heated air exhausted from the vacuum pump onto the material being cleaned to facilitate drying.

3,663,985
FLOOR SCRUBBING MACHINE
Jack L. Burgoon, Toledo, Ohio, assignor to The Scott & Fetzer Company, Lakewood, Ohio
Filed July 15, 1970, Ser. No. 54,991
Int. Cl. A47l 11/202
U.S. Cl. 15—353 15 Claims



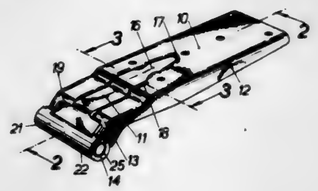
A compact floor scrubbing machine is provided. The floor scrubbing machine is relatively small, with a short length rendering the machine more easily manipulated or maneuverable than floor scrubbing machines heretofore known. A cleaning solution supply tank is mounted on a rear portion of the machine and motors are located forwardly thereof for driving the brushes of the machine and an exhaust blower. A removable recovery tank is located adjacent the two motors and partly thereabove, between the supply tank and the motors, so that maximum compactness is achieved for the machine. The recovery tank is easily separable from the rest of the machine and yet automatically seals with air passages for the exhaust blower and for a rear squeegee when placed on the machine.

3,663,986
CARPET EDGE MOLDING
Bernard M. Harby, West Vancouver, Canada, assignor to Bernard Harby Limited, Vancouver, British Columbia, Canada
Filed Sept. 26, 1969, Ser. No. 861,401
Claims priority, application Canada, Aug. 11, 1969, 059183
Int. Cl. A47g 27/04
U.S. Cl. 16—7 4 Claims



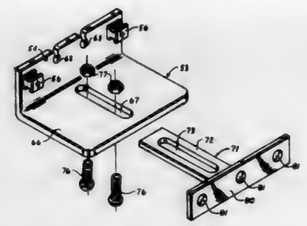
A carpet edge molding including a vertical flange forming a decorative skirting member, a horizontal flange part of which is adapted to be nailed underneath a carpet fastening strip and held thereby, and a flexible flap extending downwardly from the lower part of the skirting member and forming a recess with the horizontal flange for receiving the cut edge of a carpet.

3,663,987
HINGE FOR DOORS OF FREIGHT CONTAINERS, TRANSPORT VEHICLES AND THE LIKE
John C. Hawkins, North Walsall, England, assignor to Rubery, Owen & Co. Limited, Darlaston, Wednesbury, England
Filed July 24, 1970, Ser. No. 58,091
Claims priority, application Great Britain, July 26, 1969, 37,648/69
Int. Cl. B60b 33/00
U.S. Cl. 16—128 5 Claims



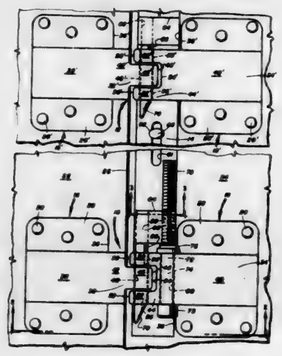
A hinge member of a hinge for the door of a freight container or transport vehicle is formed by a sheet metal pressing incorporating an eye for a hinge-pin and stiffened by a deep closed recess extending longitudinally from the eye.

3,663,988
DRAPERY MASTER CARRIER
Arthur M. Malles, 4909 Eagle Road, Carmichael, Calif.
Filed Oct. 23, 1970, Ser. No. 83,409
Int. Cl. A47h 13/00
U.S. Cl. 16—87.2 2 Claims



A drapery cord actuated slide member is translatably mounted on a drapery rod and carries a vertical plate having its outer surface covered with an adhesive or other bonding agent, such as "Velcro," to engage and support the leading upper corner portion of a drape. By attaching the leading upper corner portion of the drape to the plate, the corner of the drape is provided with firm backing over a substantial area and drooping is obviated. Optionally, the slide member can be made bilaterally symmetrical and connected to the drape supporting plate by an adapter which enables the device to operate either as a right-hand or a left-hand master carrier.

3,663,989
LATCH AND HINGE DEVICE
James S. Ellard, Jr., Rockville, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Oct. 5, 1970, Ser. No. 77,960
Int. Cl. E05d 15/50, 7/10; E05c 1/06
U.S. Cl. 16—147 1 Claim



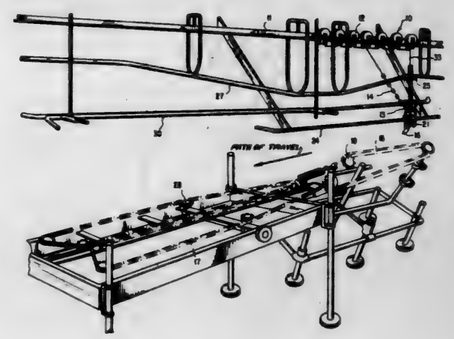
A latch device which may simultaneously act as a hinge having a master latch and at least one slave latch. Each latch includes a pair of cooperating members attached to separate wall members which, when engaged, present a series of bores in an axially aligned configuration. By turning a threaded member housed in the master latch an actuator bar may be moved thereby causing a series of tapered pins fixedly connected to the actuator bar to move into the axially aligned bores. The contour of the cooperating latch members enable the latches to act as hinges; i.e., to pivot about the tapered pins.

3,663,990
HINGE
Berwyn E. Shane, Oakland, Calif., assignor to Pacific Associated Lighting, Inc., San Francisco, Calif.
Filed Dec. 11, 1969, Ser. No. 884,203
Int. Cl. E05d 1/04
U.S. Cl. 16—178 1 Claim



A lighting fixture enclosing lamps in a wall-mounted container having a hinge that permits free removal of the cover in a limited range of open positions and permits the cover to be locked in a fully open position for access to the lamps contained therein, the hinge being of the type without a pintle and formed with a first member having a receiving flute with a constricted opening and a second member having a flared edge insertable into the receiving flute allowing limited relative swing movement between the two members.

3,663,991
METHOD AND APPARATUS FOR EVISCERATING CHICKENS OR OTHER FOWL
Grover S. Harben, Jr., Gainesville, Ga., assignor to Gainesville Machine Company, Inc., Gainesville, Ga.
Filed May 8, 1970, Ser. No. 35,672
Int. Cl. A22c 21/06
U.S. Cl. 17—11 12 Claims



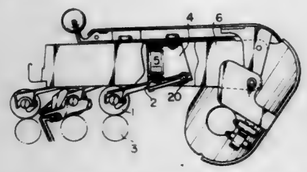
An evisceration system for removing the viscera from chickens or other fowl being conveyed in a head lowermost suspended state along a predetermined path. A special shackle for suspending the bird by its hocks is provided with a sterilized spoon-shaped viscera removal tool cooperative with structural guides positioned along the predetermined path of travel for being automatically extended into a precut hole in the abdomen of the bird and withdrawn therefrom. Devices are provided in the path of travel for maintaining a proper orientation of the bird to permit removal of all of the viscera by the spoon-like member.

3,663,992

LOADING MECHANISM APPLIED TO THE DRAFTING MECHANISM OF A SPINNING MACHINE

Nobugi Ooki, Fujisawa-shi, and Kenzi Okubo, Tokyo, both of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1970, Ser. No. 2,462
Claims priority, application Japan, June 30, 1969, 44/61020; 44/61021
Int. Cl. D01h 5/50
U.S. Cl. 19—281 **8 Claims**



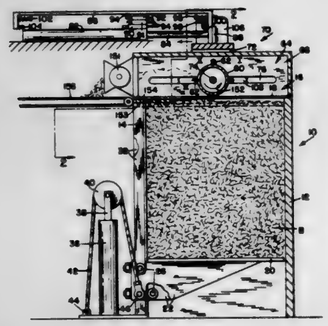
An improved loading mechanism applied to a third, fourth or back top roller of the pendulum arm type drafting mechanism. The loading mechanism of the invention is provided with means for compensating the unparallelism of the top roller to the cooperating bottom roller. This compensation means utilizes an abutment for receiving a bottom end of a helical spring which imparts a pressure to the top roller for urging the cooperating bottom roller and the abutment is turnably mounted on a guide arm of the pendulum arm mechanism in an eccentric condition with respect to the longitudinal axis of said helical spring.

3,663,993

APPARATUS FOR PLUCKING A DENSE MASS OF FIBERS

James H. Roberson, Greenville, S.C., assignor to Crompton & Knowles Corporation, Worcester, Mass.

Continuation of application Ser. No. 865,845, Oct. 3, 1969, now abandoned. This application Feb. 22, 1971, Ser. No. 117,785
Int. Cl. D01g 7/06
U.S. Cl. 19—80 R **13 Claims**



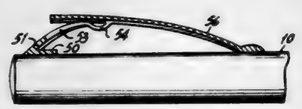
A fiber bale plucker in which the bale is maintained in plucking engagement with a plucking cylinder by a hydraulically operated lifting platform while the plucking cylinder, containing plucking pins traverses along the contacting surface of the bale in a plucking stroke. The plucking cylinder is operated from an air cylinder which can reverse the direction of the plucking cylinder for a return stroke. There are valves which are operated at the end of each stroke to change the operating direction of the air cylinder and to operate a hydraulic cylinder to move the bale away from the plucking cylinder at the end of a plucking stroke and to move the bale toward the plucking cylinder at the end of the return stroke of the plucking cylinder. Aerodynamic flow means are used to doff fibers from the plucking pins and to convey the fibers to their destination.

3,663,994

CLIP

Herbert Gordon Dyke, 206 East 35th Street, Kent County, Del.

Continuation-in-part of application Ser. No. 864,944, Dec. 15, 1967. This application Oct. 6, 1969, Ser. No. 864,110. The portion of the term of the patent subsequent to Nov. 23, 1988, has been disclaimed.
Int. Cl. B43k 25/00
U.S. Cl. 24—11 P **15 Claims**



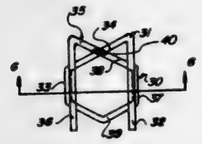
Clip, for pen or any of various articles to be detachably attached to the clothing or the like, which has a stiff support spring-hingedly carrying a gripping arm, with an opening through the support near the head end thereof through which projects a member which, when squeezed down toward the pen body, forces the gripping arm to move out from the pen body and thereby open up the clip.

3,663,995

SELF-LOCKING STRAP BUCKLE

Gert Somann, Huron Park, Ontario, Canada, assignor to Ferplas Industries Limited, Huron Park, Ontario, Canada

Filed Apr. 2, 1970, Ser. No. 25,083
Claims priority, application Canada, Apr. 2, 1969, 047577
Int. Cl. A44b 11/00
U.S. Cl. 24—74 **4 Claims**



It has been found that buckles made of metal for us with plastic or cloth web strapping material fail because the arms of the buckles bend under the stress of the web.

A buckle is disclosed herein which does not bend under normal strapping stresses. This is achieved by welding one of the four parallel arms rigidly to the body of the buckle to constrain the buckle from bending.

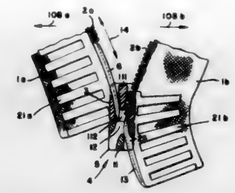
3,663,996

TAPE-SUPPORTED SEPARABLE SLIDE FASTENER

Helmut Heimberger, Grenzach, and Alfons Frohlich, Essen, both of Germany, assignors to Optic-Holding AG

Filed Jan. 27, 1970, Ser. No. 6,120
Claims priority, application Germany, June 6, 1969, P 19 28 691.0
Int. Cl. A44b 19/38, 19/12
U.S. Cl. 24—205.11 **12 Claims**

In a separable tape-supported slide fastener comprising a pin-and-socket connection at one end, accidental separation of the two halves by a transverse pull exerted below the socket connection is prevented by a slidable mounting of the pin socket which is provided with internal camming formations shifting the socket in response to such pull to interlock the end portions of the intermeshing coupling elements.

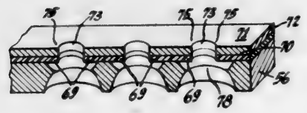


3,663,997

METHOD FOR MAKING A KINESCOPE COMPRISING PRODUCTION AND TREATMENT OF A TEMPORARY MASK

Philip Kuznetzoff, Somerville, N.J., assignor to RCA Corporation

Filed Sept. 30, 1970, Ser. No. 76,779
Int. Cl. H01j 9/00
U.S. Cl. 29—25.14 **10 Claims**



Method for producing a color kinescope by steps comprising the provision of a perforated etch-resistant layer on a substrate and providing apertures in the substrate, which apertures are in substantial register with and individually larger than the openings of the perforated layer; providing a heat-resistant layer on the exposed surface of the perforated etch-resistant layer; substantially eliminating the bond between areas of the etch-resistant layer that extend partially across the apertures and the parts of the heat-resistant layer located on these areas; heating the workpiece thus far produced and comprising at least the apertured substrate and heat-resistant layer, and possibly the etch-resistant layer or portions thereof to an elevated temperature (e.g., the annealing temperature of the substrate) to stress relieve the substrate and then shaping the substrate-heat-resistant layer assembly to produce a temporary mask; producing an image screen with the temporary mask; removing the heat-resistant layer and any remains of the etch-resistant layer from the apertured substrate to produce a color-selection mask; and incorporating the color-selection mask and the image screen in a kinescope.

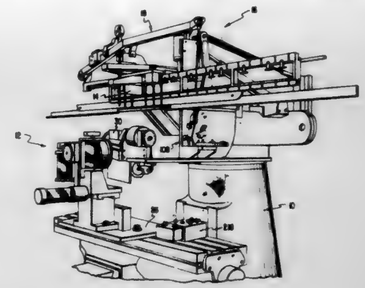
3,663,998

APPARATUS FOR CONDUCTING MACHINING OPERATIONS

John A. Cupler, II, 10 Cupler Dr., LaVale, Cumberland, Md.

Continuation-in-part of application Ser. No. 715,711, Mar. 25, 1968, now Patent No. 3,478,419. This application Oct. 22, 1969, Ser. No. 868,517
Int. Cl. B23q 3/157
U.S. Cl. 29—26 A **14 Claims**

The disclosure is directed to a vertically oriented automatic tool changer employing non-captive tools for performing machining and/or assembly operations at a plurality of work locations on a single workpiece which workpiece is supported by a work positioner capable of infinite adjustment to present any desired number an spacing of work locations, on the workpiece, to the working axis of the non-captive tools.

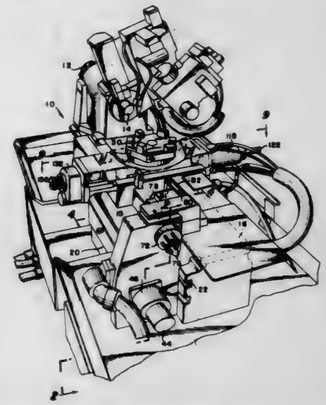


3,663,999

AUTOMATIC MACHINE TOOL CONTROL MECHANISM

Francis D. Catlin, Horseheads, N.Y., assignor to Hardinge Brothers, Inc., Elmira, N.Y.

Filed Jan. 23, 1970, Ser. No. 5,292
Int. Cl. B23b 21/00
U.S. Cl. 29—44 **21 Claims**



An automatic machine tool including a bed, a head stock having a spindle and mounted at one end of the bed, a carriage mounted for longitudinal travel on the bed, and carrying a cross-slide, a turret mounted on the cross-slide for travel transversely of the bed, a programming mechanism mounted on the positioned laterally of the bed, and means operatively connecting the carriage, the cross-slide, the turret, and the programming mechanism.

3,664,000

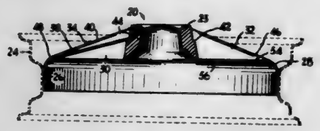
METHOD OF MAKING WHEELS FOR AUTOMOTIVE VEHICLES

Daniel Le Jeune, Clermont-Ferrand, France, assignor to Compagnie Generale Des Etablissements Michelin raison sociale Michelin & Cie, Clermont-Ferrand (Puy-de-Dome), France

Original application Dec. 11, 1967, Ser. No. 689,668, now abandoned. Divided and this application Nov. 19, 1969, Ser. No. 871,324
Int. Cl. B21h 1/02; B21k 1/32
U.S. Cl. 29—159.01 **1 Claim**

A wheel disk has a circumferential profile formed with crenellations. The depth of the crenellations is maximum ad-

jacent to the hub and ranges from the maximum down to zero adjacent to the rim. In making a wheel disk, a generally cylindrical tube is formed, the tube is widened at one end to form a border free of undulations, and the other end of the tube is folded down to impart to the central portion of the



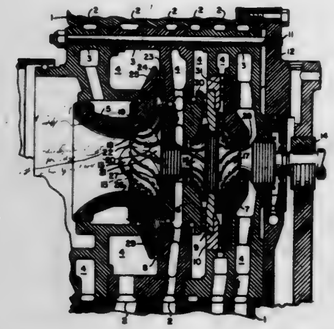
disk the desired final configuration. The tube is inserted for the folding operation between a ring of punches and a ring of counterpunches. The punches are pivoted inwardly toward the axis of the ring of punches by a cam plate, and the pivoting of the counterpunches is limited by a second plate.

3,664,001

METHOD OF CHANGING CAPACITY OF FLUID REACTION DEVICE

Karol Pilarczyk, Loudonville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed June 8, 1970, Ser. No. 44,263
Int. Cl. B23p *15/00*
U.S. Cl. 29—156.4 R **6 Claims**



The capacity of a centrifugal compressor having an overhung rotor with a plurality of separate stage impellers is changed by machining the free curved edge of each impeller blade by an equal amount for each impeller along the entire curved edge length from the radially extending axial flow edge to the axially extending radial flow edge. Additional separate shrouds are provided that differ in diameter from the shrouds supplied with the impellers before machining by an amount equal to the diametric change occurring during machining. Further, separate annular diffusers are provided, with each diffuser having integral blades with free terminal edges lying in a common plane perpendicular to the axis of rotation and engaging the adjacent shroud, so that these radially extending diffuser blade edges may be machined by an amount equal to the axial component of machining on the corresponding impeller blades.

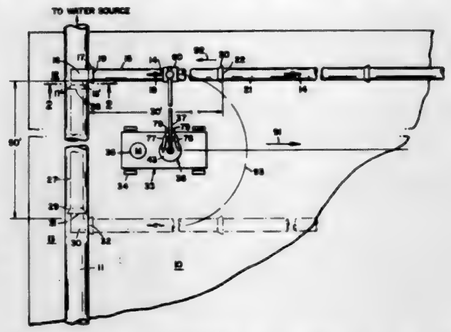
3,664,002

IRRIGATION PIPE TRANSFER APPARATUS

Reuben H. Mortne, 250 Baldwin Ave., Apt. 812, San Mateo, Calif.

Filed June 30, 1971, Ser. No. 158,205
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 D **11 Claims**

Apparatus is disclosed comprising a mobile platform having a universally mounted extensible boom thereon for selectively grasping a pipe section branching off of a main irrigation pipeline, moving it out of locking engagement with a pipe connection thereon, then transferring the pipe section to a remote location along the main pipeline. The apparatus in-



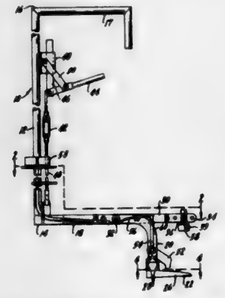
cludes means for maintaining the orientation of the transferred pipe section so that the same end which is unlocked from the pipe connection is presented at the remote location for connection and the pipe section is in proper position for operation.

3,664,003

APPARATUS FOR INSERTING FILTER ELEMENTS INTO A TANK

Stanley H. Wapner, New York, N.Y., and Alfonse J. Sorlente, Gillette, N.J., assignors to Ecodyne Corporation, Chicago, Ill.

Filed Nov. 12, 1970, Ser. No. 88,602
Int. Cl. B23p *19/00, 19/04*
U.S. Cl. 29—200 R **8 Claims**



An improved apparatus for inserting filter elements into a tank designed for use with a particular type of filter element. The apparatus has an elongated rod portion having first and second ends and element support means outwardly disposed from the first end. Element spring compressing means are positioned above the support means and mounted for movement in a direction generally parallel to the rod portion. Control means are provided adjacent to the second end of the rod portion for controlling the movement of the spring compressing means.

3,664,004

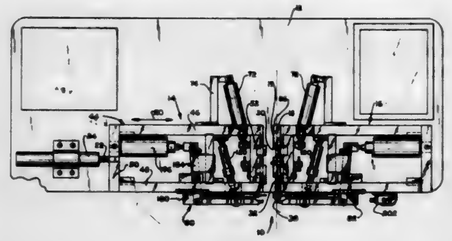
BOBBIN LUGGER

William C. Thoma, East Berlin, Pa., assignor to Berg Electronics, Inc., New Cumberland, Pa.

Filed Jan. 18, 1971, Ser. No. 107,268
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 D **12 Claims**

A bobbin lugger having two like lugging assemblies with a feed bar sandwiched between the assemblies. Lugs are fed

along the joints between the bar and each of the assemblies toward one end of the bar where the lead lugs are inserted into a bobbin held on the end of the bar and are bent away



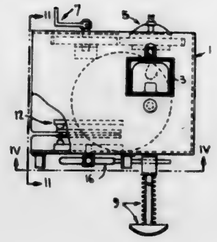
from the bobbin to secure them to the bobbin. One lugging assembly is moveable away from the other lugging assembly so that either joint may be opened depending upon which assembly the feed bar is secured to.

3,664,005

DEVICE FOR FASTENING A HOOK TO A FISHING LINE

Ciatti Enzo, Via Starnina 48, Florence, Italy

Filed Mar. 13, 1970, Ser. No. 19,448
Int. Cl. B23q *7/10*
U.S. Cl. 29—211 D **5 Claims**



A turning device having an external appendix for seizing a fishing line is coaxially mounted to surround a hook stem which is supported on a feed supporting member inside a tube. Retractable pliers are mounted adjacent the turning device. The hook stem is placed in a binding position, the line is retained by gripping members, the pliers are extended in their support in an open position to receive the fishing line, and means are provided for rotating the turning device to wind the fishing line around the hook stem whereby the retraction of the pliers to close its jaw members firmly attaches the line to the hook stem. A cutting mechanism then severs the line.

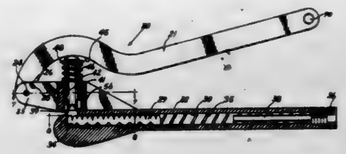
3,664,006

TOOL FOR ATTACHING SINKERS TO A FISHING LINE

Thomas Valle, Carbondale, Colo., assignor to Ralph R. Crandell and Albert G. W. Hack, Denver, Colo., part interest to each

Filed June 29, 1970, Ser. No. 50,681
Int. Cl. B23q *7/10*
U.S. Cl. 29—212 D **2 Claims**

The sinker attaching tool disclosed includes a pair of handles pivoted together with a clamping head on one end of one of the handles. The other handle includes a magazine bore for receiving a strip of sinker weight stock. The stock includes a plurality of integrally joined split weight segments. One of the segments is placed beneath the clamping head and a fishing line placed in the split. Operation of the tool



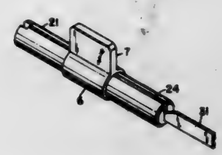
clamps the split weight segment onto a fishing line and severs the segment from the bar stock.

3,664,007

CYLINDER LOADING TOOL

Ernest L. Schlage, Burlingame, Calif., assignor to Schlage Lock Company

Filed Oct. 5, 1970, Ser. No. 78,026
Int. Cl. B25b *27/14*
U.S. Cl. 29—271 **7 Claims**



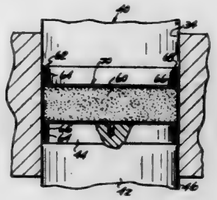
A cylinder loading tool for loading pins and springs into a pin tumbler cylinder for a pin tumbler lock set includes a rod, longer than the pin tumbler cylinder, having a slot extending therein from end to end with axially aligned, radial pin bores in the rod intersecting the slot together with a cylindrical sleeve adapted to fit over the rod and together with a slide of generally rectangular configuration adapted to fit readily within the slot and having an inclined cam surface along one side adapted to abut a pin and spring combination in one of the radial bores in the rod and to press such pin and spring combination outwardly against the sleeve or into the cylinder.

3,664,008

METHOD OF PRODUCING ELONGATED HIGHLY DENSIFIED POWDERED METAL ARTICLES

John Haller, Northville, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed June 12, 1969, Ser. No. 832,576
Int. Cl. B22f
U.S. Cl. 29—420 **10 Claims**



An elongated air-tight can with rounded top, bottom and ends and a filling stem is prepared from heat-resistant material, filled with the powdered metal to be compacted, exhausted to a high vacuum, and the stem sealed while maintaining the vacuum. The powder-filled evacuated can is then heated to a high temperature of approximately 2,100° F. for

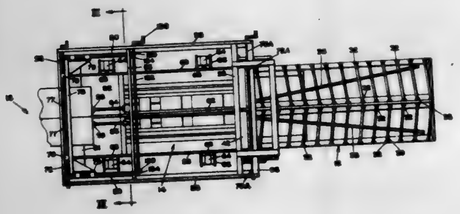
about 1 hour, then compressed in the die cavity of a press having a recess in one of its plungers for the stem, and with at least one of its plungers having an end of reduced diameter to provide a clearance space into which the peripheral portion of the can flows as compression proceeds. When the density reaches 100 percent, the peripheral portion of the can and the surplus metal powder therein continue to move axially into the clearance space around the plunger or plungers, producing an axially projecting lip extending around the periphery of the can and containing metal powder at a somewhat lower density than in the remainder of the can. The walls of the can are then removed by machining or pickling, together with the less dense peripheral portion of the now substantially solidified elongated metal billet thus produced.

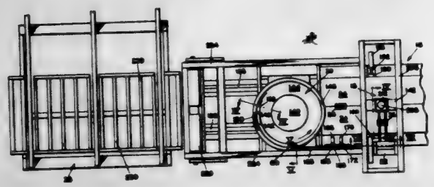
3,664,009

MANUFACTURE OF BIFOLD DOORS

William R. Fritze, Hillsdale, and Wallace W. Scarlett, Kentwood, both of Mich., assignors to Plymouth Flush Door, Inc., Hillsdale, Mich.

Filed July 1, 1970, Ser. No. 51,512
Int. Cl. B23p *19/00*; B23q *7/10*; B23p *11/00*
U.S. Cl. 29—429 28 Claims





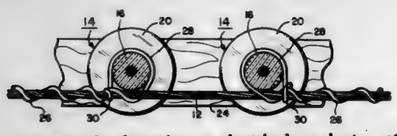
Hinging of door halves by pressing hinges having fastening projections depending therefrom onto a pair of door halves. Hinge blanks are oriented and stamped to form the depending fastening projections and, thus stamped and oriented, are fed to the pressing zone for application to the doors. The door halves are fed in side-by-side relationship through the hinge pressing zone.

3,664,010

LINE TIE

John R. D'Agati, Lakewood, Ohio, assignor to Preformed Line Products Company, Cleveland, Ohio

Filed Mar. 19, 1970, Ser. No. 21,068
Int. Cl. B23p *19/00*; H01g *17/16*; F16g *11/00*
U.S. Cl. 29—526 3 Claims



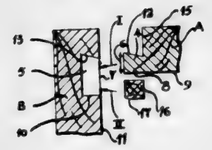
An appliance for fastening an electrical conductor, etc. to a mounting device is disclosed. The appliance has an elongated leg portion helically preformed to a predetermined internal diameter and pitch length for application to the linear body in gripping relation therewith. A return bent portion of the appliance has one end integral with the leg portion, an intermediate segment for encircling a reduced diameter neck portion of the mounting device and an opposite end configured as a hook for engaging the conductor thereby to secure the conductor against the reduced diameter neck portion of the mounting device. Other features are disclosed.

3,664,011

METHOD OF MAKING A JOINERY JOINT

Roger Labastrou, Ile Bizard, Quebec, Canada, assignor to Jacques Guillon Designers Inc., Montreal, Canada

Filed Aug. 8, 1969, Ser. No. 849,305
Int. Cl. B23p *19/00*
U.S. Cl. 29—526 7 Claims



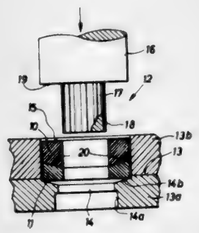
This invention relates to a method and means for making a continuous joint between panel members, the new joint being a modified form of a dovetail joint an preserving the rigidity of assembly which is characteristic thereto, while being as easy to assemble and disassemble as a tongue and groove joint.

3,664,012

METHOD OF MAKING A COMMUTATOR

Heinz Wilke, and Claus Bertram, both of Hildesheim, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed June 26, 1970, Ser. No. 50,095
Claims priority, application Germany, July 5, 1969, P 19 34 213.3
Int. Cl. H01r *43/00*
U.S. Cl. 29—597 7 Claims



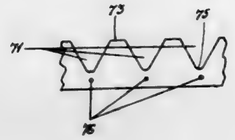
A pair of annular blanks, one consisting of copper and one consisting of another metal, are confined in a die. A stamp is introduced into the die and the material of the blanks is cold-extruded through an annular gap defined between the stamp and the die, to form a commutator ring an inner annular zone of which consists of the other metal, whereas an outer annular zone consists at least at one axial endface of copper. The other metal may be aluminum and will be cold-welded or fused with the copper at the interface of the two metals.

3,664,013

METHOD OF MANUFACTURING ELECTRIC HEATING PANELS

Andrew Edward MacGuire, 143 Goulding Ave., Willowdale, Ontario, Canada

Filed Mar. 6, 1970, Ser. No. 17,168
Int. Cl. H06b *3/00*
U.S. Cl. 29—611 2 Claims



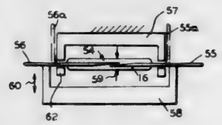
An electric heating panel is composed of two cakes compressed into a homogeneous unitary body of a thermosetting polymerizable resin having an inert filler with an intermediate asbestos sheet having an electric heating circuit lying wholly against one surface of said sheet, the method of manufacturing said panel consisting of impaling the sheet upon a set of spaced upstanding prongs around which the wire of said circuit is next bent, temporarily securing said wire in the pattern so formed, disimpaling said sheet and circuit, and uniting said cakes with said sheet and circuit therebetween under heat and pressure, the said cakes having a moisture content of between 8 and 12 percent by weight after drying, the panel being aluminum or gold painted on one surface if it is desired only to reflect heat from the other surface.

3,664,014

UNIVERSAL MODULAR PRINTED CIRCUIT MAGNETIC REED KEYBOARD SWITCH ASSEMBLY

Peter A. Peroni, Pottstown, and John Paul Jones, Jr., Wayne, both of Pa., assignors to Navigation Computer Corporation, Norristown, Pa.

Original application Oct. 26, 1967, Ser. No. 678,336, now Patent No. 3,462,719, dated Aug. 19, 1969. Divided and this application Aug. 14, 1969, Ser. No. 850,100
Int. Cl. H01h *11/00*
U.S. Cl. 29—622 2 Claims



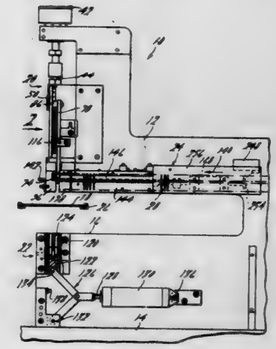
At least one glass tube enclosed magnetic reed switch is mounted on a planar printed circuit board which is removably inserted into a hollow housing member in grooves on either side of an axially movable planar key member with a magnet thereon actuating the switch contacts during a limited range of movement. This provides a universal mounting arrangement wherein one to four switches and other circuit elements may be located upon the printed circuit cards for operation by a single manually depressed key at one or more positions of its stroke. Each switch is standardized for predetermined operation timing during the magnet movement by selectively bending the leads and inserting into registration apertures in the printed circuit boards. The switch is thus precisely located within the magnetic field by simplified structure affording strain relief at closed ends of the glass tubes. The leads are bent normal to the reed switch axis for this purpose at calibrated positions to thereby precisely locate the magnetic switch gaps by means of punched hole pairs easily located to close tolerances in the printed circuit board.

3,664,015

METHOD FOR MOUNTING WIRE WRAP PINS ON CIRCUIT BOARDS

Johannes C. W. Bakermans, Etters, Pa., assignor to Berg Electronics, Inc., New Cumberland, Pa.

Original application Aug. 25, 1969, Ser. No. 862,591, now Patent No. 3,605,237, dated Sept. 20, 1971. Divided and this application Oct. 28, 1970, Ser. No. 84,925
Int. Cl. H05k *13/04*, *3/00*
U.S. Cl. 29—625 3 Claims



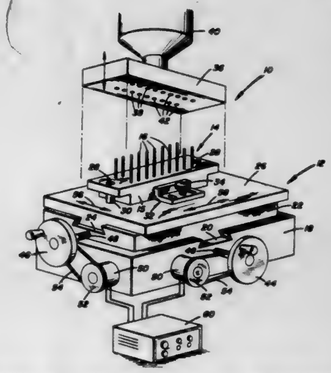
Apparatus for mounting a pin on a circuit board in which the pin is fed to a position in approximate alignment with a punch, following which the pin is aligned accurately with the punch by a pair of clamps and the punch is moved toward the pin to pick up the pin. The clamps open and further movement of the punch secures the pin to the circuit board.

3,664,016

APPARATUS AND METHOD FOR ALIGNING A PLURALITY OF CONNECTOR MOUNTED PINS BY DEFORMATION AND REFORMATION THEREOF

John M. Seve, Trumbull, and Howard E. Pierce, Jr., Watertown, both of Conn., assignors to Litton Systems, Inc., Beverly Hills, Calif.

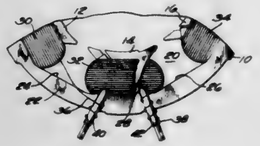
Filed Mar. 24, 1970, Ser. No. 22,344
Int. Cl. B23q *17/00*; H01r *43/00*
U.S. Cl. 29—407 10 Claims



An alignment apparatus and method for aligning a plurality of connector mounted pins is shown having a work table for mounting a connector thereon which is capable of linear displacements in four directions along X and Y axes. A fixture engages the ends of the connector mounted pins for retaining these pins in the desired aligned position while the connector is displaced with respect to that position. The mounting

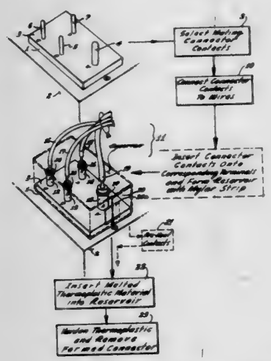
frame is displaced in one direction along the X-axis beyond the elastic limit of the pins for permanently deforming them and then displaced in a second direction beyond the elastic limit for again deforming the pins. The mounting frame is finally displaced in the first direction passed the center position a distance sufficient to remove the deformation caused by the last displacement and then returned to the center position for aligning the pins with respect to the center position along the X-axis. These same steps are repeated along the Y-axis for aligning the plurality of pins with the desired center position along that axis, thus aligning the pins with the center position located at the intersection of the X and Y axes.

3,664,017
METHOD OF FASTENING COIL LEADS
Thomas W. Stone, Owosso, Mich., assignor to The Singer Company, New York, N.Y.
Original application Apr. 22, 1968, Ser. No. 723,152, now Patent No. 3,519,860. Divided and this application Feb. 27, 1970, Ser. No. 18,396
Int. Cl. H02k *15/00*
U.S. Cl. 29—596 6 Claims



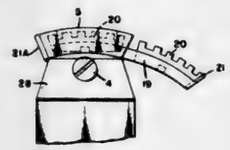
Coil leads are positioned in the corners of the coil slots formed at the juncture of the inner coil slot walls and the poles. The coils are wound in place on the poles over the lead wires securely anchoring the lead wires in the corners. The coil ends are connected to the lead wires.

3,664,018
METHOD OF MANUFACTURING A MATING ELECTRICAL CONNECTOR
John Peter McGregor, 936 Calle Miramar, Redondo Beach, Calif.
Filed May 6, 1970, Ser. No. 34,978
Int. Cl. H02g *15/00*
U.S. Cl. 29—629 19 Claims



The disclosure describes a method of manufacturing in situs a mating electrical connector for a pre-existing installed connector. This is accomplished by installing wired mating connector contacts into engagement with corresponding connector contacts of the pre-existing connector. A strip of material, suitably Mylar, is then wrapped about the face of the pre-existing connector to form a reservoir which contains the installed connector contacts. The reservoir is subsequently filled with heated softened flowable thermoplastic material, suitably low density polyethylene, and the thermoplastic material is then allowed to harden which leaves remaining in the reservoir a hardened body of thermoplastic material in which the installed mating connector contacts are firmly anchored and the body is easily separated from the face of the pre-existing connector. The Mylar strip is then removed and the formed connector may be left in location or removed and reinserted as otherwise desired in the same manner as any other electrical connector.

3,664,019
MECHANICALLY HELD INNER KNIVES OF SHEARHEADS OUTSIDE SAID HEADS ON ELECTRICAL AND MECHANICAL SHAVERS
Paul Kobler, Lynbrook, N.Y.
Filed Nov. 13, 1968, Ser. No. 785,842
Int. Cl. B26b *19/38*
U.S. Cl. 30—41 5 Claims



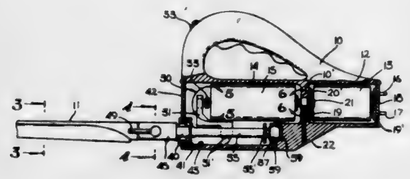
This disclosure relates to a razor having means to aid in cleaning the cutting blades or knives without completely removing them from the razor. The inner cutting blades are slidably mounted within a shearhead in such a manner that they can be moved to a position substantially without said shearhead but attached thereto to expose such blades for cleaning purposes.

3,664,020
COMBINATION SPOON AND TOOTHPICK
Arthur W. Hammond, 5144 Soldiers Home-Miamisburg Rd., Miamisburg, Ohio, and Marie E. Miller, 1804 Rainbow Dr., Kettering, Ohio
Filed Mar. 18, 1971, Ser. No. 125,568
Int. Cl. B25f *1/00*
U.S. Cl. 30—142 4 Claims



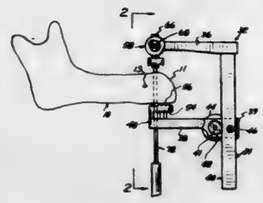
A toothpick and spoon combination includes a handle portion with a separatable toothpick member for use after eating. The combination utilizes support members from which the toothpick may be broken away.

3,664,021
KNIFE
Harold T. Sawyer, Pacific Palisades, Calif., assignor to Vernon D. Beeler, Los Angeles, Calif., a part interest
Filed Oct. 30, 1969, Ser. No. 872,690
Int. Cl. B26b *7/00*
U.S. Cl. 30—272 9 Claims



A power actuated knife with a single blade attached to a free end of a support, the other end of the support being attached to the handle. One end of the motor casing is attached to the handle through a vibration absorbing bearing and the motor at the other end has a rotatable oscillating connection to a bracket which engages the support at a location removed from its attachment to the handle whereby an oscillating sinusoidal motion is applied to the blade through the support to set the entire blade in motion.

3,664,022
DRILL GUIDE FOR MANDIBULAR STAPLE AND STAPLE CONSTRUCTION
Irwin A. Small, 751 Chestnut, Birmingham, Mich.
Filed Jan. 28, 1971, Ser. No. 110,503
Int. Cl. A61c *13/00*
U.S. Cl. 32—2 13 Claims



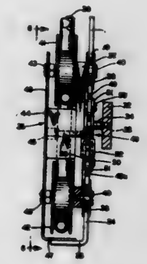
A drill guide for mandibular staples is disclosed which is adapted to accurately align a drill for drilling fastener holes in the mandibular lower jaw portion at precisely located positions for the attachment of fasteners therethrough by means of a staple to retain a dental appliance in secure position on the mandibular jaw portion; the method includes the construction of a staple which has a lower cross plate which is curvilinearly shaped to conform to the curvilinear shape of the front section of the jaw bone and to which are attached a plurality of fastener members adapted to protrude into and selectively through the jaw bone in accordance with the holes previously drilled through the jaw bone by means of the drill guide; the staple and the fastening portions of the staple are coated with a bio-ceramic such as aluminum oxide, titanium oxide, magnesium oxide, or the like, applied to the staple in open pore form to permit the bone tissue of the mandibular jaw to grow into the porous bio-ceramic coating to provide an additional interlock of the staple with the mandibular jaw tissues and to prevent bone deterioration due to the drilling operation and insertion of the metal staple.

3,664,023
ORTHODONTIC SEPARATING SPRING
Horace E. Pool, 406 West 26th St., North Little Rock, Ark.
Filed Nov. 6, 1970, Ser. No. 87,563
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 E 11 Claims



A spring wire device having a special planar configuration is inserted between two teeth to be separated in preparation for orthodontic banding. An activating portion of the inserted device projecting from the teeth is crimped by a bending plier to effect relative lateral deformation of occlusal and gingival arm portions exerting spreading forces on the teeth.

3,664,024
RETRIEVER FOR DENTAL SALIVA EJECTOR
Dean H. Buchtel, and John A. Maurer, both of Canton, Ohio, assignors to The Weber Dental Manufacturing Company, Canton, Ohio
Filed Dec. 30, 1970, Ser. No. 102,698
Int. Cl. A61c *19/02*
U.S. Cl. 32—22 25 Claims

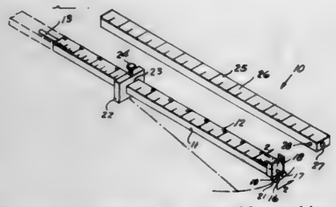


A retriever construction for positioning, retrieving and storing a flexible hose of a dental saliva ejector preferably within a dental console. A traveling car is slidably mounted on a vertical post having a fixed pulley at its upper end. The car has a pair of spaced pulleys and a locking mechanism. The ejector hose is looped around the fixed and car pulleys so that the car moves upward on the post as the hose is extended outward for use. The locking mechanism is selectively engaged in one of a plurality of positioning notches formed on the post and holds the hose in various extended positions of the hose. The car automatically returns the hose to retracted hose storage position looped around the pulleys when the locking mechanism is released upon full extension of the hose.

3,664,025
SCRIBER
Floyd D. Barto, 508 Maple St., Hurley, Wis.
Filed June 26, 1970, Ser. No. 50,072
Int. Cl. B43l *9/04*
U.S. Cl. 33—27 C 1 Claim

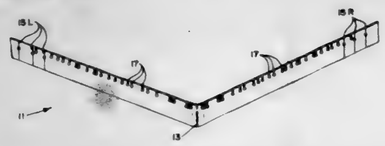
A scriber which includes an elongate bar having add on sections attachable thereto for increasing the length. The bar has a butt guide mounted thereon and including a swivel

point for centering the bar to permit it to be swung. A combination cutting blade and marking point is detachably secured to one end of the scriber to permit work to be



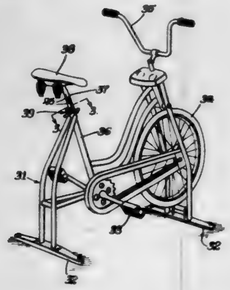
marked or cut as required. A rotatable marking wheel may be detachably secured to the scriber bar in place of the combination marking and cutting blade.

3,664,026
DRAPERY PLEATING PATTERN MEANS
Jack M. Lawson, 3161 Ashwood Ave., Memphis, Tenn.
Filed Aug. 22, 1969, Ser. No. 852,271
Int. Cl. G01b *3/10*
U.S. Cl. 33—137 **8 Claims**



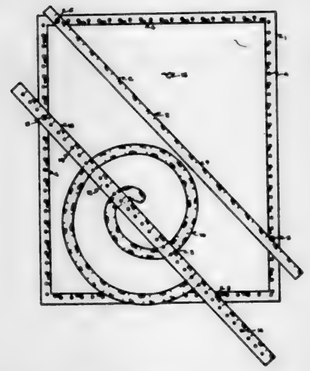
A paper or fabric pattern strip adapted for use in making the pleated upper section of a drapery panel. Two such pattern strips may be used for forming the pleated section of a pair of drapes for a single window — each pattern strip being adapted for use in forming the opposite side hems and return or border areas and in uniformly spacing the pleated areas of a drapery. By use of the pattern strip of the invention, several widths of fabric may be hemmed and pleated to a certain width with the pleated drapery of each fabric width having uniform pleat spacings and spacings equal to the pleat spacings of each other fabric width. The pattern strip means preferably is in two embodiments adapted for use respectively in forming an odd number of pleats or an even number of pleats in the pleated upper section of a drapery panel.

3,664,027
BICYCLE FRAME-SIZE INDICATOR
Albert J. Fritz, Wilmette, and Rudolph L. Schwinn, Niles, both of Ill., assignors to Schwinn Bicycle Company, Chicago, Ill.
Filed Aug. 12, 1970, Ser. No. 63,065
Int. Cl. B62k *17/00, 19/00*
U.S. Cl. 33—174 R **4 Claims**



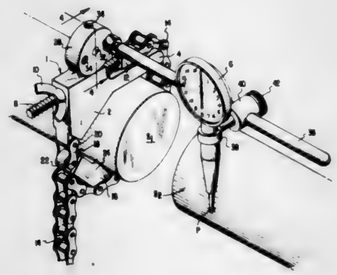
Measuring device for accurately determining under use conditions the proper size bicycle frame for any rider.

3,664,028
DRAWING DEVICE OR APPARATUS
Donald C. Smith, 132 Bartley Ave., Mansfield, Ohio
Filed May 4, 1970, Ser. No. 34,364
Int. Cl. B43l *13/20*
U.S. Cl. 33—174 B **2 Claims**



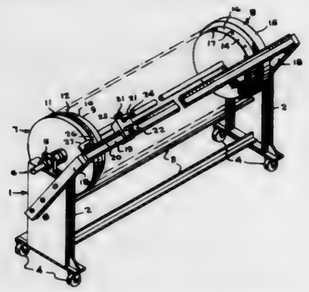
A device or apparatus which is utilized for drawing pictures or other designs on paper or other material by using a formula, and which includes a drawing board and flat rectangular and spiral shaped members which are mounted thereto in various positions, segments of the periphery of said members providing a guide for drawing lines which produce the picture or design predetermined by the formula.

3,664,029
DIAL INDICATOR HOLDER
Harold Glucoft, 1351 Sunset Ave, Santa Monica, Calif., and James Westerfield, 19 N. Margerita. Apt. #15, Alhambra, Calif.
Filed Feb. 2, 1970, Ser. No. 7,712
Int. Cl. G01b *5/14*
U.S. Cl. 33—180 R **11 Claims**



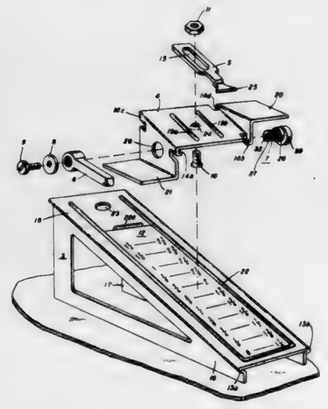
An easily attachable shaft aligning apparatus comprises a gauge carrying head member having a pair of angularly related arms which make contact with a shaft or axle to be aligned with a second shaft or axle. A belt or chain extends about the shaft or axle and has one end adjustably supported on one arm, the other arm being provided with a linked extension which also contacts the shaft and is provided with an outward projection for passing through a link in the chain or an opening in the belt, whereby when the chain is tightened by the adjustment the head member is securely held to the shaft or axle.

3,664,030
APPARATUS FOR MAKING ROTARY CUTTING DIES
Joseph O. Pope, Jr., 395 Carey Drive, S. E., Atlanta, Ga.
Filed June 11, 1969, Ser. No. 832,271
Int. Cl. B41b *1/00*
U.S. Cl. 33—184.5 **8 Claims**



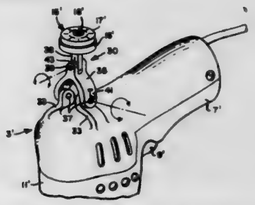
Apparatus for making dies for rotary cutting cylinders which is portable and has spaced circular mounting heads upon which a die board can be mounted for scribing, drilling, cutting, etc. One of the die heads carries a true measurement scale about its circumference, the scale being annular and concentric with the mounting die board, and spaced from the outer cylindrical surface of the die board a distance equal to the proposed projection of the cutting rules from the board surface when mounted. A tool holder is mounted on a graduated indexing bar for movement longitudinally of the cylinder, and has a tool opening having its axis radial to the cylinder. There is an index pointer over the circumferential scale on the mounting head having its point in a plane radial to the cylinder which includes the tool opening axis. This allows true measurement scales to be used throughout and the points of contact of a tool in the tool holder with the die board to form a proper circumferentially shrunken image of the article which the completed die is to cut.

3,664,031
PORTABLE HEIGHT AND DEPTH SETTING GAUGE
Edward J. Duffy, Bernardsville, N.J.
Filed Aug. 3, 1970, Ser. No. 60,595
Int. Cl. B27g *23/00*
U.S. Cl. 33—185 **7 Claims**



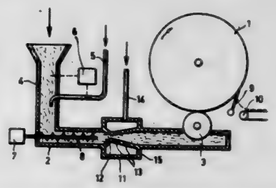
A gauge having two direct reading scales and comprising a triangular framework and gauge head slidably mounted thereon is disclosed. The head includes two sideward extending members, both of which can be moved to a so called setting position by sliding the head along an inclined surface of the framework. A pointer extends from the head for indicating on the appropriate scale, directly, the distance between a reference surface and tool surfaces coming into contact with either member. An arrangement for clamping the head in the setting position as well as an arrangement for calibrating scales and for adjusting for parts wear is included.

3,664,032
TOOL-LEVEL INDICATOR STRUCTURE
Charles A. Tompkins, Redwood City, Calif., assignor to Kelsy Eileen Tompkins, Redwood City, Calif., a part interest
Filed July 23, 1970, Ser. No. 57,564
Int. Cl. G01c *9/28*
U.S. Cl. 33—207 R **2 Claims**



A tool for working on an object positioned at an angle relative to a reference plane, sand tool including a level indicator to indicate the angular relationship of said tool to said object and said reference plane.

3,664,033
METHOD AND APPARATUS FOR DRYING ORGANIC MATERIALS
Hartwig Fritze; Wolfhart Eisenmann, and Max Preger, all of Ravensburg, Germany, assignors to Escher Wyss GmbH, Ravensburg, Wurttemberg, Germany
Filed Aug. 11, 1970, Ser. No. 62,904
Claims priority, application Germany, Aug. 14, 1969, P 19 41 425.6
Int. Cl. F26b *7/00*
U.S. Cl. 34—12 **11 Claims**

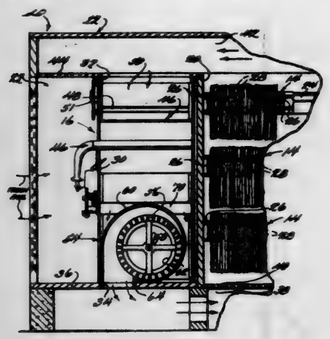


In a method for drying a material at least mainly consisting of organic substances such as carbohydrates and proteins, using a drum drier as to dry said material thereon, the improvement that said material is heated to a temperature at which its constituents are liquid, and is applied in said liquid state to the drying drum of said drum drier. Preferably, said material includes additives such as alkalis, acids or enzymes.

3,664,034
TOBACCO BULK CURING SYSTEM WITH IMPROVED CURING AIR FLOW RATE CONTROL
Robert W. Wilson, Charlotte, N.C., assignor to R. H. Bouligny, Inc., Charlotte, N.C.
Filed Sept. 23, 1970, Ser. No. 74,678
Int. Cl. A24b *1/02*
U.S. Cl. 34—225 **5 Claims**

A system of curing flue-cured tobacco in bulk including a barn structure having perforated floor defining a curing air

inlet space therebelow and tobacco loading and curing space thereabove for receiving and supporting a plurality of bulk curing racks disposed in side-by-side relation and in a plurality of vertically spaced tiers, a return air space above the loading space and a curing air conditioning and circulating assembly including a housing having an inlet communicating with the upper return air space, an outlet communicating with the lower curing air space, damper controlled fresh air inlets adjacent the upper end thereof, an air heater, a blower and an improved air throttling mechanism for controlling the amount of curing air circulated throughout the cure so that



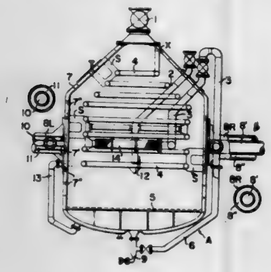
(1) the yellowing of the leaves is accomplished with the curing air at the desired temperature and relative humidity flowing at a relatively slow rate within an operative range of between 10 and 50 cubic feet per minute for each square foot of effective curing area, and within a preferred range of 40 to 45 cfm and (2) drying of the leaves is accomplished with the curing air at the desired temperatures and relative humidities flowing at a relatively high rate within an operative range of 50 to 120 cfm for each square foot of effective curing area with an increase of at least 10 percent of the flow rate during yellowing and within a preferred range of 55 to 75 cfm and an increase of at least 30 percent.

3,664,035

APPARATUS FOR TREATING A MIXTURE

Yoshio Yoshikawa; Hiroshi Kondo; Akitoshi Sugio, and Tomotake Kato, all of Tokyo, Japan, assignors to Mitsubishi Edogawa Kagaku Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 19, 1969, Ser. No. 851,396
Int. Cl. F26b *13/30*
U.S. Cl. 34—92 6 Claims



The apparatus of this invention is suitable for treating a labile material in a state free from deteriorating factors. suction vessel,

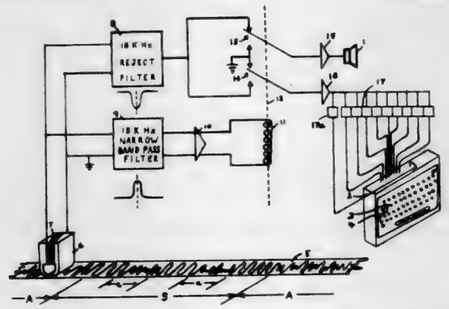
Filtration, washing, drying and mixing operations can be effected in this single apparatus. The apparatus comprises a vessel, a filter plate, cylindrical rotating shafts, and a suction member rotatable together with the vessel. , the suction member is located at a site where the material to be treated does not contact the suction member while rotating the vessel.

3,664,036

AUDIO-VISUAL TEACHING DEVICE AND METHOD FOR INSTRUCTION IN THE OPERATION OF KEYBOARD CONTROLLED INSTRUMENTS

John E. E. Boswell, Jr., and Jesse H. Miner, both of Falls Church, Va., assignors to Arthur R. Schmoyer, Potomac, Md.

Filed Oct. 13, 1970, Ser. No. 80,354
Int. Cl. G09b *13/02*
U.S. Cl. 35—6 7 Claims



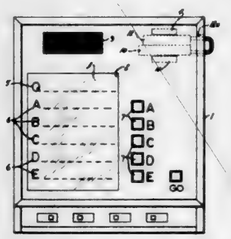
An apparatus for teaching the operation of a keyboard instrument comprises audio and visual components actuated respectively by voice signals and cueing signals both recorded at audio frequencies on a single "track" of magnetic medium. The cueing signals are superimposed on an audio inhibit signal of a preselected frequency which may or may not be within audio range and which is effective through a filter network to switch the apparatus from an audio mode to a visual mode in advance of the cueing signals and to maintain the apparatus in the visual mode during decoding of the cueing signals. Alternatively, cueing signals of brief duration are used to trigger a latching circuit to hold a visual indicator activated while further audio instructions are reproduced, and a subsequent cueing signal serves to unlatch the circuit to terminate the visual indication.

3,664,037

INSTRUCTION DEVICE WITH A PLURALITY OF MODES

Roger J. Budnik, Milwaukee; Harold S. Montgomery, Fox Point, and David J. Nutting, Milwaukee, all of Wis., assignors to Nutting Industries, Ltd., Milwaukee, Wis.

Filed Oct. 20, 1969, Ser. No. 867,669
Int. Cl. G09b *7/08*
U.S. Cl. 35—9 B 27 Claims



A film projector presents film frames in sequence. The lateral edge of the film adjacent each frame is a dark surface

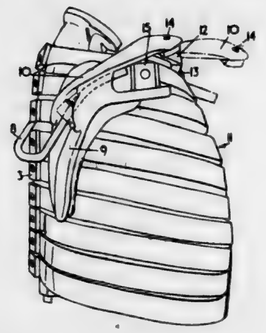
having eight code spots for answer selection and a three bit binary code. The code spots are dark or clear and read by a photocell. A sound tape machine includes three audio channels and a control channel having a high frequency advance signal and a low frequency tape stop signal. A binary decoder establishes output power at one of a plurality of power lines. A matrix board connects the power leads to control lines through diodes. The control lines are connected to branch circuits of a master control to operate the film projector and the tape machine in predetermined sequences with the output of the tape machine establishing an automatic film advance or a semi-automatic film advance. A film frame may provide a question and multiple choice answers. A response circuit includes a correct answer relay and an incorrect answer relay selectively connected in the master circuit to establish an interrelated control of the projector and tape machine.

3,664,038

HUMAN SIMULATIONS (DUMMIES)

John Albert Searle, Market Bosworth, and Dennis William Perrin, Fenny Drayton, both of England, assignors to Motor Industry Research Association, Lindley, near Nuneaton, Warwickshire, England

Filed Aug. 10, 1970, Ser. No. 62,501
Claims priority, application Great Britain, Aug. 8, 1969, 39,876/69
Int. Cl. G09b *23/32*
U.S. Cl. 35—17 8 Claims



In a dummy simulating the human shoulder region, the shoulder joint is constrained to move in an arcuate path corresponding to the natural shoulder joint, by a guiderod secured to the spine region of the dummy. The rod is resilient and there is vertical play between the rod and the shoulder joint member. The latter may be pivotably connected to the sternum region.

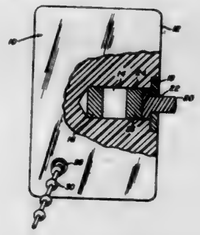
3,664,039

NOVELTY KEY CHAIN

Palmer P. Derby, Weston, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 6, 1971, Ser. No. 131,617
Int. Cl. G09b *23/06*
U.S. Cl. 35—19 A 5 Claims

A novelty key chain which comprises a body of transparent rigid material having a bore in one side thereof in the base of which is disposed a first magnet, and a push button slidably disposed in the outer portion of the bore with a second magnet on its inner end, the adjacent ends of the magnets being



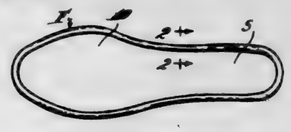
of like polarity so as to normally maintain the push button in extended position.

3,664,040

SHOE SOLE AND METHOD OF MAKING IT

Emil R. Oulmet, 31 Country Club Drive, Brockton, Mass.

Continuation of application Ser. No. 643,501, June 5, 1967, now abandoned. This application Aug. 5, 1970, Ser. No. 61,515
Int. Cl. A43b *13/00*
U.S. Cl. 36—25 R 1 Claim



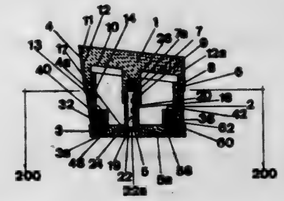
A sole element for shoes having an edge band of thermoplastic material in lieu of a textile or other tape, and a method of making it.

3,664,041

HEEL WITH ORNAMENTAL MASK

Michele Frattallone, Fulvia Villa Piazza Parte Guelfa, 3/50123 Firenze, Italy

Filed Feb. 9, 1970, Ser. No. 9,943
Claims priority, application Italy, Feb. 13, 1969, 4.462 A/69
Int. Cl. A43b *21/36*
U.S. Cl. 36—42 1 Claim



A heel containing an upper section permanently attached to the shoe, a detachable lower section and a detachable mask covering the upper section.

3,664,042

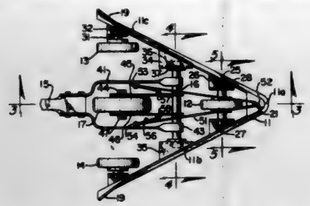
HAND OPERATED WHEELED V-BLADE SNOWPLOW

Conrado E. Duran, 71 South Xavier, Denver, Colo.

Filed June 11, 1970, Ser. No. 45,280
Int. Cl. E01h *5/02*
U.S. Cl. 37—47 7 Claims

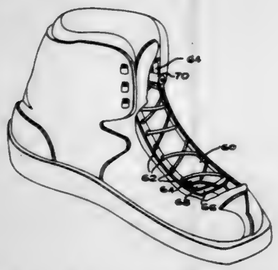
A snowplow particularly adapted to be manually propelled includes a wheel-mounted scraper blade arranged to direct

snow laterally. The blade has relatively rigid sides with rear portions being curled outwardly at the upper rear end to provide a concavely curved moldboard, a front apex together with a resilient bottom lip portion arranged relative to the plane of the wheels to reduce blade drag and provide a clean



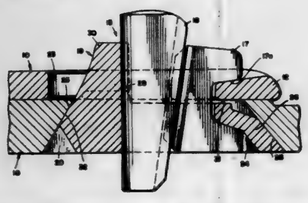
scraping action. A shaft connected transversely between the sides of the blade serves as lateral blade support structure and in addition supports both a pivotal handle and a trailing alignment wheel. The handle is cable-connected to the blade and alignment wheel in such a way that the blade may be elevated or the wheel elevated to maneuver the blade.

3,664,043
ACCESSORY FOR FOOTWEAR
Emile A. Polumbus, Jr., 3475 South Race St., Englewood, Colo.
Filed Oct. 14, 1970, Ser. No. 80,573
Int. Cl. A61l 5/00
U.S. Cl. 36—71 **2 Claims**



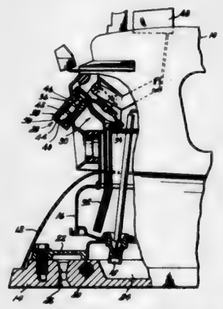
A tightening device for footwear includes an elongated air tight inflatable pad enclosed in the footwear and means for injecting compressed air into the pad so that it expands drawing the footwear tightly to the foot. Valve means are also provided to release the compressed air from the pad when it is to be deflated. An arrangement wherein the inflatable pad can be removably secured to the footwear is also disclosed.

3,664,044
RELEASABLE LOCK ARRANGEMENT FOR EXCAVATING TEETH AND THE LIKE
Frederick C. Hahn, Beaverton, Oreg., assignor to Esco Corporation, Portland, Oreg.
Filed Oct. 30, 1970, Ser. No. 85,409
Int. Cl. E02f 9/28
U.S. Cl. 37—142 R **6 Claims**



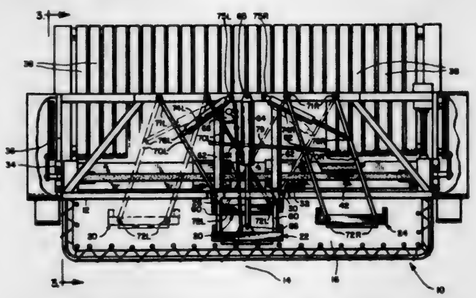
A replaceable bushing capable of self-supporting seating in the aperture of an excavator lip whereby worn bearing areas are easily and mechanically replaced, and thereby function better to support and tie an adapter or other excavating teeth components to the excavator.

3,664,045
SPRAY IRON
Wendell C. Walker, Alta Loma, and William E. Davidson, Ontario, both of Calif., assignors to General Electric Company
Filed Sept. 23, 1970, Ser. No. 74,627
Int. Cl. D06f 75/06
U.S. Cl. 38—77.5 **6 Claims**



The invention is directed to an electric flatiron equipped with a sprayer and consists of improvements in the spray mechanism whereby cavities, which normally trap undesired air or water on the pump suction stroke are filled, so that, structurally, no undesired fluids can be trapped. Additionally, the outer surface of the spray orifice is dished to provide a natural path away from the orifice so water does not form over the orifice to be drawn into the sprayer on the suction stroke. The entire sprayer mechanism may be a non-metallic molded plastic in several modifications.

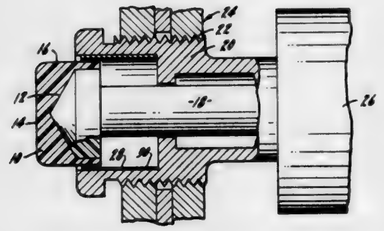
3,664,046
MULTIPLE STATION LAUNDRY FEEDER AND CONTROL THEREFOR
Richard D. Thompson, Salt Lake City, Utah, assignor to McGraw-Edison Company, Elgin, Ill.
Filed May 18, 1970, Ser. No. 38,439
Int. Cl. D06f 67/04
U.S. Cl. 38—143 **15 Claims**



A flatwork laundry feeder having a plurality of stations or transfer mechanisms each movable between its loading position whereat an operator can secure a laundry article thereon and a common unloading position whereat the laundry article can be separated from the mechanism and subsequently handled by common equipment, and a control for operating the

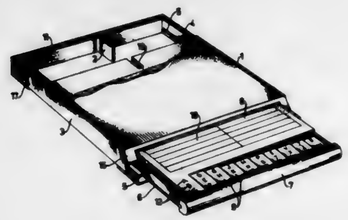
mechanisms independently on a first-come, first-serve basis as determined by the sequence in which the operators signal for each unloading cycle to begin, where the demand signal of any mechanism is stored if necessary until that mechanism is unloaded.

3,664,047
LINEAR PRISM DISPLAY
Albert L. Ruppert, Middleton, Wis., assignor to Oak Electro/Netics Corp., Crystal Lake, Ill.
Continuation-in-part of application Ser. No. 747,717, July 25, 1968, now abandoned. This application May 19, 1969, Ser. No. 825,487
Int. Cl. G09f 11/00
U.S. Cl. 40—28 R **31 Claims**



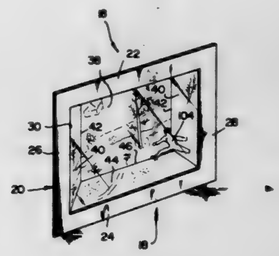
A display device including a prism having an object surface, an image surface and a reflecting surface. The reflecting surface is symmetrical in configuration and the object surface is outside the reflecting surface. There is indicia positioned adjacent and outwardly spaced from the object surface such that relative movement between the object surface and indicia along the axis of symmetry of the reflecting surface changes the display visible at the image surface.

3,664,048
CARD FILE
Lauri E. Karlsson, 13 Solvagen Alta, Sweden
Filed Sept. 26, 1969, Ser. No. 861,331
Claims priority, application Sweden, Dec. 13, 1968, 17080/68
Int. Cl. G09f 11/30
U.S. Cl. 40—65 **4 Claims**



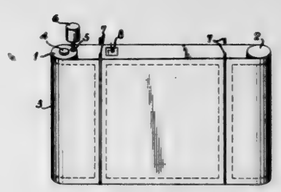
A telephone number index having a casing with a stack of cards slidably supported in said casing for being slid in and out of said casing, a slot in the inner edge of said cards and a projection in an end of said casing of a size, shape and position for entering said card slots to frictionally engage said cards tending to retain the cards in said casing until one or more of said cards is slid outwardly of the casing by a user thereof.

3,664,049
SELF-ERECTING SHADOW BOX
Irving Smith, c/o Arrow Art Finishers, 1201 Evergreen Ave., Bronx, N.Y.
Filed Nov. 12, 1970, Ser. No. 88,552
Int. Cl. G09f 1/00
U.S. Cl. 40—124.1 **16 Claims**



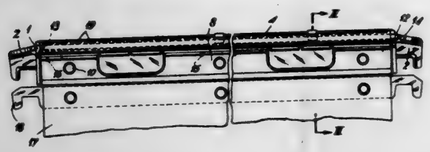
A self-erecting shadow box made of paperboard, or the like, for example, for use as a display means or a greeting card, includes an open front frame behind which is positioned a foldable, rigid sheet. An elastic member is used to draw side panels of the sheet towards each other so that the central portion of the sheet is displaced rearwardly, thus creating a rearwardly extending box. When viewed from the front, the central portion of the sheet is rearward of the open frame, the side panels of the sheet converge and the bottom panel slants upwardly, thus creating an illusion of additional depth. The shadow box is initially contained within an envelope which holds it flat and when it is removed therefrom the elastic means will automatically erect the shadow box.

3,664,050
INTRODUCED IN LUMINOUS PUBLICITY DISPLAYS OF CONTINUOUS SASH TYPE
Alejandro C. Manzano, Madrid 10, La Baneza 10-11, Madrid, Spain
Filed Mar. 9, 1970, Ser. No. 17,848
Int. Cl. G09f 11/28
U.S. Cl. 40—32 **5 Claims**



A continuous sash type luminous display having an image carrying sash mounted on a pair of rollers, one of said rollers being coupled to a drive motor. Switch means are provided in the path of end-of-display members for actuation of said switch means to turn said motor off. Timing circuitry coupled to said motor is also provided for automatically restarting said motor after the passage of a predetermined period of time. Means are also provided for automatically opening and closing a pair of curtains during the cycle.

3,664,051
SUSPENSION BAR FOR FILES OR OTHER SIMILAR OBJECTS
Marcel M. Benichou, Saint-Cloud, France, assignor to L'Organisation Economique Moderne, Paris, France
Filed Apr. 6, 1970, Ser. No. 25,631
Claims priority, application France, Apr. 11, 1969, 6911247
Int. Cl. B42f *15/04*
U.S. Cl. 40—359 2 Claims



A suspension bar for files or other similar objects, said bar being provided with a transparent covering under which a label may be inserted, characterized in that the bar has an edge on which may be fitted riders having an extension intended to be lodged under the transparent covering, the latter having slots intended to prevent the lateral displacement of the riders once the latter have been put in place. Riders and labels for use with the suspension bar are also provided.

3,664,052
IMPACT ACTUATED UNDERWATER GUN
Bruce Mounier, 9321 S.W. 80th Terrace, Miami, Fla.
Filed Apr. 2, 1970, Ser. No. 25,198
Int. Cl. F41c *17/00, 21/00*
U.S. Cl. 42—1 L 5 Claims



An underwater impact actuated gun comprising a pole member used as a handle for thrusting against a fish to be shot and having a comparatively short gun barrel at the striking end. A weighted firing pin slidably arranged behind the cartridge by a compression spring is carried forward by its momentum upon striking a fish with the muzzle of the gun to fire the cartridge. The barrel is slightly tapered just in front of the cartridge slug, convergently in the direction of the muzzle end, to effect deformation of the slug to a diameter less than its original diameter, thereby minimizing blow-by to appreciably increase breech pressure and heat for more efficient burning of the explosive. The barrel is peripherally vented at its muzzle end in such a way as to permit escape of the water in the barrel, thereby minimizing its retardation of the slug as it is projected, while at the same time providing reactive forces minimizing recoil.

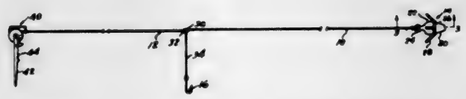
3,664,053
MULTIPURPOSE BOBBER
Rheinhardt J. Beverly, 4602 East 14th St., Tucson, Ariz.
Filed May 7, 1970, Ser. No. 35,515
Int. Cl. A01k *93/00, 91/00*
U.S. Cl. 43—43.14 5 Claims

A multipurpose bobber comprising a hollow body of suitable size and shape and made of squeezable self-shape restoring material similar to that which is currently used in making squeezable plastic bottles, squeeze-bulbs and the like. It can be charged with water to vary its relative buoyancy. It has suitably aligned stoppers operatively mounted in its opposite ends. An enclosed stiff wire or rod has hooks at its ends and when the median portion of the body is squeezed both hooked ends of the rod are caused to project in a manner



that the bobber can be (1) hooked on a line attaching, line running ring or (2) clenched retentively over longitudinally spaced portions of the line itself to provide a regular bobber.

3,664,054
FISHING RIG AND MEANS FOR HANDLING SAME
John J. Pickering, 102 Barrett Ave., North Providence, R.I.
Continuation-in-part of application Ser. No. 726,520, May 3, 1968, now Patent No. 3,525,173. This application May 1, 1970, Ser. No. 33,656
Int. Cl. A01k *91/02, 95/00*
U.S. Cl. 43—19 5 Claims



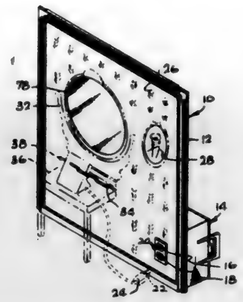
A fishing rig comprising: a length of elastic line having a self-anchoring sinker attached to one end. The elastic line is spliced to a length of conventional line at the end of the elastic line opposite the sinker. One or more hooks are attached to the conventional line adjacent its junction with the elastic line.

The means for handling the rig aforesaid comprises a reel on which the two lines are stored with a downwardly projecting handle capable of being inserted in a socket provided in a gunwale of a boat or dug into the beach, if the fishing rig is to be cast in the manner of a handline.

3,664,055
ELECTRICAL DOLL ACCESSORY
Sidney Bass, Los Angeles; Charles D. Clarke, Redondo Beach, and James E. Morse, Hawthorne, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed May 21, 1971, Ser. No. 145,682
Int. Cl. A63h *3/52*
U.S. Cl. 46—45 8 Claims

A wall assembly which represents a wall of a home, the wall assembly having a natural-appearing electrical outlet that can supply current to energize toy accessories that have motors or lamps. The wall assembly includes a sheet that represents the wall of a home, and a battery box with a plug-receiving portion projecting through a hole in the wall to represent an electrical outlet. The battery box supports the wall in a substantially vertical orientation on a table or the like. A decorative paper label printed with a wallpaper pattern and with regions representing a picture and a mirror hung on the wall, is applied to the front wall surface to cover most of it, thereby permitting the same wall structure to be used for different rooms in the home by merely using a different label for each room. A makeup mirror accessory is

provided which has an electric lamp that can be energized from the outlet, the mirror accessory constructed so it can be



switched to represent day or evening type lighting by operating a lever that moves a red-colored hood over or away from the lamp.

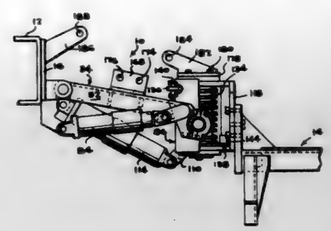
3,664,056
JET PROPELLED MODEL VEHICLE
Victor Stanzel, P.O. Box 28, Schulenburg, Tex.
Filed Aug. 7, 1970, Ser. No. 62,071
Int. Cl. A63h *27/00*
U.S. Cl. 46—74 A 4 Claims



A model or toy vehicle of the jet propelled type employing a rapidly vaporizing liquid propellant of the chlorofluoromethane type, commonly known as Freon. The vehicle may be of the airplane or rocket type, and includes a barrel for holding a charge of the propellant which is allowed to vaporize and is discharged through a jet at the rear end of the barrel. Means is provided for allowing the escape of air and the bleeding off of vapor during the charging of the barrel with liquid propellant preliminary to the launching of the craft.

3,664,057
MOUNTING ASSEMBLY
Thomas J. Dunn, P.O. Box 110, Hackettstown, N.J.
Filed Mar. 18, 1970, Ser. No. 20,601
Int. Cl. A01d *69/00*
U.S. Cl. 56—10.4 6 Claims

A lift and breakaway mounting assembly for connecting an implement to a prime mover includes a laterally mounted hinge plate with a spring case. The plate is pivotal with respect to the prime mover, and the case is pivotal with respect to the plate. An implement mount is operatively associated with the case by a heavy spring, whereby the implement mount is yieldably secured to the case and plate.

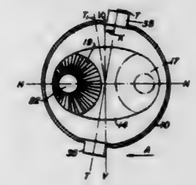


3,664,058
INFLATABLE PLASTIC STRUCTURES
Bernard F. Brieske, 241 Tall Trees Lane, Palatine, Ill.
Filed Apr. 19, 1971, Ser. No. 135,127
Int. Cl. A63h *3/06*
U.S. Cl. 46—90 4 Claims



An inflatable plastic construction formed of multiple layers of plastic sheets. Transparent exterior sheets are located adjacent interior sheets with printing substances being disposed between the facing surfaces of the respective sheets. An air holding space is defined between the interior sheets. The assembly is heat sealed all around its periphery with the exception of an area provided for a valve mechanism. The valve mechanism is formed from the sheet material, and it permits the introduction of air but inhibits the release of air whereby the structure remains inflated.

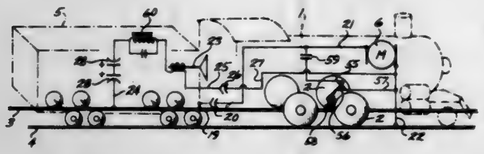
3,664,059
ROLLING DOLL EYE MOUNTED ON AN ASKEW AXIS
William Leibowitz, Flushing, N.Y., assignor to Dollac Division Jacoby-Bender, Inc., Woodside, Queens, N.Y.
Filed Mar. 15, 1967, Ser. No. 623,250
Int. Cl. A63h *3/40*
U.S. Cl. 46—167 9 Claims



The invention provides a doll eye unit wherein the eyeball has a side to side or rolling motion. The unit has a front shell with a front visibility opening or aperture, and in which is

pivotally mounted an eyeball having a pivotal axis at tilted angle to a horizontal plane but contained in a vertical plane parallel to the general plane of the front opening. The eyeball is weighted in the usual manner for rolling eyes. Accordingly, due to the uniquely angularly disposed axis of the eyeball and the weight bias, the eyeball will have an initial visible portion oriented toward one side of the front opening through which it is visible to the viewer. By thus providing a pair of eyes in a doll head with initial rotation bias always toward one side of the respective front apertures, the eyeballs will move in synchronization when the head is tilted from an erect position to reverse the tilt of the eyeball axis.

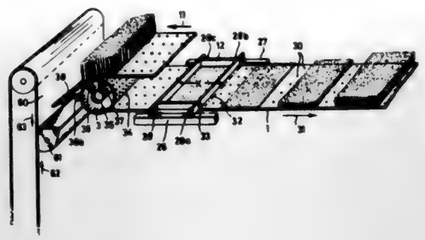
3,664,060
MODEL RAILROAD ELECTRIC LOCOMOTIVE SOUND SYSTEM
Robert H. Longnecker, Glen Mills, Pa., assignor to Pacific Fast Mail, Edmonds, Wash.
Filed Mar. 8, 1971, Ser. No. 121,701
Int. Cl. A63h *19/10, 19/14*
U.S. Cl. 46—232 **17 Claims**



An accessory includes a speaker mounted in the locomotive tender electrically driven by an audio frequency signal from one or more electronic sound generators simulating respectively a bell, escaping steam either from an engine exhaust, leakage or blowoff, and a whistle. The engine exhaust sound is timed by periodically grounding the radio frequency oscillator of a timing circuit for the escaping-steam-simulating generator by intermittently closing a switch in the circuit effected by rotation of a driver wheel of the locomotive. Selective controls enable the bell and whistle to be operated at will and further enable the nature of the sounds of the bell, exhaust and whistle to be modified. Direct current for the locomotive driving motor, the audio frequency signal to drive the speaker and the radio frequency signal to the locomotive-carried switch for timing the simulated engine exhaust are all simultaneously impressed on the two rails but electronic blocking components included in the circuit prevent the engine-driving direct current and the radio-frequency signaling current from interfering with the speaker operation and prevent the audio frequency signal and the radio frequency signal from leaking into the direct-current power circuit.

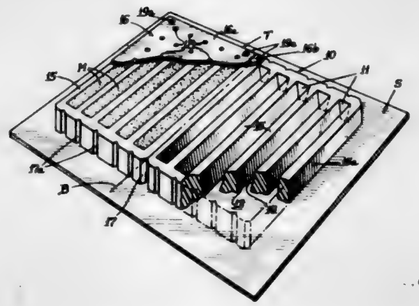
3,664,061
METHOD OF AND APPARATUS FOR THE DEVELOPMENT OF PLANT GROWTH
Karl Oepen, Gladbecherstrasse 28, 5 Koln, Germany
Continuation-in-part of application Ser. No. 705,747, Feb. 15, 1968, now abandoned. This application Mar. 3, 1971, Ser. No. 120,404
Int. Cl. A01g *31/00*
U.S. Cl. 47—1.2 **9 Claims**

A development of plant growth in which the seed material or the plants are supplied on an endless conveying means rotating in a horizontal plane to a plurality of successive treatment stations. The conveying means is constituted by a belt provided with a plurality of apertures and at the initiation of the growth, a seeding frame disposed on the belt limits the area of the seed material to be applied onto the belt. The frame or a portion thereof, is displaceable in such a fashion that upon movement of the belt by a length corresponding at least to the width of the frame, the seed material can be moved without difficulty by the frame to a



position below the frame, together with the belt to the next treatment station.

3,664,062
PLANT TRAY UNIT AND SHIPPING PACKAGE
Robert E. Danielson, West Chicago, Ill., assignor to Geo. J. Ball, Inc., West Chicago, Ill.
Filed Sept. 29, 1970, Ser. No. 76,404
Int. Cl. A01g *9/02*
U.S. Cl. 47—34.13 **5 Claims**



A plant tray unit for growing and shipping seedlings, cuttings, and the like, comprises a grid formed of rigid foam plastic, which provides a plurality of growing slots extending therethrough, the slots having sidewall portions converging upwardly and inwardly to restrict the upper portions of the slots for retaining plants and growth medium therein during handling and shipping. Separate plate means are provided for closing the bottom of the slots, which permits the grids to be filled with growth medium while in inverted condition, the bottoms attached, and the trays turned to their upright position for planting the seeds or cuttings. The tray units are adapted for incorporation in shipping package assemblies, the trays being enclosed in an outer carton, or forming sections of the package assembly.

3,664,063
PLANT GROWTH APPARATUS
R. Louis Ware, 2108 Middle Fork Road, Northfield, Ill.
Continuation-in-part of application Ser. No. 751,207, Aug. 8, 1968, now Patent No. 3,529,379. This application Sept. 21, 1970, Ser. No. 73,894
Int. Cl. A01g *9/02*
U.S. Cl. 47—39 **4 Claims**

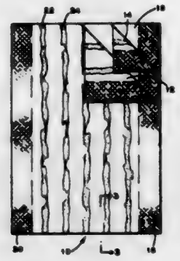
A plant growth apparatus in which plants are supported on shelves and exposed to a predetermined level of illumination

by a bank of fluorescent tubes. To provide an aesthetically pleasing structure the ballast for the fluorescent tubes is ar-



ranged and connected to provide a significant saving in wiring.

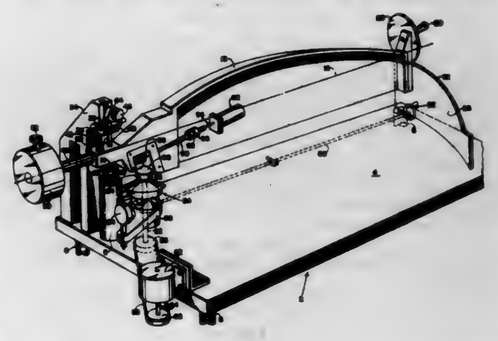
3,664,064
CLEANING AND POLISHING PAPER AND METHOD OF MAKING SAME
Fred F. Scheier, Bronx, N.Y., assignor to Dustkin Products, Inc., Bronx, N.Y.
Filed Aug. 27, 1969, Ser. No. 863,740
Int. Cl. B24d *11/00*
U.S. Cl. 51—402 **11 Claims**



This invention relates to a disposable multilayer pliable sheet, which can be used for both cleaning and polishing metal, one side of the sheet having the cleaning ingredients and the other side having the polishing ingredients. The treated sheet and the method of preparing it are novel as the cleaning and polishing ingredients are mixed together and applied to the cleaning side of the assembled sheet, the cleaning ingredients of the mixture being retained by the cleaning side of the sheet and the polishing ingredients of the mixture passing through to the polishing side of the sheet.

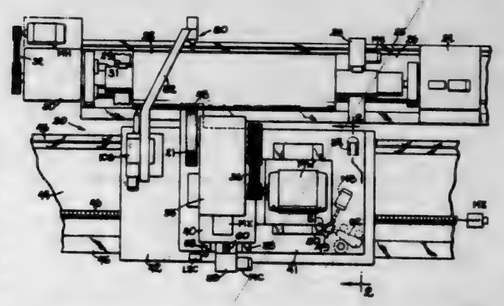
3,664,065
METHOD AND APPARATUS FOR GENERATING SURFACES OF REVOLUTION
James G. Baker, Winchester, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed May 1, 1970, Ser. No. 33,788
Int. Cl. B24b *17/04, 1/00*
U.S. Cl. 51—100 R **20 Claims**

Method and apparatus for generating, on optical material or metal, aspheric surfaces of revolution. Basically, the subject invention includes a lever arm pivotally mounted at one end portion thereof for simultaneous movement in at least two mutually orthogonal planes. The end portion of the lever arm remote from the pivot is adapted to ride upon and follow a cam surface so as to impart a predetermined motion to the lever arm. A tool is mounted on the lever arm, a predetermined distance from the pivot, and is adapted to rotate about an axis extending through the pivot point of the lever arm. A work blank is suitably positioned beneath the lever arm for



rotation about a vertical axis located a predetermined radial distance from the pivot point so that movement of the end portion of the lever arm in contact with the cam will be a linear amplification of the movement of the lever arm and, hence, the tool with respect to the work blank. The surface of the tool is adapted to make tangential contact with the surface of the work blank at all times and the blank may be vertically fed to control material removal.

3,664,066
METHOD AND APPARATUS FOR ALIGNING WORKPIECES
Stephen C. Clark, Jr., Phoenixville, Pa., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.
Original application Jan. 10, 1969, Ser. No. 790,323. Divided and this application Jan. 25, 1971, Ser. No. 109,524
Int. Cl. B24b *5/04*
U.S. Cl. 51—165 TP **10 Claims**



Disclosed here are methods and automatic apparatus for grinding cylindrical workpieces, such as the contoured rolls used in metal rolling mills. The methods and apparatus involve (1) automatic finding of the lengthwise center of rolls of different and undetermined lengths so as to establish a reference position for the execution of a numerically programmed path defined relative to the center of a roll as a point of symmetry, (2) the storage of the successive instructions of multi-axis movements making up a numerically defined profile or contoured path, and the use of those instructions repeatedly and in whole or in part as called for by different ones of a sequence of commands read from storage and executed in succession, (3) the automatic alignment of the roll axis parallel to the longitudinal axis of motion in a

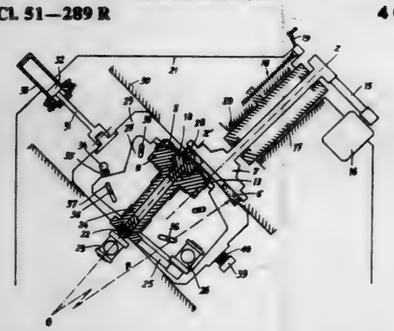
grinding machine by pivoting of one end of the roll about the other until the sensed difference in positions of the roll surface, along an axis transverse to the longitudinal axis and at locations near opposite ends of the roll, is changed to a predetermined fraction of the originally sensed difference, (4) the initiation of grinding passes from that end of a roll which is largest in diameter, so as to avoid "digging in" or increasing the depth of wheel bite as the wheel moves lengthwise of the roll, (5) the execution of continuous passes of the grinding wheel with pre-programmed values of feed rate, wheel speed, roll speed, continuous infeed and incremental infeed until a pre-programmed thickness of material has been removed from the roll surface, and (6) the grinding down of a roll until it is reduced to a diameter equal that of a previously ground roll of a matched pair. These functions are all obtained by the calling out and execution of pre-established routines in response to the reading from storage of pre-programmed sequence commands, so that in the disclosed method and apparatus there is an automatic progression from each type of operation to the next, and with the following of numerically defined profile whenever it is required.

3,664,067

METHOD FOR MACHINING BODIES OF REVOLUTION HAVING A CIRCULAR GENERATRIX

Jean Beauchet, Annecy, France, assignor to Societe Nouvelle de Roulements, Annecy (Haute Savoie), France

Filed Oct. 31, 1969, Ser. No. 872,968
Claims priority, application France, Nov. 6, 1968, 172744
Int. Cl. B24b *1/00*
U.S. Cl. 51—289 R **4 Claims**



This method consists in holding the workpieces in a driving device and imparting two movements of rotation thereto, namely a movement of relative rotation of each workpiece about its axis and a movement of rotation of all the workpieces together with their driving device about the axis of this device which forms a predetermined angle with the axis of the grinding wheel revolving in the opposite direction compared with said device, the workpieces being fed automatically to said driving device, then brought into grinding engagement with the wheel and eventually ejected also automatically upon completion of the continuous machining operation.

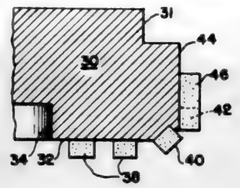
3,664,068

ROTARY GRINDING WHEEL

Leopold H. Metzger, Highland Park, and Harold C. Miller, Chicago, both of Ill., assignors to Super-Cut, Inc., Chicago, Ill.

Original application May 23, 1968, Ser. No. 731,591, now Patent No. 3,550,575, dated Dec. 29, 1970. Divided and this application Apr. 13, 1970, Ser. No. 27,565
Int. Cl. B24d *5/00, 7/00*
U.S. Cl. 51—209 **3 Claims**

A rotary abrasive grinding head adapted progressively to traverse a pre-grooved refractory surface, embodying impact members which fracture the intervening ribs between the grooves and thus remove the fractured fragments, and also



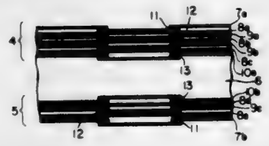
embodying abrasive members which eradicate the residual or remaining portions of the ribs.

3,664,069

PNEUMATIC SHELL STRUCTURES CONSTRUCTED FROM SYNTHETIC RESIN FILMS

Masaru Ikai, Kyoto-shi; Toshikazu Ishii, Otsu-shi, and Michiaki Higashikuze, Takatsuki-shi, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed July 18, 1969, Ser. No. 843,068
Claims priority, application Japan, July 25, 1968, 43/52711; Aug. 1, 1968, 43/54264; Dec. 26, 1968, 43/95110; 43/95111; Jan. 20, 1968, 44/3894
Int. Cl. E04b *1/345*
U.S. Cl. 52—2 **19 Claims**



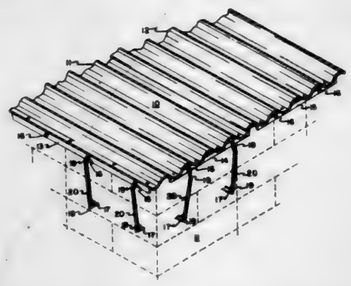
Disclosed herein is a pneumatic shell structure which is constructed from two sheet layers, each composed of a plurality of long rectangular synthetic resin films which are arranged side by side in a manner that longitudinal side edge portions of the films are mutually superimposed. The sheet layers are hermetically sealed about their edges to a support frame, so that the arranged films can uniformly carry the stress created on the sheet layers owing to the inner pressure of the airtight air chamber.

3,664,070

HAY COVERING

Willis W. Golay, Route 1, Kimberly, Idaho

Filed Apr. 9, 1970, Ser. No. 26,991
Int. Cl. E04d *1/34*
U.S. Cl. 52—4 **3 Claims**



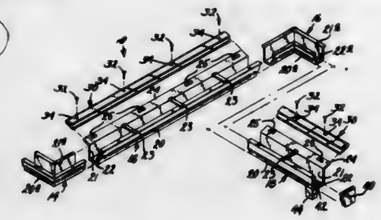
A hay covering having a multiplicity of interlockingly engageable canopy portions. Each of the canopy portions is provided with frame portions suitably fastened to each of the canopy portions and distally disposed inwardly from each of the respective terminal ends thereof, each of the frame portions being shorter in length than the respective edges of the canopy. The frame portions are provided with a multiplicity of holes spaced apart at intervals. Retaining pins operable to be driven into bales of hay are provided. S-hooks commonly known are used and employed to engage preselected bales in the frame portions and respective retaining pins driven into bales of hay to fasten canopy portions to stacked bales of hay.

3,664,071

REMOVABLE EAVE GUTTER CONSTRUCTION

William E. Gallagher, 3722 Pleasant Ave., So., Minneapolis, Minn.

Filed Sept. 2, 1970, Ser. No. 69,030
Int. Cl. E04d *13/06*; E02b *9/04*
U.S. Cl. 52—15 **4 Claims**



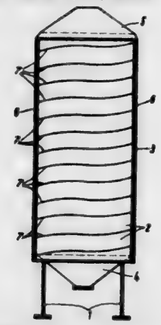
A gutter construction which is readily detachable and reattachable to an eave without necessitating the use of any implement or tool. A generally U-shaped channel is provided having longitudinally-spaced openings in the walls thereof for the reception of nails (or other similar securing devices) extending transversely therethrough for fastening the channel to an eave. A gutter having a flange portion upwardly and outwardly extending from the rear wall thereof and a plurality of longitudinally-spaced, inverted T-shaped slots along the flange portion is secured to the U-shaped channel by insertion of the flange portion into the channel whereby each of the T-shaped slots engages a different one of the securing devices.

3,664,072

VERTICAL CYLINDRICAL SILO WITH WALL OF FLEXIBLE MATERIAL

Werner Lieckfeld, Idstein/Taunus, Germany, assignor to Bran & Lubbe, Hamburg, Germany

Filed Apr. 27, 1970, Ser. No. 32,118
Claims priority, application Germany, Apr. 26, 1969, P 19 21 512.4
Int. Cl. E04h *7/24*; E04b *1/347*
U.S. Cl. 52—63 **21 Claims**



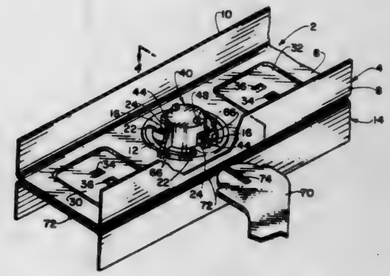
This disclosure teaches a silo having a vertical cylindrical wall of a flexible material, preferably of textile fabric suspended from a supporting frame and preferably engaged sealingly to a rigid lower closure. The flexible material, such as the textile fabric is wound in a spiral band with its lower margin connected to the upper margin of the last preceding turn to form the vertical cylindrical wall of the silo. By this expedient vertical seams are avoided so that weft threads of the textile fabric are substantially spared from tangential hoop stresses. The textile fabric is preferably woven and coated with rubber or plastic.

3,664,073

BUILDING PANEL CONSTRUCTION AND SECUREMENT MEANS THEREFOR

Council A. Tucker, Glendale, Calif., assignor to E. Walter Scott, Los Angeles, Calif.

Filed Nov. 13, 1970, Ser. No. 89,258
Int. Cl. E04b *1/60*
U.S. Cl. 52—127 **18 Claims**



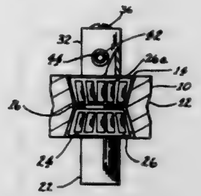
A building panel construction for non-bearing partition walls and the like which are easily assembled and if need be, disassembled after erection and at a later time, wherein panels of identical configuration may be secured to one another in back-to-back relationship by the disposition of a securement member in mating connector holes in each of the panels; wherein the connector member in the preassembled state is inserted into the connector holes and by a simple rotational movement thereof, effects rigid securement of each of the panels to one another. Alignment and positioning means are provided in the panels so as to aid in the securement operation and to lend some stability and rigidity to the assemblage and also disclosed is building construction utilizing panels as hereinbefore disclosed and connector members, all of which have aesthetic quality to blend into modern day architectural decor.

3,664,074

ROLLER ENTRY GUIDE FOR ROD MILL

Robert E. Howard, Kansas City, Kans., assignor to Armco Steel Corporation, Middletown, Ohio

Filed Apr. 10, 1970, Ser. No. 27,203
Int. Cl. B21b *39/20*
U.S. Cl. 72—250 **8 Claims**



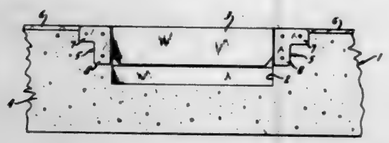
An adjustable guide mechanism for directing high speed heated metal rods and the like through a series of cross sec-

tion reduction stations. The mechanism comprises in part a roller mounted on a pair of tapered circular roller bearing cones which in turn are adjustable mounted on a shaft passing therethrough. By adjusting said bearing cones relative to said roller and said shaft, it is possible to maintain adequate pressure thereon and avoid the development of damaging oscillations.

3,664,075
PROTECTIVE BUMPER

John F. Hazlewood, Milwaukee, and Herbert T. Ruehl, Mequon, both of Wis., assignors to Kelley Company, Inc., Milwaukee, Wis.

Filed Nov. 17, 1969, Ser. No. 877,163
Int. Cl. F16f 1/44
U.S. Cl. 52—173 16 Claims

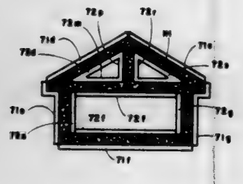


A protective bumper for use with a loading dock. The bumper is mounted on the front face of the loading dock on the side of a dockboard which is located within a pit formed in the dock. The bumper has an L-shape, including a horizontal section that extends along the upper edge of the dock and a vertical section that extends downwardly along the side of the pit. To attach the bumper to the dock, one or more bolts are welded to a curb angle on the dock and the bolts extend within holes formed in the bumper. In the preferred form, the bolts have a generally L-shape with one leg of each bolt being welded flatwise to the curb angle and located within a slot formed in the back surface of the bumper, while the other leg extends outwardly within a hole in the bumper and receives a nut.

3,664,076
RANDOM HONEYCOMB STRUCTURE

Wallace W. McCoy, C/O John E. Wagner 1041 East Green St. Suite 202, Pasadena, Calif.

Filed Mar. 2, 1970, Ser. No. 15,364
Int. Cl. E04c 2/10
U.S. Cl. 52—264 4 Claims



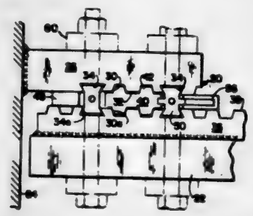
This disclosure involves a form of prefabricated structure such as commercial or industrial buildings, houses or enclosures employing an external skin bonded to an intermediate structural and insulating filler with an inner surface skin similarly bonded to the filler material. The external skins are preferably resin bonded glass fiber and the intermediate filler composes a random honeycomb structure made of cellulosic material, such as individual pieces of paper of random size each rigidified and bonded to adjacent pieces by a resinous binder which is compatible with the binder of the skins. The structure is shown in continuous panels and actually three dimensional structure configurations as well as discrete structural elements which may be used to replace comparable structural elements normally made of wood. Disclosed also are processes for continuous manufacture of structures employing the concept of this invention either in the factory or on site.

The same basic structure is shown in various configurations. Illustrated are a number of panel sections employing the same structure arrangement but different filler density whereby the load bearing strength of the panel may be controlled and its insulating properties varied as well. Structural strength can also be varied by changing the dimensions and concentrations of resin/fiberglas of either or both external skin surfaces. Disclosed also are individual structural elements produced from waste paper material and resin bonded skins.

3,664,077
CONNECTION JOINT FOR STRUCTURAL MEMBERS

Thomas N. Arnold, Sutter Hotel, 191 Sutter St., San Francisco, Calif.

Filed June 29, 1970, Ser. No. 50,401
Int. Cl. E04b 1/48; E04c 3/04
U.S. Cl. 52—283 12 Claims

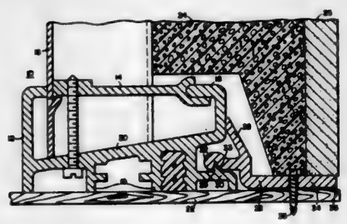


A connection joint for structural frame members capable of withstanding forces of tension, compression, shearing and bearing utilizes transverse slots on portions of the members to be connected which are brought into register so that key members can be installed in the slots. The key members are in groups of basically two types, those which accommodate bearing and shearing and those which accommodate tension or compression forces that are transverse to the applied shearing forces. The connection is shown in different embodiments such as beam or girder connections with a column or end to end connections of beams, rod or cables.

3,664,078
SILL ANCHORING STRUCTURE

Billie C. Merkin, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed July 23, 1970, Ser. No. 57,565
Int. Cl. E02d 27/00
U.S. Cl. 52—293 6 Claims

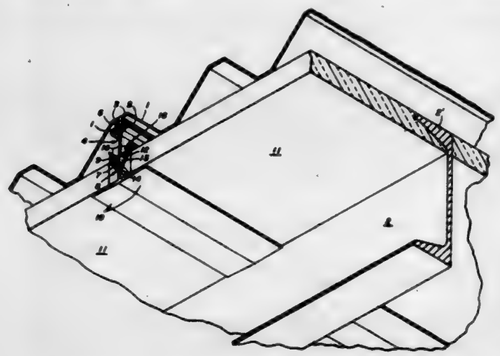


A structure for anchoring a rigid wall structure to a floor or foundation structure, the anchoring structure comprising a truncated raised portion associated with the lower (and/or upper) edge of the wall, and a clip member having a recess with opposed tapered sides. The recess is dimensioned to receive the truncated portion of the wall with the sides thereof bearing against the tapered sides of the recess when the clip member is securely fastened to the floor. The clip member further includes an upstanding arm located to engage the rigid wall structure at a location above the truncated portion when the recess of the clip member is disposed to engage the truncated portion, and the member is securely fastened to the floor.

3,664,079
INSULATION SUPPORT

John O. Bowser, Natrona Heights, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed June 1, 1970, Ser. No. 42,248
Int. Cl. E04b 1/40
U.S. Cl. 52—479 2 Claims

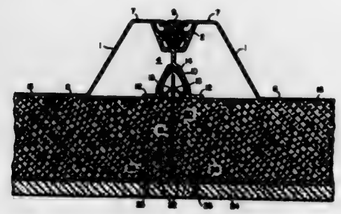


A building structure in which a rib extends inwardly from exterior sheathing and has a T-shaped base on which is supported means for holding an insulation panel in position beneath the sheathing, the said means including a channel-shaped portion in which the said base is positioned.

3,664,080
NAILABLE WALL CONSTRUCTION

James D. Klingensmith, Allegheny Township, Westmoreland County, and George Velinsky, Jr., Pittsburgh, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed July 6, 1970, Ser. No. 52,271
Int. Cl. E04b 1/40
U.S. Cl. 52—479 4 Claims



A wall construction including a first rigid panel engaging a first elongated spline extending lengthwise of the panel and facing to one side thereof, the spline having elongated shoulder portions for engaging a second rigid panel on one side thereof. An elongated T-shaped spline is connected to the first spline via a web portion thereof while flange portions of the T-shaped spline engage the side of the second panel opposite to and in alignment with the shoulder portions of the first spline. This combination provides a firm, rigid structure for driving a fastening means through the flange portions of the T-shaped spline for securing a third panel to the second panel via the flange portions.

3,664,081
BLOWBACK SEAL AND GAUGE FOR BUILDING EXTERIOR PANELS

Otis M. Martin, San Jose; John K. Kough, Morgan Hill; Silas M. Miller, Saratoga, and Blair B. Kough, Morgan Hill, all of Calif., assignors to Ditz Crane, San Francisco, Calif.

Filed July 15, 1970, Ser. No. 55,140
Int. Cl. E04d 1/36, 3/362
U.S. Cl. 52—540 18 Claims

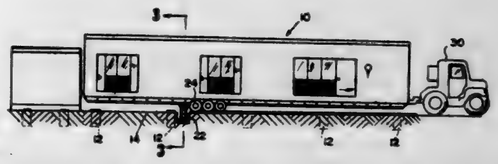


A prefabrication panel for the construction of a building exterior in which one or more layers of a plurality of facing material is secured to a sheathing in a side-by-side relation along the length of the sheathing. A strip is secured to the sheathing on the surface thereof opposite from the surface on which the facing material is secured. The strip is disposed along the length of the sheathing in the vicinity of the lower edge thereof. A plurality of such panels are placed in overlapping relation to form a building exterior. In one embodiment, the strip of the upper panel has a surface for confronting the sheathing of the lower panel for sealing engagement and has another surface confronting the facing material fixed to the lower panel for providing a weather seal. In another embodiment, the strip of the upper pane has a surface perpendicular to the sheathing of the upper panel which surface confronts and is contiguous to the upper edge of the sheathing of the lower panel to serve as a guide for the aligning of overlapping panels and also to form a weather resistant seal.

3,664,082
METHOD OF PLACING A MOBILE HOME ON A FOUNDATION

James F. Zintel, Indianapolis, Ind., assignor to Jean-Air Corporation, Indianapolis, Ind.

Filed Dec. 15, 1970, Ser. No. 98,325
Int. Cl. E04b 1/343, 1/35
U.S. Cl. 52—742 7 Claims

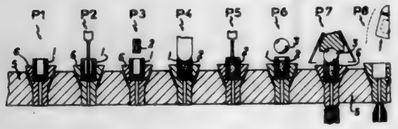


A method of positioning and lowering a mobile home body onto a prepared foundation and pad in semi-permanent location.

3,664,083
METHOD OF AUTOMATICALLY PACKAGING RADIO ACTIVE SOURCES AND APPARATUS THEREFOR

Jean Fradin, 4 bis, rue Blanche, 92 Bois Colombes, and Paul Lengagne, 2, rue de Rouen, 92 Nanterre, both of France

Filed Mar. 5, 1970, Ser. No. 16,780
Claims priority, application France, Mar. 11, 1970, 6906546
Int. Cl. B65b 57/00
U.S. Cl. 53—53 8 Claims

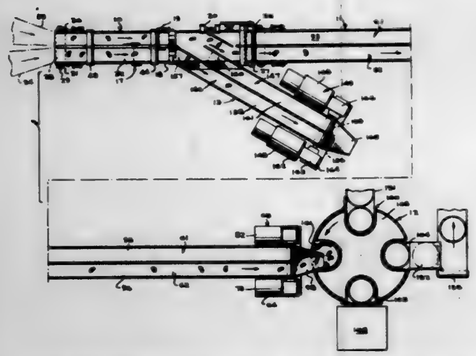


An automatic method of packing radioactive sources, the method mainly comprising moving a circular tray automatically and periodically in a shielded enclosure past a number of equidistant working stations arranged in a circle and corresponding to the various respective stages of packaging and to supervisory operations, the tray being formed with equidistant peripheral perforations to the number of working stations, a logic circuit initiating, for each perforation, the starting or not starting of a working station in dependence upon the result output by the immediately preceding working station.

3,664,084
APPARATUS FOR HANDLING ARTICLES

George E. Meckley, Abbottstown, Pa., assignor to Hanover Guest Quality Foods Corporation, Hanover, Pa.

Filed Nov. 13, 1970, Ser. No. 89,772
Int. Cl. B65b 57/20
U.S. Cl. 53—59 R 35 Claims

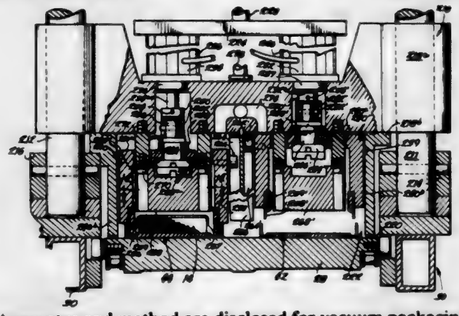


An apparatus suitable for use in packaging articles such as pretzels and the like generally including an endless feed conveyor belt for conveying the articles along a predetermined line of travel, a first endless load conveyor belt for conveying articles received from the feed conveyor belt to a container positioned at a selected position, a second endless load conveyor belt for conveying articles received from the feed conveyor belt to a container positioned at the second location, means for operating each of the load conveyor belts at predetermined high and low speeds, means for guiding articles carried at random by the feed conveyor belt selectively onto the first and second load conveyor belts, and control means operative alternatively to operate one of the feed conveyor belts at the predetermined low speed while the guiding means operates to guide articles from the feed conveyor belt onto the one load conveyor belt and the other load conveyor belt operates at the predetermined high speed whereby the load conveyor belts operate alternatively at high speeds to load groups of the articles into a container positioned at the selected location.

3,664,085
PACKAGING MACHINE

Roy S. Rousseau; Raymond J. Keating, both of Bettendorf, and Gary L. Steinke, Davenport, all of Iowa, assignors to The Kartridge-Pak Co., Davenport, Iowa

Filed Nov. 24, 1969, Ser. No. 879,338
Int. Cl. B65b 31/02
U.S. Cl. 53—112 R 25 Claims

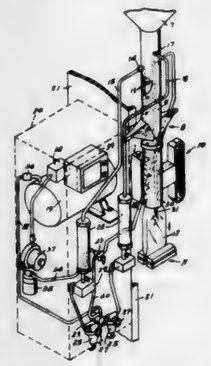


Apparatus and method are disclosed for vacuum packaging of a product in a two element package consisting of a preformed rigid base element and a preformed rigid cover element. The apparatus preferably includes a plurality of platens carried on a conveyor through a number of operating stations where the package is assembled with the base element disposed downwardly. The loosely assembled package is moved into sealing station where a concave housing placed over the package elements forms a vacuum chamber with the platen. The chamber is vacuumized, and an annular sealing member carried within the concavity of the housing moves downwardly to press the peripheral portions of the package elements together while a vacuum is maintained within the chamber.

3,664,086
GAS FLUSHING SYSTEM FOR VERTICAL FORM, FILL AND SEAL MACHINES

Robert C. James; David A. Wilson, and Frank E. Pringle, Jr., all of Sheboygan, Wis., assignors to Haysen Manufacturing Company, Sheboygan, Wis.

Filed Dec. 29, 1969, Ser. No. 888,615
Int. Cl. B65b 31/04
U.S. Cl. 53—112 A 12 Claims

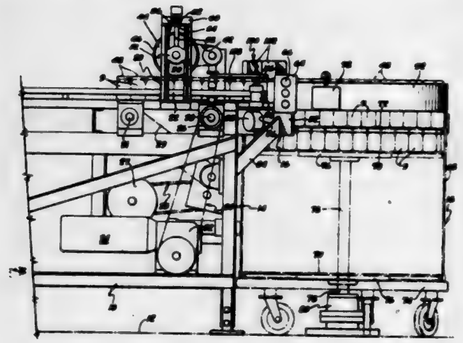


Gas flushing is effected by introducing the gas through one or more ducts into a free portion of the vertical package forming, filling and sealing tube above the area to which packaging sheet material is fed onto and tubularly formed about the tube. At least one of the ducts communicates with an extension duct nozzle depending within the tube for releasing and distributing flushing gas onto the product delivered through the tube into the formed packaging bags. Prepurging gas may be introduced into the tube upstream from the flushing gas. Gas sampling and machine start-up preflushing may be effected through a duct having a combination inlet and outlet located to extend partially downwardly into the bag to be filled or which may have been last filled when the machine is restarted after a shut-down.

3,664,087
CONTAINER POSITIONING MACHINE

Wallace W. Choate, and Norman A. Amendola, both of Rochester, N.Y., assignors to Gerber Products Company, Fremont, Mich.

Filed July 15, 1970, Ser. No. 54,921
Int. Cl. B65b 5/10, 35/30
U.S. Cl. 53—163 12 Claims



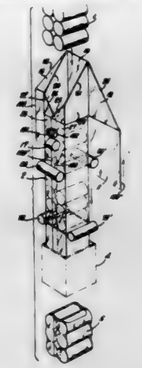
A machine for placing a multiplicity of upright containers on a container support surface in a side-by-side relationship. A support structure defining a container passageway which has a discharge end communicating with the support surface. The support structure includes means for continuously moving and urging containers toward the passageway. Transport means are provided for moving containers through the passageway onto the support surface. Further means are for temporarily retaining the containers in the passageway to the support structure to enable the replacement of filled support surfaces.

3,664,088
PACKAGE FORMING APPARATUS

Earle C. Sherman, Monroe, La., assignor to Ollakraft, Inc.

Filed June 23, 1970, Ser. No. 48,963
Int. Cl. B65b 9/06
U.S. Cl. 53—180 13 Claims

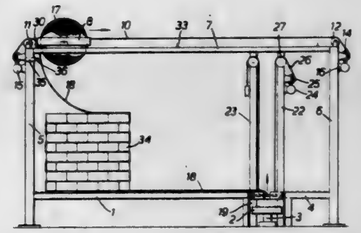
A packaging machine comprising: a tube forming section; a grouping section; a separating section and a sealing section. In the tube forming section, a tube of packaging material, preferably a shrink film, is formed. The tube then moves downwardly through the remaining sections of the machine. Articles to be packaged within the tube of packaging material are fed to the top of said machine and are allowed to travel downwardly aided by the action of gravity into said tube. With the articles thus positioned within said tube, they are grouped into an arrangement suitable for packaging. The groups thus formed travel downwardly aided by the action of gravity into the separating section and are separated within the tube by a distance sufficient to afford adequate packaging material for tucking at each end of the respective groups. With said material thus tucked at each end, the packaging material is secured in place to thereby form a package. In a preferred embodiment, the material is secured in place by the shrinking thereof.



3,664,089
EQUIPMENT FOR FORMING A STACK OF BRICKS OR OTHER ARTICLES AND FOR INTERLEAVING SUCCESSIVE LAYERS WITH THERMOPLASTIC FILM MATERIAL

Dieter Kack, Laggenbeck, Germany, assignor to C. Keller u. Co., Laggenbeck, Germany

Filed Nov. 9, 1970, Ser. No. 87,900
Claims priority, application Germany, Nov. 21, 1969, P 19 58 522.9
Int. Cl. B65b 41/12, 27/02
U.S. Cl. 53—199 7 Claims



Equipment for inserting a thermoplastic film material in zig-zag formation between layers of bricks comprises a roller conveyor for supporting the bricks and a support system for a roll of the film material. Drive motors cooperate to move the roll to and fro so that successive passes lay down a length of film material between each layer of bricks. When a stack is complete an outer covering is wound round the stack.

3,664,090
AUTOMATIC STUFFER FOR SLEEPING BAGS

Wesley H. Atkin, St. George, Utah, assignor to The Wennel Company West, St. George, Utah

Filed July 16, 1970, Ser. No. 55,523
Int. Cl. B65b 5/00, 39/00
U.S. Cl. 53—258 17 Claims

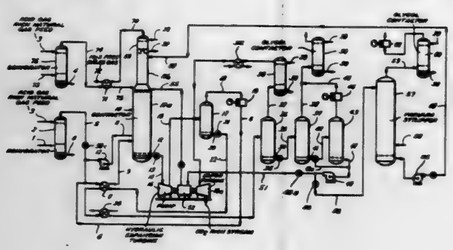
A machine for automatically stuffing a sleeping bag batting into an empty ticking. The machine comprises a reversible carriage which is adapted to receive a cut-to-length batting from a feed conveyor and carry it into an empty ticking with the carriage contacting the closed end of the ticking stretched over a funnel which receives the batting in such a

fashion that the ticking is pulled inside out to cover the batting. After carrying the batting into the ticking, the carriage is reversed to receive another batting length. A stuffing conveyor is designed to transfer the batting from the feed conveyor into overlying relation with the carriage which is elevatable in its batting-receiving position to take the batting off the conveyor and then transfer it into the ticking. The stuffing conveyor is controlled to move the batting at a



greatly faster rate of speed than the feed conveyor in order to provide ample time and space for working. Special control means comprising a timer disc or wheel is synchronized with the speed of the feed conveyor to operate the carriage and the supplementary stuffing conveyor with means for adjusting the control or timer disc to accommodate different lengths of batting. Limit switch control means are further provided for reversing the carriage and stopping it for the next batting-receiving operation.

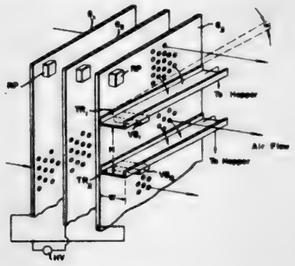
3,664,091
PROCESS AND SYSTEM FOR REMOVING ACID GAS FROM NATURAL GAS
Arnold M. Hegwer, Houston, Tex., assignor to Fish Engineering & Construction, Inc., Houston, Tex.
Filed June 27, 1969, Ser. No. 837,106
Int. Cl. F25j *3/00*
U.S. Cl. 55—29 8 Claims



A process and system for removing acid gas such as CO_2, H_2S, RSH and COS from a natural gas stream by physical absorption using a solvent which will absorb acid gas. The method and system is arranged such that the acid gas is removed from the natural gas without the aid of external refrigeration and with substantially no external heat.

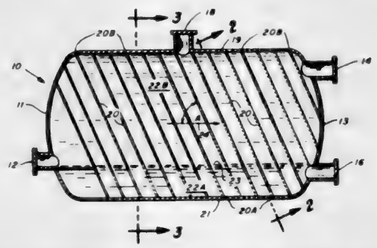
3,664,092
COLLECTING APPARATUS FOR ELECTROSTATIC PRECIPITATORS
James Henry Vincent, Plainfield, N.J., assignor to American Standard Inc., New York, N.Y.
Filed Aug. 24, 1970, Ser. No. 66,328
Int. Cl. B03c *3/76*
U.S. Cl. 55—112 6 Claims

Covers an electrostatic precipitator and mechanism associated therewith for collecting dust, dirt and other particulate matter received by the electrostatic precipitator. The electrostatic precipitator may include two or more apertured plates or grids which are vertically oriented and positioned parallel to each other and arranged so that air or gas laden with the particulate matter will traverse the apertures. The alternate grids may be connected to one terminal of a high voltage source while the other or adjacent alternate grids may be connected to the other terminal of the same source of voltage and grounded. The last grid, i.e., the downstream grid of the series, may be equipped with a tray for receiving the collected dust. The collected dust will reach the tray only



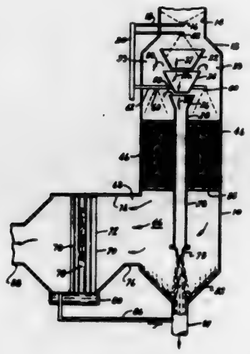
after it has been deposited on the grid to which the tray is attached. The collected dust is dislodged from the grid under the influence of the stroke or strokes of a rapper. The tray preferably may be inclined at a predetermined angle so that dust received in the tray may be caused to move downhill along the tray and then discharged into a hopper. A vibrator may be employed to produce repeated blows against the surface of the tray to assist in the removal of the particulate matter.

3,664,093
SEPARATOR VESSEL HAVING MULTIPLE PARALLEL SEPARATOR PLATES
Forrest L. Murdock, Sr., 2420 East 24th St., Tulsa, Okla.
Filed Apr. 22, 1970, Ser. No. 30,843
Int. Cl. B01d *19/00*
U.S. Cl. 55—174 6 Claims



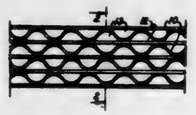
This invention relates to a means for separating solids from fluid or gas, fluids from gas, and commingled immiscible fluids from each other when one portion of such fluids has a heavier specific gravity than the other. When used to separate commingled immiscible fluids the invention includes a vessel having a fluid inlet, a light fluid outlet and a heavy fluid outlet, the outlets being spaced from the inlet, and a plurality of spaced apart parallel separator screens positioned within the vessel between the inlet and the outlet arranged such that fluid flowing from the inlet to the outlet passes through the separator screens, each separator screen being a planar foraminous reticulum of integrally formed relatively small width and small thickness strands, all of which are longitudinally downwardly inclined providing a multiplicity of continuous uninterrupted downwardly inclined paths on which coalesced droplets of heavier fluid may travel towards the bottom of the vessel.

3,664,094
FLOW BALANCING RESTRICTION IN GAS SCRUBBER
William E. Barkovitz, Lincoln Park, and Julius V. Przygocki, Trenton, both of Mich., assignors to American Standard Inc., New York, N.Y.
Filed July 27, 1970, Ser. No. 58,485
Int. Cl. B01d *45/00*
U.S. Cl. 55—223 9 Claims



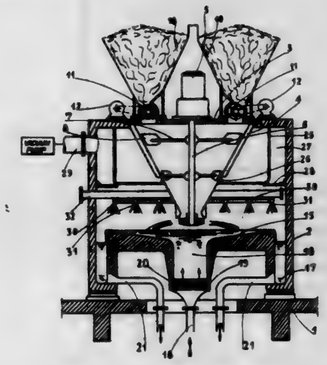
A wet dust collector or scrubber having an inertial separator section for removing a substantial percentage of the dust particles from the treated gas stream, a porous packing subjected to flushing liquid for producing a concentrated fog and assimilating the remaining dust particles into said fog, and a second separator section for removing the wet dust particles from the gas stream. The first inertial section preferably includes a special flow-limiting nozzle which exerts a balancing pressure drop on the flow of separated dust particles so that proper particle separator flows are achieved in the first inertial section.

3,664,095
EXCHANGE PACKING ELEMENT
Gunnar C. F. Asker, and Maurice A. Hubscher, both of 18 Industrial Drive, Trenton, N.J.
Filed Oct. 21, 1968, Ser. No. 768,995
Int. Cl. B01d *53/02*
U.S. Cl. 55—387 13 Claims



A packing for fluid treatment, either gaseous or liquid, for various surface contact effects such as drying of the fluid, heat exchange, ion exchange, molecular sieve separations and the like, wherein a laminated cellular structure of paper is coated throughout the cellular structure with a hard resin such as an epoxy resin in which such resin coating can be used alone for heat exchange purposes, or it can be further coated with dry solids to effect many of the fluid modifications.

3,664,096
PROCESS AND APPARATUS FOR SUSPENDING PARTICLES IN A LIQUID
Pierre LeJeune, Grenoble, France, assignor to Neyrpic-BMB, Grenoble, France
Filed Mar. 3, 1970, Ser. No. 16,015
Claims priority, application France, Mar. 7, 1969, 6906506
Int. Cl. B01d *46/00*
U.S. Cl. 55—466 5 Claims

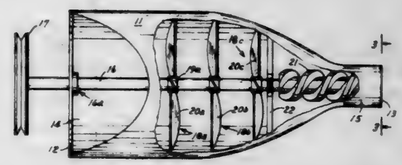


Particles to be suspended in a liquid are fed into an enclosure maintained at less than atmospheric pressure. In the enclosure the particles are subjected to mixing and then centrifuging to assist the vacuum in removal of air from the particles. The particles leaving the centrifuge are subjected to liquid jets to assist in removal of air and the particles then fall onto a layer of the suspending liquid and thereafter in homogeneous suspension in the liquid leave the enclosure.

ERRATUM

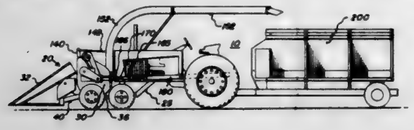
For Class 56—10 see:
Patent No. 3,664,057

3,664,097
GRASS-CLIPPINGS PELLETIZER FOR LAWNMOWERS
Richard A. Pedigo, 2030 Champa St., Denver, Colo.
Filed Dec. 17, 1970, Ser. No. 99,151
Int. Cl. A01d *43/00*
U.S. Cl. 56—1 6 Claims



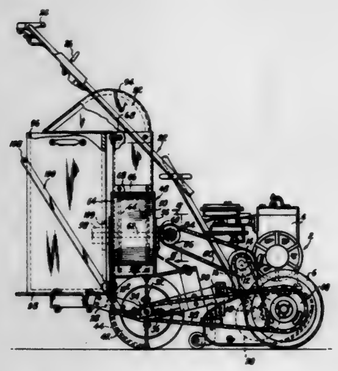
Attachment for power lawnmowers, driven by the lawnmower motor has a rotating shaft revolving fan blades and a screw auger within a hollow body. Grass clippings from the mower are sucked into an inlet in the body by the fan blades, compacted by the auger, and emitted through an apertured extrusion plate as dense pellets.

3,664,098
REMOVABLE SILAGE CHOPPER
Charles C. Thor, Box 554, Hutchinson, Minn.
Filed Apr. 26, 1971, Ser. No. 137,513
Int. Cl. A01d *45/02*
U.S. Cl. 56—13.9 11 Claims



A removable field silage chopper in which the chopper is removably connected to the front of a tractor with a steering link between the steerable wheels of the tractor and the steerable wheels of the chopper to provide for movement of the chopper and tractor in unison. The power is supplied to the chopper components from a demountable shaft connected through gearing to the power take-off of the tractor. Similarly, the chopper is pivotally mounted on the front of the tractor so that it may be raised or lowered between working and transport positions.

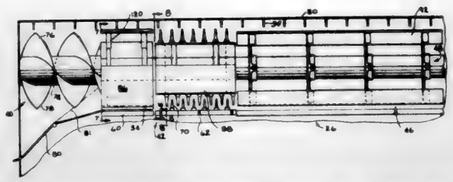
3,664,099
LAWN MOWER ATTACHMENT
Joseph Henry Chouinard, 34 Broad St., East Hartford, Conn.
Filed Oct. 12, 1970, Ser. No. 79,806
Int. Cl. A01d *35/22*
U.S. Cl. 56—13.3 5 Claims



A wheel supported attachment for a self-powered lawn mower is attached in trailing relation to the mower and a cylindrical brush, driven by power from the mower, sweeps grass cuttings and other debris upwardly into a hood in which a centrifugal blower operates to receive the material and blow it into an open-topped container removably mounted on the attachment.

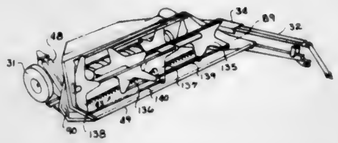
3,664,100
AXIAL COMBINE WITH ROTOR AND CONCAVE CONVERTIBLE TO SUPPORT DIFFERENT THRESHING ELEMENTS
Edward William Rowland-Hill, Lancaster, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed June 30, 1970, Ser. No. 51,304
Int. Cl. A01d *41/02*
U.S. Cl. 56—14.6 10 Claims

The threshing and separating sections of an axial flow combine have the rotors and concaves in front and rear parts



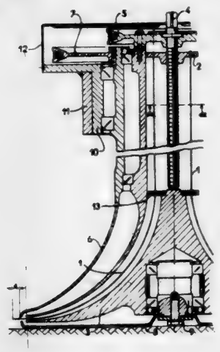
with the rear parts readily convertible to either spike threshing or rasp and concave-bar threshing.

3,664,101
CROP GATHERING AND CONVERGING REEL
Joseph C. Hurlburt, Leola, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed Sept. 11, 1970, Ser. No. 71,551
Int. Cl. A01d *57/00*
U.S. Cl. 56—220 21 Claims



A crop gathering and converging reel has two reel sections rotatably mounted on a transverse stationary tube with adjacent ends of the reel sections overlapping. The two reel sections have opposite angularities to sweep cut crop rearwardly into the header and laterally towards the center for converging the cut crop to a narrower discharge.

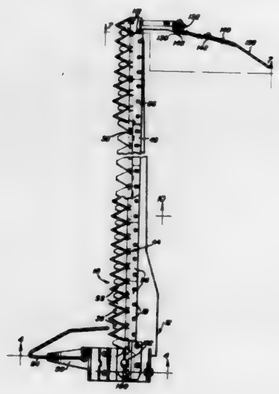
3,664,102
CUTTER MECHANISM FOR AGRICULTURAL MACHINES OR LAWN MOWERS
Walter Reber, 50, avenue du Morechal Foch, Saverne, France
Filed May 11, 1970, Ser. No. 36,184
Claims priority, application France, May 14, 1969, 6914884
Int. Cl. A01d *55/18*
U.S. Cl. 56—295 6 Claims



The disclosure is of a cutter mechanism for lawn mowers or for agricultural machines serving solely or partially for mowing which can be drawn by any motor vehicle to which

they can be adapted, or can be self-propelled, which is characterized in that the elements intended to cut are solid or hollow wires or bands which can be of any form, profile and constitution, which wires or bands are mounted on fast-rotating supports, and in that the operative lengths of the assembly of wires or bands mounted on one and the same rotating support can be modified, preferably simultaneously by one single adjustment or even if necessary by two or at the very maximum by three adjustments, and in that the assembly of wires or bands mounted on one and the same rotating support can be locked again in the desired position, preferably without adjustment or by one single adjustment, if necessary by two or at the very maximum by three adjustments.

3,664,103
MOWER CONSTRUCTION
Waldo D. McNair, 514 Ash Street, Myrtle Point, Oreg.
Continuation-in-part of application Ser. No. 807,738, Mar. 17, 1969, now abandoned. This application July 1, 1970, Ser. No. 51,636
Int. Cl. A01d *55/02*
U.S. Cl. 56—298 8 Claims



A mower bar construction including a toothed elongated stationary support bar and an elongated toothed mounting bar guidingly supported from the support bar for longitudinal reciprocation relative thereto. The teeth on the support bar overlie the teeth on the mounting bar and the latter includes an elongated upwardly opening guideway in which the mounting bar is reciprocally received. The support bar includes structure by which the effective width of the guideway may be varied and the outer end of the mower bar construction includes a rearwardly and downwardly inclined outer shoe for contact with the ground whose rear end may be adjusted in elevation. In addition the outer end of the mower bar construction includes an upstanding rearwardly projecting and inwardly inclined swath plate constructed of stiff but resilient material and provided with a rearwardly and upwardly inclined resilient swath strake or stick that is also slightly inwardly inclined at its rear end. Further, the corresponding base and head ends of the support and mounting bars are provided with coacting guide surfaces including a shallow longitudinal recess formed in the support bar in which the head end of the mounting bar is captively retained for longitudinal reciprocation and the recess includes a bottom longitudinal groove or channel in which a depending rib carried by the head end of the mounting bar is reciprocally received.

3,664,104
FRUITS AND NUTS PICKING DEVICE
Khosrow Jamshidi, 124-4th Avenue, N. W., Faribault, Minn.
Filed Mar. 24, 1971, Ser. No. 127,529
Int. Cl. A01g *19/08*
U.S. Cl. 56—332 5 Claims

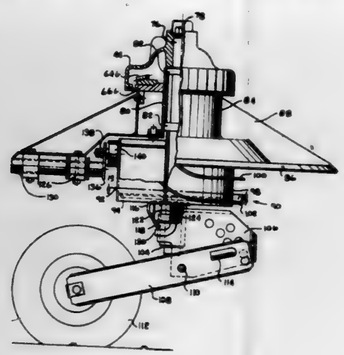


Apparatus for harvesting fruits from trees comprising first conduit means, coupling means adjacent a first end thereof and adapted for attachment to a source of vacuum. Throat means including inner and outer sleeve members are provided, the inner sleeve member having a fruit receiving opening at one end thereof, a generally flexible fruit receiving portion arranged inwardly of said fruit receiving opening and having an inwardly converging conical portion. The inwardly converging conical portion is arranged to have a minimum diameter which is not substantially greater than the diameter of the fruit being harvested. A generally rigid cylinder depends from the inwardly converging conical portion and is coupled to the inwardly converging conical portion at one end thereof. Aspirating openings are formed along the rigid cylinder adjacent the inwardly converging conical portion, and a second generally flexible sleeve or conical member is coupled to the rigid cylinder at the end opposite from the fruit receiving opening. This second flexible member is arranged to form a generally flexible closure in response to vacuum being applied through said aspirating openings. The outer sleeve is sealingly secured to the inner sleeve about axially spaced points disposed on opposite sides of said aspirating openings, and means defining a port are arranged on the wall of the outer sleeve with means for coupling said port to said first conduit means.

3,664,105
RAKE-TEDDING DEVICE
Thomas L. Stiefvater, New Holland; James G. Greiner, Leola; John K. Hale, and Thomas W. Waldrop, both of New Holland, all of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed May 24, 1971, Ser. No. 146,231
Int. Cl. A01d *79/00*
U.S. Cl. 56—370 6 Claims

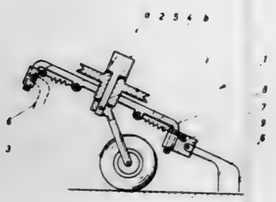
A double rotor cam actuated rake-tedding device in which each rotor includes a cam disposed around a cylindrical housing. Each cylindrical housing is rotatively mounted about a vertical axis and is normally held stationary with respect thereto by a locking pin which is spring biased to extend up through one of a series of apertures formed within a bottom floor portion of the cylindrical housing, the series of apertures being particularly spaced such that the cam as-

sociated therewith may be rotatively adjusted for raking or tedding. Further provided is a two speed input drive means



for selectively rotating the double rotors at a high and a low speed for tedding and raking respectively.

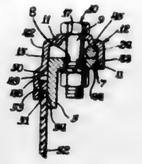
3,664,106
MANIPULATING WHEEL FOR A HAY OR CROP COLLECTING TURNING OR TREATING MACHINE
Josef Maegg, Glarus, Switzerland, assignor to Maschinenfabrik Fahr A.G., Gottmadingen, Germany
Filed Aug. 11, 1969, Ser. No. 848,879
Claims priority, application Germany, Aug. 13, 1968, P 17 82 308.4; June 9, 1969, P 19 29 104.4
Int. Cl. A01d *79/00*
U.S. Cl. 56—370 25 Claims



In a hay manipulating machine, a manipulating wheel supported from the ground by a support wheel and rotatable about an axis, operating prong means having a rest and an operating position being coupled to the manipulating wheel in a manner that they assume the rest position when the manipulating wheel is in rest position and they assume the operating position when the manipulating wheel is rotated about its axis.

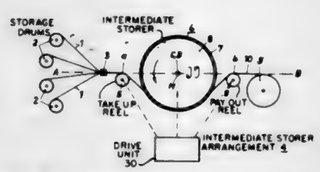
3,664,107
RAKE TOOTH MOUNTING
Arthur H. Keller, Western Springs, Ill., assignor to International Harvester Company, Chicago, Ill.
Continuation-in-part of application Ser. No. 862,853, Oct. 1, 1969, now abandoned. This application Mar. 9, 1971, Ser. No. 122,405
Int. Cl. A01d *77/00*
U.S. Cl. 56—400 14 Claims

In a wheel rake, a mounting for a rake tooth structure on the wheel which also serves to secure a wheel shield to the wheel comprising a clip having a tooth mounting portion positionable on the periphery of the wheel and an inwardly extending flange with a projection thereon functioning to in-



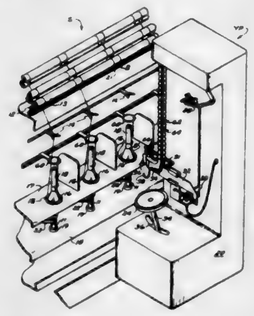
dent the fiberboard shield as the clip is drawn up against the rim of the wheel by a securing bolt.

3,664,108
INTERMEDIATE STORER FOR APPARATUS FOR STRANDING A TWISTED UNIT OF A CABLE
Alfred Strulow, and Klaus Haecher, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed July 22, 1969, Ser. No. 843,664
Claims priority, application Austria, July 23, 1968, A 7117/68; A 7118/68
Int. Cl. H01b *13/04*
U.S. Cl. 57—34 AT 4 Claims



An intermediate storer positioned between a take up point for forming a twisted unit from cable elements and a pay out point engages and rotates the twisted unit about an axis of rotation a number of twists and provides a different direction of stranding of the twisted unit for individual section lengths. A take up reel at the take up point supplies the twisted unit to the storer in the direction of the axis of rotation of the storer and a pay out reel at the pay out point and on the axis of rotation removes the twisted unit from the storer in the direction of the axis of rotation.

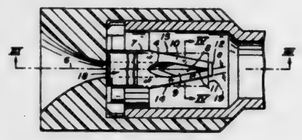
3,664,109
METHOD AND MEANS FOR YARN RETRIEVAL
Roberto Escursell-Prat, Rda. General Mitre, 105 4.°,1.°, Barcelona 6, Spain
Filed Sept. 24, 1969, Ser. No. 860,501
Int. Cl. D01h *15/00*
U.S. Cl. 57—34 R 38 Claims



In the automatic servicing of an end-down condition at a

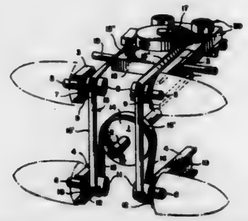
delivery of a textile spinning frame or the like, wherein yarn is sucked from the bobbin and thereafter traveler-threaded and joined with yarn issuing from the frame's delivery rolls, satisfactory suction-retrieval of the bobbin yarn is facilitated by elevating and relatively slowly rotating the bobbin in an unwinding direction, by directing an air blast upwardly through the spinning ring along the surface of the bobbin yarn, and by beating such surface. Excessive twist-loss within the yarn withdrawn from the bobbin after its free end has been retrieved is minimized by rotating the bobbin relatively rapidly in an unwinding direction during such withdrawal. The bobbin is elevated and rotated without being unseated from its spindle. A beater effectively frees the end of the bobbin yarn without deteriorating the same, and, in one embodiment, frees itself of any entanglement which might inadvertently occur.

3,664,110
SLIDING RADIALLY-CLAMPING GRIPPER
Herbert Stalder, Geneva, and Jean Pellaton, Chatelaine/Geneva, both of Switzerland, assignors to Electrospin Corporation, Columbus, Ohio
Filed Mar. 30, 1971, Ser. No. 129,491
Claims priority, application Switzerland, Apr. 3, 1970, 4945/70
Int. Cl. D01h *1/12, 7/92*
U.S. Cl. 57—77.3 11 Claims



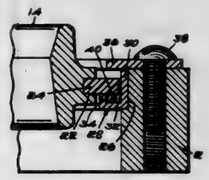
A gripper for use in open-end spinning of textile fiber in which axial movement of fiber is permitted through a bevelled tubular element while the fiber moves through a generally V-shaped groove and has an axial pressure exerted against it by suitable resilient means. The gripper is rotated while the fiber is moved axially under the radial pressure so that a textile yarn is formed.

3,664,111
MULTI-SPINDLE DRIVE MEANS FOR SPINNING AND TWISTING MACHINES
Klaus Weber, and Fritz Urbahn, both of Remscheid, Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany
Filed June 11, 1970, Ser. No. 45,431
Claims priority, application Germany, June 13, 1969, P 19 30 208.0
Int. Cl. D01h *1/24*
U.S. Cl. 57—105 6 Claims



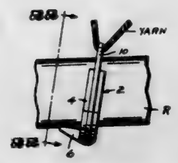
Multi-spindle, band or belt drive for spinning and twisting machines with the drive pulley located conveniently for quick belt changes. The belt runs in a saddle-like fashion around the drive pulley, arcuately about several spindle whorls, and about deflection and/or tensioning pulleys.

3,664,112
ROTATING SPINNING RING
Anthony Netti, Methuen, Mass., and Douglas Bussiere, Plaistow, N.H., assignors to Davis & Furber Machine Company, North Andover, Mass.
Filed Aug. 11, 1970, Ser. No. 62,851
Int. Cl. D01h *7/56, 7/62*
U.S. Cl. 57—120 11 Claims



A rotatable spinning ring whose rotation is induced by the friction of the rotating traveler thereagainst during the spinning operation with the ring having a circular bearing portion made of non-metallic bearing material which slidably rotates on a circular metallic bearing surface. The non-metallic bearing material acts as an insulator to prevent effectively the transfer of heat generated at the sliding bearing surfaces to the ring.

3,664,113
TRAVELER WITH MEANS FOR LIMITING FRICTION AND TILTING
Andrew J. Wayson, Needham, Mass., assignor to Merriman, Inc., Hingham, Mass.
Filed Jan. 14, 1970, Ser. No. 2,913
Int. Cl. D01h *7/52, 7/60*
U.S. Cl. 57—125 21 Claims

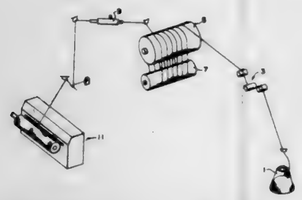


Travelers for use on a vertical or horizontal type spinning or twisting ring having integral rearward extensions that utilize the air velocity acting thereagainst to minimize the frictional engagement of the traveler with ring and to reduce the angle of tilt of the traveler during operation so that the upper part of the traveler does not come into contact with the top of the ring.

3,664,114
SPUN POLYESTER STRANDS AND METHOD FOR MAKING
Robert L. Ammons, and Robert B. Moore, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed July 31, 1969, Ser. No. 846,419
Int. Cl. D02g *3/02*
U.S. Cl. 57—140 R 10 Claims

Novel spun polyethylene terephthalate strands of improved percent elongation at break and initial modulus are obtained by (1) passing the strand under tension through a jet gas stream such as steam at a rate and gas temperature that effects fusion to the degree that the pulse propagation of the treated strand over a strand distance of 60 centimeters while

under 20 grams tension is reduced to less than 300 microseconds or (2) passing the spun strand under tension

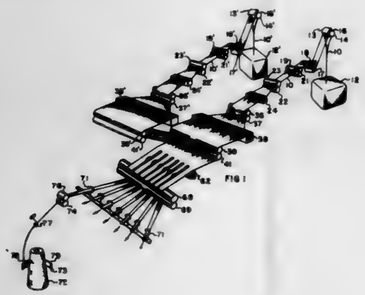


around a roll heated to a temperature of about 175° to 195° C. at a rate of about 300 to 500 feet per minute.

3,664,115
METHOD OF MAKING A SEMI-CONTINUOUS FILAMENT COMBINATION YARN

George A. Watson, Davidson, N.C., assignor to Celanese Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 606,982, Jan. 3, 1967, now abandoned, and a continuation-in-part of 763,468, Aug. 5, 1968, now Patent No. 3,504,489, which is a division of application Ser. No. 650,795, July 3, 1967, now Patent No. 3,417,560, which is a continuation-in-part of application Ser. No. 382,263, July 13, 1964, now abandoned. This application Apr. 6, 1970, Ser. No. 25,675. The portion of the term of the patent subsequent to Dec. 24, 1985, has been disclaimed.
Int. Cl. D02g *1/00*
U.S. Cl. 57—156 10 Claims



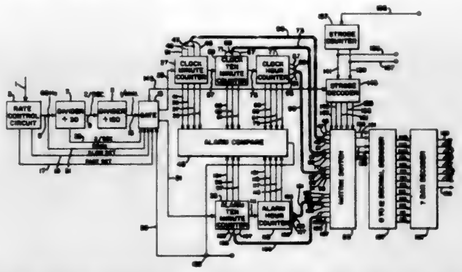
A method, apparatus and product comprising producing a semi-continuous filament yarn having staple yarn characteristics from crimped tow comprising longitudinally slitting a deregistered tow comprising different fibers into strips of filaments either with or without a tow spreading stage and subsequently twisting the strips into yarn. The tows differ from each other in the fibers they contain, but each individual tow may contain a relatively uniform blend of different fibers.

3,664,116
DIGITAL CLOCK CONTROLLED BY VOLTAGE LEVEL OF CLOCK REFERENCE SIGNAL

Paul Gene Emerson; Hans Jurgen Thamhain, both of Liverpool, and Bruce Cromwell McIntosh, Utica, all of N.Y., assignors to General Electric Company

Filed Apr. 6, 1970, Ser. No. 25,930
Int. Cl. G04c *3/00, 21/04;* G04b *19/30*
U.S. Cl. 58—23 15 Claims

A digital clock circuit particularly suited for monolithic integration wherein the counting rate of the clock is variable from a normal to a faster rate in response to the level of a 60

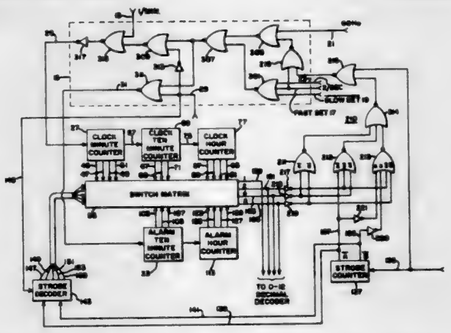


Hz voltage derived from the power line and applied to a single input terminal as a clock reference signal.

3,664,117
NON-TIME INDICATING NUMBER CORRECTION CIRCUIT

Bruce C. McIntosh, Utica, N.Y., assignor to General Electric Company

Filed June 5, 1970, Ser. No. 43,786
Int. Cl. G04c *9/02*
U.S. Cl. 58—35 W 6 Claims



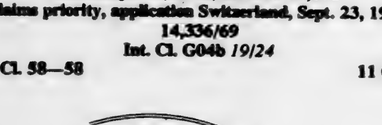
When power is applied to a digital clock, the counters therein can assume forbidden states and non-time indicating numbers are generated. This problem is eliminated by a gate circuit responsive to each such non-time indicating number to apply a high frequency signal source to the counter to advance the counter to a time indicating number. Because non-time indicating numbers can also occur on a transient basis, the gate circuit also includes a time delay to avoid response to such transients. The time delay may be provided by a second signal synchronized with the source of transient generation and gated with the strobe signal in a phase to block response to the transient for one-half cycle of the second signal. This non-time indicating number correction circuit is also employed to correct non-time indicating numbers in the alarm time counter when the digital clock is switched to present an alarm time indication.

3,664,118
ELECTRONICALLY CONTROLLED TIMEPIECE USING LOW POWER MOS TRANSISTOR CIRCUITRY

Richard S. Walton, Lancaster, Pa., assignor to Hamilton Watch Company, Lancaster, Pa.

Continuation-in-part of application Ser. No. 768,076, Oct. 16, 1968, now Patent No. 3,560,998. This application Sept. 9, 1970, Ser. No. 70,787. The portion of the term of the patent subsequent to Feb. 2, 1988, has been disclaimed.
Int. Cl. B04c *3/00;* G04b *19/30*
U.S. Cl. 58—50 R 25 Claims

Disclosed is an electronically controlled timepiece suitable for use as a wristwatch. A novel solid state electronic oscillator operating at a frequency substantially in excess of the desired timekeeping rate is connected to a divider in the form of a chain of integrated circuit transistor stages formed

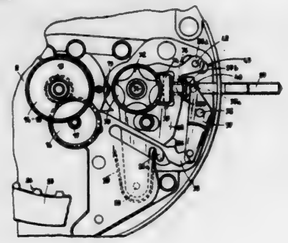


of complementary MOS devices. The divider may be formed from static counters or a combination of dynamic and static counters. Connected to the output of the divider is a display actuator and timekeeping display.

3,664,119
CALENDAR ELECTRIC TIMEPIECE

Rene Besson, Neuchatel, Switzerland, assignor to Ebauches S. A., Neuchatel, Switzerland

Filed July 30, 1969, Ser. No. 846,056
Claims priority, application Switzerland, Aug. 30, 1968, 13111/68
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 1 Claim



The present invention relates to a calendar electric timepiece.

3,664,120
DRIVE MECHANISM FOR AN INDICATOR OF THE DATE OR THE DAYS OF THE WEEK

Jean-Pierre Golay, and Bernard Gerber, both of Tramelan, Switzerland, assignors to Record Watch Co., S.A., Tramelan, Switzerland

Filed Sept. 21, 1970, Ser. No. 74,871
Claims priority, application Switzerland, Sept. 23, 1969, 14,336/69
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 11 Claims

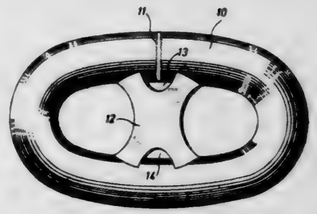


A driving mechanism for a date-or-day indicator comprises a gear driven at the rate of *n* revolutions daily and carrying a pivotal lever adapted for meshing with a drive gear secured to the indicator. The lever is moved by a cam coaxial with the drive gear and located in the same plane of the lever and revolving at the rate of $(n+1)$ revolutions daily in the same direction as the driven gear so that a nose of the cam causes the lever to enter once every 24 hours into the path of the drive gear to advance the indicator.

3,664,121
CHAIN LINK

Carl-Henning Cassøe, Ramnæs, Sweden, assignor to Ramnæs Bruks Aktiebolag, Ramnæs, Sweden

Filed Sept. 8, 1970, Ser. No. 70,065
Int. Cl. F16g *13/06*
U.S. Cl. 59—84 2 Claims

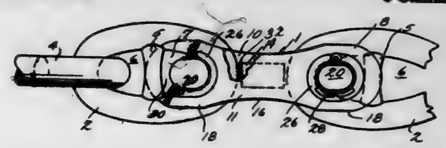


A chain link having a central stud between the sides of the link and a weld at least in one side. The stud is provided with a notch at least in the end facing the weld shaped so that the weld is visible also at the inside of the link. The stud is symmetrical and has notches at both ends.

3,664,122
CHAIN CONNECTING LINK

Charles D. Limesbank, Wyncroft, Media, Pa., assignor to Baldt Anchor and Chain Corporation-a subsidiary of Baldt Corporation, Chester, Pa.

Filed Apr. 13, 1970, Ser. No. 27,764
Int. Cl. F16g *15/04*
U.S. Cl. 59—85 6 Claims



A special link for use in detachably connecting links of chain and other objects to stud-link marine anchor chains. Said connecting link having a positioning member which limits the movement of said stud-link chain with respect to said connecting link so that said connecting link is prevented from damaging, weakening or dislodging the studs in said stud-link chain.

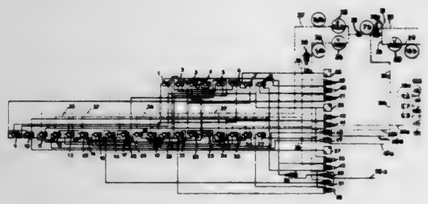
3,664,123
PNEUMATIC LOGICAL RELAYS SYSTEM FOR REMOTE-CONTROLLING AND MONITORING A THERMAL ENGINE

Marc Edouard Zucca, and Jean-Paul Filippi, both of La Ciotat, France, assignors to Chantiers Navals de la Ciotat, La Ciotat (Bouches-du-Rhone), France, by said Zucca, a part interest

Continuation-in-part of application Ser. No. 666,052, Sept. 7, 1967, now abandoned. This application July 2, 1969, Ser. No. 3,590
Int. Cl. F01b *27/04, 29/04*
U.S. Cl. 60—16 13 Claims

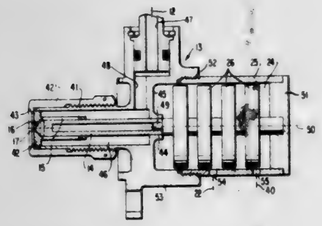
Device for operating an air-starting engine comprising a

first control means which receives starting trigger pulses and supplies a storage unit actuating a pre-lubrication pump and a fuel-supply valve, a first time-lag device with a transit time t_1, which at the end of the time t_1, opens a starting-air valve



and closes said pump, a second time-lag device with a transit time t_2, acting upon said storage unit which, at the end of the time $t_1 + t_2$, suppresses the pressure upon said starting-air valve and upon said fuel-supply valve.

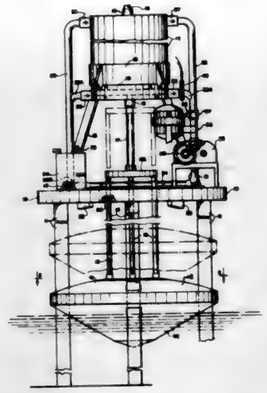
3,664,124
GAS TURBINE ENGINE
Adolf Fehler, Puchheim, Germany, assignor to Motoren-und Turbinen-Union Muchen GmbH, Postfach, Muenchen, Germany
Filed Apr. 17, 1970, Ser. No. 29,479
Claims priority, application Germany, Apr. 17, 1969, P 19 19 488.8
Int. Cl. F02c 9/08
U.S. Cl. 60—39.28 27 Claims



A gas turbine engine with a compressor, a combustion chamber and a turbine, in which the fuel metering device, controlling metering slots, is combined with the injection installation so as to form an integral component thereof, for example, within a common housing.

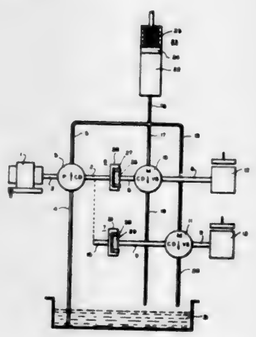
3,664,125
OFFSHORE POWER CONVERSION APPARATUS
Edward A. Strange, P.O. Box 205, Florence, Oreg.
Filed Mar. 30, 1970, Ser. No. 23,792
Int. Cl. B63h 19/02; F04b 17/00
U.S. Cl. 60—51 1 Claim

An apparatus located in a body of water which has a fluctuating water level for actuation of a float assembly which is coupled to fluid displacement means. Fluid is pumped to a motor during both upward and downward movement of the float assembly with said assembly being retained against lateral movement by ground engaging supports. The motor is



coupled to power conversion means, as for example a generator as shown.

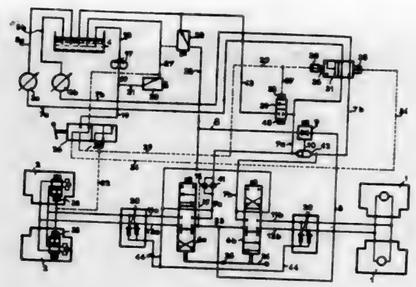
3,664,126
VALVELESS HYDRAULIC CONTROL
James H. Sayder, Battle Creek, Mich., assignor to Clark Equipment Company
Filed Nov. 27, 1970, Ser. No. 93,349
Int. Cl. F15b 15/18
U.S. Cl. 60—52 HD 10 Claims



A valveless control apparatus for hydraulic equipment having a pump and two hydraulic motors all of equal capacity in which the selective braking of the motors controls the flow of fluid to and from the hydraulic equipment without the use of any valves.

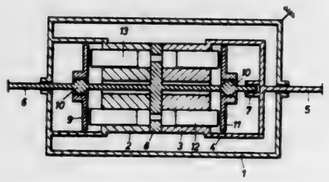
3,664,127
HYDRAULIC POWER TRANSMISSIONS
Pierre A. Praddaude, Crepy-en-Valois, France, assignor to Societe Anonyme Poclain, (Oise), France
Filed June 5, 1970, Ser. No. 43,831
Claims priority, application France, June 11, 1969, 6919398
Int. Cl. F16d 41/00
U.S. Cl. 60—53 R 3 Claims

The present invention relates to a hydraulic power transmission constituted by two groups of hydraulic motors by at least one source of pressurized fluid feeding the motors of the first group, while, concomitantly, the motors of the second group are driven by their shaft, and by a first speed limiter arranged on the delivery conduit of the first group of motors, wherein the motors of the second group having a "-free wheel" function and being connected to ensure this function, a conduit connects the delivery of the first group of



motors to the feed of the second group of motors and is connected upstream of the first speed limiter, while a second speed limiter is arranged downstream of the point of connection of the conduit, in the irrigation circuit of the motors of the second group.

3,664,128
POWER TRANSMISSION WITH INTERNAL POWER DISTRIBUTION
Walter Heyl, Klein Umstadt, Germany, assignor to Linde A. G., Hoellriegelskreuth, Germany
Filed Jan. 7, 1971, Ser. No. 104,581
Claims priority, application Germany, Jan. 7, 1970, P 20 00 797.0
Int. Cl. F16h 39/46
U.S. Cl. 60—53 A 10 Claims

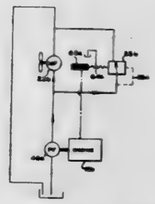


This invention relates to a power transmission with a drive shaft and with an output shaft, and with branched internal power distribution consisting of a direct branch for transmission of mechanical drive and a hydrostatic power transmission in a power branch. The hydrostatic power transmission consists of a primary swash plate unit and a secondary swash plate unit which are disposed coaxially with respect to each other and rest against a common symmetrical control element.

3,664,129
HYDRAULIC COOLING SYSTEM
Delmar G Schwab, Portland, Oreg., assignor to Hyster Company, Portland, Oreg.
Original application May 8, 1968, Ser. No. 727,442, now Patent No. 3,540,540, dated Nov. 11, 1970. Divided and this application June 3, 1970, Ser. No. 42,998
Int. Cl. F15b 21/04
U.S. Cl. 60—53 R 25 Claims

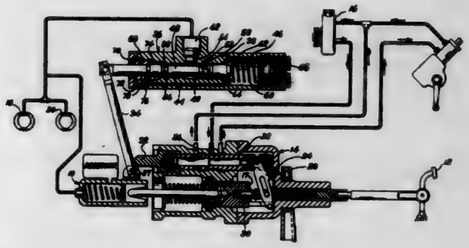
A cooling system for a lift truck which includes a hydrostatic cooling fan mounted within a duct portion of the counterweight rearwardly of the engine and radiator to draw engine heat through the radiator and dissipate it from the rear

of the truck. In one embodiment the fan motor is driven by a fixed displacement pump and is connected in series with other hydraulic accessories. A thermo-modulated pressure relief valve connected in parallel with the fan motor varies the differential pressure across the fan motor and thus fan speed in response to changes in temperature of transmission oil and largely independently of system pressures and engine



speed. In a second embodiment a hydraulic fan motor is driven by a variable pressure compensated, variable displacement pump. The motor is connected in series with a thermo-modulated pressure-reducing valve and in parallel with other hydraulic accessories of the lift truck to vary fan speed with variations in engine temperature and independently of variations in system pressures and engine speed.

3,664,130
HYDRAULIC BRAKE PRESSURE LIMITING DEVICE
Robert E. Meyers, South Bend, Ind., assignor to The Bendix Corporation
Filed Nov. 16, 1970, Ser. No. 89,725
Int. Cl. F15b 7/00, 11/10; B60t 8/06
U.S. Cl. 60—54.5 P 8 Claims



A pressure limiting device is provided which prevents the output pressure from a power braking system from exceeding the brake line pressure capacity. During normal brake application the pressure limiting device does not function. If hydraulic boost pressure combined with manual operator input force become too great, and brake line pressure exceeds a predetermined value which threatens to rupture the brake line hoses, the limit device functions to prevent further system pressure buildup.

3,664,131
HYBRID ROCKET FUEL AND PROCESS OF PROPULSION USING TETRAFORMALTRIAZINE
Eugene D. Vessel, Santa Clara, Calif., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Feb. 1, 1966, Ser. No. 523,976
Int. Cl. C06d 5/10
U.S. Cl. 60—220 4 Claims

Tetraformal-tris-azine is a high energy fuel material suitable for use in hybrid rocket motors either as a compound per se or admixed with suitable binders.

3,664,132
HYPERGOLIC PROPELLANT SYSTEMS USING TETRAFORMALTRISAZINE

Eugene D. Venzel, and Robert W. Ebeling, Jr., both of Santa Clara, Calif., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Feb. 14, 1966, Ser. No. 527,099
Int. Cl. C06d 5/10
U.S. Cl. 60—220 3 Claims

Tetraformaltrisazine is hypergolic with respect to concentrated nitric acid and this fuel oxidizer combination is usable in hybrid combustion systems.

3,664,133
SUPPORTED GRAIN DESIGN FOR HIGH ACCELERATION ROCKET MOTORS

Bernard L. Ivanciow, Sunnyvale, and Robert A. Chase, Los Altos Hills, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 30, 1965, Ser. No. 469,974
Int. Cl. F02k 9/04
U.S. Cl. 60—255 10 Claims



1. A solid propellant rocket motor comprising a case having a generally cylindrical chamber section, a forward closure, and a nozzle section;

for carrying solid propellant grain, a plurality of structural reinforcements constituting ribs extending longitudinally in said cylindrical chamber, disposed with the heights of said ribs positioned generally radially of said chamber and spaced circumferentially from one another around the interior of said chamber;

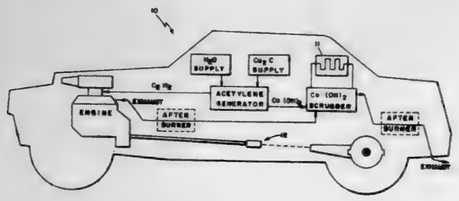
means connecting said reinforcement to said case at the said forward closure so that acceleration loads place said reinforcements in tension; and

solid propellant grain bonded to said reinforcements.

3,664,134
COMBUSTION SYSTEM

Joseph R. M. Seitz, Boston, Mass., assignor to The Whole Earth Corporation, Rockland, Mass.

Filed Aug. 10, 1970, Ser. No. 62,329
Int. Cl. F01n 3/16; F02b 75/10
U.S. Cl. 60—274 18 Claims

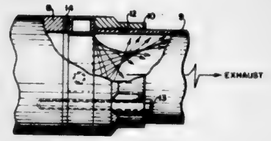


An internal combustion system comprising structure defining a reaction zone for reacting calcium carbide and water to obtain acetylene and calcium hydroxide, structure defining a combustion zone for burning acetylene and producing motive power, including means for transferring acetylene to said combustion zone, and means for passing combustion products of the combustion zone through the calcium hydroxide slurry produced by the reaction zone.

3,664,135
POLLUTION CONTROL AND COOLING DEVICE FOR EXHAUST SYSTEMS

Odrey J. Lirette, 125 York, Belle Chasse, La.

Filed Sept. 14, 1970, Ser. No. 71,767
Int. Cl. F01n 3/04
U.S. Cl. 60—310 4 Claims

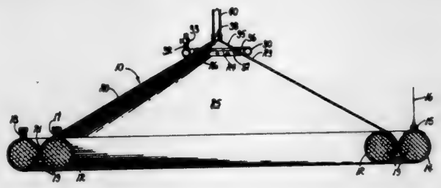


Exhaust cooling system for a marine engine which prevents any heat corrosion deterioration of the exhaust pipe and eliminates substantially all air pollution from the exhaust; the system includes a water spray element immediately adjacent to the exhaust manifold which injects spiraling divergent, crossing water sprays about 360° of the element's circumference at the very beginning of the exhaust system by means of a basic wafer structure interposed between and in line with the manifold and the exhaust pipe; two embodiments are disclosed, one designed for insertion between flanges and the other for insertion between a screw thread/flange joint; the water sprays cool down the exhaust sufficient to allow touching of the exhaust pipe throughout its length and absorb practically all of the solid pollutants in the exhaust fumes.

3,664,136
COLLECTING DEVICE FOR SUBMARINE OIL LEAKAGE

Claude C. Laval, Jr., 2444 North Farris Ave., and Pete P. Peters, 1132 E. Santa Ana Ave., Both of Fresno, Calif.

Filed Nov. 28, 1969, Ser. No. 880,728
Int. Cl. E02b 3/00, 15/04; E02d 23/00
U.S. Cl. 61—1 12 Claims

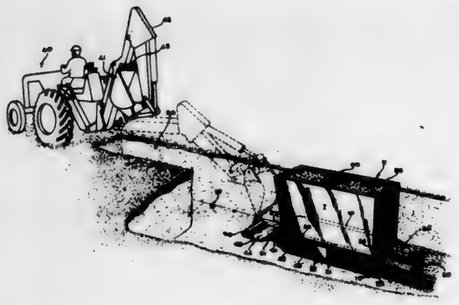


A device for collecting oil leakage from formations beneath a body of water constructed of flexible, impervious sheet material for compact storage that can be readily erected for use by inflation. The device has a pair of predetermined upper and lower torus-shaped envelopes connected by a frusto-conical shroud with the lower envelope being of a larger diameter and adapted to be filled with a non-buoyant material to distend the same and to open the shroud to its frusto-conical form in circumscribing relation to a point of oil leakage. The upper envelope is relatively smaller and is adapted to be inflated with air to make it buoyant and to circumscribe an opening having a discharge conduit extended therefrom for transferring the oil leaking from the bottom of the body of water internally of the collecting device to the surface.

3,664,137
SYSTEM FOR CONSTRUCTING DRAIN LINES

James E. Lett, 5800 Paula Drive, Knoxville, Tenn.

Filed May 11, 1970, Ser. No. 36,021
Int. Cl. E02b 11/02; E02f 5/12
U.S. Cl. 61—11 9 Claims

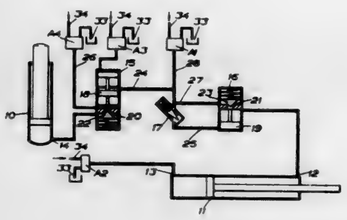


A system for constructing a drain line including laying a uniformly thick and contoured bed of particulate material, such as gravel, within the confines of a trench.

3,664,138
MINE ROOF SUPPORT CONTROL SYSTEM

Kenneth Cooper, Orrell, near Wigan, England, assignor to Gullick Dobson Limited, Ince, Wigan, England

Filed Mar. 17, 1970, Ser. No. 20,324
Claims priority, application Great Britain, Mar. 26, 1969, 15,839/69
Int. Cl. E21d 15/44
U.S. Cl. 61—45 D 5 Claims



Mine roof supports have a fluidic logic control system for raising and lowering the supports and for advancing the supports in the form of a number of units one on each support. Each unit has a first OR gate which controls a first interface valve to cause the support to lower and advance itself, a second interface valve causing the support to rebrace itself controlled by a second OR gate interconnected with the first through an AND gate which receives inputs from the first OR gate and a sensor denoting that the advance has been completed, an AND gate receiving inputs from a sensor denoting that the support is rebraced and from the second OR gate to provide an input for the first OR gate of the next unit and a reset signal which is passed through a delay restrictor to reset the first OR gate of the support.

3,664,139
REMOVABLE SELF-JETTING PILE

Richard F. Seixner, 140 Munsey Place, Manhasset, Long Island, N.Y.

Filed Oct. 1, 1969, Ser. No. 862,684
Int. Cl. E02d 7/24, 5/60
U.S. Cl. 61—53.74 1 Claim

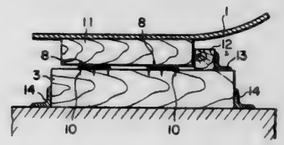


A removable self-jetting pile comprises a body shell, a concrete conically shaped nose portion, and a jetting tube extending from an opening in the nose portion to the upper portion of the shell. The pile is formed by setting one end of the shell in an inverted truncated cone-shaped pouring form, mounting the jetting tube in the truncated end of the form and supporting it within the shell, and pouring concrete into the shell until the pouring form and at least a lower adjacent portion of the shell are filled with the concrete.

3,664,140
BUILDING-SLIP HAVING A RESILIENT SUPPORTING MEMBER

Soichiro Shimizu, 7-5, 2 Chome, Higashi-Shimbashi, Minato-ku, Tokyo, Japan

Filed May 19, 1970, Ser. No. 38,796
Claims priority, application Japan, May 28, 1969, 44/40950
Int. Cl. B63c 3/00
U.S. Cl. 61—64 3 Claims



The present invention relates to a building-slip for ships having a resilient supporting member characterized in that a resilient supporting member consisting of a synthetic resin sliding plate secured integrally to the upper surface of a resilient material such as rubber is placed on and fixed to the lower wooden block secured to the base of building-slip.

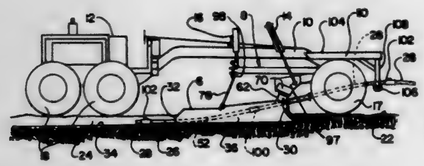
3,664,141
RIGID PIPE LAYING APPARATUS

Shelford S. Wyatt, P.O. Box 8, Esparto, Calif.

Filed June 1, 1970, Ser. No. 42,401
Int. Cl. E02f 5/10; F16l 1/00
U.S. Cl. 61—72.5 12 Claims

A trencher adapted to be secured to graders and like construction equipment is provided with a rearwardly and

downwardly sloping pipe passageway which terminates at the aft end of the trencher and exhibits a gentle curvature permitting elastic deflection of the pipe as it moves through the passageway. The trencher is rigidly supported from the grader frame at the forward end above a throw-out plate and at a rearwardly spaced intermittent point to assure the formation of a straight line trench having a closely controlled and constant depth. Relatively rigid, endless pipe, which may include intermittent T-sections, is laid out over the ground, picked up by a pipe guidance and suspension device mounted to the forward end of the grader, moved into and through the passageway and placed into the trench as the grader moves along.

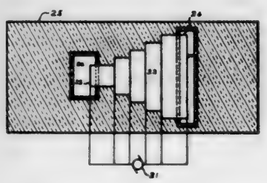


3,664,142
METHOD OF BURYING AN OBJECT IN THE SOIL
Joost Werner Janse, Rijswijk, Netherlands, assignor to Nederlandse Maatschappij voor Werken Buitengaats (Netherlands Offshore Company) N.V., The Hague, Netherlands
Filed Sept. 3, 1970, Ser. No. 69,236
Int. Cl. F16l 1/00; E02f 5/12
U.S. Cl. 61—72.4 3 Claims



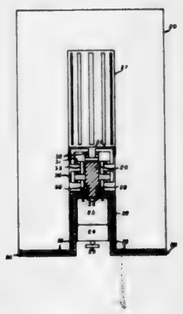
A method of burying objects, for example pipelines and cables in the bottom of the sea includes loosening the soil, laying the object in the loosened soil and compacting the soil placed on top of the object laid by means of vibrators.

3,664,143
LOW TEMPERATURE HEAT TRANSFER DEVICE
Robert L. Carroll, 115 Wisteria Road, Hanahan, S.C.
Filed May 8, 1970, Ser. No. 35,821
Int. Cl. F25b 21/02
U.S. Cl. 62—3 7 Claims



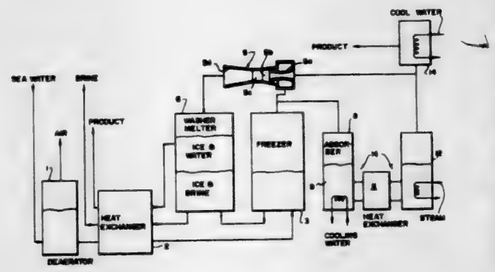
A heat transfer device for obtaining extremely low temperatures which transfers heat by electrical means through a series of transfer units of differing size thereby allowing for the successive lowering of temperature through each unit. Each transfer unit is constructed with filaments of superconducting material through an insulated block.

3,664,144
SELF POWERED REFRIGERATED DISPOSABLE CONTAINER
Robert I. Sarbacher, Arcadia, Calif., assignor to John S. Bogue, Santa Monica, Calif.
Filed Dec. 15, 1969, Ser. No. 884,957
Int. Cl. F25b 21/02
U.S. Cl. 62—3 6 Claims



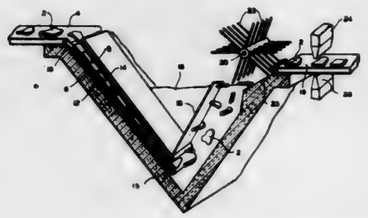
A container is equipped with a thermoelectric cooling device powered by a reserve battery which may be placed in a cavity within the container. An extension of the cold zone of the Peltier cooling device projects into the container in such a manner as to distribute the cooling surface to effect more rapid cooling of the contents. A heat exchanger is provided to carry away both the heat generated in the Peltier device and the heat generated by the internal resistance of the reserve battery during discharge. Provision is made to prevent heat carried by the battery terminals from entering the cooling compartment.

3,664,145
VACUUM-FREEZING, EJECTOR ABSORPTION SOLUTION SEPARATION SYSTEMS AND METHODS
Wallace E. Johnson, 1116 Olympian Boulevard, Beloit, Wis.
Filed Oct. 13, 1969, Ser. No. 865,834
Int. Cl. B01d 9/04
U.S. Cl. 62—58 20 Claims



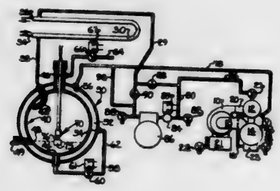
There is disclosed herein novel systems and methods for separating a solvent in substantially pure form from a solution including freezer means for producing vapors and a slurry of solvent and solute, means for separating a frozen solvent and liquid solute, ejector means for moving the major portion of the solvent vapor from the freezer means, bypass means for increasing the temperature and pressure of the remaining portion of the solvent vapor produced in the freezer means and means for bypassing the remaining portion of the solvent vapors from the freezer means to the bypass means.

3,664,146
FOOD PRODUCT QUICK FREEZING METHOD AND APPARATUS
Edward E. Butts, Niles, Mich., assignor to Clark Equipment Company
Filed Dec. 18, 1970, Ser. No. 99,566
Int. Cl. F25d 13/06
U.S. Cl. 62—63 6 Claims



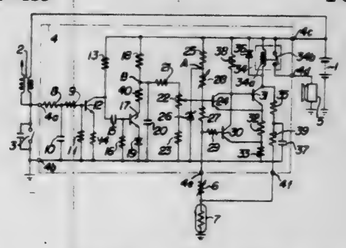
This is a method and apparatus for the quick freezing of foods products, particularly meat, in which the food product is immersed in a liquid coolant maintained below 32° F. The liquid coolant, in the preferred form, is a halocarbon compound particularly dichlorodifluoromethane (refrigerant 12). The food product is pressed into a flat position by being held between two belts as it is immersed in the refrigerant for freezing. After freezing, the product floats to the top of the refrigerant and is retrieved and passed between low pressure steam or hot air jets to thaw the surface of the food parcel to prepare it for wrapping. After the food parcel is wrapped, it is again refrozen.

3,664,147
PURGE APPARATUS FOR REFRIGERATION SYSTEM
John G. Blackmon, Charlotte, N.C., assignor to Carolina Products, Inc., Charlotte, N.C.
Filed Aug. 19, 1970, Ser. No. 65,217
Int. Cl. F25b 43/04
U.S. Cl. 62—85 14 Claims



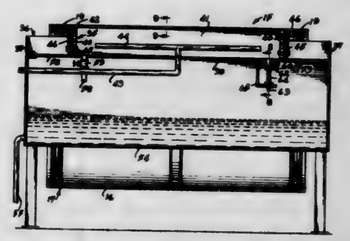
A purge apparatus for removing foreign non-condensable gases from a refrigeration system including a closed vessel adapted to receive the foreign gases together with a portion of the refrigerant from the high pressure region of the system. The vessel is cooled to condense the refrigerant, and a float actuated electrical switch is provided within the vessel to open a first valve for discharging the condensed refrigerant upon the refrigerant reaching a predetermined level, and a second valve for venting the non-condensable gases to the atmosphere upon a drop in the refrigerant level. The discharged condensed refrigerant is utilized to cool the vessel by evaporating the same in an area about the outer walls of the vessel, and then returned to the low pressure region of the system.

3,664,148
COOLER CONTROL SYSTEM FOR AUTOMOBILE COOLERS
Hisashi Yonezu, Aichi, Japan, assignor to Nippondenso Kabushiki Kaisha, Showa-cho, Kariya-shi, Aichi-ken, Japan
Filed Dec. 28, 1970, Ser. No. 101,775
Claims priority, application Japan, Jan. 13, 1970, 45/4294
Int. Cl. B60h 3/04
U.S. Cl. 62—133 2 Claims



A cooler control system suitable for automobile coolers. It includes an engine speed detection circuit and a temperature control circuit to control the operation of a cooler through the combination of these circuits, thereby separating the cooler from the engine to reduce the engine load during low engine speed operation so as to overcome the insufficiency of the engine output under the low engine speed operating condition. The engine speed detection circuit of the cooler control system according to the invention includes an integrating capacitor, whose discharging circuit comprises a transistor, diode and resistor, whereby the fluctuation of the preset engine speed is prevented.

3,664,149
CONTROLLED REFRIGERATION APPLICATION TO A METALLIC CONVEYOR BELT
Milton W. Garland, and Bruce S. Schaeffer, both of Waynesboro, Pa., assignors to Frick Company, Waynesboro, Pa.
Filed Oct. 26, 1970, Ser. No. 84,022
Int. Cl. F25d 17/02
U.S. Cl. 62—201 8 Claims

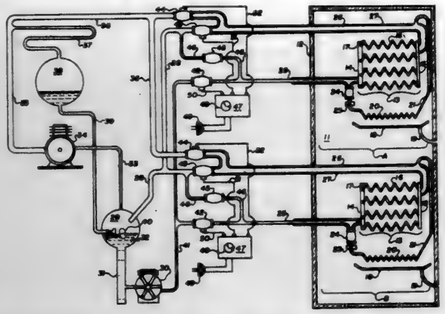


Apparatus for controlling the flow of refrigerant in direct engagement with the bottom surface of a metallic conveyor belt. The apparatus includes an open-top trough the ends and sides of which are in contact with the bottom surface of the conveyor belt and the sides of the trough permit leakage and control the flow of refrigerant regardless of the change in viscosity due to varying temperatures of the refrigerant.

3,664,150
HOT GAS REFRIGERATION DEFROSTING SYSTEM
Velt C. Patterson, 5511 Beaswood Lane, Austin, Tex.
Filed Dec. 30, 1970, Ser. No. 102,669
Int. Cl. F25d 21/00
U.S. Cl. 62—234 11 Claims

An improved dual refrigeration and defrost system having cycles of refrigeration and defrost so integrated that the heat

collected from one bank of refrigerating evaporators is used for defrosting another evaporator unit with the refrigerant lines into the refrigeration chamber being reduced to a two



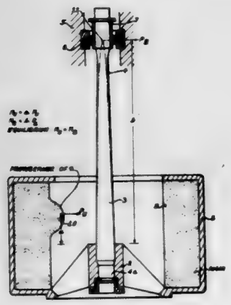
pipe refrigerant supply line and a suction return line that permits almost all critical control components to be located outside of the refrigeration chamber to facilitate safe and convenient maintenance and repair of said control components.

3,664,151

SPINDLE FOR CENTRIFUGES

Kurt Pause, Grevenbroich, Germany, assignor to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft, Grevenbroich, Germany

Filed Oct. 16, 1969, Ser. No. 866,882
Claims priority, application Germany, Oct. 16, 1968, P 18 032 49.0
Int. Cl. F16c *1/00*
U.S. Cl. 64—1 2 Claims



A spindle which forms part of a suspended centrifugal and is mounted in the machine frame at its upper end. The bowl or basket is attached to the lower end of the spindle and the latter tapers from the lower toward the upper end so that its flexural strength is at least substantially constant all the way from the hub of the bowl or basket to the bearing in the frame.

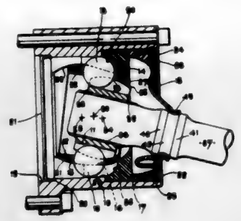
3,664,152

CONSTANT VELOCITY UNIVERSAL JOINTS

Jerzy Witold Macielinski, Birmingham, England, assignor to GKN. Birfield Transmissions Limited, Erdington, Birmingham, England

Filed Feb. 4, 1971, Ser. No. 112,725
Claims priority, application Great Britain, Feb. 4, 1970, 5,315/70
Int. Cl. F16d *3/30*
U.S. Cl. 64—8 8 Claims

A constant velocity universal joint includes balls which transmit torque between the joint outer member and the joint inner member. An annular restraining member is formed separately from and acts between the outer member and a cage which serves to guide the balls into the bisector plane of



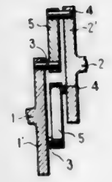
the joint. The restraining member assists in preventing relative axial movement between the inner and outer members of the joint.

3,664,153

TORQUE TRANSMISSION ARRANGEMENT

Eisuke Sugahara, Tokyo, Japan, assignor to Nippon Piston Ring Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 10, 1970, Ser. No. 88,321
Claims priority, application Japan, Dec. 29, 1969, 45/1711; 45/1712
Int. Cl. F16d *3/04*
U.S. Cl. 64—31 5 Claims



Two shafts which are at least approximately parallel and rotate about transversely spaced axes connected by a torque transmission arrangement consisting of two axially spaced radial flanges on respective end portions of the shaft, three eccentric pins equiangularly distributed about the axis of each shaft and axially projecting from each flange toward the plane of rotation of the other flange, and three links of equal length hingedly connecting corresponding pins on the two flanges. When two such arrangements are connected in series by a flexible coupling between the two shafts, the shafts may be angularly misaligned by a small acute angle.

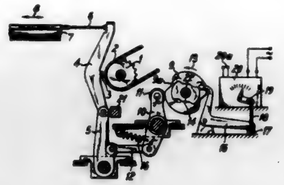
3,664,154

METHOD OF OPERATING A WARP KNITTING MACHINE, ESPECIALLY A RASCHEL KNITTING MACHINE, AND DEVICE FOR CARRYING OUT THE METHOD

Egon Fritz, Monchengladbach, Germany, assignor to Walter Reiners, Monchengladbach, Germany

Filed Nov. 13, 1969, Ser. No. 876,273
Claims priority, application Germany, Nov. 13, 1968, P 18 08 479.2
Int. Cl. D04b *23/00*
U.S. Cl. 66—86 5 Claims

Method of operating a warp knitting machine equipped with a pattern-changing device for changing pattern chains which comprises reducing the operation of the machine from a higher to a lower speed before changing a pattern, and increasing the operation of the machine from the lower to the



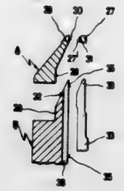
higher speed after changing the pattern chain, and device for carrying out the method.

3,664,155

NEEDLE BAR FOR KNITTING MACHINES

Jose Maria Dalmau Guell, Badalona, Spain, assignor to Jumberca, S.A., Jacinto Benavente s/n, Badalona (Prov. Barcelona), Spain

Filed Nov. 24, 1969, Ser. No. 879,447
Int. Cl. D04b *15/00*
U.S. Cl. 66—115 3 Claims



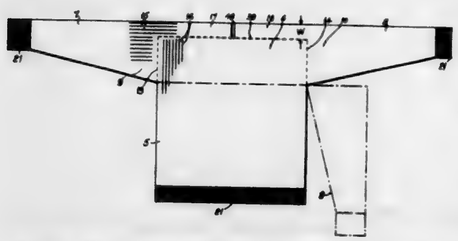
The knitting head is divided, parallel to the looping area, into two parts firmly fixed together. The first part carries a plurality of knocking off bits and delimits frontally the tricks in which the needles move. The second part carries a plurality of spacers which are aligned with and form extensions of the knocking off bits and delimits laterally the tricks.

3,664,156

GARMENT AND METHOD OF MAKING IT

Max W. Betts, Coventry, and Frank Robinson, Borrowash, both of England, assignors to Courtaulds Limited, London, England

Filed June 5, 1970, Ser. No. 43,672
Claims priority, application Great Britain, June 18, 1969, 30,866/69
Int. Cl. D04b *7/10*; A41b *9/06*
U.S. Cl. 66—176 10 Claims



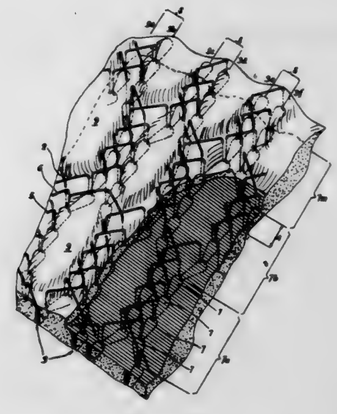
A blank for manufacture of a knitted sleeve garment comprises front and rear upper body portions each constituted by a piece of flat fabric and having side edges joined, on the knitting machine, to shoulder regions of the sleeves, the said shoulder regions having extensions arranged to be joined to upper edges of the said front and rear upper body portions. A method of knitting such a blank is also described.

3,664,157

PATTERNED STITCH-BONDED FABRIC

Zdenek Kochta, and Karel Dvoracsek, both of Brno, Czechoslovakia, assignors to Vyzkumny ustav pletarsky, Brno, Czechoslovakia

Filed Dec. 31, 1968, Ser. No. 788,155
Claims priority, application Czechoslovakia, Jan. 3, 1968, 52-68
Int. Cl. D04b *7/12*
U.S. Cl. 66—190 6 Claims



A patterned stitch-bonded fabric having a basic fibrous layer which is stitch-bonded with a binding warp thread thereby forming wales of loops on the face of the fabric and connecting loops on the back of the fabric. The face of the fabric has, furthermore, courses of loops which extend transversely to the wales. These courses of loops are divided into groups each of which has at least two successive courses of loops. The wales of loops are divided into sets; each set includes at least two adjacent wales which are interconnected by means of connecting loops extending across the back face of the fabric. The outer wales of adjacent sets of wales are not interconnected to each other and, consequently, the basic fibrous layer bulges out in the front and back face of the fabric in the area between the outer wales of adjacent sets of wales. The outer wales of the sets of wales in adjacent groups of courses of loops are offset with respect to each other.

3,664,158

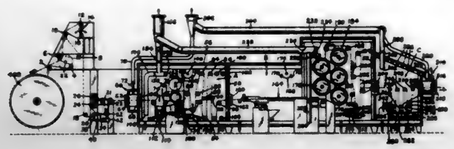
APPARATUS FOR TREATMENT OF FABRICS WITH LIQUID AMMONIA

Olav Skaathun, Kolbotn, Norway, and Walter S. Troope, Latham, N.Y., assignors to Tedeco Textile Development Co. A/S, Oslo, Norway

Continuation-in-part of application Ser. No. 834,730, June 19, 1969, now abandoned. This application Feb. 5, 1970, Ser. No. 8,987
Int. Cl. D06c *1/00*
U.S. Cl. 68—5 D 19 Claims

The invention relates to an apparatus for the treatment of fabrics with liquid ammonia to improve several properties of

the fabrics. The apparatus is provided with control means

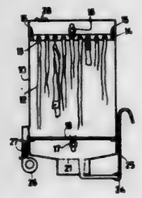


controlling the tensions to which the fabrics are subjected during the treatment.

3,664,159
HOUSEHOLD DEVICE FOR WASHING, SMOOTHING AND DRYING ARTICLES OF APPAREL, UNDERWEAR CLOTHING AND THE LIKE

Lamberto Mazza, Pordenone, Italy, assignor to Industrie A. Zanussi S.p.A., Pordenone, Italy

Filed Mar. 23, 1970, Ser. No. 21,750
Claims priority, application Italy, Mar. 31, 1969, 14902 A/69; Oct. 31, 1969, 3893 A/69
Int. Cl. B05c 5/00
U.S. Cl. 68—205 R 9 Claims

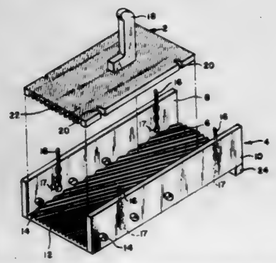


A device for laundering articles and particularly for household use in which a container is provided with an access opening capable of being opened and closed, a plurality of support members within the container for supporting articles in a freely hanging condition and a set of nozzles for supplying detergent and rinsing liquids within the container below the freely hanging articles, the nozzles having orifices for vertically directing the liquids upon the freely hanging articles for cleansing and rinsing purposes as well as effecting a shaking of the articles and preventing the articles from sticking together and means for imparting controlled movement to said nozzles.

3,664,160
WASHBOARD

Eloy Fernando Muniz, Guayama Street No. 271, Hato Rey, P.R.

Filed Oct. 12, 1970, Ser. No. 79,755
Int. Cl. D06f 35/00
U.S. Cl. 68—224 3 Claims

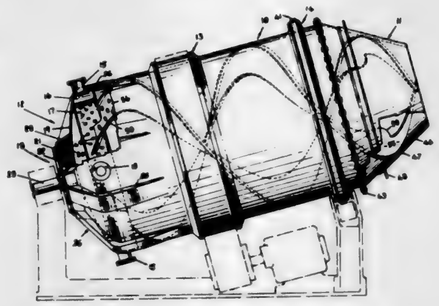


The device for washing clothes is portable and consists of upper and lower parts which are separated to put between them the fabric to be washed, after which they are brought together and reciprocated horizontally in opposite directions to effect washing. The abutting faces of the two parts are provided with angular grooves which are oppositely directed to provide added friction to the fabric being washed. In a preferred embodiment the upper member is provided with a container for detergent powder which is forced to the fabric being washed by pressure of the wash water.

3,664,161
FIBERGLASS PROCESSING TANK

Fred D. Cressman, Waterloo, Ontario, Canada, assignor to Canada Barrels & Kegs Limited, Waterloo, Ontario, Canada

Filed Oct. 6, 1970, Ser. No. 78,503
Int. Cl. C14c 15/00
U.S. Cl. 69—30 13 Claims

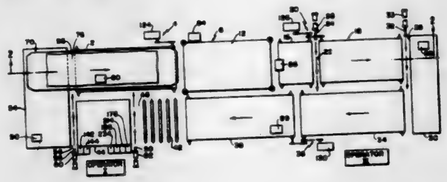


A molded resin-bonded fiberglass processing tank having a hub structure formed integrally with the end wall. The hub structure is made up of a laminated core overlayed with a fiberglass laminate. A gudgeon is attached to the core. Reinforcing ribs are laid on the end wall, the ribs, which radiate from the hub, extend over the contiguous portions of the cylindrical wall of the tank. The ribs are formed with a center core, preferably of foamed plastic. A belt track and a support ring are also formed integrally on the cylindrical wall of the tank.

3,664,162
LEATHER ROLLING APPARATUS

Hans Christoph Schrade, Bensberg-Refrath, Germany; William F. del Guidice, Durbin, and Charles W. Wimer, Bartow, both of W. Va., assignors to Howes Leather Company, Inc., Boston, Mass.

Filed Dec. 28, 1970, Ser. No. 101,835
Int. Cl. C14b 1/30
U.S. Cl. 69—46 8 Claims



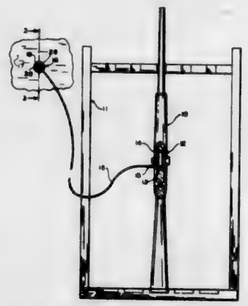
Apparatus for rolling and compacting leather either automatically or semi-automatically using in combination a leather rolling press, a plurality of conveyor tables, conveyor boards and an electrical control circuit, the tables and press being positioned to form a continuous pathway for the boards into and out of the press, each board being adapted to receive thereon at a loading table a leather crop or a pair of

bends, the boards and their carried leather successively being passed to an inlet table, then into the rolling press from the inlet table, the leather being rolled in two stages in the press, after which the boards and leather are moved to an exit table, thence an unloading table, and thereafter to a loading table where the next crops or bends of leather are loaded on the boards. The cycle is then repeated under the control of the electrical system.

3,664,163
PROTECTIVE ANCHORING ASSEMBLAGE

Daniel J. Foote, Waurwatosa, Wis., assignor to Master Lock Company

Filed Feb. 24, 1970, Ser. No. 13,395
Int. Cl. E05b 73/00; A47f 7/00; B61l 3/00
U.S. Cl. 70—58 6 Claims

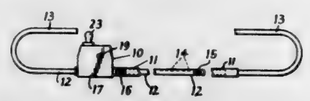


To prevent the theft, removal or unauthorized use of a displayed or stored bulky item such as a fire-arm, implement or the like, while permitting handling or inspection thereof within a limited range, this protective anchoring assemblage includes a base member non-removably mounted on an adjacent support by screws or the like, with a cover secured to the base member and rendering the screws inaccessible. The base member carries an outwardly projecting connector to which is non-removably affixed one end of an elongated flexible connection or leash. The outer end portion of said leash is lockingly engaged with the item to be protected in a manner to permit the latter to be handled and moved through a limited range, but it cannot be unauthorizedly removed or wrongfully appropriated.

3,664,164
LOCKING MECHANISMS

Kitty Zaldener, 36, Hamilton Court, Maida Vale, London, W. 9, England

Filed Oct. 13, 1970, Ser. No. 80,316
Claims priority, application Great Britain, Apr. 8, 1970, 16,783/70
Int. Cl. B60r 25/02
U.S. Cl. 70—202 5 Claims



A locking mechanism particularly applicable to vehicle anti-theft devices comprises two telescopic members one of which has a series of recesses and the other of which has a detent spring urged into engagement with said recesses. The detent is mounted for angular movement into said recesses whereby it locks the two members against relative movement in one direction by a wedging action while permitting movement in the other and means operable for example by a key is provided to release the members for movement in both directions by moving said detent against the spring loading.

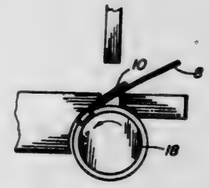
ERRATA

For Classes 70—292 and 72—250, see: Patent Nos. 3,664,074 and 3,664,231

3,664,165
METHOD AND DIE CONSTRUCTION FOR FAN BLADE

J. D. Harvill, and Kenneth C. Harlan, both of Indianapolis, Ind., assignors to Wallace-Murray Corporation, New York, N.Y.

Filed Aug. 4, 1969, Ser. No. 847,323
Int. Cl. B21b 15/00
U.S. Cl. 72—168 6 Claims



A flat metal sheet is engaged by a downwardly moving rectangular anvil. The anvil passes through a space between two planar supports, carrying contiguous sheet metal portions with it, distorting them to a U-form. The bight portion of the U is moved into a slot in a rotary drum. The anvil is withdrawn and the drum rotates, carrying the sheet against curved cam surfaces to yield the finished configuration.

3,664,166
METHOD AND DEVICE FOR THE CONTINUOUS ROLLING OF THIN STRIPS

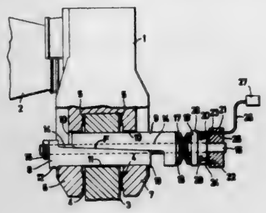
Pierre Gay, La Tour en Jarez, France, assignor to Compagnie des Ateliers et Forges de la Loire (St.-Chamond, Firminh, St.-Etienne Jacob Holtzer), Paris, France

Filed Apr. 18, 1969, Ser. No. 817,389
Claims priority, application France, May 16, 1968, 152012
Int. Cl. B21b 1/28
U.S. Cl. 72—205 3 Claims



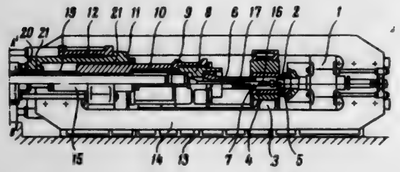
A previously hot-rolled strip is subjected to a first thickness-regularizing pass in the cold state through a mill permitting of not maintaining to a constant value the thickness variations of the strip before and after the rolling operation, that is, imparting to the strip an elongation to which a constant value is not imposed, that first pass being followed by several rolling passes performed in rolling stands in which a predetermined elongation is imparted to the strip.

3,664,167
ROLLER TABLES
Ernst Theodor Sack, Hesel, Germany, assignor to Maschinenfabrik Sack GmbH, Duesseldorf-Rath, Germany
Filed Sept. 16, 1970, Ser. No. 72,763
Claims priority, application Germany, Sept. 20, 1969, P 19 47 765.7
Int. Cl. B21b 39/20
U.S. Cl. 72—251 3 Claims



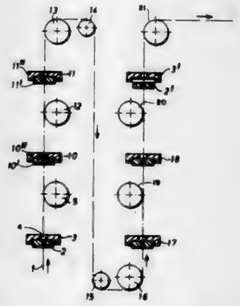
A roller table is described having a frame with a longitudinal wall on which a number of bearing casings are rigidly mounted. Each bearing casing has a pair of parallel lugs projecting at right angles to the bearing axis and each formed with an aperture. The lugs straddle the top edge of the longitudinal wall which is also formed with an aperture and a pair of wedges extend through the apertures in the lugs and in the longitudinal wall. A tension bolt is provided for tightening the wedges and a strong compression spring is interposed between a nut on the bolt and the wedges to maintain tightness of the wedges even after wear of the contacting surfaces of the wedges, the wall and the lugs. The spring is arranged to be compressed by a hydraulic thrust device temporarily attached to a free end of the bolt. The nut is then tightened and the hydraulic device removed.

3,664,168
HORIZONTAL HYDRAULIC PRESS FOR TUBULAR ARTICLES
Lev Mikhailovich Shtin, prospekt Ordzhonikidze, 3, kv. 49; Nikolai Feodosovich Grebnev, Kirovgradskaya, 63, kv. 18; Ljudmila Sergeevna Sotovskaya, prospekt Ordzhonikidze, 3, kv. 77; Mikhail Grigorievich Rassolkin, ulitsa Lomonosova, 19, kv. 7; Sergei Grigorievich Khirdzhiev, ulitsa Mashinostroitelei, 51, kv. 38; Evgeny Titovich Perevoschikov, ulitsa Sotsialisticheskaya, 7, kv. 4; Sofia Stepanovna Zagulina, ulitsa 40 let Oktyabrya, 9, kv. 29; Vladimir Nikolaevich Duda, ulitsa Kultury, 6, kv. 15; Mikhail Andreevich Karnaev, ulitsa Kalinina, 66, kv. 9, all of Sverdlovsk; Ulkter Mikhailovich Rozkov, 2 Truzhennikov pereulok, 4, kv. 3, and Valentin Fedorovich Shtamburg, Varshavskoe shosse, 135a, korpus 4, kv. 309, both of Moscow, all of U.S.S.R.
Filed Feb. 12, 1970, Ser. No. 10,720
Int. Cl. B21c 23/20
U.S. Cl. 72—265 6 Claims



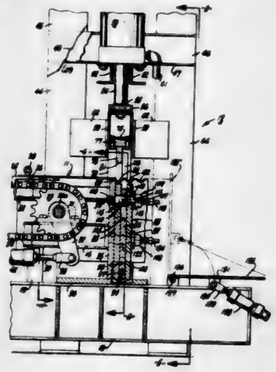
The present invention relates to a horizontal hydraulic press for the manufacture of tubular articles with a cross section variable along its length, mostly drill pipes, which comprises two groups of working cylinders for moving in opposite directions the mandrel which shapes the bore of the pipe; the press is provided with at least two adjustable stops one of which limits the travel of the mandrel with relation to the die in the direction of pressing and the other one — against the direction of pressing.

3,664,169
WIRE DRAWING APPARATUS
Werner Heurich, 6349 Horbach (Dillkreis), Am Wachtgeipfel, Germany
Filed Jan. 8, 1970, Ser. No. 1,370
Claims priority, application Germany, Sept. 12, 1969, P 19 46 221.6
Int. Cl. B21c 1/04, 3/00
U.S. Cl. 72—278 4 Claims



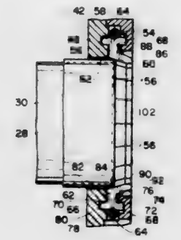
A wire drawing apparatus has a plurality of vertically spaded wire drawing dies arranged in a plurality of drawing stages positioned in side-by-side relationship. Drive rollers are positioned respectively above each of the dies to draw the wire vertically upwardly therethrough and additional rollers are employed to change the direction of wire between drawing stages so that the wire emerging from the top of one drawing stage enters at the bottom of the next drawing stage. The dies are self-centering under the action of the upwardly moving wire.

3,664,170
CURVING METHOD AND APPARATUS FOR RIDGED SHEET MATERIAL
Paul K. Davis, Alameda, Calif., assignor to Pacific Roller Die Co., Inc., Hayward, Calif.
Filed Mar. 16, 1970, Ser. No. 19,974
Int. Cl. B21d 11/04
U.S. Cl. 72—307 7 Claims



Method and apparatus for forming ridged sheet material into arcuate shape. Sheet material having an elongated major ridge or corrugation extending along a line is curved along said line by progressive formation therealong of a series of corrugations or pleats directed substantially normal to said line.

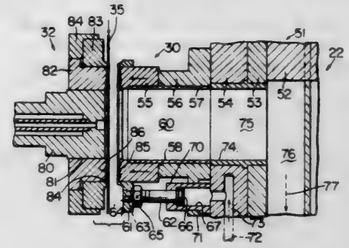
3,664,171
STRIPPER FOR APPARATUS SUCH AS METALLIC CAN BODY FORMERS
Elpidifor Paramonoff, Los Angeles, Calif., assignor to Standun, Inc., Compton, Calif.
Filed Nov. 13, 1970, Ser. No. 89,259
Int. Cl. B21d 45/00
U.S. Cl. 72—344 15 Claims



A series of circumferentially aligned, generally T-shaped cross section stripper members are positioned in a retainer ring with stripper member finger extensions projecting into a central opening of the retainer ring through which a ram end passes rearwardly with a cup-shaped article thereon and forwardly during stripping of the article from the ram end. The stripper members are received in an annular, inwardly opening recess of the retainer ring, T-shaped in cross section generally corresponding to the stripper members. A circumferentially surrounding garter spring normally urges the stripper members radially inwardly with axially spaced, radially inwardly facing stripper member surfaces abutting corresponding retainer ring recess walls, axially opposite stripper member ends abutting corresponding retainer ring recess end walls and the stripper member finger extensions projecting angularly rearwardly into the retainer ring central opening to a diameter less than the outer diameter of the cup-shaped articles carried by the ram end. During movement of the cup-shaped articles rearwardly through the stripper members by the ram end, the stripper members pivot outwardly about an arcuate surface on the forward ends thereof and over the retainer ring corresponding recess wall, while stripper member rearward arcuate end surfaces slide radially along the retainer ring corresponding recess wall and other surfaces and walls separate permitting such pivoting. After the cup-shaped articles have passed rearwardly the stripper members return generally to normal position so as to engage the ends of the cup-shaped articles upon forward return movement of the ram end with the stripper member finger extensions, thereby forcing the cup shaped articles from the ram end.

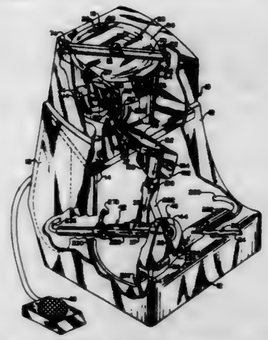
3,664,172
APPARATUS FOR AND METHOD OF FORMING CUP-SHAPED ARTICLES
Daniel S. Cvacho, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed June 1, 1970, Ser. No. 41,949
Int. Cl. B21d 24/04
U.S. Cl. 72—350 18 Claims

An apparatus and method is provided wherein a circular sheet blank is formed into a cup-shaped article which is substantially free of defects. The apparatus and method utilize a pair of cooperating die assemblies having a pair of rings provided with a pair of cooperating blank-engaging surfaces each defined by a plurality of alternating concentric grooves and projections. The grooves and projections of one of the surfaces partially intermeshes with associated projections and grooves respectively of the other of the surfaces to define concentric undulations in the peripheral portion of the blank. One of the die assemblies has a male member provided as a



part thereof and the other assembly has a cooperating die cavity whereby upon relatively moving the assemblies together the blank is drawn by the male member into the die cavity enabling the undulations to serve as integral columnar members which allow controlled flow of the peripheral portion to define a tubular wall of the cup-shaped article which is free of defects.

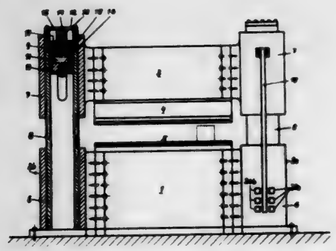
3,664,173
HOPPER FEED CRIMPING MACHINE WITH COMBINATION CONTAINER-HOPPER
Paul A. Haucke, Rahway; Seymour Rosenfeld, Monsey; Ronald W. Schwab, West Orange, and Charles F. Mazzeo, Scotch Plains, all of N.J., assignors to Buchanan Electrical Products Corporation, Union, N.J.
Filed Feb. 9, 1970, Ser. No. 9,700
Int. Cl. B21d 43/20; H01r
U.S. Cl. 72—424 25 Claims



A crimping machine in which electrical contacts of any one of a variety of configurations are supplied in a reservoir of loose contacts held in a container and are serially fed from the container to be advanced, oriented and positioned in a crimping mechanism where each contact is selectively crimped to the end of an electrical wire. The container is in the form of a bowl-shaped insert and is removably coupled with an oscillating mechanism such that the oscillating mechanism oscillates the bowl-shaped insert to serially feed the contacts to a discharge opening in the insert for subsequent advancement through the machine. The insert is provided with a closed top and a removable closure for the discharge opening so that the insert serves as a storage and transportation container for the contacts as well as a hopper for the machine. A plurality of such inserts may be provided, each insert carrying contacts of another configuration, so

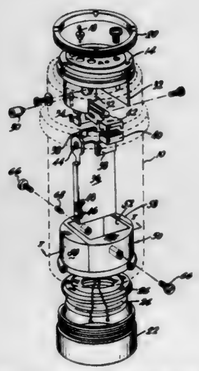
that contacts of various configurations may be supplied to the machine by interchanging the inserts. The means for advancing, orienting, positioning and crimping the contacts include means which are selectively adjustable or readily replaceable in order to accommodate each of the various contact configurations.

3,664,174
SHEET METAL WORKING MACHINE
Edouard Hanni, Zofingen, Switzerland, assignor to Hammerle A.G. Maschinenfabrik, Zofingen, Switzerland
Filed May 4, 1970, Ser. No. 34,299
Claims priority, application Austria, May 28, 1969, 5078/69
Int. Cl. B21j 9/20
U.S. Cl. 72—441 4 Claims



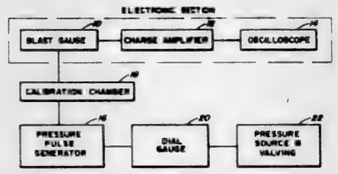
A sheet metal working machine with a worktable has a ram which is controlled by at least two actuating and guiding elements, each fitted with a cylinder and a pressure-operated piston. The piston in each element has two separated working surfaces of different sizes. Each actuating and guiding element has a control organ which acts on the pressure of the individual piston surfaces in accordance with the eccentricity of the load on the ram. Fluid pressure may be used to operate the piston and the control organs may be programmed for regulating the feed of the pressure fluid.

3,664,175
VELOCITY GAUGE
William D. Pierson, Albuquerque, N. Mex., assignor to Sparton Corporation, Jackson, Mich.
Filed Apr. 1, 1969, Ser. No. 811,813
Int. Cl. G01p 15/00
U.S. Cl. 73—1 D 2 Claims



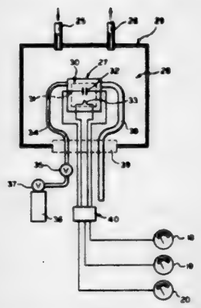
A gauge capable of sensing the velocity at which it is displaced utilizing a pendulous mass dampened within a high viscosity oil, and utilizing polarized electromagnetic deflection means for deflecting the mass for test and calibration purposes.

3,664,176
METHOD AND APPARATUS FOR THE CALIBRATION OF TRANSDUCERS
Charles S. Mangleburg, Colonial Beach, Va., assignor to The United States of America as represented by the Secretary of the Navy
Filed Mar. 23, 1970, Ser. No. 21,572
Int. Cl. G01l 27/00
U.S. Cl. 73—4 R 2 Claims



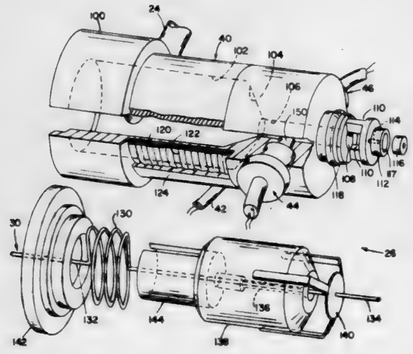
A calibration system for the dynamic calibration of piezoelectric transducers used in the measurement of blast wave pressure caused by sudden changes of fluid pressure, such as in the firing of various weapons. A calibration chamber is used to create a blast wave of 100 psig upon the transducer being tested. A pressure pulse is generated and supplied to the calibration chamber and the electrical output of the transducer is recorded on a storage oscilloscope to form a first trace. A second trace is generated by a charge amplifier containing a calibration circuit having precision capacitors. The second trace is adjusted to fall upon the first generated trace and the transducer charge sensitivity is read directly from the sensitivity control on the charge amplifier. A series of tests can be used to determine the non-repeatability of the transducer and repetition at different pressures will determine its non-linearity.

3,664,177
PORTABLE DEW POINT HYGROMETER
Richard C. Bridgeman, Northbrook, and Wiadaw Gajewski, Evanston, both of Ill., assignors to Vapor Corporation, Chicago, Ill.
Filed Aug. 17, 1970, Ser. No. 64,160
Int. Cl. G01n 25/02
U.S. Cl. 73—17 A 6 Claims



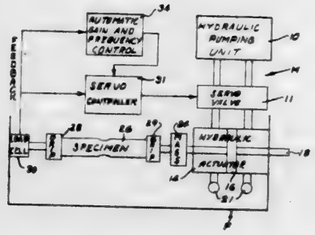
A dew point hygrometer for measuring the moisture content of a gas that includes a self-contained power supply in the form of a battery and a compressed gas supply. The electrical conductivity of the water vapor in the sampling gas near the dew point is measured by a sensor, the temperature of which is also measured as well as the rate of cooling the sensor to determine the dew point temperature of the sampling gas. The battery powers electrical circuitry for making the measurements, while the compressed gas is utilized for cooling the sensor.

3,664,178
FLUID HANDLING APPARATUS
Philip Spergel, Lexington, and Stanley L. Gaines, Wayland, both of Mass., assignors to Instrumentation Laboratory, Inc., Lexington, Mass.
Filed Apr. 7, 1970, Ser. No. 27,199
Int. Cl. G01n 1/00, 7/10
U.S. Cl. 73—53 20 Claims



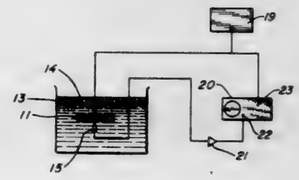
Fluid analysis apparatus includes a sample chamber that has a constituent sensor in it and an inlet conduit connected to the sample chamber. A heater assembly surrounds the inlet conduit. The heater assembly includes a preheater stage, a final heater stage, and a heat supply stage disposed between the preheater and final stages. Tempering fluid is flowed sequentially through the preheater stage, the heat supply stage and final stage and around the sample chamber for maintaining the sample chamber and the constituent sensor at a stable temperature and heating the sample to that same temperature as it flows through the inlet conduit.

3,664,179
APPARATUS AND METHOD FOR CONTROLLING A RESONANT TESTING MACHINE
Donald M. Danko, Parma, and James E. Svarovsky, Cleveland, both of Ohio, assignors to Gilmore Industries, Inc., Cleveland, Ohio
Filed May 11, 1970, Ser. No. 35,996
Int. Cl. G01n 29/00
U.S. Cl. 73—67.2 29 Claims



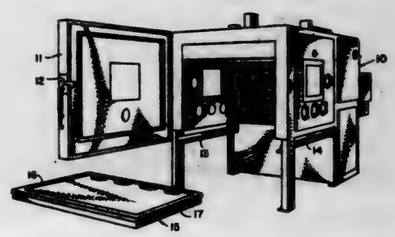
A machine for testing the strength of material specimens by applying a mean and a cyclical load thereto includes a hydraulic actuator connected to the specimen, a servo valve for controlling the flow of hydraulic fluid to and from the actuator and a sensor connected to the specimen. The servo valve is controlled by a train of pulses directed to its actuating coil. The use of pulses as the forcing function allows the system to attain higher operating efficiency. A feedback signal from the sensor is utilized to correct the repetition rate of the pulses to the resonant frequency of the specimen system under test and, after the resonant frequency is attained, to maintain the rate at the resonant frequency. The pulses are area controlled to supply more or less energy to the system as required to maintain the system in resonance at the desired load. A mean load on the specimen is also maintained at a selected value. The machine may be used for standard, non-resonant testing by changing the position of a few switches.

3,664,180
ULTRASONIC DETECTION OF LUMBER DEFECTS
Kent A. McDonald, Cross Plains, Wis., and Roger G. Cox, Loveland, Colo., assignors to The United States of America as represented by the Secretary of Agriculture
Filed July 15, 1970, Ser. No. 55,110
Int. Cl. G01n 29/04
U.S. Cl. 73—67.6 3 Claims



A method of locating, by ultrasonic inspection, internal defects in wood. The transit time of ultrasonic pulses through the wood, in a direction substantially perpendicular to the grain, is measured at approximately one-half inch intervals along the length and across the width of the board. The inspection is made under water. Comparison of the transit times between adjacent measurement locations provides an indication of a defect such as a knot or steep grain area between the measurement points.

3,664,181
FLOOR STRUCTURE FOR A TEST CHAMBER
Charles F. Conrad, and Kieth L. Dadd, both of Holland, Mich., assignors to Thermotron Corporation, Inc., Holland, Mich.
Filed July 25, 1968, Ser. No. 747,555
Int. Cl. G01n 29/00
U.S. Cl. 73—71.6 10 Claims



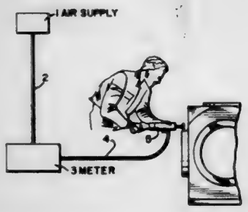
A test chamber having a floor including a flexible sealing diaphragm secured to a frame removable and insertable laterally through an open door together with an exterior vibrating unit adapted to transmit vibrations through the diaphragm.

3,664,182
TENSION-TORSION TESTING MACHINE
Thomas W. Butler, 303 Balsam Drive, Severna Park, Md.
Filed Feb. 25, 1971, Ser. No. 118,740
Int. Cl. G01n 3/08
U.S. Cl. 73—93 5 Claims



The invention is a machine which simultaneously applies tensile and torsional loads to a material test specimen by the utilization of the untwisting of a spiral wound steel wire rope.

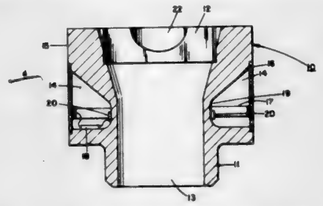
3,664,183
WORK MEASUREMENT SYSTEM
Edwin S. Trefble, Jr., Ringoes, N.J., assignor to Ingersoll-Rand Company, New York, N.Y.
Filed June 22, 1970, Ser. No. 48,019
Int. Cl. G01l 23/00
U.S. Cl. 73—133 7 Claims



A method and apparatus for measuring the work performed by a governed air-powered tool and including a flow and integrated meter for measuring the amount of air supplied to the tool. The method limits the measurement of the air flow to periods when such air flow is above a predetermined minimum magnitude which generally will be a small amount above the air consumption of the tool when running free and not performing work.

3,664,184
ROTARY TORQUE INDICATOR FOR WELL DRILLING APPARATUS
Norman D. Dyer, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Sept. 14, 1970, Ser. No. 71,712
Int. Cl. G01l 3/10
U.S. Cl. 73—136 A 9 Claims

The device is used to indicate torque applied by the rotary table to the drill string during drilling of oil and gas wells. Intermediate adapter between the Kelly bushing and the rotary table in one embodiment has two parts. Lower part of adapter includes standard male square drive that fits into the square drive of the rotary table, and is thus rotated by the rotary table. Upper part of adapter includes female square drive arranged to receive male square drive on the Kelly. The Kelly transmits torque from adapter assembly to the drill pipe. Upper part is connected to lower part by either hydraulic cylinders or by linkage with strain gauge. The upper part rotates with lower part, but is movable relative thereto to indicate relative torque between upper and lower parts. RF transmitter connected to the hydraulic cylinder or strain gauge provides torque signal to remote RF receiver. Alternative embodiment has unitized adapter assembly. Still another alternative embodiment uses torque sensor and RF transmitter directly on Kelly drive bushing without utilization of intermediate bushing.



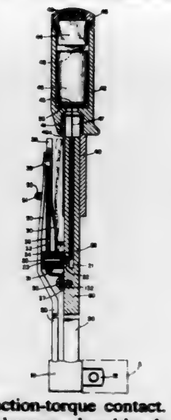
3,664,185
ROTARY ACTUATOR
George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of; Charles Kallins, 72 Orange Drive, Jericho, N.Y., and Jerome Ostroff, 20 Ambrose Lane, Northport, N.Y.
Filed June 4, 1970, Ser. No. 43,327
Int. Cl. G01l 5/00
U.S. Cl. 73—136 R 1 Claim



A rotary actuator particularly suited for use in environments wherein rolling and sliding friction preferably is to be avoided, such as in a high-vacuum celestial space environment, characterized by the utilization of a plurality of spaced tri-flex pivots each having a linear torque-angle characteristic over its operative range adapted continuously to support the shaft in concentric alignment within a tubular housing and an electrically energizable torquer having linear torque-current characteristics over its operating range magnetically coupled with the shaft for imposing rotation thereto for rotating the shaft against the bias of the tri-flex pivots, and an ammeter electrically coupled with said torquer for providing an output indicative of the current being supplied to the torquer and hence the angular position of the shaft.

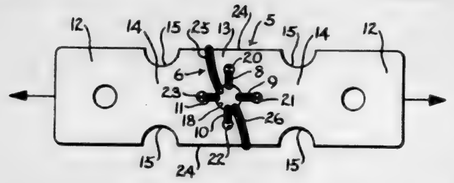
3,664,186
TORQUE WRENCH
Robert J. Kraus, 5 Beverly Ave., Malvern, Pa.
Filed July 20, 1970, Ser. No. 56,309
Int. Cl. G01l 5/24
U.S. Cl. 73—139 2 Claims

A torque wrench is provided of the type which comprises a yieldable beam having a work-engaging head at one end and a force-applying handle at the other end. The wrench is provided with an electrical signal circuit which preferably includes a battery and a buzzer or other signalling device, both of which may be in the handle, a reference-torque contact



and an adjustable selection-torque contact. These contacts are normally open but become closed by the bending of the yieldable beam when the selected torque force is reached, thereby actuating the buzzer or other signalling device.

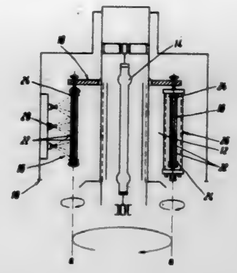
3,664,187
TRANSDUCER FOR MEASURING MECHANICAL FORCES
Nils Paul Goransson, Hjulsbro, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden
Filed June 3, 1970, Ser. No. 43,120
Int. Cl. G01l 1/12
U.S. Cl. 73—141 A 6 Claims



A transducer has a body of ferromagnetic material to which force to be measured is applied to produce, by magnetostriction, changed distribution of magnetic flux induced in the body by an a.c. energized primary embracing it. The body has a hole large enough to insure high stress concentrations upon application of force. An even number of secondaries are wound through smaller holes and around edge portions of the body. Half of the secondaries embrace zones of tension stress, the other half zones of compression stress.

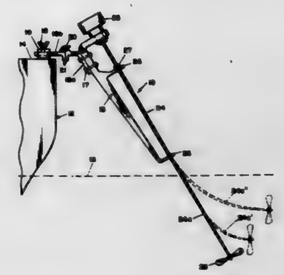
3,664,188
APPARATUS FOR ACCELERATED TESTING OF THE LIGHT AND WEATHER RESISTING ABILITY OF DIFFERENT MATERIALS
Dieter Kockott, Rueckingen ueber Hanau, Germany, assignor to Original Hanau Quarzlamper GmbH
Continuation of application Ser. No. 734,770, June 5, 1968, now abandoned. This application Nov. 6, 1970, Ser. No. 87,640
Claims priority, application Germany, June 19, 1967, P 15 98 899.5
Int. Cl. G01n 17/00
U.S. Cl. 73—150 4 Claims

An apparatus for accelerated testing of the radiation and atmosphere resisting ability of materials, having a radiation source and one or more gas-tight, radiation permeable containers in which material specimens may be irradiated and at



the same time exposed to selected atmospheres at super ambient pressures.

3,664,189
BOAT SPEEDOMETERS
Albert Weinstein, Alexandria, Va., assignor to Wellington Products, Inc., Alexandria, Va.
Filed July 14, 1970, Ser. No. 54,773
Int. Cl. G01c 21/00
U.S. Cl. 73—185 6 Claims

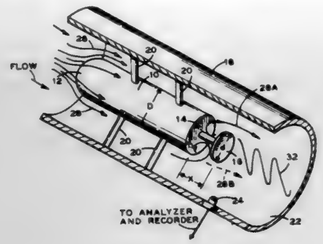


An elongated support is either mounted or hand-held on a small boat so as to slant downwardly from the hull toward the water. A speedometer head at the upper end of the support is driven by a shaft rotatably journalled on the support. The free lower end portion of the shaft extends beyond the lower end of the support into the water and carries an impeller which is rotated by movement of the boat through water. The shaft is normally straight but its lower end portion is resiliently flexible in all directions so that the axis of rotation of the impeller is aligned with the water slipstream and drag is materially reduced.

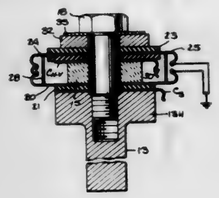
3,664,190
FLOW METER DEVICE
Richard Brunner, Bound Brook, and Roger F. Mahon, New Brunswick, both of N.J., assignors to American Standard Inc., New York, N.Y.
Filed Feb. 19, 1970, Ser. No. 12,797
Int. Cl. G01f 1/00
U.S. Cl. 73—194 B 7 Claims

The velocity of a flowing fluid is determined by means of an apparatus which includes as its principle elements, an upstream-cylinder-like element, a downstream-disc-like member spaced a short distance from the downstream end of the cylinder-like element, and means responsive to the fluid parameter fluctuations which are produced by the apparatus.

The reproducibility of the parameter fluctuation frequency versus flow rate, as well as signal strength fluctuations are improved by a system which involves the stabilization of the fluid flow by means of an asymetric design of the device.



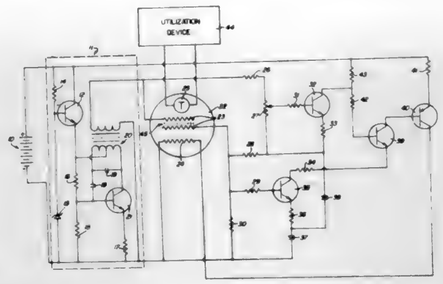
3,664,191
EXPLOSION-PROOF SELF-CLEANING ELECTRODES
Henry Hermanns, Huntingdon Valley, Pa., assignor to Fischer & Porter Company, Warminster, Pa.
Filed June 1, 1970, Ser. No. 42,319
Int. Cl. G01f 1/02
U.S. Cl. 73—194 EM 5 Claims



An explosion-proof, self-cleaning electrode for use in magnetic flowmeters, measurement probes and other instruments in which an electrode is exposed to a contaminating fluid that is explosive in nature and also tends to coat the electrode with material which interferes with its proper operation. The electrode is provided with an ultrasonic transducer to produce ultrasonic energy which is transmitted to the fluid to create cavitation effects therein, acting to clean the exposed surface of the electrode. The transducer is mounted on the electrode within a protective shield to prevent high voltage applied to the transducer from reaching the electrode and producing a spark igniting an explosive fluid.

3,664,192
DEW POINT HYGROMETERS
Curtis B. Campbell, and Ben L. Grover, both of Logan, Utah, assignors to Utah State University
Filed Sept. 8, 1969, Ser. No. 856,037
Int. Cl. G01n 25/66
U.S. Cl. 73—336.5 8 Claims

The invention disclosed herein relates to the measurement of the water vapor content of a gaseous environment and more particularly to the measurement of the water vapor content of the atmosphere by means of a hygroscopic salt exposed to the atmosphere. The salt absorbs moisture from, or releases moisture to, the atmosphere as a function of the water vapor content of the atmosphere and the temperature to which the salt is heated. Heat is supplied to the hygroscopic salt to a greater or lesser degree in response to changes in the resistivity of the salt and these changes in resistivity are relatively large with relatively small variations in the amount of water absorbed by the salt at its lower percentages of water absorption. The temperature required to maintain the hygroscopic salt at its preselected resistivity and resultant low



degree of water content is in direct relationship to the dew point or water vapor content of the atmosphere.

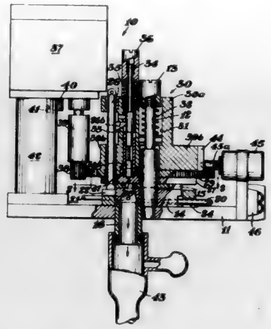
3,664,193
PASSIVE TEMPERATURE SENSOR
Peter V. Nielsen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed Apr. 22, 1970, Ser. No. 30,891
Claims priority, application Germany, Apr. 28, 1969, P 19 21 570.4
Int. Cl. G01k 5/08, 5/10
U.S. Cl. 73—368 19 Claims



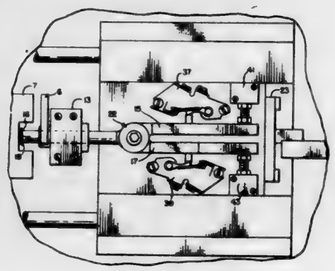
A passive temperature sensor for controlling a thermostat or the like. The sensor reacts to the temperature of the air and also to thermal radiation in order to control a thermostat in such a manner to give optimum personal comfort despite relative changes over a period of time between the room air temperature and thermal radiation effects in the room.

3,664,194
VALVE ASSEMBLY FOR INJECTING A LIQUID SAMPLE INTO AN ANALYZING INSTRUMENT
Ormond E. Barstow, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Sept. 29, 1970, Ser. No. 76,556
Int. Cl. G01n 1/10
U.S. Cl. 73—422 GC 5 Claims

A valve assembly is provided which comprises basically a stationary base and a slidable body member, the unit being attached to an analyzing instrument. The base includes a passageway for conducting a liquid stream to be analyzed, such as water, into the valve assembly. The slidable member includes a plunger or piston slidably carried in a chamber and an orifice which communicates with the chamber. At one point during sliding contact of the body member with the stationary base, the orifice is aligned with the passageway. At a later point the orifice lines up with a discharge port in the base which communicates with the analyzing instrument. As the orifice lines up with the passage the plunger is actuated to withdraw a precise amount of liquid sample into the chamber through the orifice. When the orifice lines up with the discharge port the plunger is again actuated to "shoot" the sample downwardly through the orifice and into the analyzing instrument.



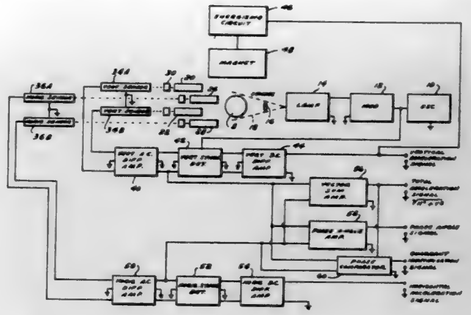
3,664,195
ARTICLE TESTING APPARATUS
Daniel Fournier, Roseville, and Urho A. Strang, Livonia, both of Mich., assignors to Dan Bee Corporation, Southfield, Mich.
Filed May 11, 1970, Ser. No. 35,968
Int. Cl. G07c 5/06
U.S. Cl. 73—432 R 6 Claims



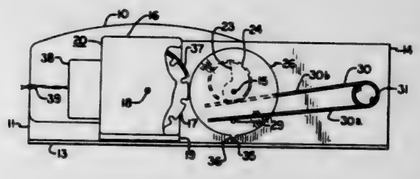
An apparatus for detecting missing threads in internally threaded nuts. A scissor-like probe element is translated into the internally threaded hole of the nut and travels the full length of the nut. If any threads are missing, the probe fingers will expand and energize a reject solenoid to eject the improperly fabricated nut. The probe unit is actuated by a spring-loaded slide driven by a gear reduction motor and a bellcrank wheel. A missing thread gives rise to a pivotal motion of one of the probe elements, and this motion is detected by an adjacent electrical contact detecting device. The testing operation is completely automatic and the stopping and starting of the probe unit may be controlled by a parts detection switch mounted in a track in front of the probe unit.

3,664,196
ACCELEROMETER
Jorge G. Codina, 223 Secor Road, Hartsdale, N.Y.
Continuation-in-part of application Ser. No. 710,155, Mar. 4, 1968. This application July 31, 1970, Ser. No. 59,919
Int. Cl. G01p 15/08
U.S. Cl. 73—517 B 7 Claims

An accelerometer for measuring the acceleration of a body in any direction with extremely high sensitivity and accuracy, utilizing a mass which is free to move incrementally in any direction but which is then returned to a stable position by means of a servo-controlled electromagnetic field.



3,664,197
CONSTANT TORQUE DEVICE FOR METER READING SYSTEM
Elmer L. Larsen, Greenfield, Wis., assignor to McGraw-Edison Company, South Milwaukee, Wis.
Filed Feb. 12, 1971, Ser. No. 115,005
Int. Cl. F16h 27/04
U.S. Cl. 74—1.5 17 Claims

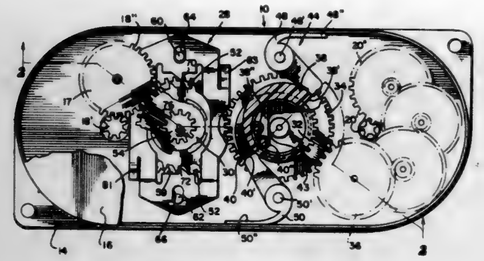


A meter output shaft drives a constant torque device. The constant torque device drives a disc encoding assembly that produces an output indicating the quantity measured by the meter. The constant torque device has a drive dog and eccentric cam assembly rotated by the meter shaft. The drive dog rotates to drive a freely rotating plate through a drive pin on the plate. A double arm spring is positioned to have one spring arm bias against the eccentric cam and the other spring arm against a toggle pin on the plate. On rotation of the shaft, the dog is rotated to move the plate drive pin during a half revolution of the shaft against the biasing of the second spring arm until an overtoggle position is reached at which time the second spring arm shifts the plate 180°. Upon shifting of the plate, a disc toggle pin on the plate drives the disc to change the reading on the disc encoder assembly. Upon overtoggling of the plate, the shaft continues to rotate the eccentric cam against the bias of the first spring arm during the other half revolution of the shaft until the drive dog again engages the plate drive pin.

3,664,198
DRIVE MEANS WITH VARIABLE OUTPUTS
Benjamin F. Chestnut, Greenwood, and Richard W. Stafford, Clayton, both of Ind., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Filed June 29, 1970, Ser. No. 50,703
Int. Cl. F16h 5/74
U.S. Cl. 74—3.54 15 Claims

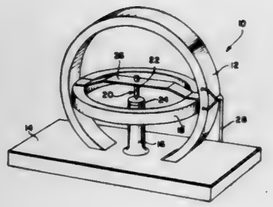
There is provided a combination constant speed output means and an intermittent drive means, both rotatably car-

ried by a shaft and responsive to rotation of a gear reduction means, second output means responsive to movement of the



intermittent drive means and dampening means cooperating with the second output means to retard the snap action characteristics generated by the intermittent drive means.

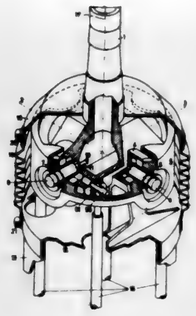
3,664,199
BRUSHLESS D.C. MOTOR DRIVEN GYROSCOPE
Reinhard N. Lahde, Los Altos, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Jan. 12, 1970, Ser. No. 2,066
Int. Cl. G01c *19/28*
U.S. Cl. 74—5.6 11 Claims



An electrical gyroscope having an annular electromagnetic field structure and a magnetic rotor gimbaled within the field structure in such a way that the gimbal support carries only the rotor and not the field structure. The field structure is connected to a D.C. source through a switching circuit which intermittently energizes the field structure in the proper timing to drive the rotor at a high spin rate with a brushless D.C. motor action.

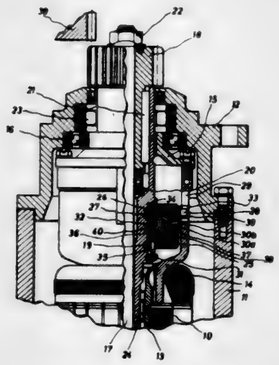
3,664,200
STABLE BASE MOUNTS
Hendrik Ter Brugge, Hengelo, Netherlands, assignor to N.V. Hollandse Signaalapparaten, Hengelo (O), Netherlands
Filed Apr. 28, 1970, Ser. No. 32,700
Claims priority, application Netherlands, May 8, 1969, 6907029
Int. Cl. G01c *19/46*
U.S. Cl. 74—5.22 11 Claims

In a ship-born stable base mount is a hollow column secured in a position perpendicular to the deck plane of the ship. Means are presented for mounting a Gimbal system including two orthogonal axes on the upper end portion and a gyroscopically controlled servo drive system on the lower end portion of the hollow column. Furthermore, the stable base mount comprises transmission means controlled by the servo drive system and extending through the length of the



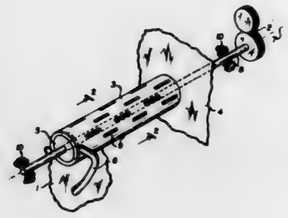
interior of the hollow column to act on a base member to be stabilized.

3,664,201
STARTER DRIVE FOR COMBUSTION ENGINES
Erich Vogel, Bernhausen, and Gunther Ullmann, Schwieberdingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Oct. 16, 1970, Ser. No. 81,348
Claims priority, application Germany, Nov. 11, 1969, P 19 56 518.5
Int. Cl. F02n *11/00*
U.S. Cl. 74—6 10 Claims



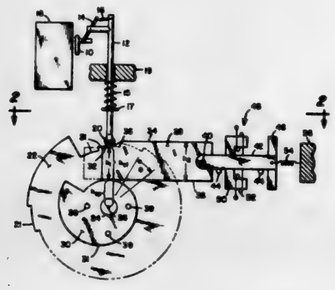
An axially shiftable rotatable rod is mounted with radial clearance in the hollow output shaft of a motor. A pinion is fixed on the rod and at least in part located outwardly beyond the shaft so that it can mesh with a gear of a combustion engine to be started. A sleeve surrounds the rod fixed with the pinion and has an outer steep-pitch thread. A motion-transmitting coupling is provided including a first coupling element mounted in the shaft for rotation therewith and a second coupling element carried by the sleeve for rotation therewith. The coupling elements are provided with mechanically interlockable coupling projections and damping means is located between the sleeve and the first coupling portion and serves for damping axially directed forces.

3,664,202
APPARATUS FOR THE TRANSMISSION OF A ROTARY MOVEMENT THROUGH THE WALL OF A CHAMBER UNDER PRESSURE
Reinhold Metzger, Kilianstadten, Germany, assignor to VDO Tachometer Werke Adolf Schindling GmbH, Frankurt, Germany
Filed May 18, 1970, Ser. No. 38,210
Claims priority, application Germany, May 31, 1969, P 19 27842.3
Int. Cl. F16j *15/50*
U.S. Cl. 74—18.1 7 Claims



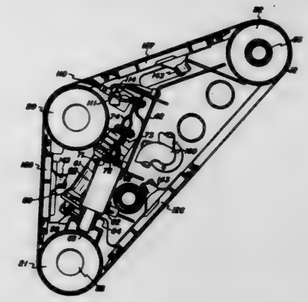
An apparatus for the transmission of an oscillatory movement through the wall of a chamber under pressure, comprising a torsion tube having one open end and secured pressure tight in a corresponding recess of a wall and the other end being closed up pressure tight. A shaft is disposed concentrically in the torsion tube and is secured to the closed tube end, and the torsion tube is formed over its entire outer surface with a plurality of cavities with a small opening face and reduces locally the wall thickness of the tube.

3,664,203
SHAFT POSITIONING APPARATUS
Andrew B. Pataki, Lansdale, Pa., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Dec. 18, 1969, Ser. No. 886,226
Int. Cl. F16h *25/08*
U.S. Cl. 74—55 6 Claims



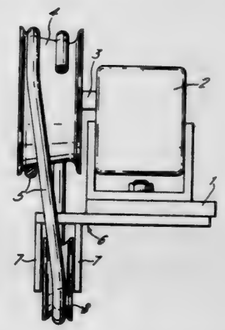
Shaft positioning apparatus including a spiral cam in supporting relation to an interposer cam which, by moving perpendicular to the axis of the shaft, lifts the shaft from contact with a shaft-supporting and positioning stepped cam. The stepped cam and the spiral cam are mounted on a common drive member and have a substantially constant difference in radial length at any angular position so that the interposer cam can lift the shaft regardless of the orientation of the stepped cam.

3,664,204
BELT ASSEMBLY FOR USE IN AN ELECTROSTATIC PRINTING MACHINE
William E. Jordan, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 29, 1970, Ser. No. 102,464
Int. Cl. F16h *7/00*
U.S. Cl. 74—219 4 Claims



A multiple roller belt assembly module arrangement for an electrostatic printing machine of the type employing an endless photoconductive belt. The arrangement supports the module in cantilever fashion using two horizontally protruding shafts one of which is rotatably driven and connected to one roller for driving the belt and the other being fixed. Centering and locking means are provided for aligning the belt assembly upon the shafts during mounting of the assembly to a fixed machine support.

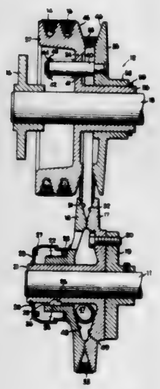
3,664,205
DRIVE MEANS FOR AN ENDLESS ROPE, ESPECIALLY FOR SKI LIFTS
Arne Wildar Luras, Sandsvaerveien 151, 3600 Kongsberg, Norway
Filed Aug. 26, 1970, Ser. No. 66,999
Claims priority, application Norway, Aug. 30, 1969, 3478/69
Int. Cl. F16h *7/04*
U.S. Cl. 74—224 3 Claims



A drive means for small portable ski lifts comprises a flanged motor-driven drive drum mounted at the upper station of the ski lift and frictionally driving an endless smooth rope adapted to be gripped by the skiers. The incoming reach of the rope passes around the drive drum in a first turn, then around an idle roller and finally in a second turn around the drive drum before leaving the drum. The drive drum is conical and the idle roller separated said turns is positioned radi-

ally outside the position on the circumference of the drum at which the incoming reach enters the drum and in approximately the same plane as the part of the conical drum having the smaller diameter.

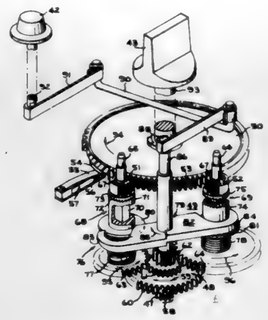
3,664,206
ACCESSORY DRIVE MECHANISM
Julius A. Clauss, Jr., Birmingham, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed June 25, 1970, Ser. No. 49,795
Int. Cl. F16h *55/22*
U.S. Cl. 74—230.17 E **9 Claims**



A drive mechanism for driving accessories, associated with a prime mover such as an automotive engine which is normally operated over a wide range of speeds, and operable to increase the speed of the accessories at lower engine speeds to increase their output and to reduce the speed of the accessories at high engine speeds. The drive mechanism is a speed-responsive variable ratio V-belt pulley assembly with expanding driving and driven pulleys, each pulley having truncated conical discs defining a V-belt groove and movable toward each other by spring force, the drive pulley being rotatable by the engine and provided with cam ramps disposed radially inward of its groove and engaging balls movable by centrifugal force to separate its discs to vary the effective diameters of the V-belt grooves.

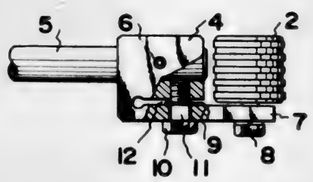
3,664,207
DUAL RATCHET CLUTCH DRIVE
Frederick M. White, Louisville, Ky., assignor to General Electric Company
Filed Aug. 17, 1970, Ser. No. 64,331
Int. Cl. F16h *5/06, 3/10;* **F16d** *41/00*
U.S. Cl. 74—337.5 **3 Claims**

A motor-driven cam-operated switch having a rotary cam adapted to selectively open and close at least one switch means in response to rotation of the cam and having a drive motor adapted for connection to a source of electrical energy, is provided with a two-speed drive train adapted to selectively transmit low or high speed rotational motion to the rotary cam. The drive train includes first and second ratchet clutches and drive means adapted to connect each of the clutch inputs to the drive motor and to connect each of the clutch outputs to the rotary cam such that the first clutch may be operative to drive the rotary cam at high speed and the second clutch may be operative to drive the cam at low speed. Each of the ratchet clutches may include a toothed input member and a toothed output member. A shifting means is provided to selectively engage the toothed member



of one of the ratchet clutches while simultaneously disengaging the toothed members of the other ratchet clutch.

3,664,208
APPARATUS FOR ADJUSTING THE POSITION OF THE AXIS OF A BELT SUPPORTING PULLEY
Noboru Saito, Tokyo, Japan, assignor to Nitto Kohki Company Limited, Tokyo, Japan
Filed Jan. 27, 1971, Ser. No. 110,096
Claims priority, application Japan, Dec. 10, 1970, 45/35657
Int. Cl. F16h *7/10*
U.S. Cl. 74—242.15 **5 Claims**

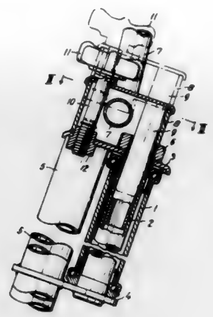


An apparatus for adjusting the tension of an endless belt and correcting for parallelism of the drive and idler pulleys in an endless belt system such as a belt grinder. The idler pulley is mounted on the arm of a block provided with a slot which can be opened or closed thereby, altering the axial position of the idler, relative to the drive pulley.

3,664,209
APPARATUS FOR ATTACHING A STEERING HANDLE TO A TWO-WHEEL VEHICLE
Masayuki Michiuchi, Hamamatsu, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 8, 1970, Ser. No. 70,076
Claims priority, application Japan, Apr. 4, 1970, 45/31903
Int. Cl. B62k *21/24*
U.S. Cl. 74—551.3 **8 Claims**

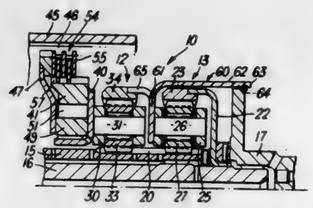
An apparatus for attaching a steering handle in a two-wheel vehicle comprises a handle post secured to a bracket

supporting a steering handle, the handle post being rotatably and removably attached to a steering stem within a head



pipe, the bracket being provided with a fixing member connectable with and disconnectable from the front wheel fork.

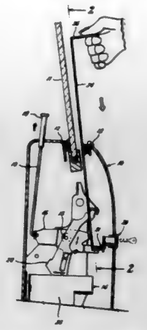
3,664,210
TRANSMISSION MECHANISM AND METHOD OF MANUFACTURE THEREOF
James Morrison Laing, Letchworth, England, assignor to Borg-Warner Limited, Letchworth, England
Filed July 17, 1970, Ser. No. 55,771
Claims priority, application Great Britain, July 29, 1969, 38,121/69
Int. Cl. F16h *57/00;* **B21d** *51/00*
U.S. Cl. 74—753 **10 Claims**



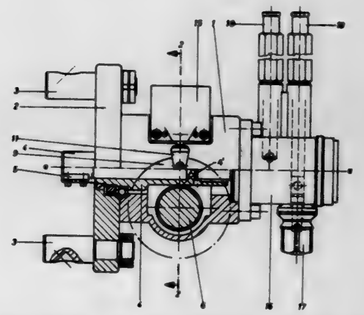
A torque transmitting member, and a transmission mechanism, such as an automatic transmission, in which the member is formed from sheet metal and comprises a central radial portion and forwardly and rearwardly axially extending portions connecting the member to elements of two planetary gear sets and to a torque transmitting shaft. The member may be formed by drawing an annular sheet metal part to form a radially and an axially rearwardly extending portion, severing sections in the area between these portions and bending the severed sections forwardly to form the forwardly extending portion.

3,664,211
VEHICLE DOOR LOCK RELEASE METHOD AND APPARATUS
John S. McConnell, 6242 Longmont, Houston, Tex.
Filed Oct. 15, 1970, Ser. No. 80,832
Int. Cl. E05b *19/20*
U.S. Cl. 81—3 R **4 Claims**

An elongate member arranged for downward insertion into a vehicle door between the door glass and window sill and arranged to engage a portion of the door lock assembly and trip the lock. Means are provided for exerting either an upward or a downward force upon a lock release arm of the lock assembly.



3,664,212
ATTACHMENT FOR INJECTION-MOLDING MACHINES
Karl Hehl, Siedlung 183, 7291 Lossburg, Wuttenberg, Germany
Filed Dec. 8, 1970, Ser. No. 96,215
Claims priority, application Germany, Dec. 13, 1969, P 19 62 663.2
Int. Cl. B25b *17/00, 21/00*
U.S. Cl. 81—52.5 **8 Claims**

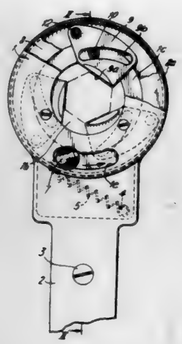


An attachment to injection-molding machines for removing threaded cores from pieces molded therein has a motor connected to a hollow spindle so as to rotate the same. The hollow spindle either transmits the torque from the motor to at least one threaded core or to a drive spindle which in turn transmits the torque to a threaded core. The spindle has an outer surface defining a thread section. A stationary switch element is provided for a respective one of a pair of adjustable switching cam means which are arranged on the outer periphery of a scale disc connected to the hollow spindle for rotation therewith. The setting of the cams via the cooperation with the switch element determines the start and finish of a core removal cycle.

3,664,213
WRENCH
Reuven Anati, Mazkereth Batya, Israel
Filed Sept. 10, 1970, Ser. No. 71,161
Claims priority, application Israel, Sept. 11, 1969, 32989
Int. Cl. B25b *13/28, 13/18*
U.S. Cl. 81—91 R **6 Claims**

A wrench for nuts, bolts or pipes which consists of a shallow housing having a throughgoing circular axial opening, an

annulus adapted to rotate within the housing around the axis of said opening, at least two pins being fixed to said annulus spaced at equal angular distances and constituting pivots for a corresponding number of substantially flat jaw members whose jaw faces extend into the range of said openings. Each jaw member has a slot through which a guide pin fixed to



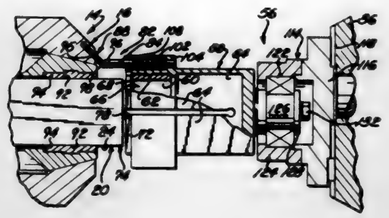
said housing extends. When the annulus is turned, the jaw members describe a guided movement, whereby their faces approach or move away from the axis of the opening. A handle provided on the housing is apt by a ratchet-like movement to tighten or loosen the bolt, nut or pipe held by the jaws.

3,664,214
COMBINATION PLIERS AND WRENCH TOOL
Reuben J. Feldman, 188 W. Randolph Street, Chicago, Ill.
Filed Mar. 18, 1970, Ser. No. 20,644
Int. Cl. B25b *13/12*
U.S. Cl. 81—130 **2 Claims**



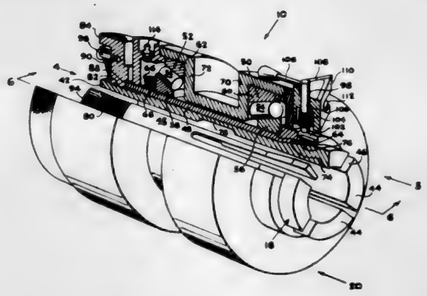
A hand operative tool comprising a pair of handle grip members, one of which has a fixed jaw, the other handle grip member being adjustably attached to a moveable jaw, the handle grip members being slideable relative to each other so that the fixed and moveable jaw allow for maximum pressure to be applied to fasteners, fittings and the like.

3,664,215
MACHINE TOOL WITH BAR STOCK GRIPPER
Jack H. Selby, Chagrin Falls, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio
Filed June 11, 1970, Ser. No. 45,477
Int. Cl. B23b *13/02*
U.S. Cl. 82—2.5 **16 Claims**



An improved machine tool includes a spindle for rotating bar stock which has a noncircular cross sectional configuration. A bar stock feed gripper is engageable with a leading end portion of the bar stock and is movable away from the spindle to pull bar stock to a machining station. Positioning members mounted on the spindle and gripper cooperate to orient clamping surfaces on the gripper in proper alignment with the noncircular bar stock. To orient the gripper clamping surfaces, the positioning member on the gripper is moved into a path of rotation of the positioning member on the spindle as the gripper is moved toward the leading end portion of the bar stock. When the spindle rotates its positioning member into abutting engagement with the positioning member on the gripper, the gripper clamping surfaces are in the desired alignment with the noncircular bar stock.

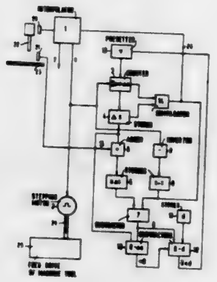
3,664,216
SELF-CENTERING STEADY REST CHUCKS
Joseph Kladich, 100 Rowena Drive, Don Mills, Ontario, Canada
Filed June 14, 1968, Ser. No. 737,071
Int. Cl. B23b *25/00*
U.S. Cl. 82—38 **5 Claims**



A steady rest for use with a lathe has a non-rotatable housing which is suitably secured to the lathe and which supports for rotation therein a self-centering chuck for securing a work-piece extending through the steady rest. The collet member of the chuck has axially extending fingers which are radially flexed or released respectively to engage or disengage the workpiece on relative axial movement of such collet member and a sleeve surrounding that member, by virtue of the provision of co-operating frusto-conical surfaces on said collet member and said sleeve. An internally threaded adjusting collar engages a corresponding thread on the collet member and abuts the end of the sleeve, so that the collet

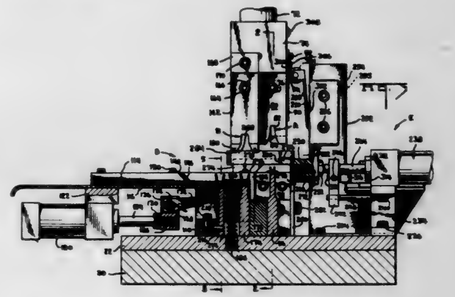
member is moved axially and the collet fingers move radially when the adjusting collar is rotated relative to the collet member. A pin is radially retractably mounted through the housing for releasable engagement with the sleeve to hold such sleeve stationary and to facilitate tightening or releasing of the collet fingers on the workpiece. A ratchet and pawl mechanism is provided between the adjusting collar and the collet member to prevent their relative rotation and loosening of the collet fingers from the workpiece during operation of the lathe.

3,664,217
METHOD AND SYSTEM FOR DIGITAL SUBDIVISION OF THE TOOL FEED TRAVEL OF A NUMERICALLY CONTROLLED MACHINE TOOL
Peter Schiewek, Eltersdorf, and Dieter Kremper, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Munich, Germany
Filed Feb. 24, 1970, Ser. No. 13,662
Claims priority, application Germany, Mar. 1, 1969, P 19 10 577.2
Int. Cl. B26d *3/00*; B23d *27/00*
U.S. Cl. 83—49 **3 Claims**



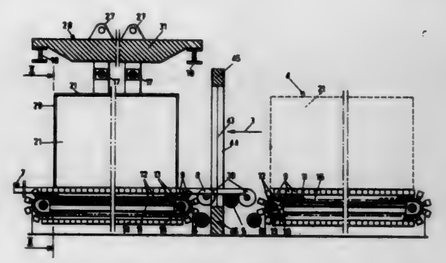
The tool feed travel of a numerically controlled machine tool is subdivided into steps of approximately equal lengths by sequentially adding after one of the first steps the length (Δs) of the respective next following steps to obtain each time the sum total ($n\Delta s$) of the number (n) of steps already performed, comparing each of the sum totals thus counted with the then still remaining feed travel ($s-x$), and shortening the length of the subsequent steps a given amount (ν) until the difference between the still remaining feed travel ($s-x$) and the sum total ($n\Delta s$) declines below a given minimum (d) between 50 and 100 percent, preferably between 60 and 70 percent, of the normal step length. The method is performed with the aid of a logic system in which a pulse generator, preferably an interpolator, issues to a pulse counter a number of pulses during each tool-feed step, this number being indicative of the pulse length. Logic components compare the counted sum total with a number originally set to the total feed travel and progressively reduced in accordance with the feed travel already performed. When the comparison results in a difference smaller than a given minimum, the output of the logic system resets the pulse counter by a given amount which shortens the subsequent travel steps until the difference declines below the above-mentioned minimum.

3,664,218
METHOD AND APPARATUS FOR FORMING AN INSULATED ELECTRICAL CONNECTION
Ralph Rupp Lau, Harrisburg, Pa., and Gilbert Carl Sitz, Richardson, Tex., assignors to AMP Incorporated, Harrisburg, Pa.
Original application Sept. 23, 1965, Ser. No. 489,558, Pat. No. 3,386,153.
Divided and this application Sept. 17, 1970, Ser. No. 73,060
Int. Cl. B26d *7/06*
U.S. Cl. 83—81 **2 Claims**



An apparatus is provided for forming an insulated electrical connection. An electrical terminal having an open U-shaped ferrule-forming portion is fed to a first crimping station. The stripped end of an insulated electrical conductor is inserted into the ferrule-forming portion and the terminal is crimped to the conductor. An open U-shaped insulating member is fed to a second crimping station. The terminal and conductor previously joined are transferred to the second crimping station in overlying relationship with the insulating member. The insulating member is then crimped around the terminal and conductor.

3,664,219
APPARATUS FOR CUTTING A BLOCK OF PLASTIC MATERIAL
Berend Vrijma, Vuren, Netherlands, assignor to Calsilox S.A., Luxemburg Ville, Luxembourg
Filed June 23, 1970, Ser. No. 49,050
Claims priority, application Netherlands, June 26, 1969, 6909801
Int. Cl. B28b *7/14*
U.S. Cl. 83—89 **11 Claims**



Apparatus for cutting a block of material in a plastic state, more particularly light weight concrete, comprising a plurality of supports which extend transversely of a cutting direction and whose upper surfaces are formed with a plurality of projections; a plurality of rods extending in the cutting direction and loosely spaced out one beside the other between the projections, for carrying the block; and a

number of cutting wires. The parts of the block disposed at a cutting wire width from one another cannot be pushed against one another, as is needed for cutting the parts of the block in a direction transverse of the cutting already performed, to prevent the tearing and crumbling of the parts of the block during the second cutting.

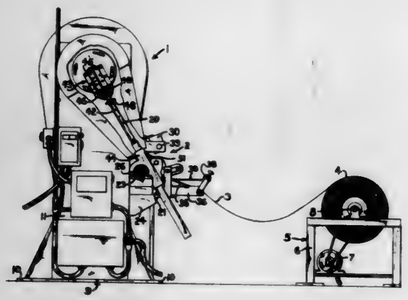
This apparatus is improved in that the supports adjoin one another, and the projections and the rods are substantially of the same height and cooperate to form a flat table.

3,664,220

SHEET WORKING MACHINE AND FEED CONTROL APPARATUS THEREFOR

Boyd C. Blair, Topeka, Kans., assignor to Brackett Stripping Machine Co., Inc., Topeka, Kans.

Filed Mar. 2, 1970, Ser. No. 15,691
Int. Cl. B26d 5/20; B65h 17/10
U.S. Cl. 83—170 **11 Claims**



A high speed sheet working machine and a feed control apparatus therefor which is operative to precisely control the amount of material to be cut from a strip, fed from a roll, to form sheets with edges thereof in precise registry, as if stacked and trimmed all at one time. The feed control apparatus holds the strip in firm engagement with a feed roller which is rotatably mounted on a drive shaft engaged by an overrunning clutch to permit only feeding rotation of the feed roller, whereby the strip is intermittently advanced by the feed roller. Brake shoes engage discs on the feed roller for stopping same after a selected feeding advancement of the strip to avoid overruns and underruns of the selected feeding advancement.

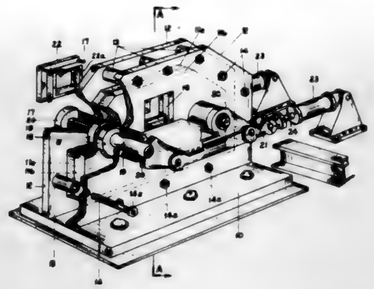
3,664,221

SHEARING MACHINES

Emile Breetvelt, Johannesburg, Republic of South Africa, assignor to Intermenua (Proprietary) Limited, Johannesburg, Republic of South Africa

Filed May 5, 1970, Ser. No. 34,754
Claims priority, application South Africa, May 7, 1969, 69/3272
Int. Cl. B23d 15/00, 23/00
U.S. Cl. 83—196 **9 Claims**

A metal shearing machine in which two cooperating die carriers which, may optionally have dies made integral therewith, are mounted in a supporting stand therefor, the die carriers being associated with means for moving them in



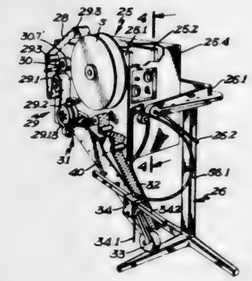
parallel planes simultaneously but in directions substantially at right angles to each other.

3,664,222

LABELING MACHINE

Judson H. Early, Dallas, Tex., assignor to Domain Industries, Inc., New Richmond, Wis.

Filed Apr. 7, 1970, Ser. No. 27,055
Int. Cl. B26d 5/22
U.S. Cl. 83—205 **17 Claims**



A labeling machine; the labels being drawn from a roll of labels in strip form, then fed and cut precisely, and being vacuum carried and heated for adhesive activation and application to the article upon command. The alternate label feeding and cutting being effected by the alternate retraction and extension strokes of a reciprocating air motor, and mechanical interlocks prohibiting cutting until feeding is complete and prohibiting partial cycling through hand operation.

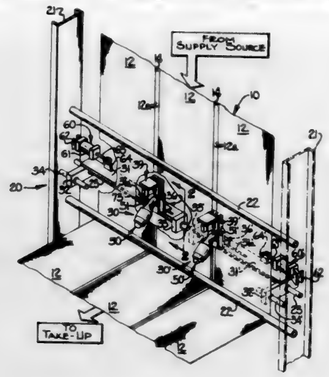
3,664,223

SELF-ALIGNING SLITTING APPARATUS FOR TRAVELING WEBS

Charles E. Brocklehurst, Augusta, Ga., assignor to Riegel Textile Corporation, Ware Shoals, S.C.

Filed Apr. 8, 1970, Ser. No. 26,508
Int. Cl. B26d 5/04
U.S. Cl. 83—368 **3 Claims**

An apparatus for slitting a longitudinally traveling elongate web having both longitudinally extending thickened and thinned portions joining each other at one longitudinal side edge of the thickened portion and being characterized by its ability to self-align to compensate for deviations in the path of travel of the one longitudinal side edge. A sensing means and severing means are mounted for transverse movement with each other with the sensing means being disposed for alternative engagement with the thickened and thinned portions and with the severing means being disposed for longitudinally slitting the traveling web along a predetermined path. A reciprocating means is provided for continuously shifting the sensing means and severing means in alternative opposite



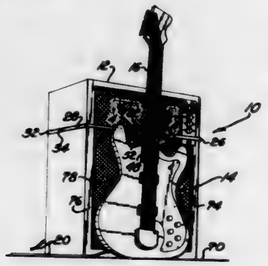
transverse directions and is controlled by control means responsive to the sensing means for actuating the reciprocating means to transversely shift the sensing means and severing means to continually compensate for deviations in the path of travel of the one longitudinal side edge of the thickened portion.

3,664,224

MAIN STRAP AROUND AN AMPLIFIER WITH HOLDING STRAP TO HOLD GUITAR

James V. Campagna, Jr., 2008 Magee Avenue, Lakewood, Ohio

Filed Apr. 14, 1971, Ser. No. 133,995
Int. Cl. G10h 1/00
U.S. Cl. 84—1.01 **8 Claims**



An improved guitar support assembly includes a main strap assembly which encircles an amplifier. The main strap assembly has an elastic section to provide for tight engagement between the strap assembly and amplifiers of different dimensions. A holding strap is connected with the main strap assembly and releasably engages the neck portion of a guitar to hold the guitar in an upright position when it is not being played.

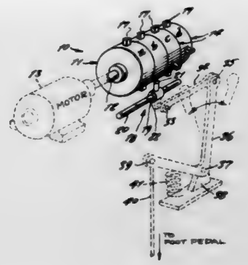
3,664,225

VARIABLE ELECTRIC METRONOME

Walter C. Robertson, P.O. Box 1292, San Marcos, Tex.

Filed Mar. 18, 1970, Ser. No. 20,488
Int. Cl. G04f 5/02
U.S. Cl. 84—484 **3 Claims**

A metronome for indicating musical tempo, the device comprising a series of cylinders mounted on a shaft that is driven by an electric motor, each of the cylinders having a radially outwardly extending spoke or several spokes adaptable to strike a sound producing device that is slideable along



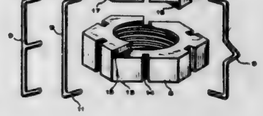
a rod for selectively engaging the spokes of a specific cylinder, and the sound-producing device being rapidly slideable along the rod by means of a foot controlled mechanism.

3,664,226

NUTS AND LOCK NUTS COUPLED IN ONE SINGLE UNIT FOR TIGHTENING AT A CONTROLLED TORSION

Cesar Fernandez-Versaud Gonzalez, Avenue Central 58, Mexico City, Mexico

Filed June 12, 1970, Ser. No. 45,760
Int. Cl. F16b 31/02, 39/12
U.S. Cl. 85—61 **3 Claims**



Improvements on nuts and lock nuts characterized by their being threaded in one single unit and comprising two separate pieces namely: a lower nut portion properly said and an upper lock nut portion which simultaneously tightens said lower nut portion to a degree of delimited and adjustable torsion by means of the utilization of torsion clamps or wires which join the bodies of the nut and of the lock nut.

3,664,227

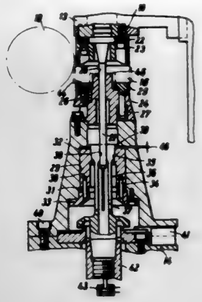
PRESSURE-OPERATED DEVICE FOR CLAMPING OF WORKPIECES ON GEAR PROCESSING MACHINES

Heinrich R. Fischer, Munich, Germany, assignor to Carl Harth, Maschinen-und Zahnradfabrik, Munich, Germany

Filed July 22, 1969, Ser. No. 843,650
Claims priority, application Germany, July 30, 1968, P 17 52 877.7
Int. Cl. B23f 23/06
U.S. Cl. 90—1 **12 Claims**

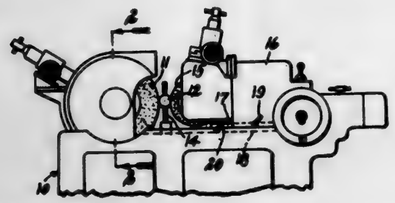
A device for clamping workpieces on gear processing machines in which a drawbar is driven axially to pull to workpiece onto a workpiece support. A resilient collet is secured to a drawbar and has an outer cone for engaging a draw-in arbor to permit the drawbar to apply an initial pressure on

the workpiece when the drawbar is pulled toward a workpiece support. The collet is received by a countercone which



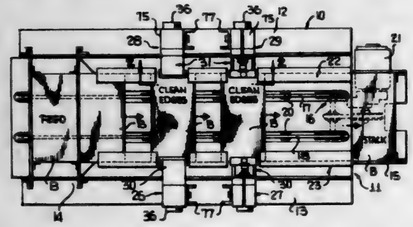
resiliently yields to the pull of the drawbar to permit the drawbar to apply a final clamping pressure to the workpiece.

3,664,228
DAMPING MEANS FOR INCREASING THE MINIMUM DYNAMIC STIFFNESS OF A SHAFT
John R. Hasz, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Sept. 11, 1969, Ser. No. 857,155
Int. Cl. B23c *9/00*
U.S. Cl. 90—11 A 24 Claims



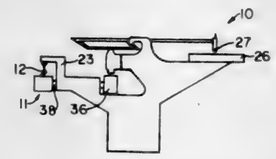
The minimum dynamic stiffness of a spindle of a grinding wheel is increased by having a sleeve of viscoelastic material bonded to the spindle between the bearing supports for the spindle. A sleeve surrounds the viscoelastic material sleeve to constrain the sleeve of viscoelastic material to increase its shear strains and is bonded thereto.

3,664,229
CONTROLLED CUTTING FORCE ASSEMBLY
John T. Cary, Markham, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Jan. 12, 1970, Ser. No. 2,290
Int. Cl. B23c *3/12*
U.S. Cl. 90—18 10 Claims



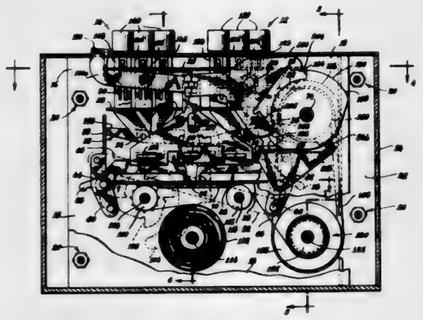
This disclosure relates to an apparatus for cleaning edges of sheet metal can body blanks prior to welding. The cleaning is accomplished by means of high speed cutters. In order to assure a uniform abrading or cutting action without the wearing of the cutters becoming a factor, a special guide is associated with each cutter for deflecting an edge portion of a sheet metal blank being cleaned into controlled pressure engagement with the cutter. The guide is preferably actuated by means of an air piston.

3,664,230
PANTOGRAPH MACHINE MOVEMENT CONTROL ASSEMBLY
Bernard I. Mechanic, Evanston, Ill., assignor to Tiara Corporation, Lincolnwood, Ill.
Filed May 22, 1970, Ser. No. 39,642
Int. Cl. B23c *1/18*
U.S. Cl. 90—13.1 6 Claims



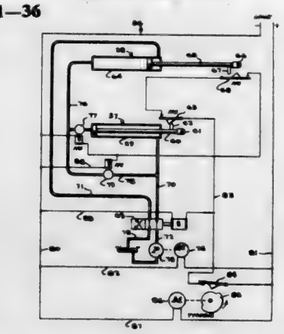
Pantograph machine movement control assembly in which relative rotational movement of cutter and work supports about a certain axis is effected in proportion to an X component of movement of a tracing stylus while relative rectilinear movement of the supports is effected in proportion to a Y component of movement of the stylus to cause a cutting portion of a cutter to move through work on the work support in a linear path along a certain line which intersects the certain axis at an acute angle. The assembly is especially advantageous when used for the cutting of letters on the bezel portion of a class ring or the like.

3,664,231
LOCKING DEVICE
Walter J. Hanson, Old Greenwich, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.
Filed Dec. 17, 1970, Ser. No. 98,999
Int. Cl. E05b *37/16*; G05g *5/00*
U.S. Cl. 70—292 22 Claims



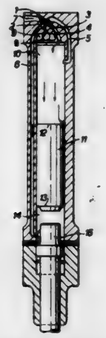
There is disclosed a combination lock which is actuated by two sets of numbered keys. Contained within the lock is a tape which is pre-punched with a succession of randomly generated codes. The lock can be actuated only when the keys punched by the user correspond with the code on the punched tape. Each actuation of the lock advances the tape to establish a new code.

3,664,232
DRIVE SYSTEM
Miro Dvirka, Long Island City, N.Y., assignor to Hagan Industries Incorporated, Corona, N.Y.
Division of Ser. No. 821,560, May 1, 1969, Pat. No. 3,585,947.
Filed Aug. 5, 1970, Ser. No. 61,328
Int. Cl. F15b *21/02*
U.S. Cl. 91—36 16 Claims



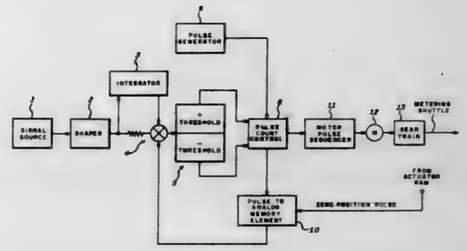
A drive system generally including a first fluid cylinder assembly, a second fluid cylinder assembly, first means for supplying fluid under pressure to the front end of the first fluid cylinder assembly, second fluid supply means for supplying fluid to the front end of the second fluid cylinder assembly, the first and second fluid supply means being communicable with a source of fluid under pressure, means for selectively communicating the first and second fluid supply means with the source of fluid under pressure, means intercommunicating the rear ends of the fluid cylinder assemblies, and means communicable with the source of fluid under pressure for selectively supplying fluid under pressure to the rear end of the first fluid cylinder assembly while closing said means intercommunicating the rear ends of said fluid cylinder assemblies.

3,664,233
CONTROL ARRANGEMENT FOR PNEUMATIC HAMMERS
Robert Balve, 9, rue St. Nicolas, Remich, Luxembourg
Filed Dec. 29, 1969, Ser. No. 888,794
Claims priority, application Luxembourg, Jan. 23, 1969, 57,835
Int. Cl. F01l *25/06*
U.S. Cl. 91—290 4 Claims



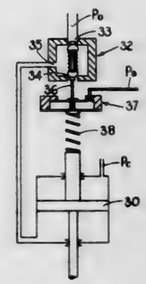
A control arrangement for pneumatic hammers comprises a reciprocating rocking piston for actuating an impact cutter and a rocking slide for controlling the input of the compressed air and the output of the consumed air. After a predetermined control angle of the rocking slide a tension means effects a complete reversal of the rocking slide and the rocking piston.

3,664,234
DIGITAL ELECTROHYDRAULIC SERVO ACTUATOR
Gerald F. Simons; Frederick W. Lynch, and Gary C. McKown, all of Phoenix, Ariz., assignors to Sperry Rand Corporation, Great Neck, N.Y.
Filed Apr. 27, 1970, Ser. No. 31,905
Int. Cl. F15b *9/03*, *9/09*, *9/10*
U.S. Cl. 91—363 6 Claims



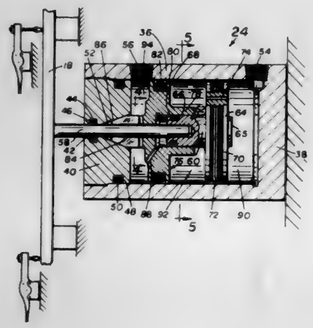
A hydraulic boost actuator having variable displacement and rate of displacement commands and controlled by a digital electronic system driving a stepper motor. The actuator may be operated either in a series or a parallel mode.

3,664,235
FLUID PRESSURE OPERATED SERVO ARRANGEMENT
Peter Walton, Gloucester, England, assignor to Serck Industries Limited, Birmingham, England
Filed May 13, 1970, Ser. No. 36,803
Claims priority, application Great Britain, Sept. 22, 1969, 46,457/69
Int. Cl. F15b *13/16*
U.S. Cl. 91—387 1 Claim



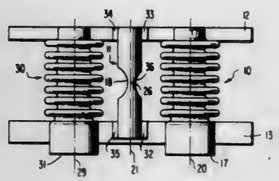
A servo arrangement includes a valve having a chamber into which opens a pair of aligned ports and a third port. A stem is movable within the pair of ports and carries a pair of closure members for the ports. The closure members are biased apart against stops so that in a mid-position of the stem both of the pair of ports are open to the third ports. When the stem has moved to shut one port, continued movement in the same direction allows a large flow through the other port. The servo arrangement also includes an actuating piston and a valve operating device responsive to a signal pressure and to the piston position. The valve controls the pressure supplied to one side of the piston.

3,664,236
RESISTANCE LOCKING CYLINDER
Richard C. Malott, 321 North Jackson, Spring Lake, Mich.
Filed Feb. 13, 1970, Ser. No. 11,213
Int. Cl. F15b *15/26*
U.S. Cl. 92--26 5 Claims



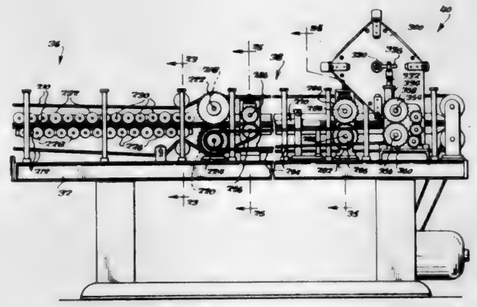
This disclosure relates to a table with a variable shape surface and locking cylinder therefor wherein the table is comprised of a plurality of vertically disposed resistance locking cylinders, each of which has a piston rod, the upper portion of which forms a portion of the variable shape surface. The piston rod is locked in place by a plurality of wedging members within the cylinder, the wedging members being forced against the piston rod when the piston rod encounters substantial resistance as it is extended.

3,664,237
PRESSURE SENSOR
Jerome M. Paros, Williamsville, N.Y., assignor to Sundstrand Data Control, Inc., Redmond, Wash.
Filed Jan. 21, 1970, Ser. No. 4,576
Int. Cl. F01b *19/00*; F16j *3/00*
U.S. Cl. 92—38 2 Claims



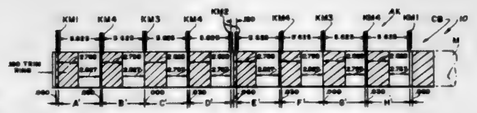
Disclosed is a pressure sensor containing: (1) a mechanical assembly, consisting of a bellows-pivot arrangement such as to yield a torque about a single sensitive axis wherein pressure is applied to the bellows, and (2) the appropriate electronics, consisting of a detection device to sense angular motion and a torquing device to restore the mechanical assembly to its null position. The amount of electrically generated torque necessary to balance the pressure induced torque is proportional to and a measure of the applied pressure.

3,664,238
APPARATUS FOR MAKING MULTI-PLY PAPER BAGS
Robert O. Baxter; Clint R. Hollis, and Carlton F. Evans, all of Camden, Ark., assignors to International Paper Company, New York, N.Y.
Original application Apr. 24, 1969, Ser. No. 818,909, now Patent No. 3,567,111. Divided and this application Oct. 2, 1970, Ser. No. 77,416
Int. Cl. B31b *1/00*
U.S. Cl. 93—8 R 7 Claims



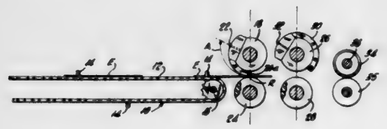
Apparatus for the manufacture of multi-ply paper bags having means for advancing bag blanks one after the other along a path, means along the path for heating the bottom end of the blank to soften the thermoplastic coating, means for applying a sealing force to the softened thermoplastic coating, means for holding the seal while the thermoplastic coating cools and hardens, means for embossing the bag blank along a fold line for folding the bag blank end along the fold line and for folding the folded portion into the side wall of the blank and means for applying, coating and adhesively securing a tape to the folded portion and the side wall of the blank.

3,664,239
LABEL REGISTRATION FOR HELICALLY WOUND CONTAINER BODIES
Wilhelm Woelbel, St. Louis, Mo., assignor to Container Corporation of America, Chicago, Ill.
Filed Jan. 20, 1971, Ser. No. 107,904
Int. Cl. B31c *1/00*
U.S. Cl. 93—80 6 Claims



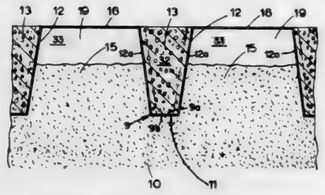
The error occurring in helically winding container bodies having a label pattern repeated thereon is minimized to an extent whereby the placement of the container closures at the ends thereof gives substantially similar appearance to all the containers irrespective from the point on the wound "stick" where they originate.

3,664,240
ARRANGEMENT FOR ADJUSTABLE SPLIT SCORING OF SEAL AND BOTTOM SCORE OF AN ENVELOPE OF A BAG BLANK
Herbert W. Helm, Hollidaysburg, Pa., assignor to F. L. Smithe Machine Company, Inc., Duncansville, Pa.
Filed Sept. 17, 1970, Ser. No. 72,926
Int. Cl. B31b *1/14*; B26d *3/08*
U.S. Cl. 93—58.1 7 Claims



An apparatus whereby the seal score and bottom score is made on the seal and bottom flaps respectively of envelopes or bag blanks. The apparatus provides for split scoring and an adjustment for different size envelopes or bag blanks. Size changes are accomplished by a running adjustment of the one scorer, relative to the other scorer which remains fixed. The construction is such that the pull-out segment engages each envelope blank at a precise location so that the distance on the envelope blank for the first scoring operation thereon is always predetermined. Thus, a fine running adjustment is permitted along with quick size changes for envelopes or bag blanks. The scoring knives also may be mounted on a common cylinder.

3,664,241
METHODS FOR PRODUCING PAVEMENT-LIKE SITES
Jack Blackburn, 25 Springfield Hall Gardens, Huddersfield, England
Filed Mar. 25, 1970, Ser. No. 22,455
Int. Cl. E01c *7/10*
U.S. Cl. 94—10 11 Claims

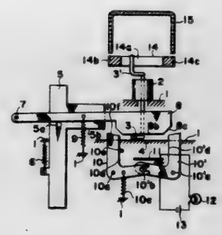


Methods of producing a pavement-like site composed of separate areas at least including concrete areas by laying fluid concrete, and by the use of formers to separate said areas. The site may be composed of areas of concrete and areas of natural or imitation grass, sand or gravel or the like or areas of different colored concrete and the formers may remain in the site or be removed therefrom at some stage during its construction.

3,664,242
METHOD FOR MARKING ROADWAYS
Thomas L. Harrington, Saint Paul, and Jens L. Jorgensen, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of application Ser. No. 647,327, June 20, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 314,505, Oct. 7, 1963, now abandoned.
This application June 15, 1970, Ser. No. 46,492
Int. Cl. E01c *21/00*
U.S. Cl. 94—22 7 Claims

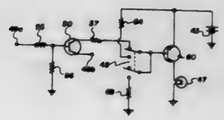
A method for forming traffic-control markings on roadways using a novel particulate marking material. The marking material is heated and projected to the roadway, and the resulting markings are ready to bear wheeled road traffic within seconds. The marking material comprises a particulate thermoplastic-resin-based composition having an organic phase that melts to a low-viscosity condition and principally comprises a polyamide resin. It also preferably includes an inert particulate material, preferably transparent glass beads, that is non-melting at the temperature of application of the marking material.

3,664,243
APPARATUS FOR INTERLOCKING A SHUTTER RELEASE WITH EXPOSURE METER SETTINGS
Tatsuo Kobayashi, Kaizuka-shi, and Keisuke Maeda, Osaka-shi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Oct. 10, 1969, Ser. No. 865,451
Int. Cl. G03b *7/02*
U.S. Cl. 95—10 C 6 Claims



Apparatus to prevent actuation of a camera shutter release in accordance with underexposed and overexposed settings of an exposure meter. Movement of the shutter mechanism is prevented by its engagement with an arresting member rotated into operative position by movement of pointer locking apparatus having sloping edges at respective end portions thereof for receiving the pointer when it indicates underexposed and overexposed conditions.

3,664,244
INDICATING APPARATUS FOR EXPOSURE CONTROL APPARATUS
Richard C. Painton, West Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 10, 1970, Ser. No. 70,981
Int. Cl. G01j *1/44*; G03b *7/08*
U.S. Cl. 95—10 CD 8 Claims

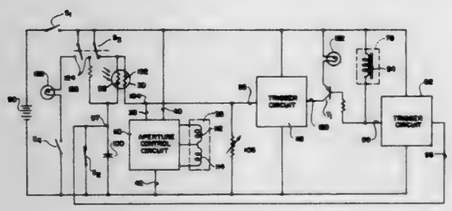


Indicating apparatus for use in a camera having a battery and automatic exposure control apparatus is disclosed. The indicating apparatus includes an amplifier and a manually operative switch member which in a first position couples the exposure control apparatus to the amplifier such that the amplifier will energize a low light indicating lamp only when the scene brightness is unsuitable for film exposure. The switch is movable to a second position to connect the first amplifier to a battery by way of a voltage divider network such that the first amplifier will energize the lamp only if a potential of the battery is above a predetermined level.

3,664,245
CAMERA APPARATUS FOR CONTROLLING DIAPHRAGM AND SHUTTER SPEED

Richard J. Bresson, and Richard C. Painton, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 22, 1970, Ser. No. 48,364
Int. Cl. G03b 7/08, 9/07
U.S. Cl. 95—10 CD 5 Claims



An exposure control system for use in photographic apparatus which provides automatic adjustment of the exposure aperture in response to a first photoresponsive signal before and during an exposure interval determined by a timing circuit as a function of the aperture adjustment and a second photoresponsive signal. Preferably the system includes an indicator controlled by both photoresponsive signals to provide an indication of low light conditions and of the termination of the exposure interval when such low light conditions prevail.

3,664,246
DEVICE FOR RESTRAINING A POINTER OF AMMETER FOR THE EXPOSURE METER IN A CAMERA

Yoshio Kuramoto, Sakai-shi, and Shotaro Inagaki, Okazaki-shi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Minami-ku, Osaka, Japan

Filed Oct. 6, 1969, Ser. No. 864,102
Claims priority, application Japan, Oct. 15, 1968, 43/89968
Int. Cl. G03b 7/12
U.S. Cl. 95—10 C 5 Claims

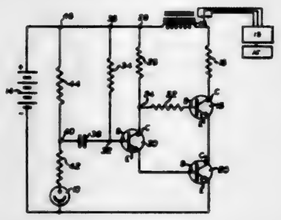


An exposure meter pointer clamping member having a planar surface is mounted to the movable ends of two spring members which extend from the camera body in parallel spaced relationship so that the planar surface is biased toward an opposing planar supporting surface whereby the pointer is restrained between the planar surfaces. A restraining member has a first position for opposing the force of the spring members to separate the planar surface and the planar supporting surface and a second position determined by the actuation of the shutter release mechanism to restrain the pointer.

3,664,247
SURVEILLANCE CAMERA WITH CIRCUIT FOR AUTOMATIC ACTIVATION

Edward M. Tellerman, East Rockaway, N.Y., assignor to Continental Instruments Corp., Oceanside, N.Y.

Continuation-in-part of application Ser. No. 717,577, Apr. 1, 1968, now Patent No. 3,536,923. This application July 6, 1970, Ser. No. 52,585
Int. Cl. G03b 19/02
U.S. Cl. 95—11 R 7 Claims

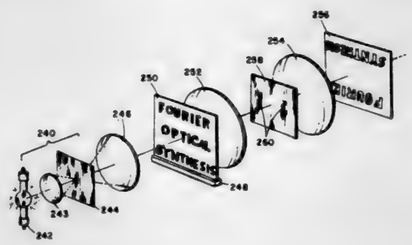


A camera which is automatically activated in response to the change in resistance of a photocell due to the occurrence of an event intended to be detected and recorded. The camera is provided with a network for translating such change in electrical resistance into the automatic activation of the camera drive motor. The camera drive motor is controlled by a relay which activates the motor only when the relay is energized. The relay is in series with a pair of transistor amplifiers, both on which must be conducting for the relay to remain in energized condition. The change in resistance of the photocell creates a change of potential across a condenser which, in turn, causes a temporary flow of current, which current affects the triggering current of a third transistor amplifier. This third transistor amplifier controls the other two transistor amplifiers in such a manner that whenever the triggering current of the third transistor amplifier is changed, either upwardly or downwardly, from a fixed value, one or the other of the two transistor amplifiers in series with the control relay will be rendered non-conducting to unenergize the control relay and thus activate the drive motor of the camera.

3,664,248
OPTICAL PROCESSING OF INFORMATION INCLUDING SYNTHESIS BY COMPLEX AMPLITUDE ADDITION OF DIFFRACTION SPECTRA

Peter F. Mueller, Concord, Mass., assignor to Technical Operations Incorporated, Burlington, Mass.

Continuation-in-part of application Ser. No. 564,340, July 11, 1966. This application May 3, 1968, Ser. No. 726,455
Int. Cl. G03b 33/00
U.S. Cl. 95—12.2 16 Claims



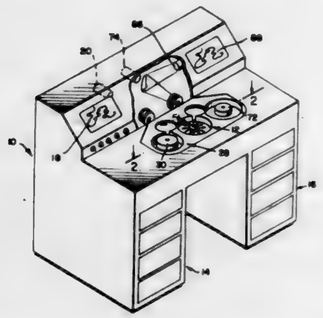
This disclosure depicts a number of ways for implementing a novel optical information processing technique utilizing a

phenomena (herein termed Fourier optical synthesis) involving effecting a complex amplitude addition of diffraction spectra characterizing two or more object functions. The processed object functions may represent totally different scenes, or color separation functions of a common colored scene. Embodiments are shown in which a plurality of object functions are recorded in an interlace geometry on a common recording medium to form a composite optical record suitable for processing using Fourier optical synthesis techniques as described in detail herein. The disclosure teaches effecting a complex amplitude addition of diffraction spectra representing object functions recorded on discrete recording media in which the processed object functions are optically interlaced in space in a coherent detection system. Techniques of spectral zonal photography are described wherein color information is encoded with unique carrier functions and wherein the zeroth order channel in a coherent optical detection system as well as a diffracted order channel or channels are utilized for the transmission of color information. Various other records and recording techniques and detection systems useful in the practice of the invention are also disclosed.

3,664,249
IMAGE EXPOSURE AND DEVELOPMENT METHOD AND APPARATUS

Alfred F. Kaspaul, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Original application Jan. 9, 1969, Ser. No. 789,997, now Patent No. 3,585,965, dated June 22, 1971. Divided and this application Feb. 17, 1971, Ser. No. 115,943
Int. Cl. G03b 17/50
U.S. Cl. 95—13 9 Claims



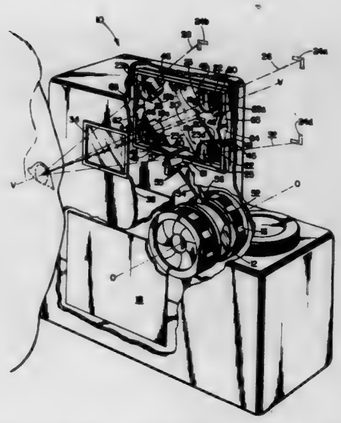
The image exposure and development apparatus provides for exposure of a sensitive medium which is developable by the deposition of atoms thereon, such as a sensitized nucleation material and development thereof by the deposition of metal from metal vapor. Following exposure, the exposed medium is continuously fed to and wrapped around a major portion of the circumference of spaced discs. Atoms from a vapor source between the discs impinge upon the medium and the latent image thereon is developed by selective acquisition of the metal onto the surface. The surface characteristics of the medium and discs are such that little metal is deposited upon the discs.

3,664,250
COMPACT VARIABLE FRAME VIEWFINDER

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed June 11, 1970, Ser. No. 45,418
Int. Cl. G03b 13/20; G01c
U.S. Cl. 95—44 C 14 Claims

A photographic camera is disclosed as having a variable frame viewfinder comprising a plurality of discrete reticles respectively defining framing marks and a corresponding plurality of reticle imaging means, one associated with each of the reticles, for projecting virtual images of the framing marks into the viewed field. The reticles and associated imaging means are positioned on the periphery of the field of view of the observer such that the virtual images of the framing

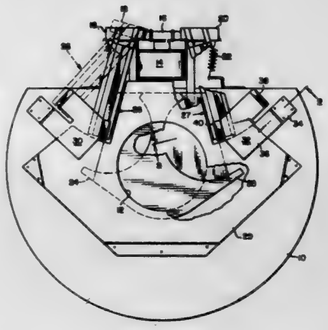


marks cooperate when viewed in composite to frame a portion of the scene. Frame varying means coupled to the reticles and responsive to adjustments in a focus control mechanism on the camera operate to vary in accordance with a predetermined program the framed portion of the scene so as to compensate for sighting parallax and field size changes.

3,664,251
ELECTROMAGNETIC SHUTTER WITH DETENT

Andrew W. Vincent, 65 Aberdeen Street, Rochester, N.Y.

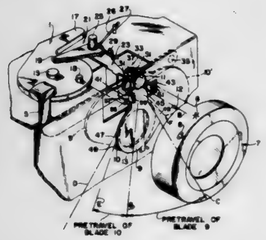
Original application Apr. 16, 1969, Ser. No. 816,535, now Patent No. 3,595,553. Divided and this application Apr. 1, 1971, Ser. No. 130,168
Int. Cl. G03b 9/14
U.S. Cl. 95—59 3 Claims



An electromagnetically actuated photographic shutter including an actuator having a relatively uniform output force characteristic, and a shock absorbing stop consisting of a member having an inclined abutment surface in the path of travel of the body to be stopped. The abutment surface is inclined relative to the direction of travel of the body, and is resiliently movable in a direction generally normal to the direction of travel and fixed against motion in the direction of travel. The abutment surface is preferably covered with a

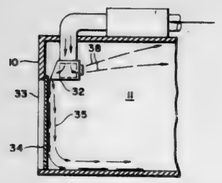
pad of a compressible material having a relatively high coefficient of friction. When the moving body strikes the abutment surface it drives the stop laterally, and energy is dissipated by compression of the compressible material and friction. In the shutter, the blades are mounted on beams that are shaped to engage the stop.

3,664,252
CAMERA SHUTTER MECHANISM
Horst Simon, Fellbach, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 4, 1970, Ser. No. 69,860
Claims priority, application Germany, Sept. 20, 1969, P 19 47 708.8
Int. Cl. G03b 9/14
U.S. Cl. 95—62 **6 Claims**



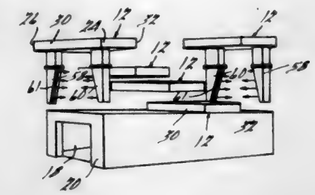
A multi-speed camera shutter mechanism comprises a pair of pivotally mounted blades, each of which is adapted to cover the exposure aperture of the camera. A short exposure period is effected by simultaneously driving the blades in opposite directions, and a longer exposure period is effected by releasably locking one blade in a position wherein it does not cover the aperture and by driving only the other blade to make an exposure.

3,664,253
CONDITIONED AIR DISTRIBUTION SYSTEM
Gunnar C. F. Asker, and Maurice A. Hubecher, both of 18 Industrial Drive, Trenton, N.J.
Filed Jan. 27, 1969, Ser. No. 794,281
Int. Cl. F24f 9/00
U.S. Cl. 98—36 **13 Claims**



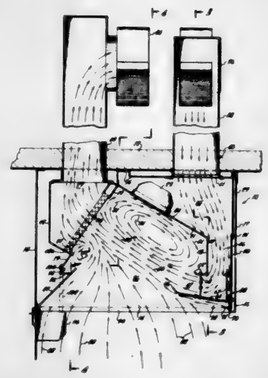
Air distribution system wherein polluted air is withdrawn and fresh replenishing air is brought into the system, desirably with heat exchange and temperature adjustment to that of a conditioned space, and is distributed alternately as an air screen over any open doorway or conveyor opening and when the doorway or conveyor opening is closed, the fresh air flow is shifted by damper means to a central distribution point.

3,664,254
MODULAR ROOF SYSTEM
Artel R. Henson, Birmingham, Mich., assignor to Disco Engineering, Inc., Detroit, Mich.
Filed Nov. 26, 1969, Ser. No. 880,330
Int. Cl. F24f 9/00
U.S. Cl. 98—36 **21 Claims**



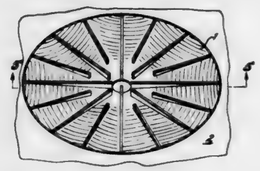
A modular system for providing a roof structure for new and old buildings and designed for the containment of air curtain door systems, heating, cooling, ventilating and make-up air equipment and the like, and adapted for universality of application in various styles of building architecture.

3,664,255
APPARATUS AND METHOD FOR REMOVING FUMES FROM THE SPACE ABOVE A COOKING APPLIANCE
Irvin R. Kuechler, San Bernardino, Calif., assignor to Gausewitz, Carr & Rothenberg, a part interest
Filed July 6, 1970, Ser. No. 52,469
Int. Cl. F23j 11/00
U.S. Cl. 98—115 K **46 Claims**



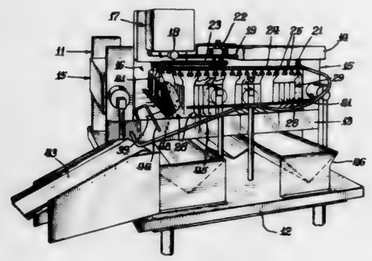
A self-contained, mass-producible fume hood or canopy for mounting in the space above a cooking appliance, so that fumes which pass upwardly into the hood will be removed from the room. Supply air from the exterior of the room is supplied to the hood and is fed through a baffle and throat apparatus toward filter and exhaust means, such baffle and throat apparatus being horizontally, vertically and angularly adjustable. The direction of supply air flow from the baffle and throat apparatus is caused to be substantially perpendicular to the filter, and the supply air first strikes the filter at an intermediate region as distinguished from the upper and lower regions. The relationships are caused to be such that some of the supply air passes directly through the filter, whereas other supply air rolls or vortexes (swirls) upwardly and downwardly. Upper and lower deflector means are provided to cause the upwardly and downwardly rolling supply air to return to the filter means for exhaust therethrough. The upper vortex is caused to be very large, whereas the lower is small. Means are provided to direct part of the supply air horizontally below the adjustable baffle and throat apparatus, thus entraining fumes and directing the same toward the filter means. Inclined means are provided to deflect fumes into the region above the lower deflector means. Trough and heater means are provided to receive grease from the filter, and means are provided to remove condensed water. The method of the invention relates to the critical air velocities, directions, and paths adapted to effect a substantially 100 percent removal of fumes from the region above the cooking appliance, with very little removal of cooled or heated air from the room.

3,664,256
COOKING GRILL
Inez H. Peirce, 157 Camino San Clemente, San Clemente, Calif.
Filed Aug. 14, 1969, Ser. No. 850,083
Int. Cl. A47j 37/06
U.S. Cl. 99—425 **5 Claims**



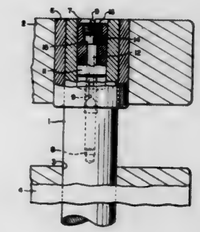
This invention comprises a grill cast in a form which will facilitate the ready drainage by gravity of the fatty components out of the meat being cooked thereon.

3,664,257
PRODUCTION BROILER WITH HANGING FOOD HOLDERS
Alfred E. Meyer, Prospect Heights, Ill., assignor to Anetsberger Brothers Inc., Northbrook, Ill.
Filed Oct. 2, 1970, Ser. No. 77,614
Int. Cl. A47j 37/04
U.S. Cl. 99—427 **11 Claims**



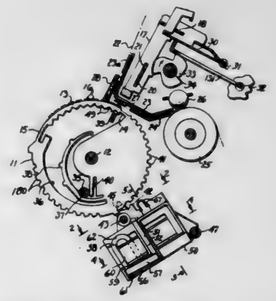
Production broiler with vertically disposed burner means defining a plurality of open-ended broiler spaces, an endless chain supported and driven by sprockets mounted on vertical axes, hangers spaced along and supported by the chain for movement longitudinally of the broiler spaces, food holders removably depending from the hangers by means of hanger-engaging portions spaced longitudinally from each other, each food holder comprising a first part engaging the hangers and a second part having a base pivotally mounted at its outer edge on the first part and a wall upstanding therefrom to define a tray for normally supporting a meat patty on edge, the weight of the patty maintaining the tray in closed position, a delivery chute, means for automatically moving the trays to open position to deliver patties therefrom into the chute, means operable automatically thereafter to move the trays to closed position, and normally inoperative deflector means selectively movable to operative position to effect automatic disengagement of the food holders from the hangers for cleaning purposes.

3,664,258
DIE SUPPORT WITH GUIDE POSTS
John C. Vecchi, Natrona Heights, Pa., assignor to Oberg Manufacturing Co., Inc., Freeport, Pa.
Filed Mar. 10, 1971, Ser. No. 122,920
Int. Cl. B30b 1/00; B26d 5/08; F16c 1/26
U.S. Cl. 100—214 **5 Claims**



A die support is provided with a plurality of parallel passages through it, in each of which an end portion of a projecting guide post fits tightly. The end portion of the post is split lengthwise and provided with an inwardly tapered axial socket and with a threaded axis bore extending inwardly from the inner end of the socket. Fitting in the socket is a hollow tapered wedge, in which is rotatably mounted a screw that extends into the threaded bore. Means are provided for holding the screw against axial movement in the wedge so that tightening of the screw will draw the wedge inwardly of the socket to expand the post into tight engagement with the surrounding wall of the passage and loosening of the screw will force the wedge outwardly in the socket to permit the post to contract so it can be withdrawn from the passage.

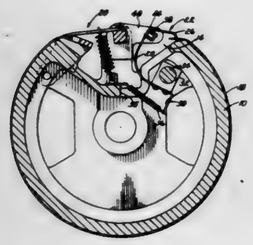
3,664,259
DRUM SERIES PRINTER WITH STOP PAWL ENGAGED BY A SNAP-OVER SPRING
David Weinkle, Sierra Madre, Calif., assignor to Addmaster Corporation, San Gabriel, Calif.
Filed July 6, 1970, Ser. No. 52,264
Int. Cl. B41j 7/34, 7/48
U.S. Cl. 101—99 **13 Claims**



A printer is disclosed having type members carrying type characters, the members being yieldably advanced past a printing point and arrested by electromagnetically actuated pawls which are yieldably maintained in both retracted posi-

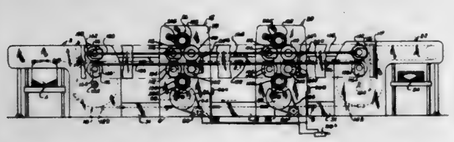
tions and arresting positions by snap-over springs. Abutments on the type members engage the pawls when the type members are in home positions to prevent accidental movement of the pawls to arresting positions. The electromagnetically operable means comprises pairs of side-by-side magnet modules in which each module is effective to retain the parts of an adjacent module in place.

3,664,260
MASTER SHEET RETAINER FOR PRINTING MACHINES
Donald J. Miller, Lakewood, and Raymond J. Schmidlin, Lyndhurst, both of Ohio, assignors to Addressograph Multigraph Corporation, Cleveland, Ohio
Continuation of application Ser. No. 769,988, Oct. 23, 1968, now abandoned. This application June 15, 1970, Ser. No. 48,897
Int. Cl. B41f *27/06*
U.S. Cl. 101—132 **13 Claims**



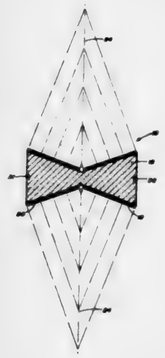
A device for retaining the trailing end of a master sheet on a printing machine drum includes a retainer member movable between an open position for receiving the trailing end and a closed position for holding the trailing end of the master sheet. An actuating means, provided on an impression cylinder in printing relationship with the printing machine drum, acts against the trailing end of the master sheet which acts against the retainer member in such a way as to move the retainer member to the open position and the trailing end of the master sheet under the retainer member. Spring means is provided for restoring the retainer member to the closed position and for maintaining it closed and in holding engagement with the trailing end of the master sheet during a printing operation.

3,664,261
STRAIGHT FEED PRESS
Harold P. Dahlgren, 726 Regal Row, Dallas, Tex.
Filed June 17, 1968, Ser. No. 737,521
Int. Cl. B41f *7/12, 7/04*
U.S. Cl. 101—177 **45 Claims**



A sheet-fed lithographic offset printing press in which sheets are aerodynamically supported and directed in a single horizontal plane straight to and through individually driven and mechanically synchronized multi-color perfecting towers while the sheet is continuously gripped and moved by a single set of grippers at the leading edge so that only blanket printing cylinders touch the sheet, eliminating sheet transfer between the time the sheet leaves the feeder and the time it reaches the delivery.

3,664,262
REACTIVE FOCUSING WARHEAD CONCEPT
Millard F. Rose, Dahlgren, and James C. Talley, Fredericksburg, both of Va., assignors to The United States of America as represented by the Secretary of the Navy
Filed May 23, 1969, Ser. No. 828,449
Int. Cl. F42b *1/02*
U.S. Cl. 102—56 **9 Claims**



A warhead containing two components, each of which is explosively inert alone but which explode when combined. Upon detonation of the warhead the components are propelled along separate paths to a point near the target where they combine and explode to extend the destructive radius of the warhead.

3,664,263
BULLET TRAP
John J. Driscoll, Paris, France, assignor to Allied Research Associates, Inc., Concord, Mass.
Filed Aug. 7, 1969, Ser. No. 848,174
Int. Cl. F41j *1/12*
U.S. Cl. 102—65.2 **9 Claims**

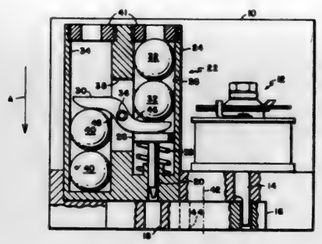


A bullet decelerator and arrestor utilizes a stacked assembly of bullet arresting discs alternating with resilient discs. The disc assembly is enclosed by pliable material and contained within a grenade assembly or other body to be accelerated by the bullet.

3,664,264
BI-DIRECTIONAL FUZE ASSEMBLY
David E. Besner, Webster, Ind., assignor to Avco Corporation, Richmond, Ind.
Filed Nov. 6, 1969, Ser. No. 874,584
Int. Cl. F42c *1/04*
U.S. Cl. 102—73 **3 Claims**

The disclosure shows a fuze assembly capable of detonating a bomb whether mounted in a nose well or a tail well therein. A pair of inertia balls are mounted in side-by-side

cylindrical raceways. Dependent upon the fuze assembly being mounted in a tail well or nose well, one or the other of



the pairs of balls acts on a pivotal lever to drive a firing pin against a detonator charge to detonate the bomb.

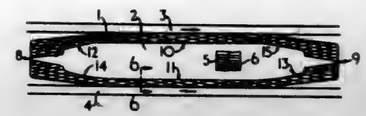
3,664,265
PROCESS FOR THE ALIGNMENT OF RAILWAY TRACKS
Gerard Sauterel, Pully, and Andre Fornerod, Grandvaux, both of Switzerland, assignors to Matisa Materiel Industriel S.A., Crissier, Switzerland
Filed Mar. 20, 1970, Ser. No. 29,333
Claims priority, application Switzerland, Mar. 24, 1969, 4372/69
Int. Cl. E01b *33/02, 35/10*
U.S. Cl. 104—8 **4 Claims**



The process forming the object of the invention aims at integrating into the performance of each automatic alignment cycle, an operation, likewise automatic, for compensating errors due to the track return phenomenon, without it being necessary to shift each corrected point of the track twice; this feature permits without difficulty, the use of the process for tamping-levelling-aligning machines, as well as for independent alignment machines.

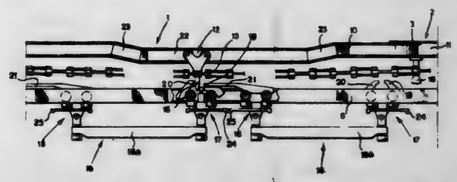
3,664,266
PEDESTRIAN TRANSPORT CONVEYOR INSTALLATIONS
Stephen W. Tonkin, Bristol, England, assignor to Dunlop Holdings Limited, London, England
Filed Feb. 10, 1970, Ser. No. 10,184
Claims priority, application Great Britain, Feb. 21, 1969, 9,611/69
Int. Cl. B65g *17/06*
U.S. Cl. 104—25 **8 Claims**

A variable speed passenger conveyor comprising a multiplicity of rhomboid shaped platforms mounted in slidable



relation to each other along their contiguous sides.

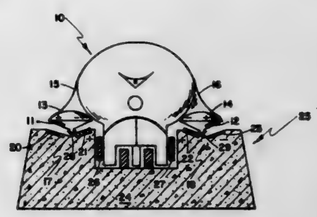
3,664,267
OVERHEAD DUAL-TRACK CONVEYORS SYSTEMS
Gaetano Di Rosa, Pino Torinese, Turin, Italy, assignor to SOC. F.A.T.A. S.p.A., Turin, Italy
Filed Feb. 16, 1970, Ser. No. 11,800
Int. Cl. B65g *17/42*
U.S. Cl. 104—96 **5 Claims**



A conveyor system has a first and a second upper track diverging from a continuous lower track. Downwardly projecting pushers supported by the upper tracks couple with carriers on the lower track and drive them forward. The carriers have coupling and uncoupling means such that a following carrier striking a preceding carrier is uncoupled from its pusher because a finger on the preceding carrier swings a detent rocker out of the path of the pusher.

For transfer a zone of the first upper track near the point of divergence from the lower track is lowered. A pusher traversing this zone remains coupled to a carrier even though the rocker of that carrier has been swung to its normally inoperative position. The preceding carrier, arrested on the track because its pusher has moved transversely away the rocker with the curvature of the upper track, is pushed forward by the following carrier. The preceding carrier is then coupled by a pusher of the second upper track and driven along the second conveyor.

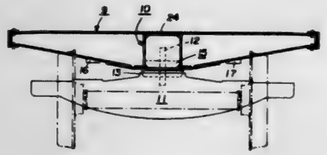
3,664,268
SYSTEM FOR AND METHOD OF LEVITATING VEHICLES IN A GROUND TRANSPORTATION SYSTEM
Edward J. Lucas, Wayland, Mass., and Jean C. Lafrance, Vienna, Va., assignors to Avco Corporation, Cincinnati, Ohio
Filed Dec. 15, 1969, Ser. No. 884,906
Int. Cl. B61b *13/08*; H01f *7/00*; H02k *41/00*
U.S. Cl. 104—148 SS **2 Claims**



Apparatus for and a method of levitating vehicles in a ground transportation system wherein the magnetic field of a

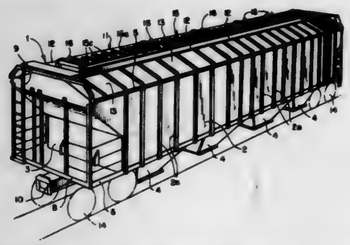
direct current power transmission line in conjunction with superconductive magnets in the vehicle cooperate to provide levitation of the vehicle. The direct current power transmission line simultaneously functions as part of the levitation system and as part of a conventional electric power distribution system.

3,664,269
COMBINED BODY BOLSTER CENTER FILLER AND CENTER PLATE FOR RAILWAY CARS
Stanley H. Fillion, Wilmette, Ill., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed May 27, 1970, Ser. No. 40,978
Int. Cl. B61c 9/48
U.S. Cl. 105—199 C 11 Claims



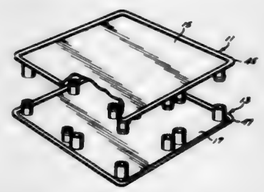
A separate cast or forged bowl shaped center plate secured centrally received in the vertical center sill pocket of a freight car body where intersecting the body bolster. Located rigidly, secured, longitudinally displaced within the sill at each opposite end of the center plate is a vertical spacer plate for withstanding the shear and vertical forces service imposed thereat. A separate tie plate horizontally spanning the sill pocket exterior of the center plate and connected to the underedge of each spacer plate provides stiffening reinforcement. By welding the bowl substantially all around to the underedges of the spacer plates and sill wall extents therebetween, maximum in-service load support is provided.

3,664,270
COVERED HOPPER CAR WITH HATCH COVER MEANS
Marvin Stark, Michigan City, Ind., and Willis H. Knippel, Palos Park, Ill., assignors to Pullman Incorporated, Chicago, Ill.
Filed Jan. 2, 1970, Ser. No. 90
Int. Cl. B61d 39/00
U.S. Cl. 105—377 16 Claims



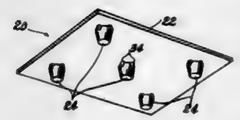
A hopper car having a roof with an open trough hatch defined by coaming and a plurality of odd numbered hatch cover sections pivotally connected on the roof and overlapping one another, longitudinal and end seal means being along the sides of the coaming cooperative with the longitudinal side and the end portions of the hatch cover sections; and further transverse seam seals located between the cover sections by seal retainers on adjacent cover sections, and hold-down means at the seams of the hatch cover sections and ends of the hatch cover sections and intermediate of the hatch cover sections, the hold-down means being locked by spring lock means on the car roof, the adjacent tapered edges of the longitudinal seals on each of the sections compressingly sealing with one another.

3,664,271
PLASTIC MOLDED PALLET
Ernest Harold Wolder, 12011 Laurel Avenue, Whittier, Calif., and James Harold Jarrett, 13012 Goller Avenue, Norwalk, Calif.
Filed Dec. 15, 1969, Ser. No. 870,669
Int. Cl. B65d 19/18
U.S. Cl. 108—51 12 Claims



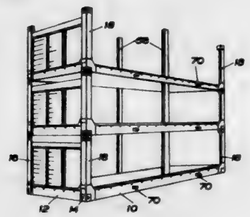
Formed pallet apparatus including first deck means formed with a first deck wall and a plurality of integral female sockets. Second deck means is formed with a second deck wall and a plurality of integral male plugs which are formed to be telescopically received in the respective sockets to support the deck walls in spaced apart relationship. Coupling means is provided for coupling the plugs in the sockets whereby the first and second deck means may be formed separately and then coupled together to form a pallet apparatus which incorporates deck walls that are spaced apart for receipt of lift-fork tines and the like.

3,664,272
STACKABLE PALLET CONSTRUCTIONS
James S. Sanders, Arlington Heights, Ill., assignor to Skid-Stack Corporation, Chicago, Ill.
Filed June 10, 1970, Ser. No. 45,011
Int. Cl. B65d 19/18
U.S. Cl. 108—53 21 Claims



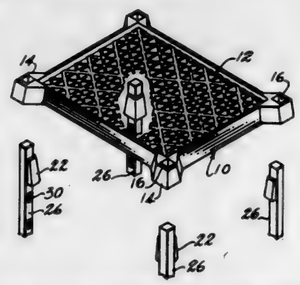
The illustrated pallet comprises a plurality of legs having hollow cup-shaped bodies extending through openings in the pallet member, which may be made of corrugated cardboard or other suitable material. Each leg is made in one piece, preferably of plastic material. A flange projects outwardly from the upper end of the body and engages the upper surface of the pallet member. Each leg is retained in the corresponding opening by one or more lugs projecting outwardly from the body, for engagement with the underside of the pallet member. In one embodiment, each lug comprises an upwardly facing shoulder and a downwardly tapering side surface for temporarily displacing the material of the pallet member by a wedging action, when the body of the leg is forced through the corresponding opening. The displaced material of the pallet member snaps into its final position above each lug when the leg has been fully inserted. The cup-shaped bodies of the legs taper downwardly so as to be stackable. In another embodiment, the lugs are adapted to be inserted through cut-outs or notches formed in the edges of the openings. Each leg is then rotated to move the lugs under the pallet member. Each lug preferably has a shoulder which is inclined to produce a wedging action with the underside of the pallet member. One or more locking teeth are preferably provided on each shoulder, to dig into the material of the pallet member.

3,664,273
LOAD CARRYING STACKING PLATFORMS
Theodore Howe, 17, Heybouses Lane, St. Annes-on-Sea, England
Continuation-in-part of application Ser. No. 870,156, June 27, 1969. This application Nov. 14, 1969, Ser. No. 876,798
Claims priority, application Great Britain, Nov. 21, 1968, 55,189/68
Int. Cl. B65d 19/18
U.S. Cl. 108—53 4 Claims



The invention relates to stacking platforms for transporting goods, wherein there is a basal part and corner posts which are pivotally mounted on the basal part whereby a plurality of such loaded platforms can be stacked one upon another when said posts are locked in an upright position and a plurality of such platforms, when unloaded, can be stacked one upon another in a minimum of height with said pots in a collapsed condition, means being provided whereby a number of such platforms, stacked one upon another with their corner posts collapsed, can be releasably connected together so that when the uppermost platform is lifted the remainder are suspended beneath it. Releasable connecting means comprises a member 56 which can turn so that a head 58 which passes through a hole 54 in a platform above it can occupy either a locked or a release position.

3,664,274
ADJUSTABLE MERCHANDISE SUPPORT WITH SPACED, MOLDED SHELVES
Rafael Thomas Bustos, Atlanta, Ga., assignor to Southern Cross Industries, Inc., Atlanta, Ga.
Filed Nov. 12, 1970, Ser. No. 88,560
Int. Cl. A47b 13/02
U.S. Cl. 108—144 10 Claims



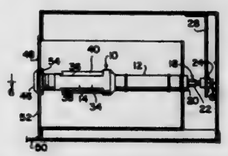
A merchandise shelf arrangement utilizing molded plastic shelves each of which has a corner arrangement with an open bore through which is fitted a respective vertical support member resting on the floor. Tapered plastic inserts removably placed between the vertical members and the respective bore of each shelf corner retains the shelf in a selected location ready for easy removal and re-positioning. Projecting lugs or tongues on each molded insert are fitted respectively into one of many vertically spaced locations on a vertical member to hold the tapered insert in place. Weight from a number of cartons of bottles or the like pressing downwardly on the shelf causes a tighter relationship between each insert and its respective corner to assure positive retention of each shelf. Each shelf is molded integrally with each corner arrangement in a pattern which may be in the form of an open grid structure reducing weight and is of plastic material and providing ventilation and drainage.

3,664,275
TABLE OR SEATING DEVICE
Werner L. Kleinert, 37246 Ruth Drive, Sterling Heights, Mich.
Filed May 15, 1970, Ser. No. 37,524
Int. Cl. A47b 13/02
U.S. Cl. 108—150 11 Claims



A table or a seating device fabricated from a fiber glass, plastic, or the like, adapted for indoor and outdoor use having a top planar member maintained in a horizontal position by a support base comprised of at least three identical legs, disposed in a side by side relationship. The outer surface of each leg being dished inwardly to form a generally concave surface extending from the bottom to the top end thereof; a portion of the top end being flared outwardly with respect to the concave surface such that the upper surface of each flared out portion is positioned to be fastened to the lower surface of a top planar member. Upon assembly of the top planar member with each flared out portion, the adjacent edges of each leg abut to define a line at least portion of which is concave. The interior portion of the support base defined by the inner walls of each leg is adapted to be filled with a material of sufficient consistency to provide ballast for maintaining the table or seating device in an upright position when the same is subjected to an external force, such as wind and the like.

3,664,276
COMBINATION LOCK AND DETERRENT
Nunzio J. Palumbo, 3515 Post Road, Huntingdon Valley, Pa., and Jack F. Maclone, P.O. Box 381, Hatboro, Pa.
Filed Apr. 27, 1970, Ser. No. 32,291
Int. Cl. G08b 15/02; E05g 3/00
U.S. Cl. 109—29 12 Claims

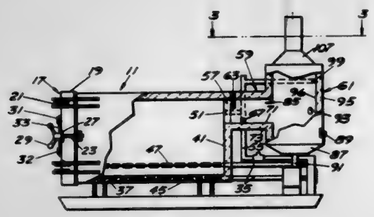


A combination lock and deterrent device comprising a rotatable, elongated body having a deterrent gas cartridge removably affixed thereto, the said body retaining a spring biased firing pin therein in spaced relationship from one end of the said deterrent gas cylinder, and a firing pin release mechanism, portions of which are affixed to the enclosure guarded by the device and which are responsive to actions initiated to force open the enclosure to thereby release the firing pin.

3,664,277
ON-SITE INCINERATOR

Anil K. Chatterjee, Tonawanda, and James R. O'Grady, Lockport, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed July 31, 1970, Ser. No. 60,018
Int. Cl. F23g 5/12
U.S. Cl. 110—8 A 6 Claims

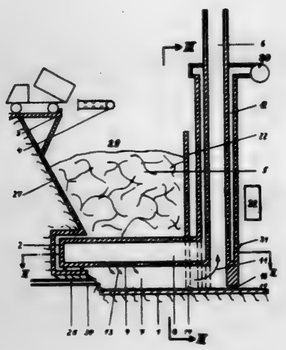


An on-site incinerator for the burning of refuse without pollution utilizes a first combustion chamber for burning refuse to produce a disposable solid residue and an incompletely combusted gaseous effluent. Gaseous effluent from the first combustion chamber is intimately mixed with air in a mixing zone before its entry into a secondary combustion chamber wherein the combustion of gaseous effluent is completed, and the resulting inert effluent is discharged.

3,664,278
METHOD AND APPARATUS FOR INCINERATING SOLID MATERIALS

Gerhard Steen, Lappenbergsallee 8c, 2 Hamburg 19, Germany

Filed Sept. 8, 1970, Ser. No. 70,086
Int. Cl. F23g 5/00
U.S. Cl. 110—8 R 21 Claims

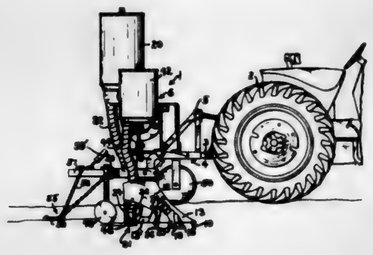


Combustible material is incinerated by piling about a horizontal overhead girder until the material closes the space between the ground and the girder on both sides of the girder, leaving an empty space below the girder that serves as a combustion chamber whose two side walls are the material to be incinerated. Oxygen-containing gas is preheated and fed to the combustion chamber lengthwise of the girder and out through downwardly and laterally outwardly inclined openings through the underside of the girder. The combustion chamber is maintained at subatmospheric pressure by discharging the flue gas through a chimney.

3,664,279
EARTH WORKING AND PLANTING APPARATUS AND METHOD OF PLANTING SEED

Rex Belden, 202 North Grant, Smith Center, Kans.

Filed Mar. 4, 1970, Ser. No. 16,475
Int. Cl. A01c 5/00
U.S. Cl. 111—80 5 Claims

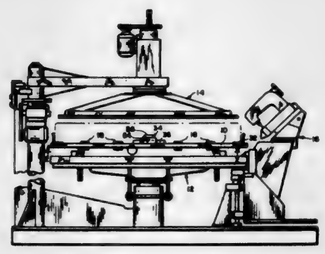


An earth working and planting apparatus and method wherein an earth working and planting apparatus is mounted on a frame moved by a prime mover. The frame has one or more laterally spaced furrow making apparatus and each has double moldboard lister with a double share bottom positioned at the forward end of the frame for opening a main furrow and forming ridges on each side thereof. A shovel or subsoiler is positioned rearwardly of the lister for opening a narrow fertilizer trench within the main furrow to receive fertilizer from a fertilizer distributor having an open end aligned with the fertilizer trench. A plurality of spaced tines are positioned rearwardly of the shovel to mix soil and fertilizer, fill the fertilizer trench, and increase the tilth of the fertilizer trench. A seed furrow is opened adjacent each opposite edge of the main furrow by a pair of shovels having forwardly curved and pointed lower ends. The seed furrows receive seed from a dispensing shoe directing seed in a wide random pattern into the respective seed furrow and the main furrow is widened by a concave disc engaging each side of the main furrow. A drag is mounted on a rear end of the frame and is positioned to pack the soil moved into the widened furrow to firmly cover the seed in each of the seed furrows within the main furrow.

3,664,280
MATTRESS CLOSING MACHINE WITH AUTOMATIC POSITIONING MEANS FOR A MATTRESS ASSEMBLY

Howard E. Redman, 178 Summer Street, Weymouth, Mass., and Frederick E. Kaining, 15 Merrill Avenue, Quincy, Mass.

Filed Jan. 25, 1971, Ser. No. 109,265
Int. Cl. D05b 11/00
U.S. Cl. 112—3 R 14 Claims



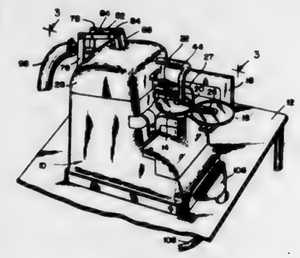
A mattress closing machine comprising a horizontal table adapted to receive a mattress assembly for sewing along one

edge at one broad side and then along the edge at the other broad side, motor-driven conveyor belts mounted on the table operable to draw a mattress assembly onto the table and discharge it therefrom, and a control circuit including a starting switch operable to initiate operation of the conveyor belts to draw a mattress assembly onto the table and automatically position it relative to a sewing instrumentality for sewing and after sewing to effect discharge from the table.

3,664,281
MATERIAL FEEDING GUIDE SYSTEM FOR INDUSTRIAL SEWING MACHINERY

Arthur Shulman, New York, and Henry M. Bonis, Jr., Sands Point, both of N.Y., assignors to Nabs Leasing Corp., New York, N.Y.

Continuation-in-part of application Ser. No. 842,187, July 16, 1969, now Patent No. 3,570,425, dated Mar. 16, 1971. This application Mar. 1, 1971, Ser. No. 119,573
Int. Cl. D05b 23/00, 35/00, 35/10
U.S. Cl. 112—20 14 Claims



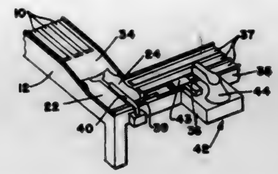
Two open fluid systems are utilized as feeding guides for a sewing machine. In the first system a compressed air conduit is pivotally mounted within the cover of the sewing machine and assumes an operative position wherein an outlet orifice is positioned in front of a pair of horizontal feeding discs. A stream of air is forced through the outlet orifice toward a seam line of strips of material having a plurality of furlike strands which are being steamed together as they are fed between the discs. The second open fluid system includes a vacuum nozzle positioned beneath and spaced from the discs and any loose strands are collected by the nozzle. To rotate the conduit from operative to idle positions, a take off linkage is driven by an existing foot pedal control of the sewing machine and transmits axial movement to a sleeve cam mounted on the conduit within the sewing machine. The cam co-acts with a stationary pin follower and rotates the conduit. In its operative position, the cam abuts a switch which activates a vacuum and compressed air supply for the systems. An idle track is provided in the cam whereby the conduit will remain in an idle position while the foot pedal is moved. A mechanical inverted "U" shaped guide is positioned adjacent the outlet orifice to assist in the feeding of the strips of material.

3,664,282
METHOD AND APPARATUS FOR ASSEMBLING SHIRT PARTS

Albert E. Wagar, Albany, N.Y., assignor to Cluett, Peabody & Co., Inc., Troy, N.Y.

Filed Oct. 28, 1970, Ser. No. 84,590
Int. Cl. D05b 21/00
U.S. Cl. 112—121.15 5 Claims

Method of assembling shirt parts including the steps of aligning two yoke pieces with the upper edge of a shirt back, stitching the yoke to the shirt back, simultaneously stitching the shirt fronts to the shirt back to form side seams, drawing a free end of one shirt front away from the assembled parts and hemming the bottom edges of the shirt fronts and back. The apparatus includes two conveyors mounted at right angles to each other. The first conveyor has an inclined surface

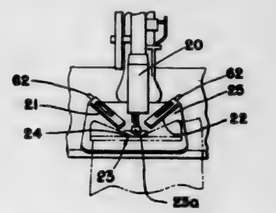


at one end thereof which extends across the width of the second conveyor. A smooth turning rod extends across the width of the second conveyor and generally in the direction of the first conveyor.

3,664,283
APPARATUS FOR MAKING SLEEVE PLACKETS

Richard J. McFalls, Troy, N.Y., assignor to Cluett, Peabody & Co., Inc., Troy, N.Y.

Filed Apr. 6, 1970, Ser. No. 25,968
Int. Cl. D05b 21/00
U.S. Cl. 112—121.15 5 Claims

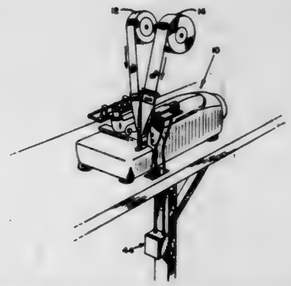


Apparatus for making a shirt sleeve placket, including two angled folder plates and a hold-down element for retaining the folded construction in shape for sewing on a profile sewing machine.

3,664,284
MATERIAL HANDLING APPARATUS, METHOD AND ARTICLE FORMED THEREFROM

James F. Hester, 4109 Northampton Drive, Winston-Salem, N.C.

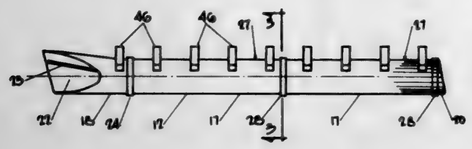
Filed Mar. 9, 1970, Ser. No. 17,540
Int. Cl. D05b 35/06
U.S. Cl. 112—152 1 Claim



Material handling apparatus, method and article formed by the method directed to simultaneously dispensing, folding

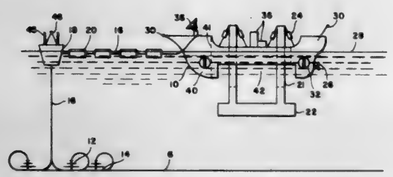
and joining at least two supplies of continuous web material in a predetermined relationship which can be selectively established or vitiated. The apparatus incorporates a folding and guide means for dispensing folded material into a predetermined relationship, additional components to selectively move the folded materials out of and into that relationship and a suitable device for separating the folded materials from the supplies selectively. The method incorporates the steps of folding and dispensing continuous supplies of web material in a particular relationship, selectively sewing together these materials as a part of the sewing operation or otherwise and separating the materials selectively from their supplies.

3,664,285
KNOCKDOWN PONTOONS FOR PORTABLE BOATS AND THE COMBINATION THEREOF
Gerald T. Rabideau, Toledo, Ohio, assignor to Mio Marine Corporation, Toledo, Ohio
Filed June 4, 1968, Ser. No. 734,345
Int. Cl. B63b *35/38*
U.S. Cl. 114—0.5 F **6 Claims**



A knockdown, pontoon boat is described which may be easily assembled and disassembled. The boat is provided with high strength pontoons that may be dismantled for shipment and convenient storage. The pontoons are made of sections with a compression ring disposed between adjacent sections and means is provided for securing the individual members of the pontoon into a watertight unit.

3,664,286
OFFSHORE STORAGE SYSTEM
Preston E. Chaney, Dallas, Tex., assignor to Sun Oil Company, Dallas, Tex.
Filed Nov. 3, 1969, Ser. No. 873,291
Int. Cl. B63b *35/00*
U.S. Cl. 114—0.5 T **19 Claims**



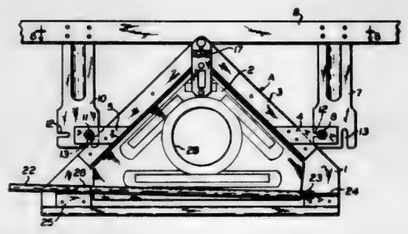
A buoyant vessel for storing offshore oil and gas production having a ballast compartment for stability which can be raised and lowered relative to the vessel. The ballast compartment is in a lowered position when the vessel is in its offshore location, and it is in a raised position flush with the hull of the vessel when the vessel is being moved to and from its offshore position. This vessel is used in cooperation with wells completed on the floor of a body of water with flexible flow lines and hydraulic lines attached from the vessel to the wells by way of a float located on the water surface. The production is processed on the vessel and stored therein with ballast and stored fluids manipulated to provide appropriate buoyancy for the vessel.

3,664,287
REINFORCED CONCRETE BOAT HULL AND METHOD OF CONSTRUCTION
Raymond A. Duff, 1333 South Baker, Santa Ana, Calif.
Filed Aug. 21, 1969, Ser. No. 851,961
Int. Cl. B63b *5/14*
U.S. Cl. 114—65 A **16 Claims**



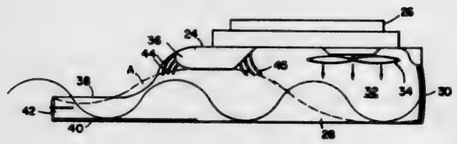
A boat having a concrete hull formed of a plurality of alternate, integrally bonded layers of concrete and fiber-reinforced epoxy resin, and a method of constructing a concrete and fiber-reinforced epoxy resin boat hull. The hull is a unitary structure comprised of a plurality of layers of concrete having an integrally bonded layer of fiber-reinforced epoxy resin interspaced between adjacent layers of concrete. The strength of the structure can be even further increased by the addition of a minor proportion of epoxy resin to the concrete.

3,664,288
FABRIC-HOLDING CLAMP FOR EMBROIDERY MACHINES
Alberto Weidlin Von Boden, Washington, D.C., and Ernest Enzian, Highland, N.Y., assignors to Countess Mara, Inc., New York, N.Y.
Filed Mar. 26, 1970, Ser. No. 22,818
Int. Cl. D05c *9/04*
U.S. Cl. 112—103 **3 Claims**



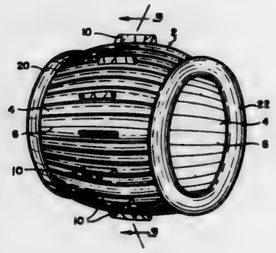
A fabric-holding means particularly adapted for embroidery machines, such as those which are used for applying initials, monograms or other designs to neckties or fabric pieces, the device comprising a pair of plates, which may be triangular is shape, with one of said plates hingedly attached to the other plate and between which plates the fabric piece is inserted and is clampingly held with a portion of the fabric piece in which the embroidering operation is to be performed, exposed in registered openings in the plates and below an embroidery needle. The plates are provided with compressible, non-slip areas which act to hold the fabric taut across the openings, and means is provided for pressing one of the plates down upon the other when the fabric piece is clamped between the plates. Guide means for directing the fabric pieces into the proper position are also provided.

3,664,289
HYDRAULIC JUMP CAPTURED AIR BUBBLE VESSEL
Edward A. Boydston, 546 A Flordia Street, Vallejo, Calif.
Continuation-in-part of application Ser. No. 870,301, Dec. 22, 1969, now abandoned. This application Oct. 28, 1970, Ser. No. 84,601
Int. Cl. B63b *1/38*
U.S. Cl. 114—67 A **5 Claims**



A water-borne air cushion vessel has an underwater driving means on its forward end which creates a hydraulic wave at a distance rearwardly therefrom. The wave produced provides at its crest a constant seal for the forward side of a cavity under the vessel wherein air is trapped to produce the cushioning effect that maintains the vessel above the nominal water level.

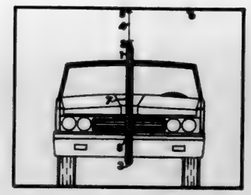
3,664,290
AQUATIC RECREATION DEVICE
Arthur F. Finn, 608 John Marshall Drive, N.W., Vienna, Va.
Filed Nov. 10, 1970, Ser. No. 88,396
Int. Cl. B63b *35/72*
U.S. Cl. 115—20 **4 Claims**



This aquatic recreational and exercise device is intended to be propelled over the surface of a body of water, and is part-spherical in shape having open ends and being of such dimensions that a person can stand, walk or run within it. The body of the device is formed of an annular series of buoyant segments each having an external outwardly extending paddle, and the device is propelled along and over the water by the operator walking or running within it in the direction he wishes to go, while a modification would allow for powered operation. An annular buoyant member is attached at each open end of the part-spherical body to provide stability.

3,664,291
RIBBON-TYPE GARAGE PARKING DEVICE
Paul C. Fritz, 1441 Colleen Lane, McLean, Va.
Filed Feb. 5, 1971, Ser. No. 112,886
Int. Cl. B60q
U.S. Cl. 116—28 **1 Claim**

This invention relates to an improved target and signaling device used for precise positioning of an automobile in a garage, and which is comprised of a high-visibility, draped, flexible ribbon suspended from the garage ceiling, weighted at the lower end to hold it taut, and located at the front of the desired parked position of the automobile.



3,664,292
MAGNETIC COMPASS TACK HEADING INDICATOR
Allen Butman Sherman, Pembroke, Mass., assignor to E. S. Ritchie & Sons, Inc., Pembroke, Mass.
Filed Dec. 2, 1970, Ser. No. 94,285
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 **10 Claims**

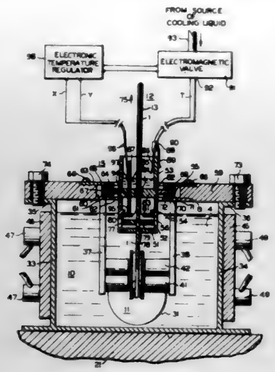


A navigational aid for use with a magnetic compass to set optimum tack headings to be taken when sailing upwind. The device fits over the transparent dome of a flat top or spherical compass and includes movable tack heading pointers and a bisecting wind heading pointer, the pointers all being rotatable about the compass card pivot point.

3,664,293
HOT DIP COATING APPARATUS
Shiro Hozumi, and Terukazu Kinugasa, both of Osaka-fu, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 24, 1970, Ser. No. 92,381
Claims priority, application Japan, July 8, 1970, 45/60423
Int. Cl. B05c *11/00*
U.S. Cl. 118—5 **9 Claims**

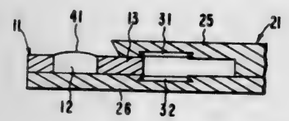
A hot dip coating apparatus for coating a metal wire or strip with a molten metal. A bath of molten metal has at least one guide member immersed therein. A cooling chamber is positioned above the guide member and has, at the bottom thereof, a bore through which the wire passes and also has a cooling liquid in the bottom thereof. A liquid supplier is attached to the cooling chamber, and a liquid level control means in the form of a monitor coupled to the liquid supplier keeps the liquid at a predetermined liquid level. The guide

member and the cooling chamber are combined in a unitary body. The wire coated with the molten metal is cooled by the



cooling liquid while passing through the bore while being guided by the guide member.

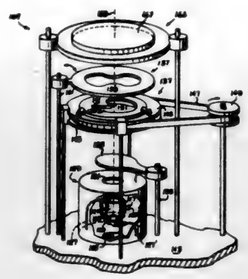
3,664,294
PUSH-PULL STRUCTURE FOR SOLUTION EPITAXIAL GROWTH OF III–V COMPOUNDS
Raymond Solomon, Sunnyvale, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.
Filed Jan. 29, 1970, Ser. No. 6,819
Int. Cl. B05c *5/02*, *11/10*
U.S. Cl. 118—7 6 Claims



Epitaxial layers of III–V compounds are grown on the facing surfaces of a pair of parallel, spaced-apart wafers by forcing a small quantity of a solution saturated with a III–V compound between the wafers for a selected time. Lowering the temperature of the solution precipitates the III–V compound epitaxially onto the adjacent surfaces of the wafers.

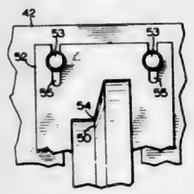
3,664,295
MEANS FOR ACHIEVING A CONTROLLED GRADIENT DENSITY COATING ON A LIGHT ATTENUATION MEDIUM
David M. Ng, and Charles H. Rehkopf, both of Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.
Filed Nov. 2, 1970, Ser. No. 86,030
Int. Cl. C23c *13/08*
U.S. Cl. 118—9 7 Claims

Means and process are disclosed for disposing a patterned light attenuating coating of a differential density on a substantially transparent optical medium, used in the optical system for photo-forming the windowed interstitial web portion of a color cathode ray tube composite screen structure. The apparatus comprises a hermetic chamber wherein there is included a vaporizing source, a rotatable first pattern mask, a movable second pattern mask, support means for positioning the optical medium, and optical means for monitoring the deposition of coating thereon. The apparatus enables the deposition of a nonsymmetrical coating formed to



modify the photo-exposure illumination from the photo-exposure light source.

3,664,296
SEALING COMPOUND APPLICATOR
George Frederick Stamp, and Kenneth Allan Walker, both of London, Ontario, Canada, assignors to Somerville Industries Limited, London, Ontario, Canada
Filed Sept. 21, 1970, Ser. No. 74,063
Claims priority, application Canada, Aug. 25, 1970, 091,700
Int. Cl. B05c *1/08*
U.S. Cl. 118—246 3 Claims

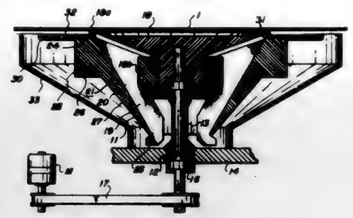


This invention relates to an apparatus for applying sealant to the edge face of a container blank of the type used to package liquids such as milk. The principle of the invention is an applicator wheel that enters into a sealant pot and picks up a ribbon of sealant as its rotates. The edge of the container blank to be sealed is caused to engage with and pick up the ribbon of sealant on the wheel. A feature of the invention is the design of the sealant pocket of the applicator wheel which is adapted to place sealant on the edge face only of the container blank.

3,664,297
CENTRIFUGAL DEVELOPMENT APPARATUS AND METHOD
Daniel J. Donalles, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Aug. 29, 1969, Ser. No. 854,083
Int. Cl. G03g *13/08*
U.S. Cl. 118—627 26 Claims

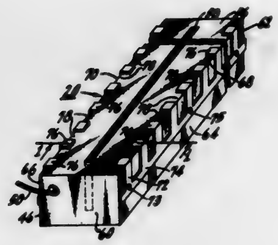
An apparatus for developing an electrostatic latent image which includes a housing rotatable about an axis for conveying developer to the image. The housing includes a sloped inner surface which increases in distance from the axis in an upward direction and includes a top surface which lies in a plane substantially perpendicular to the axis to confront an

electrostatic image to develop. Rotation of the housing centrifugally impels developer from the bottom of the housing



along the inner sloped surface to the top surface of the housing in order to develop the image.

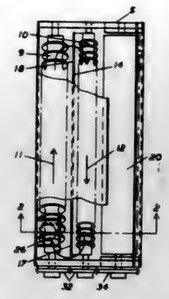
3,664,298
MANIFOLD FOR FOUNTAIN-TYPE LIQUID DISPENSER
Edward Charles Giaimo, Jr., Princeton, N.J., assignor to RCA Corporation
Filed Mar. 26, 1970, Ser. No. 22,911
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 8 Claims



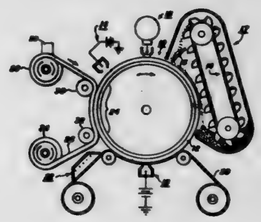
In an electrostatic printing machine, a manifold for applying liquid developer to an adjacent recording element comprises an elongated body of electrically conductive material. An exit slit, formed in the top surface, serves to direct the liquid developer to the recording element. A plurality of spaced-apart ridges extend upwardly from the top surface, adjacent side edges thereof, and form a plurality of spaced-apart slots between adjacent ridges, respectively, so that liquid developer that is pumped through the exit slit can flow off the top surface via the slots, in a direction perpendicular to the exit slit.

3,664,299
ELECTROSTATIC RECORDING PAPER TONER SECTION
David Shaler, Madison, and Ralph A. Varrichio, Morristown, both of N.J., assignors to EG&G Inc., Bedford, Mass.
Filed Dec. 7, 1970, Ser. No. 95,842
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 9 Claims

A toner section is provided incorporating a pair of auger members moving a toner and iron filing mixture past the surface of the magnetic brush roller in which the toner mixture adheres to the magnetic brush roller at a desired thickness pursuant to the action of a stripper blade. Entrance means is provided to receive toner directly into the toner compartment where it is mixed with the iron filings and conveyed to the magnetic brush roller.



3,664,300
APPARATUS FOR TREATING THE SURFACE OF AN ELECTROSTATOGRAPHIC IMAGING
Robert John Joseph, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Original application Nov. 14, 1966, Ser. No. 594,249, now Patent No. 3,501,294. Divided and this application Sept. 2, 1969, Ser. No. 870,872
Int. Cl. B05c *1/14*, *1/08*
U.S. Cl. 118—637 8 Claims

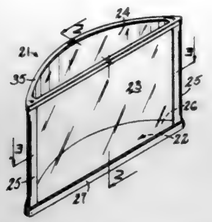


Apparatus for treating a surface of an electrostatographic imaging plate with a solid hydrophobic metal salt of a fatty acid comprising an electrostatographic imaging plate having a recyclicable imageable surface, means to support the imaging plate, fibrous treating means positioned adjacent to the imageable surface for pressure contact with the imageable surface, the fibrous treating means carrying on an outer surface thereof a transferable solid hydrophobic metal salt of a fatty acid and adapted to treat the imageable surface, and means to cause relative motion between the fibrous treating means and the imageable surface.

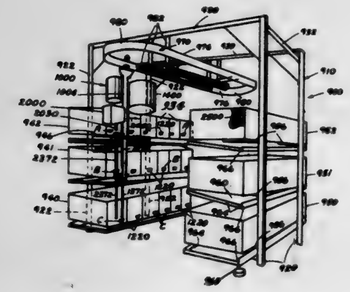
3,664,301
AQUARIUM
Ralph C. Morrill, 950 Benham Street, Hamden, Conn.
Filed Oct. 12, 1970, Ser. No. 79,891
Int. Cl. A01k *63/00*
U.S. Cl. 119—5 10 Claims

In an aquarium tank having a concave mirror as at least a portion of its rear wall, the distortion of images of fish and other objects in the water of the aquarium is prevented by positioning the front, transparent wall such that objects in the tank are confined between the principal focal point of the

mirror and the surface of the mirror. The strength of the aquarium and its resistance to soiling and corrosion is improved by providing corner posts of extruded aluminum alloy, and bottom and top members of plastic.



3,664,302
LACTATION PERIOD BROODER
Lloyd C. Wienert, Papillion, Nebr., assignor to Wilson & Co., Inc., Chicago, Ill.
Continuation of application Ser. No. 672,082, Oct. 2, 1967, now abandoned. This application Feb. 10, 1971, Ser. No. 114,364
Int. Cl. A01k *05/00, 09/00*
U.S. Cl. 119—18 27 Claims



A liquid animal feeder comprising compartments in which there are no openings during operation through which a pig less than three weeks old can extend its entire head, the liquid animal feeder having a moving feed delivery unit deliverying food to a row of compartments at feed delivery positions at least sufficiently close to the inner side of each compartment that pigs less than three weeks old can drink from said positions, the liquid animal feeder having means making possible delivery of feed to vertically spaced rows or compartments from the same feed delivery unit, such unit being mounted on a track having a straight side for serving a straight row of compartments, the quantity of feed delivered at each compartment being selectively controllable by convenient control means.

3,664,303
FISH FOOD HOLDER
Ulrich Baensch, Herrenteich 70, 452 Melle, Germany
Filed June 17, 1970, Ser. No. 46,869
Claims priority, application Germany, June 24, 1969, G 69 25 057.3
Int. Cl. A01k *61/02*
U.S. Cl. 119—51 8 Claims

A fish food holder for aquariums with one or more recesses provided in the lower portions of a non-floatable body while the upper portion of said body includes suspension means for suspending said fish food holder at a desired height.



3,664,304
CHICK FEEDER
Allie F Carter, 822 Olde Hickory Road, Lancaster, Pa.
Filed Nov. 19, 1969, Ser. No. 877,891
Int. Cl. A01k *5/00, 39/00*
U.S. Cl. 119—61 6 Claims



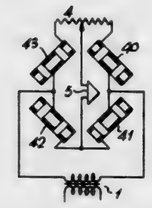
A dish-like element is provided for feeding chicks. The dish-like element is round, colored red to attract the chicks, has a rim which the chicks can climb over and has a groove in the rim as a feed catching and supplemental feed trough. The dish-like element is made of a very thin, inexpensive plastic material.

3,664,305
EXTENDIBLE WATERING SYSTEM FOR FOWLS
Harold W. Hart, and Warren H. Hart, both of Glendale, Calif., assignors to H. W. Hart Mfg. Co., Glendale, Calif.
Filed Dec. 29, 1969, Ser. No. 888,594
Int. Cl. A01k *07/00*
U.S. Cl. 119—72 36 Claims



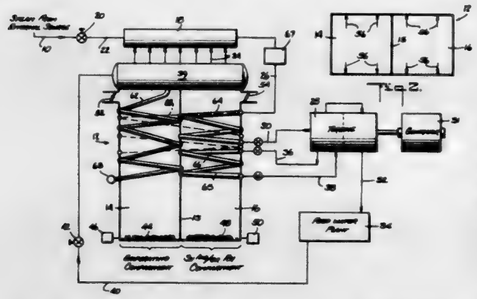
A pipeline comprises plastic pipe lengths interconnected by plastic couplings with telescoped joints and with plastic valves in each coupling. The pipeline is enclosed and supported by an adjustably suspended sheet metal housing assembly with a charged wire thereon to keep off fowls.

3,664,306
APPARATUS FOR THE DETECTION OF MASTITIS IN MILK ANIMALS
Joshua Creer Quayle, Teesside; Graham Roland Greatrix, Seaton Carew, both of England, and Ronald Alan Coombe, Bentley, Australia, assignors to National Research Development Corporation, London, England
Filed Oct. 23, 1969, Ser. No. 868,841
Int. Cl. A01j *3/00, 5/00*
U.S. Cl. 119—14.14 5 Claims



A method and apparatus are described for detecting mastitis in milk animals. Milk from different teats of the animal is passed through conductivity cells and if the conductance of the milk from one teat is different from that of milk from other teats a mastitis infection is likely. A convenient method of comparing conductances using an electrical bridge is described, as is a suitable conductivity cell.

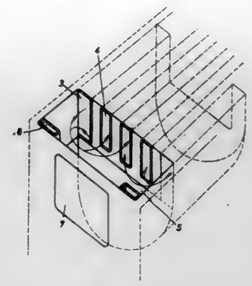
3,664,307
METHOD AND APPARATUS FOR PRODUCING STEAM
Albert H. Rawdon, Jr., Shrewsbury, Mass., assignor to Riley Stoker Corporation, Worcester, Mass.
Filed July 17, 1969, Ser. No. 842,460
Int. Cl. F22b *33/00*
U.S. Cl. 122—1 6 Claims



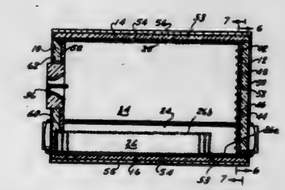
This invention relates to a method and apparatus for producing steam utilizing an external irregular supply source such as an incinerator plant, a waste boiler, a nuclear plant, etc., combined with a twin furnace having a first evaporator compartment and a second superheater and reheating compartment.

3,664,308
BOILERS
Hans Viessmann, Battenberg, Eder Im Hain, Germany
Filed Nov. 26, 1969, Ser. No. 880,317
Claims priority, application Germany, Nov. 28, 1968, P 18 11 349.4; Aug. 28, 1969, P 19 43 761.7
Int. Cl. F22b *7/12*
U.S. Cl. 122—149 6 Claims

A boiler for use with liquid or gaseous fuels. Return flow of combustion gases takes place within the combustion chamber itself by means of one or more passageways formed in the walls of the combustion chamber. A plurality of gas flues are positioned alongside the passageways, and this face permits a ready transfer of gases from the passageways into the flues. Thus, the volume of the combustion chamber depends solely on the combustion of the fuels and a compact, efficient boiler results.



3,664,309
PACKAGE STEAM GENERATOR
Richard W. Seelinger, East Stroudsburg, Pa., assignor to Ovitron Corp., Newburgh, N.Y.
Filed Mar. 13, 1970, Ser. No. 19,168
Int. Cl. F22b *21/34*
U.S. Cl. 122—336 3 Claims

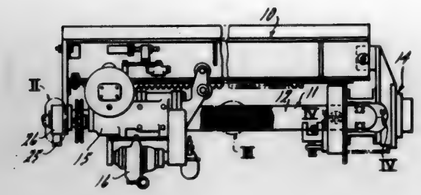


A package steam generator is disclosed which comprises longitudinally extending upper and lower drums having their center lines laterally displaced from one another. First and second sections of tubing extend between the drums to define therebetween a furnace area for heating the fluid in the tubing. The tubes are of substantially equal length in both tubing sections to provide substantially uniform fluid circulation between the drums, thereby to prevent unequal heating and failure of the tubing.

3,664,310
FLUID PROJECTION APPARATUS FOR CLEANING HEAT EXCHANGERS
James W. Locke, Sr., and John C. Goeller, III, both of Lancaster, Ohio, assignors to Diamond Power Specialty Corporation, Lancaster, Ohio
Continuation of application Ser. No. 16,291, Mar. 4, 1970, now abandoned. This application May 3, 1971, Ser. No. 139,883
Int. Cl. F22b *37/48*
U.S. Cl. 122—379 6 Claims

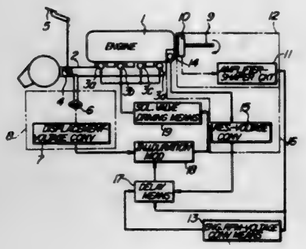
A combined soot blower and liquid projector for cleaning boiler surfaces has a main lance tube telescopically overfitted on a feed tube and carrying a nozzle assembly at its outer end for projecting steam and/or air supplied through said tubes, a second pair of telescoped tubes inside and substantially smaller in diameter than the two tubes first mentioned and including a slidable liquid lance having a jet member con-

nected to the nozzle assembly to discharge liquid at right angles to the stream or air. During projection of liquid, steam



and/or air is supplied to the outer tubes to cool them and the nozzle assembly.

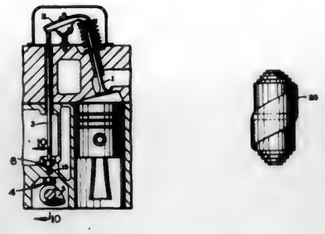
3,664,311
FUEL INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE
Kunio Endo, Anjo-shi, Japan, assignor to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Filed Dec. 30, 1969, Ser. No. 889,064
Claims priority, application Japan, Jan. 21, 1969, 44/4213
Int. Cl. F02m *51/00*
U.S. Cl. 123—32 EA **1 Claim**



A fuel injection control system for internal combustion engines wherein an injection reference signal synchronized with the rotation of the engine and in advance of the valve opening times of the inlet valves is produced and the signal is then delayed such that a fuel injection duration modulator for driving the fuel injection solenoid valves is actuated by said delayed signal, while said delay time is controlled by means of signals corresponding to the temperature of the engine and the engine rpm, whereby the fuel injection starting time is changed according to variations in the engine temperature thereby achieving excellent starting characteristics and the optimum rate of fuel consumption.

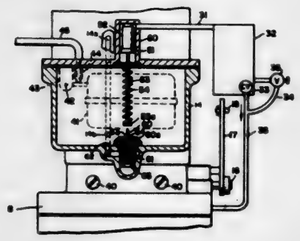
3,664,312
THERMO-COMPENSATING VALVE LIFTER FOR INTERNAL COMBUSTION ENGINES
Lloyd E. Miller, Jr., 8330 S. W. 52nd Avenue, Miami, Fla.
Filed June 25, 1970, Ser. No. 49,724
Int. Cl. F01l *1/14*, *1/00*, *1/22*
U.S. Cl. 123—90.19 **6 Claims**

A valve lifter for an internal combustion engine embodying a screw member rotated by a thermally responsive control element for holding predetermined clearance in a valve train substantially constant over a relatively wide temperature



gradient and including means for positively conducting pressurized lubricant to the entire train.

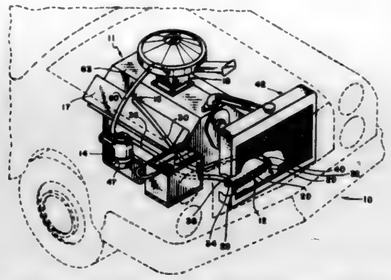
3,664,313
CARBURETOR
Brooks Walker, 1280 Columbus Avenue, San Francisco, Calif.
Filed Feb. 24, 1970, Ser. No. 13,550
Int. Cl. F02m *13/04*
U.S. Cl. 123—119 R **12 Claims**



This invention involves a time delay in the opening of the power valve to cut out some or all of the power valve operation for city driving and still allow the power valve to come in for continued high power operation at power normally requiring a power valve enrichment to keep from over-heating the engine and valves at such continued high power. Such a power valve cut out for city driving with lower peak combustion temperatures for lower NO_x (nitrous oxides) on city driving and lower temperatures of the exhaust valves, etc. over those temperatures that would exist if no power enrichment were used on continued high power operation. The method of timing the delay in power valve come in is by the use of a reservoir between the intake suction and the power valve piston with a check valve to hold suction in the reservoir and a very limited bleed down for delayed reduction of suction to operate the power valve.

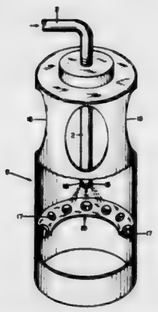
3,664,314
CRANKCASE VAPORS CONDENSOR
Clifford L. Lamkin, 1602 Mills, Wichita, Kans.
Filed Mar. 9, 1970, Ser. No. 17,466
Int. Cl. F02f *9/00*
U.S. Cl. 123—119 B **3 Claims**

This invention is a crankcase vapors condensor for a vehicle having an internal combustion engine with a crankcase, a positive crankcase ventilation valve, intake manifold carburetor, and associated cooler. The invention includes a special condensor operably connectible with the positive crankcase ventilation valve to receive crankcase vapors, condense same, and pass to a special separator operable to remove and



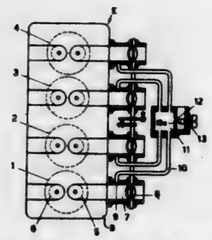
retain the resulting condensate, and pass resulting vapors to the intake manifold of the engine.

3,664,315
LP-GAS RAM-AIR CHARGER
John B. Kramer, Houston, Tex., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Mar. 16, 1970, Ser. No. 19,950
Int. Cl. F02a *21/04*
U.S. Cl. 123—120 **4 Claims**



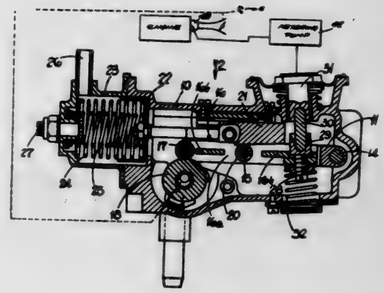
Method and apparatus for introducing vapor of LPG or natural gas into the air intake system of an internal combustion engine.

3,664,316
DEVICE FOR ADJUSTING THE IDLING IN AN INTERNAL COMBUSTION ENGINE
Giampaolo Garcea, Milan, Italy, assignor to Alfa Romero S.p.A., Milan, Italy
Filed July 8, 1970, Ser. No. 53,217
Claims priority, application Italy, July 15, 1969, 19,672 A/69
Int. Cl. F02m *23/04*, *13/04*
U.S. Cl. 123—124 R **5 Claims**



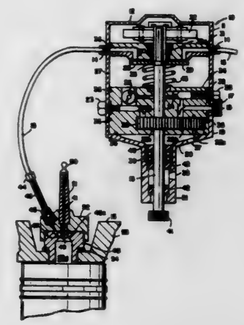
The regulation of the idle speed of an internal combustion engine under no-load conditions is effected by a compensating chamber which communicates with the intake ducts of the several cylinders of the engine. Manual adjustment means (such as a screw) is used to adjust the flow passage area in the small ducts until a satisfactory adjustment is achieved.

3,664,317
FUEL INJECTION CONTROLS FOR INTERNAL COMBUSTION ENGINES
Jack Skinner, and George Whitehurst, both of Solihull, Warwickshire, England, assignors to Simms Motor Units Limited, London, England
Filed Mar. 3, 1970, Ser. No. 16,141
Int. Cl. F02d *1/04*
U.S. Cl. 123—139 BG **9 Claims**



The invention relates to a control apparatus for an internal combustion engine fuel injection system. The control apparatus operates by varying the stroke of an associated metering device, and has a lever movable by a cam plate in response to the engine inlet manifold pressure. The lever is also movable by a further cam coupled to the engine throttle control, whereby the amount of fuel supplied to the engine is dependent both on manifold depression and throttle position.

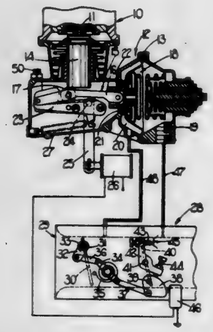
3,664,318
FUEL INJECTION SYSTEM
William E. Giuffra, 1111 Buena Vista Drive, Jackson, Calif.
Filed Oct. 28, 1970, Ser. No. 84,805
Int. Cl. F02m *39/00*
U.S. Cl. 123—139 AL **10 Claims**



A fuel injection system for injecting fuel into either a two or four cycle internal combustion engine including a housing having a drive shaft with fuel pumping means for pumping

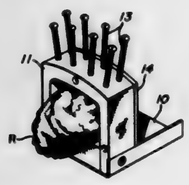
fuel through a distributing section into fuel injectors associated with the combustion chambers of the engine. At the fuel injectors, the fuel is atomized, mixed with air and ignited before being passed into the combustion chambers.

3,664,319
INTERNAL COMBUSTION ENGINE GASOLINE INJECTION SYSTEM
Derek Channing, Farmington, Mich., assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Jan. 27, 1970, Ser. No. 6,191
Int. Cl. F02d 1/04
U.S. Cl. 123—140 MC 1 Claim



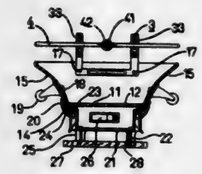
The invention relates to a gasoline injection system for an internal combustion engine. A control stop for a shuttle-type metering pump is responsive to a cam follower movable by a diaphragm. The diaphragm is in turn responsive to the pressure drop across the engine intake throttle. An airflow control device is carried in the intake, upstream of the throttle. The control device is operable by an element sensitive to engine temperature to reduce the pressure drop and thereby increase fuel supply at low temperatures. A cam track engaged by the cam follower is energizable during engine starting to further increase the fuel supply.

3,664,320
CONTOUR VISE
Mary E. Allen, and Harry W. Allen, both of Lee Pike, R.R. #1, Soddy, Tenn.
Filed July 23, 1969, Ser. No. 844,109
Int. Cl. B28d 7/04
U.S. Cl. 125—35 5 Claims



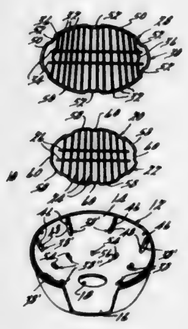
A device for holding irregular objects to enable a fixed frame of reference for an object, irrespective of its contour, and including a frame and differentially positioned, angularly related, clamping elements.

3,664,321
DISMOUNTABLE HIBACHI CONSTRUCTION
Jia-Fa Chiou, 7 An-Lo Street, Taoyuan, Taiwan
Filed Aug. 20, 1970, Ser. No. 65,485
Int. Cl. F24b 3/00; F24c 1/16
U.S. Cl. 126—9 R 3 Claims



A hibachi (e.g., a picnic barbecue roaster) comprising a body portion and a base portion. The latter can easily be disassembled from the body portion and placed inside the body portion for reducing packaging dimensions.

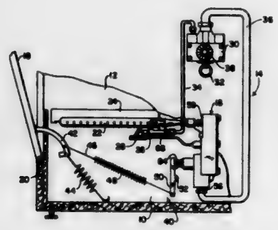
3,664,322
BARBECUE GRILL ASSEMBLY
Robert H. Clark, Freeport, Ill., assignor to King-Seeley Thermos Co., Ann Arbor, Mich.
Filed Dec. 28, 1970, Ser. No. 101,455
Int. Cl. F24b 3/00; A47j 37/00
U.S. Cl. 126—25 A 12 Claims



A barbecue grill assembly comprising a bowl-like enclosure having a generally circular peripheral side wall and adapted to contain a bed of combustible fuel; an annular article support member disposed interiorly of the enclosure, means for vertically adjustably supporting the member within the enclosure including means on the inner periphery of the side wall of the enclosure defining a plurality of step-shaped support elements each having at least first and second vertically spaced and horizontally offset support surfaces, the elements being circumferentially spaced around and projecting inwardly from the side wall such that the first and second support surfaces lie in respective vertically spaced, horizontal planes, and means on the support member defining radially spaced first and second circumferentially staggered support portions adapted for engagement with selective of the support surfaces, whereby the support member may be rotated from a first vertical position wherein the first support portions thereof are circumferentially aligned with and adapted to bear upon the first support surfaces of the elements, to a second position vertically offset from the first position

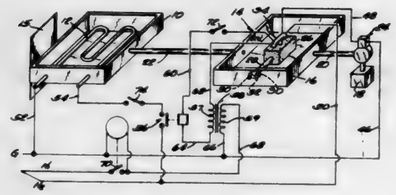
wherein the second support portions of the member are circumferentially aligned with and adapted to bear upon the second support surfaces of the elements.

3,664,323
OVEN CONTROL VALVE AND SYSTEM
Leonard H. Michaels, Naperville, Ill., assignor to Harper-Wyman Company, Hinsdale, Ill.
Filed Dec. 29, 1970, Ser. No. 102,282
Int. Cl. F24c 3/12
U.S. Cl. 126—42 8 Claims



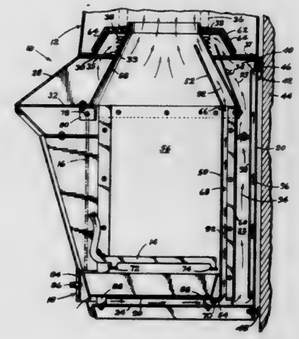
An oven control system and control valve for use with a gas oven including a main burner and a pilot burner serve to prevent operation of the oven when the oven door is opened. In normal operation, with the oven door closed, a valve member is moved to an open position in response to a predetermined pilot flame condition to admit gas to the main burner. When the oven door is moved to an open position, the valve member is held in its closed position to block flow to the main oven burner regardless of pilot flame condition.

3,664,324
HUMIDIFIER
Herbert W. Radtke, 3755 South 20th Street, Milwaukee, Wis.
Continuation of application Ser. No. 5,628, Jan. 26, 1970, now abandoned, Continuation-in-part of application Ser. No. 868,501, Oct. 22, 1969, now abandoned. This application May 5, 1971, Ser. No. 140,599
Int. Cl. F24f 3/14
U.S. Cl. 126—113 8 Claims



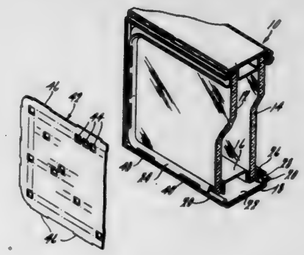
A portable humidifier including an evaporator pan adapted to be mounted in the plenum of a furnace, a heating element in the evaporator pan connected to the furnace motor circuit, a reservoir mounted at a point remote from the evaporator pan and at the same level, a conduit connecting the reservoir to the evaporator, a source of water connected to the reservoir through a restricted conduit, a solenoid actuated control valve connected to control the flow of water through the restricted conduit and a double acting mercury switch mounted on a float in the reservoir to control the operation of the solenoid valve and to disable the heating element when the water in the evaporator pan drops below the heating element.

3,664,325
SHEET METAL FIREPLACE
Dannie O. Malafouris, 7945 N.E. Alberta Street, Portland, Oreg.
Filed July 8, 1970, Ser. No. 53,193
Int. Cl. F24b 1/18
U.S. Cl. 126—121 9 Claims



A sheet metal fireplace comprises an outer jacket and a firebox mounted in and spaced from the jacket. The jacket and firebox have open fronts. The firebox has a flue opening at the top. A grate is mounted near the bottom of the firebox. A draft passageway is located beneath the grate and communicates with the space between the back walls of the jacket and firebox. A vertical baffle is present in this space. The baffle provides two vertical passageways. The inner passageway adjacent the firebox back wall circulates cool air behind the same and discharges it through the flue. The outer passageway behind the baffle circulates heated air into the room through appropriately located louvers.

3,664,326
SAFETY SCREEN FOR OVEN WINDOWS
Vernon I. Mills, Bloomfield Hills, Mich., assignor to Mills Products, Inc., Farmington, Mich.
Filed Mar. 18, 1971, Ser. No. 125,558
Int. Cl. F23m 7/00
U.S. Cl. 126—200 3 Claims



A decorative safety screen for use with a window unit in an oven door comprises a flat sheet of perforated flexible material removably mounted in spaced parallel relation in front of the outer one of the two glass panels of the window unit.

3,664,327
MAGNETIC PROBE

Reuben H. Gordon, Holly Hill Plaza, 2321 Peach Orchard Road, Augusta, Ga., and Ivan H. Brown, 304 Bloomfield Road, Sebastopol, Calif.

Continuation-in-part of application Ser. No. 845,184, July 28, 1969, now abandoned. This application Nov. 27, 1970, Ser. No. 93,264
Int. Cl. A61b *17/52*
U.S. Cl. 128—1.4 8 Claims



A case made of non-magnetic material encloses a paramagnetic core leaving a key hole slotted end closely spaced from an opening in the case at a rounded probe end. An electromagnetic winding is mounted about the core axially spaced from the slotted end to establish a magnetic field of maximum intensity at the probe end of the case.

3,664,328
CANCER TEST SPECIMEN GATHERING DEVICE

Henry Dinwoodey Moyle, Jr., 5600 Holladay Blvd., Salt Lake City, Utah, and William Bates, 4700 Idlewild Circle, Salt Lake City, Utah

Continuation of application Ser. No. 810,299, Mar., 1969, now abandoned. This application Apr. 28, 1971, Ser. No. 138,323
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 B 1 Claim



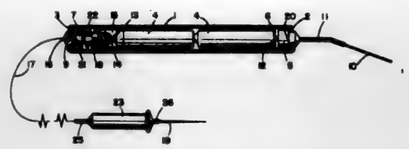
A cervical cancer test specimen gathering device for use in the home. The device includes an insertion tube and a sampling balloon normally collapsed within one end of the tube. A manually collapsible, self-restoring bulb is connected to the other end of the tube. A layer of specimen gathering material is mounted on the balloon for movement by the balloon from the interior of the tube to an exterior sampling position and back whenever the bulb is collapsed and released.

3,664,329
NERVE LOCATOR/STIMULATOR

Richard Norman Naylor, Clearwater, Fla., assignor to Concept, Inc., St. Petersburg, Fla.

Filed Mar. 9, 1970, Ser. No. 17,457
Int. Cl. A61f *5/00*
U.S. Cl. 128—2.1 R 2 Claims

A self contained, portable, disposable, self testing and self powered instrument for use in medical procedures to stimulate nerves and to determine if the tissue in question is a muscle controlling nerve, by delivering a maximum of 2 milliamperes of current through human tissue in the general area to be probed by an insertion of a probe electrode (negative) in subcutaneous tissue after an incision has been made

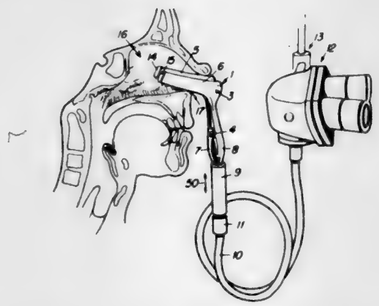


and implanting a needle (positive electrode) anywhere in subcutaneous tissue as a ground.

3,664,330
FIBER OPTIC MEDICAL TOOL

Harold L. Deutsch, New York, N.Y.

Filed Sept. 12, 1969, Ser. No. 857,386
Int. Cl. A61b *1/06*
U.S. Cl. 128—18 17 Claims



A medical tool, preferably taking the form of a speculum, wherein fiber optics are carried by the distal ends of members which extend into a body orifice to provide visualization and illumination of the body area interior of the orifice. Manipulative access is provided to the area within the orifice between the inner surfaces of the spread apart members of the speculum-type tool which extends into the orifice.

3,664,331
APPARATUS FOR MEDICAL TREATMENT BY VIBRATIONS

Gheorghe Filipovici, str. Episcopul Chesare, 12, Bucharest, Romania

Filed Sept. 3, 1969, Ser. No. 854,905
Int. Cl. A61h *7/00*
U.S. Cl. 128—51 11 Claims

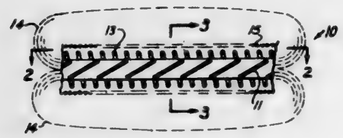


A device for the medical treatment of organic tissues by vibrations having a lever with two opposite ends and a longitudinal axis between them, and a bumper rigidly attached to one end of the lever, the lever being mounted for universal pivoting movement and for limited movement in the direction of its longitudinal axis. The end of the lever opposite to the end at which the bumper is mounted is arranged to engage a rotating eccentric cavity when pressure is put on the bumper.

3,664,332
THERAPEUTIC VIBRATING PAD

Luigi Vecchio, 6003 Fair Avenue, North Hollywood, Calif.

Filed Mar. 18, 1970, Ser. No. 20,720
Int. Cl. A61h *24/00*
U.S. Cl. 128—24.2 11 Claims

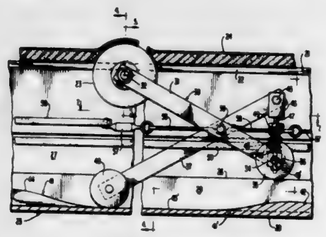


A therapeutic pad with an armature having a plurality of extended strips in spaced, overlapping relation. Magnetic field means provides an alternating magnetic field in the armature to vibrate the strips by successively inducing and removing magnetic flux into each strip so that adjacent strips successively pull together and relax.

3,664,333
MASSAGE TABLE

Menno E. Hill, 806 Harbor Island, Clearwater, Fla.

Filed Feb. 8, 1971, Ser. No. 113,308
Int. Cl. A61h *7/00*
U.S. Cl. 128—52 14 Claims

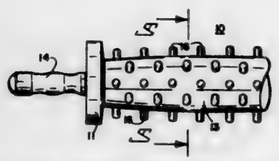


A massage table which features a traversing roller or series of rollers to follow the spinal column from the lower back to the neck region. The massage roller or rollers follow a contoured cam means which produce the desired rise and fall at the various regions of the back. The massage roller is also resiliently cushioned. The machine is self-reversing.

3,664,334
MASSAGE WHEEL

John J. O'Neil, 513 West Ninth Place, Mesa, Ariz.

Filed June 15, 1970, Ser. No. 45,997
Int. Cl. A61h *15/00*
U.S. Cl. 128—57 2 Claims

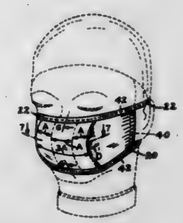


A massage wheel consisting of a cylinder having a plurality of prongs protruding from its circumference to which is attached an axle on either end which serve as handle grips for manipulation of the wheel over the body surface for massage purposes.

3,664,335
SURGICAL FACE MASK

Wilfred M. Boucher, Fanwood, N.Y.; John Kurilla, Doylestown, Pa., and Alice C. Stepp, Teaneck, N.J., assignors to International Paper Company, New York, N.Y.

Filed Feb. 24, 1970, Ser. No. 13,507
Int. Cl. A62b *23/02*
U.S. Cl. 128—146.6 1 Claim



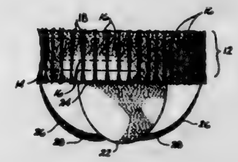
Disposable surgical face mask comprising a flexible porous pad capable of covering the nose and the mouth of the wearer, the flexible porous pad having an inner layer of non-woven fiber material, an outer layer of non-woven fiber material, and a central layer of filter material. The three layers are stitched together along their horizontal and vertical edges. An elastic binding is secured onto each vertical edge of the flexible porous pad. The flexible porous pad has a first vertical double pleat structure and a second vertical double pleat structure. The first and second vertical double pleat structures are parallel to one another and are spaced a horizontal distance from one another. Each of the vertical double pleat structures is formed by folding the flexible porous pad back on itself a first time and then folding it back on itself a second time thereby forming a "Z" or reverse "Z." A flexible nose strip and a foam strip are situated along the upper horizontal edge of the flexible porous pad. Binding tapes are stitched into the horizontal edges of the flexible porous pad.

The vertical double pleat structures form a cavity on the inner side of the flexible porous pad. When the frontal face of the flexible porous pad is extended outwardly, the vertical double pleat structures expand and provide a semirigid box structure.

3,664,336
DISPOSABLE ATHLETIC SUPPORTER

Brenda B. Gelston, Woodbark Lane, Phoenix, Md.

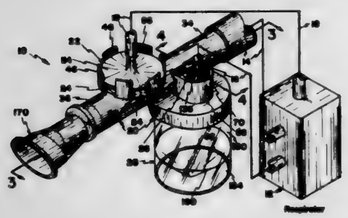
Filed Nov. 5, 1969, Ser. No. 874,339
Int. Cl. A61f *5/40*
U.S. Cl. 128—158 7 Claims



Wear-and-discard athletic supporters of non-woven material which has preferential directions of strength and resilience at right angles, are described, the circumference of the athletic supporter waistband being the strength-oriented

direction of the material, which is also gathered into pleats by circumferential elastic stitching, and the direction of resilience of the material being the suspensory direction; ventilated double waistbands and integral pouch and waistband construction further characterize embodiments of the invention.

3,664,337
RESPIRATION ASSEMBLY AND METHODS
Joseph W. Lindsey, and Larry O. Murphy, both of Salt Lake City, Utah, assignors to Bio-Logics, Inc., Salt Lake City, Utah
Filed Apr. 15, 1970, Ser. No. 28,887
Int. Cl. A61m *11/00*
U.S. Cl. 128—194 **12 Claims**



A respiration assembly and methods, the assembly comprising only a few nebulizing and exhalation valve components, force-fit together and disposable after short usage. Air is delivered during the inspiration phase of the respiration cycle from a conventional respirator to the assembly in the form of a low pressure main stream flow and a high pressure nebulizing flow, the exhalation valve being closed by distending an expandable bladder under pressure. Nebulization occurs by discharging the high pressure flow through a constriction causing fluid from a cup reservoir to be siphoned to the site of discharge where shearing action of the effluent air against the liquid results in an aerosol of small liquid particles. The aerosol is further broken up by a baffle, disposed immediately downstream of the orifice within the cup reservoir. The aerosol is purged from the cup reservoir and carried to and mixed with the main stream air flow by diverting a portion of the main stream flow through the cup. During the expiration phase of the respiration cycle, no air flow occurs, the exhalation valve is open and the pressure and spent air within the assembly vents to the atmosphere.

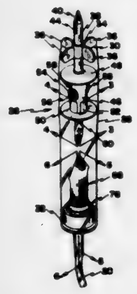
3,664,338
CAP FOR A MEDICAMENT VIAL
Kenneth H. Knox, Libertyville, and Robert J. Ries, Waukegan, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.
Filed Oct. 28, 1970, Ser. No. 84,851
Int. Cl. A61m *5/00*
U.S. Cl. 128—220 **10 Claims**

A cap for use with a medicament vial of the type having an externally threaded plug therein disposed adjacent an open mouth thereof, the cap including a base member, an internally threaded cylindrical wall extending from an inner surface of the base member and threadedly engaging the externally threaded plug, a grip extending from an outer surface of the base member, an annular rib projecting from the inner surface of the base member and abutting a contact surface at the end of the plug to provide a seal therefore, and a skirt extending from the internally threaded cylindrical wall to



prevent deformation of the externally threaded portion of the plug.

3,664,339
DRIP CHAMBER AND METHOD
Louis S. Santomieri, 345 West M St., Benecia, Calif.
Filed Apr. 9, 1970, Ser. No. 27,040
Int. Cl. A61m *05/16*
U.S. Cl. 128—214 C **5 Claims**



A drip chamber having a flexibly resilient sleeve with memory and one-way inlet and outlet valves in each end of the sleeve, the valves respectively being in communication with a fluid source and an infusion tube. A control unit can be finger-actuated to determine a continuous drip at a constant rate from the inlet to the outlet valve. The method includes squeezing the sleeve to force fluid through the outlet valve into the infusion tube and thereafter allowing the sleeve to expand to draw fluid through the inlet tube into the sleeve.

3,664,340
SCLERAL LENS WITH ATTACHED TUBE
Loran B. Morgan, 138 Linda Vista, Torrington, Wyo.
Filed Oct. 17, 1969, Ser. No. 867,198
Int. Cl. A61m *7/00*
U.S. Cl. 128—249 **1 Claim**

Means for scientifically supervised use when treating severe injuries and infections of the human eye. It enables a doctor or his nurse to administer a regulable but constant instillation of an antibiotic solution, chemotherapeutic agents, steroids or like solutions to the corneal area of the eyeball. A molded shield is conformingly superimposed on the eyeball and embodies a centralized concavo-convex corneal lens surrounded by a rim-like annulus which resides conformingly

atop the sclera. Flexible tubing delivers the solution from a solution feeding bottle to the annulus in a manner that the



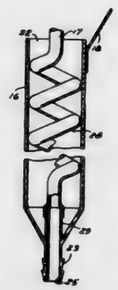
eyeball is continuously lavaged while the over-all shield "-floats" atop the constantly existing film of fluid.

3,664,341
VAGINAL CAPSULE
Harry W. Gordon, Bronx, N.Y., assignor to Julius Schmid, Inc., New York, N.Y.
Filed Dec. 24, 1970, Ser. No. 101,285
Int. Cl. A61f *15/00*
U.S. Cl. 128—271 **3 Claims**



A water soluble cylindrically shaped vaginal capsule is described comprising a sealed elongated large diameter portion containing a medicament and an elongated small diameter portion located at the distal end of the large diameter portion. This capsule is useful in treating vaginal infections such as vaginal moniliasis in pediatric patients.

3,664,342
RETRACTABLE ASPIRATOR TUBING AND SHEATH FOR SURGICAL USE
Henry J. Heimlich, 3850 Clifton Ave., Cincinnati, Ohio
Original application Dec. 4, 1967, Ser. No. 687,715, now Patent No. 3,537,457. Divided and this application Jan. 21, 1970, Ser. No. 12,876
Int. Cl. A61m *1/00*
U.S. Cl. 128—276 **6 Claims**



Sheath open only at its ends can be mounted with one end in sterile field. Other end connected to suction source. One end of flexible tubing in sheath communicates with suction source. Other end of tubing may be withdrawn from sheath at will to transmit suction to operative field, and returned to sheath during periods of non-use. Tubing may be resiliently formed for retraction, e.g., it may have a helical shape when retracted.

3,664,343
DISPOSABLE ARTICLES
Per Gunnar Assarsson, Montclair, N.J., assignor to Union Carbide Corporation, New York, N.Y.
Filed Oct. 6, 1969, Ser. No. 864,193
Int. Cl. C08g *43/02*; A61f *13/16, 13/18*
U.S. Cl. 128—284 **14 Claims**

Improved disposable absorbent articles, such as diapers, catamenial devices and sanitary napkins, are provided which contain certain stabilized insoluble hydrophilic poly(ethylene oxide) polymers as an absorbing media. The polymers are stabilized with a stabilizing amount of poly(ethylene imine).

3,664,344
TYNED CRYOSURGICAL PROBE
Michael D. Bryne, Vernon, Conn., assignor to Brymill Corp., Vernon, Conn.
Filed Sept. 15, 1970, Ser. No. 72,317
Int. Cl. A61b *17/36*; A61f *7/12*; F25d *3/00*
U.S. Cl. 128—303.1 **2 Claims**



Freezing of large tissue masses to significant depths is achieved by utilizing a tyned cryosurgical probe having sharpened tynes that are embedded directly into the tissue to be frozen. Nitrogen is delivered in substantially liquid form directly to the exposed ends of the tynes or to metallic surfaces metallurgically bonded thereto. Examples of uses include starting a deep iceball with a tyned probe in accordance herewith and advancing the iceball deeper with other apparatus.

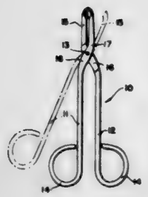
3,664,345
SURGICAL BUTTONS
Clyde Harwell Dabbs, 606 Main Ave., S.W., and Hugh G. Neil, P.O. Box 1950, both of Knoxville, Tenn.
Filed July 6, 1970, Ser. No. 52,449
Int. Cl. A61b *17/04*
U.S. Cl. 128—335 **10 Claims**



A surgical button for retaining a suture after passing through the skin on one side of an abdominal or other wound. The button comprises a non-metallic disc made of nylon or other suitable plastic material which has an axial orifice therethrough for passage of the suture and which axial passage or orifice is intersected by a radial orifice extending diametrically therethrough to receive a locking pin which engages the suture in a wedging action to hold it tightly in the disc. The button also comprises a pad of soft, spongy material, such as sponge rubber, secured to one face of the disc with a covering of cloth or fabric which lies against the skin

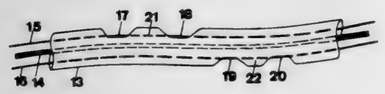
and prevents irritation or maceration. No tying of the suture is involved. It is held in place by the wedging action of the disc.

3,664,346
EYEBROW TWEEZERS
Dixie Dunn, Mobile, Ala.
Filed July 6, 1970, Ser. No. 52,181
Int. Cl. A61b *17/28*; B25b *7/00*
U.S. Cl. 128—355 1 Claim



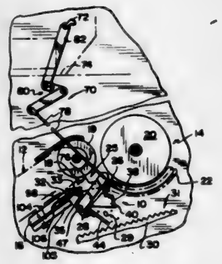
Eyebrow tweezers are provided for people with poor vision which enable the plucking of eyebrows without the necessity of removing eyeglasses. The tweezers include a pair of jaw blades which are bent away from the plane of movement of the handle. The ends of the jaw blades have a portion thereof cut away and curved to provide flat knife-like mating edges and a firm gripping action. The edges form a point at one end to facilitate manipulation of the tweezers beneath or between eyebrow hairs.

3,664,347
ELECTRIC HEART STIMULATION METHOD AND ELECTRODE
Dietrich Harmjanz, Diedenhofenerstrasse 17, 3 Hannover, Germany
Filed July 25, 1969, Ser. No. 844,876
Claims priority, application Germany, July 27, 1968, P 17 64 704.4; Apr. 16, 1969, P 19 19 246.2
Int. Cl. A61n *1/04*
U.S. Cl. 128—404 13 Claims



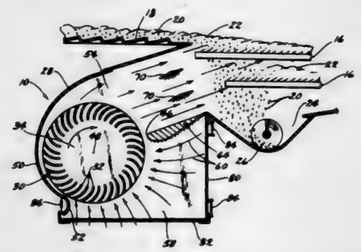
Apparatus and method for electrically stimulating a heart by means of a flexible filament that carries a conductor connected to an electrode which is exposed at the surface of the filament. According to the preferred embodiment, a portion of the filament extends beyond the electrode, thereby forming a flexible tail section that helps to hold the electrode at a desired position within the heart. According to the preferred method aspect of the disclosure, the above-described filament is introduced into a vein in the arm so that it is carried to the heart by the ordinary blood flow through the vein. The tail section of the filament is carried through the heart into a portion of the lungs in order to stabilize the position of the electrode within the heart.

3,664,348
STONE TRAP FOR A COMBINE
Arved Maiste, and Melvin F. Robertson, both of Brantford, Ontario, Canada, assignors to White Motor Corporation of Canada Limited, Brantford, Ontario, Canada
Filed Feb. 25, 1971, Ser. No. 118,762
Claims priority, application Canada, Mar. 13, 1970, 077,399
Int. Cl. A01f *12/16*
U.S. Cl. 130—27 JT 10 Claims



The stone trap is in the form of a trough having a front wall which extends below the delivery end of the feeder conveyor of a combine, a rear wall which extends below the entry edge portion of the concave of the combine, first and second side walls which are secured respectively to first and second frame members of the combine, and a trap door which extends across the bottom of the stone trap and in which is adapted to drop material caught in the stone trap into a portion of a grain pan of the combine which extends below the stone trap. To facilitate self-cleaning of the stone trap, the outlet width of the stone trap between the bottom edge of the front wall and the bottom edge of the rear wall is greater than the inlet width of the stone trap between the entry position of the concave and the top edge of the front wall.

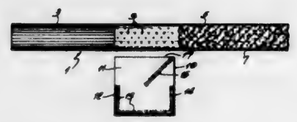
3,664,349
COMBINE CLEANING BLOWER
Graeme R. Quick, Ames, Iowa, assignor to Iowa State University Research Foundation, Ames, Iowa
Filed Dec. 19, 1969, Ser. No. 886,471
Int. Cl. A01f *12/44*
U.S. Cl. 130—27 HF 8 Claims



A combine having grain cleaning sieves and a grain trough therebelow. A cross-flow fan is provided to blow air across the sieves and the fan includes an elongated hollow rotor having forwardly curved peripherally disposed spaced apart blades. A vortex regulator vane having an air foil cross-section is provided on one side between the inlet and the outlet opening and a housing wall is on the opposite side of the rotor. The leading edge of the air foil is closely adjacent the

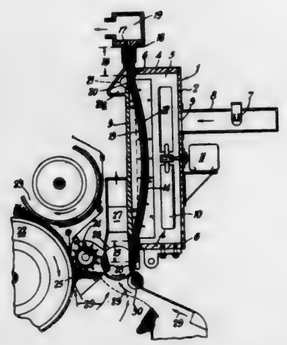
rotor in a radial plane through the longitudinal axis of the rotor. The housing wall extends partially around the rotor and is spaced progressively farther away from the inlet opening to the outlet opening. Vertically and horizontally disposed screens cover the inlet opening and are secured to the housing by springs to permit movement thereof and thereby maintaining them free of foreign material.

3,664,350
CIGARETTE
Byron T. Wall, 143-20 Franklin Ave., Flushing, N.Y.
Filed Dec. 12, 1969, Ser. No. 882,278
Int. Cl. A24d *01/02*, *01/06*
U.S. Cl. 131—10 A 10 Claims



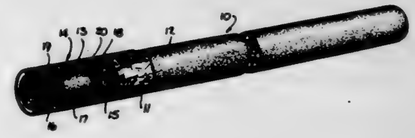
A cigarette comprising a filter, a roll of tobacco, a wrapper surrounding the filter and tobacco which has a plurality of air ingress openings in an area adjacent to but ahead of the filter, and means overlying said openings to impede the ingress of air therethrough until the cigarette has been burned away to predetermined position and then automatically to uncover the openings for ingress of air. The atmospheric air blending with the smoke generated by burning the tobacco cools the smoke and precipitates condensibles which are caught and held by the filter.

3,664,351
CIGARETTE-MAKING MACHINERY
Frederick Russell, Southampton, England, assignor to Brown and Williamson Tobacco Corporation, Louisville, Ky.
Filed Feb. 19, 1970, Ser. No. 12,642
Claims priority, application Great Britain, Feb. 27, 1969, 10,509/69
Int. Cl. A24b *9/00*; A24c *5/14*
U.S. Cl. 131—110 9 Claims



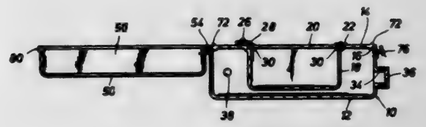
The invention is concerned with an apparatus and a method for the treatment of cut tobacco in a cigarette-making machine in which a stream of tobacco strands carried in a stream of air is subjected to microwave-radiation energy by passing it through a radiation chamber. Suitably, the wavelength of the microwave energy is in the range from 10 to 100 cms. and the stream of air carrying the tobacco is directed through the chamber at a substantial distance from the chamber walls where the energy level is low. The path of the tobacco strands through the chamber is defined by a pair of confronting end walls having straight inlet and outlet portions at their ends, and an arcuate portion therebetween that is convex toward a wave-guide that terminates in an outlet communicating with the interior of the chamber. The straight portions serve as microwave-retaining filters and the confronting walls are transparent to the passing of microwaves therethrough. A rotating fan is positioned to the passing of microwaves therethrough. A rotating fan is positioned in the chamber between the confronting walls and the energy inlet and serves to cool the adjacent arcuate wall. Tobacco leaving the chamber is formed into a filler stream and into a rod from which cigarettes may be cut.

3,664,352
TOBACCO SMOKE FILTER
Vello Norman, Chapel Hill, and Thomas B. Williams, Durham, both of N.C., assignors to Liggett & Myers Incorporated, New York, N.Y.
Filed July 27, 1970, Ser. No. 58,238
Int. Cl. A24b *15/02*; A24d *01/06*
U.S. Cl. 131—264 16 Claims



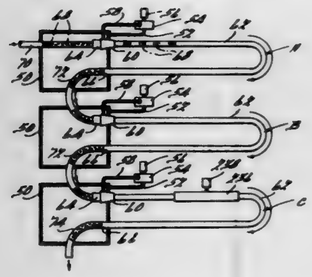
Hydrogen cyanide is removed from tobacco smoke by passing the smoke through a filter containing a water-insoluble, mixed-metal carbonate of an alkaline earth metal selected from the group consisting of magnesium, calcium, strontium and barium and a transition metal selected from the group consisting of cobalt, nickel, copper and zinc.

3,664,353
PORTABLE GROOMING KIT
Allen M. Childress, Jr., 1410 Speed, Monroe, La.
Filed Feb. 13, 1970, Ser. No. 11,038
Int. Cl. A45d *40/22*
U.S. Cl. 132—79 G 10 Claims



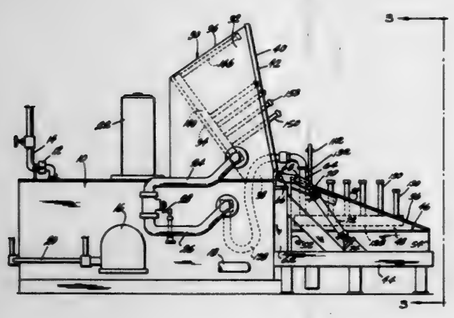
A portable kit suitable for use as an aid in personal grooming out of doors comprises a water-containing reservoir, water inlet and outlet means in the reservoir, a tub which fits against one side of the reservoir and is detachably hinged to the reservoir to permit use as a wash basin, latch means for holding the tub closed against the reservoir, and a handle on the reservoir to permit convenient carrying.

3,664,354
APPARATUS FOR PROCESSING WORKPIECES
Louis J. Minbiole, Jr., Detroit; Chester G. Clark, Grosse Pointe Woods, and John W. Neumann, Birmingham, all of Mich., assignors to The Udylite Corporation
Filed Nov. 12, 1968, Ser. No. 774,923
Int. Cl. B08b *3/08, 3/10*; B05c *3/08*; B67c *1/00*
U.S. Cl. 134—61 22 Claims



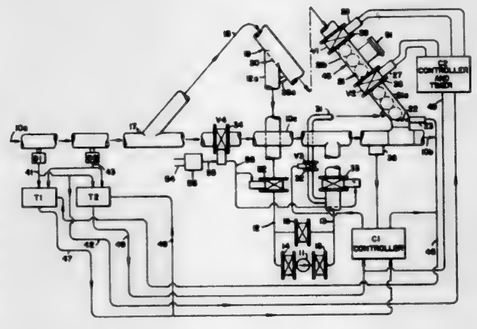
Apparatus for simultaneously treating and conveying workpieces by which a rapidly moving confined stream of a treating fluid is formed into which workpieces are introduced for entrainment and conveyance thereby and are subsequently extracted from the stream and thereafter successively introduced, if desired, into separate succeeding streams in an ordered sequence, thereby performing a multiple-stage treatment of the workpieces.

3,664,355
CONTAINER WASHING APPARATUS
Robert J. Adams, 15601 Charles R Avenue, East Detroit, Mich.
Filed July 20, 1970, Ser. No. 56,538
Int. Cl. B08b *3/02, 9/08*
U.S. Cl. 134—143 5 Claims



A device for washing industrial gondolas consisting of two receptacles each open at one end and forming half sections of a gondola washing chamber. One of the sections is adapted to be pivoted from an open position to a position closing with the other section to form the washing chamber. The movable section has a platform on which a gondola is adapted to be clamped and arranged to support the gondola in a generally inverted position when the sections are closed. The two sections have sets of nozzles thereon arranged for directing high pressure jets of washing liquid against the inner and outer sides of all the gondola walls.

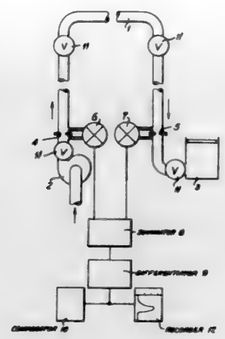
3,664,356
PUMPING STATION SPHERE HANDLING METHOD AND SYSTEM
Marvin H. Grove, and Lyle R. Van Arsdale, both of Houston, Tex., assignors to M & J Valve Company, Houston, Tex.
Filed July 30, 1970, Ser. No. 59,573
Int. Cl. B08b *9/04*
U.S. Cl. 137—1 12 Claims



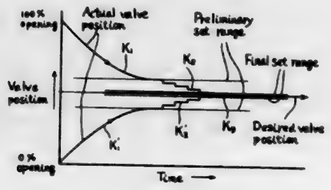
A method and system applicable to pipeline systems for handling spheres at pumping stations. Particularly the invention serves to launch spheres into the line at the downstream side of a pumping station in predetermined relation to an interface region between different liquid products. Spheres arriving at the pumping station are detected and diverted and stored in a magazine. Previously diverted spheres in the magazine are launched successively into the downstream portion of the line in such a manner as to effectively divide different products. The method makes use of sphere detecting means in the upstream portion of the line to detect the arrival of a group of spheres, and also means for detecting the interface region between different products. Special timing means is provided for controlling the sequence with which the spheres are relaunched into the line, whereby the spacing between relaunched spheres corresponds to a particular volume.

3,664,357
METHOD AND INSTALLATION FOR DETECTING FLUID LEAKAGE FROM A PIPELINE
Manfred Kreiss, Mannheim-Kirchwald, Germany, assignor to Erdol-Raffinerie Mannheim GmbH, Mannheim, Germany
Filed Dec. 23, 1970, Ser. No. 100,967
Int. Cl. G05d *7/03*
U.S. Cl. 137—2 10 Claims

A pipeline leakage detection method and installation including measuring fluid flow rates in the pipeline at spaced points and obtaining summated and differentiated electrical current values corresponding to differences in the measured rates. Increases in current rates corresponding to a pipeline break are instantaneously relayed to means for sounding an alarm and to means for preventing further leakage flow of liquid product in the pipeline.



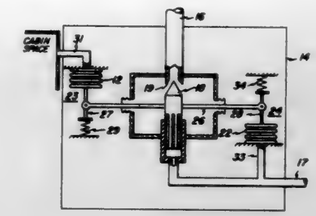
3,664,358
METHOD OF AUTOMATIC VALVE CONTROL
Takeshi Kosugi, Nara, and Toshio Kunimitsu, Hirakata, both of Japan, assignors to Nakakita Seisakusho Company Limited, Osaka, Japan
Filed Sept. 28, 1970, Ser. No. 75,865
Claims priority, application Japan, Oct. 2, 1969, 44/78729
Int. Cl. F16k *31/02*; G05d *16/00*
U.S. Cl. 137—14 2 Claims



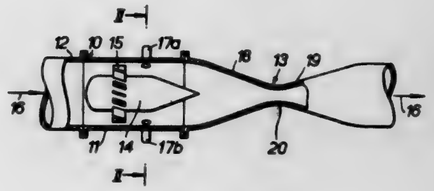
Controlling a valve automatically by electric feedback with a differential signal produced from a signal for desired valve position and a signal for actual valve position in such a manner that the valve is opened or closed continuously while the actual valve position is considerably far from the desired valve position, is opened or closed intermittently while the actual valve position is not so considerably far but insufficiently approximate to the desired valve position, and remains as it is when the actual valve position is sufficiently approximate to the desired valve position, and, in addition, that the valve is tightened sufficiently in the full closing position.

3,664,359
AIRCRAFT CLOSED CIRCUIT BREATHING SYSTEM
Angelo Dounoucos, Schenectady, N.Y., and John W. Harrison, Manchester, Mass., assignors to General Electric Company
Original application July 1, 1968, Ser. No. 741,527, now Patent No. 3,552,392. Divided and this application Feb. 27, 1970, Ser. No. 18,398
Int. Cl. A62b *9/02*
U.S. Cl. 137—81 1 Claim

An improvement is presented in an aircraft oxygen closed circuit breathing system wherein in place of the previously proposed flexible breathing bag rendering the system volume a variable, a compressor is employed converting the system to one having a variable pressure and a constant volume.



3,664,360
FLUID FLOW CONTROL DEVICES
Joseph Kenneth Royle, Bakewell; John Grant, Risley, and Jack Alexander Golder, Lower Walton, all of England, assignors to United Kingdom Atomic Energy Authority, London, England
Filed June 15, 1970, Ser. No. 45,963
Claims priority, application Great Britain, June 25, 1969, 32,202/69
Int. Cl. F15c *1/04*
U.S. Cl. 137—81.5 6 Claims

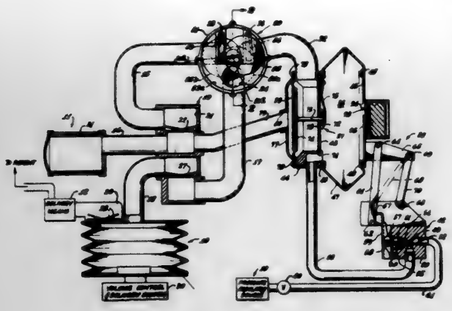


A vortex amplifier with a chmber having co-axial inlet and outlet ducts. In the chamber is disposed a flow shaper body which confines fluid flow through the chamber to the outer part of the chamber. Flow directing means such as vanes are also disposed in the chamber so as to impart a rotary component of flow to fuild passing through the chamber. Control ports direct a control flow of fluid tangentially into the chamber to interact with fluid flow to which a rotary component has been applied.

3,664,361
RESPIRATION SYSTEM
Harold Bartels, Reseda, Calif., assignor to Puritan-Bennett Corporation, Kansas City, Mo.
Filed Aug. 24, 1970, Ser. No. 66,246
Int. Cl. G05d *11/02*
U.S. Cl. 137—98 14 Claims

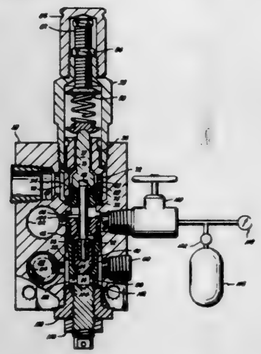
A respiration system for mixing oxygen from a pressure-regulated source with room air at ambient pressure in a proportion which is infinitely variable. Air and oxygen are drawn through a proportioning valve having inlets with effective flow areas of the same relationship as the proportion of air and oxygen desired. The pressure at the oxygen inlet is varied in accordance with air pressure variations by a pressure-operated balancing valve for admitting oxygen from a reser-

voir in response to sensed variations in the air intake pressure. Selective adjustment of the air/oxygen proportion of the



mixture is accomplished with a manually movable valve member for varying the inlet area relationship.

3,664,362
PILOT VALVE
Irvin B. Weise, Bellaire, Tex., assignor to Anderson, Greenwood & Co., Houston, Tex.
Original application Feb. 6, 1969, Ser. No. 796,961, now Patent No. 3,568,706. Divided and this application Jan. 22, 1971, Ser. No. 108,906
Int. Cl. F16k *17/10*
U.S. Cl. 137—102 9 Claims

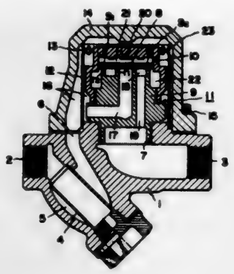


A pilot valve to be utilized in a pressure relieving system. The pilot valve controls the pressure setting for relief and blowdown through the main valve and assures that there is no reverse flow through the fluid pressure supply line, thereby allowing field testing of the main valve to determine if it is functioning properly while the pilot valve is installed in the system controlling the operation of the main valve.

3,664,363
STEAM TRAP
Sentaro Miyawaki, 26-32, 3-chome, Nishi Senriyama, Suita Osaka-fu, Japan
Continuation-in-part of application Ser. No. 755,942, Aug. 28, 1968, now abandoned. This application Sept. 21, 1970, Ser. No. 74,040
Claims priority, application Japan, Sept. 5, 1967, 42/56873
Int. Cl. F16t *1/00*
U.S. Cl. 137—183 10 Claims

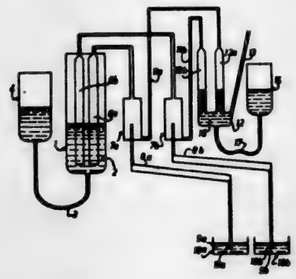
A disk type steam trap having a trap unit and a jacket communicating with both an inlet opening of the steam trap and a valve port passage of the trap unit having an intermediate pressure chamber, a condensate reservoir of a suitable internal volume formed below the intermediate pressure chamber, and one or more bleeder passages communicating the intermediate pressure chamber with a discharge passage.

The trap unit comprises a valve seat member, a disk placed on the top of the valve seat member, and a cap forming the



intermediate pressure chamber at the back of the disk. The valve seat member has an inner annular seat and an outer annular seat. The valve port passage issues from the inside of the inner annular seat and communicates with the inlet opening of the steam trap through the jacket. An annular groove is formed between the inner and outer annular seats, and the discharge passage issues from the annular groove and communicates with an outlet opening of the steam trap.

3,664,364
TRANSFER OF A PLURALITY OF LIQUIDS
Jean-Marie Faure, 28, Boulevard Aristide Briand, 91-Savigny S/Ogre, France
Filed Apr. 2, 1970, Ser. No. 24,995
Int. Cl. B67c *2/16, 1/04*
U.S. Cl. 137—205 3 Claims

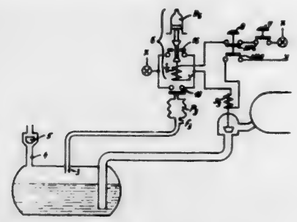


A chamber is provided with a plurality of conduits having non-horizontal portions into which a fluid can be continuously charged to control movement of one or more other fluids as well as a rinsing fluid which may optionally be employed.

3,664,365
METHOD OF AN APPARATUS FOR THE AUTOMATIC SUPERVISION OF LIQUID LIMITS IN CLOSED TANKS
Claude Marie Ernest Ralet, and Daniel Albert Clement Ralet, both of 661 Boulevard Poincare, Brussels, Belgium
Filed June 25, 1970, Ser. No. 49,719
Claims priority, application Belgium, June 26, 1969, 735,169
Int. Cl. G01f *23/14*
U.S. Cl. 137—206 15 Claims

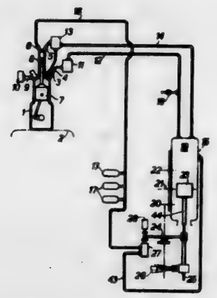
A level detector for a tank for liquid comprises a dip tube having an open lower end within the tank. At its upper end

the tube carries a pressure detector and a restricted orifice communicates the tube with an environment external to the tank. A higher gas pressure is produced in the tank than in said environment e.g. by the introduction of liquid into the tank and the pressure within the dip tube remains substantially the same as that in the tank until the lower end of the dip tube is immersed, causing a drop in pressure within the



dip tube. This drop in pressure is used to control the introduction or removal of liquid from the tank to limit the level to a desired value. In a variant two dip tubes are used for each level each having its own restricted orifice communicating with said environment and one having its lower end slightly below the other, and the pressure detection means is responsive to the differential pressure between the dip tubes.

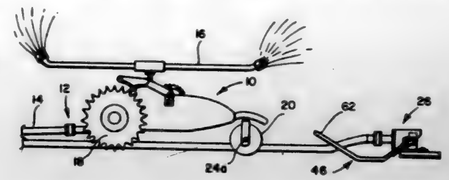
3,664,366
FLUID PRESSURE REGULATING DEVICE
Oscar Ferrer Munguet, Balmes 188, 6°1a, Barcelona 6, Spain
Filed Jan. 24, 1969, Ser. No. 793,855
Claims priority, application Spain, Jan. 25, 1968, 349,747
Int. Cl. B63g *8/24*
U.S. Cl. 137—209 9 Claims



A regulating device for adjusting the pressure and/or volume of a body of gas or liquid relative to an ambient or exterior gas or liquid. The regulating device has particular application in marine situations and can be installed in a submersible vessel, e.g. a diving device or a submarine, to control the condition of flotation of the vessel on or under the sea or other large water mass. Various embodiments of the regulating device and their uses are given.

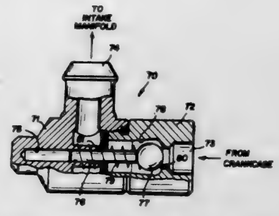
3,664,367
TRAVELLING SPRINKLER SHUT OFF
George J. Schaefer, Jr., Beatrice, Nebr., assignor to F. D. Kees Manufacturing Co., Beatrice, Nebr.
Filed Oct. 14, 1970, Ser. No. 80,588
Int. Cl. B05b *9/02*; E01h *3/02*
U.S. Cl. 137—344 4 Claims

A sprinkler shut off, more particularly an automatically operated sprinkler shut off valve mechanism for a travelling type of sprinkler. The mechanism includes a lever, attached to a valve shut off handle, engageable by an arm carried by



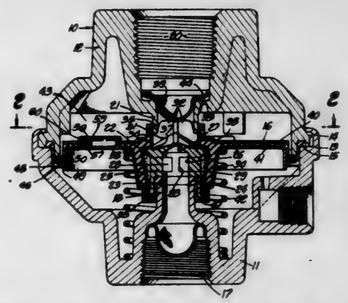
the travelling sprinkler to turn the valve to an off position as the sprinkler moves into operative engagement therewith.

3,664,368
PCV VALVE
Frank B. Sweeney, Rochester, N.Y., assignor to Emcon Technology, Inc., Rochester, N.Y.
Continuation-in-part of application Ser. No. 799,798, Feb. 17, 1969, now abandoned. This application May 10, 1971, Ser. No. 141,788
Int. Cl. F16k *17/04*
U.S. Cl. 137—480 4 Claims



A PCV valve has a moving part with a stem guided in a bearing and a spherical head moving coaxially in a shaped orifice having a seat toward which the head is biased by a compression spring. The head is positioned axially in the orifice under the influence of intake manifold vacuum, and the orifice is preferably shaped for the desired valve opening at different engine operating conditions.

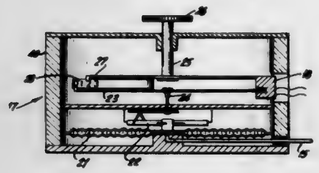
3,664,369
PRESSURE REDUCING REGULATOR
Dwight N. Johnson, Anaheim, Calif., assignor to The Singer Company, New York, N.Y.
Filed Dec. 9, 1970, Ser. No. 96,454
Int. Cl. F16k *17/34*
U.S. Cl. 137—484.4 13 Claims



A pressure regulator of the "straight-through" type employs a stationary valve member clamped between axially

aligned tubes carried on inlet and outlet body parts. A flexible diaphragm clamped between the body parts has a seat ring cooperating with a face on the valve member to provide a fully balanced valve construction controlling flow of fluid between the inlet tube and the outlet tube. An inner rim on the diaphragm is clamped between the stationary member and the inlet tube, and a tubular portion of the diaphragm slidably receives the outlet tube. Concentric axially extending convolutions each "U" shaped in cross-section provide rolling diaphragm action adjacent the inner and outer peripheries. A control screen downstream from the stationary valve member diffuses high velocity flow issuing between the valve face and seat ring, and passage means establish communication between the fluid downstream from the control screen and a chamber defined between the diaphragm and the inlet body part. A spring within the body acts to move the diaphragm in a direction opposed by pressure in the chamber. Stiffener plates confine a central portion of the diaphragm between them and are secured together in a manner to eliminate any leakage path. Tubular projections on one plate extend through aligned apertures in the diaphragm and in other plate, each projection having an enlarged integral end wall forming a clamping lip.

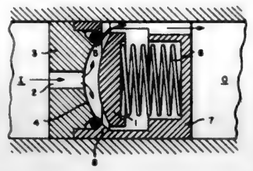
3,664,370
TRIGGER DEVICE FOR OPERATING A CONTROL VALVE OF A RESPIRATORY SYSTEM
Detlef Warnow, Luebeck, Germany, assignor to Dragerwerk Aktiengesellschaft, Lubeck, Germany
Filed Mar. 10, 1970, Ser. No. 18,118
Claims priority, application Germany, Mar. 13, 1969, P 18 12 829.1
Int. Cl. G05d 7/00; G01l 9/10
U.S. Cl. 137—487.5 **5 Claims**



A trigger device for controlling the operation of a control valve for an artificial respiration system includes a pressure sensitive control element which is admitted with the pressure of a line carrying the respiration gas and it operates and causes a deflection of an actual value indicator which moves in its deflection range past as adjustable inductive barrier. The inductive barrier is connected to an electronic control unit so that deflection of the actual value indicator interrupts, in dependence upon its setting in respect to the inductive barrier, the recoupling of the electronic control unit in order to vary an electrical impulse which is amplified for controlling the operation of a pressure valve in the respiratory gas supply system.

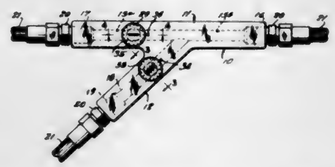
3,664,371
RESILIENT POPPET VALVE
William E. Schneider, Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Oct. 23, 1970, Ser. No. 83,571
Int. Cl. F16k 15/00
U.S. Cl. 137—516.29 **3 Claims**

A lightweight poppet valve having a resilient poppet in which the radius of the spherical contact surface is slightly larger than the radius of the spherical contact surface of the metal valve seat such that as the pressure behind the poppet



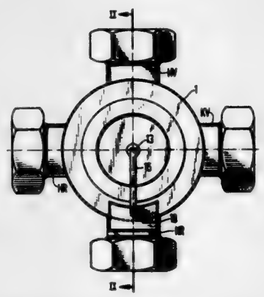
increases the poppet gradually assumes the shape of the valve seat to form a tight seal.

3,664,372
FLUID MIXING DEVICE
Harold A. Marshall, 65 Carnegie Ave., East Orange, N.J.
Filed Apr. 30, 1970, Ser. No. 33,316
Int. Cl. F16k 19/00, 5/04
U.S. Cl. 137—552 **1 Claim**



A mixing manifold is provided with a plurality of inlet passages each having an individual inlet opening, with all of the inlet passages communicating with a common discharge passage and opening. The feed passages are adapted for communication with individual supply reservoirs by means of suitable conduits. Separate control valves provided in each inlet passage are adjustable for predetermining the amount of flow through each passage to the common discharge passage.

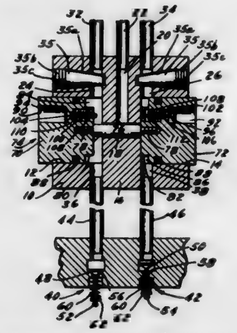
3,664,373
APPARATUS FOR HOT-WATER AND HEATING INSTALLATIONS
Karl Schichl, Ottweilerstr. 2, 8 Munich 83, Germany
Filed Nov. 18, 1970, Ser. No. 90,505
Claims priority, application Germany, Nov. 20, 1969, P 19 58 277.5; Mar. 25, 1970, P 20 14 415.4
Int. Cl. F15b 15/18
U.S. Cl. 137—565 **18 Claims**



A circulating pump with a mixer valve combined to form an apparatus especially for hot-water and heating installa-

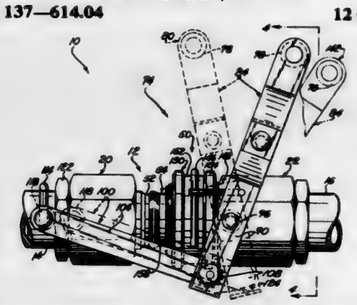
tions, wherein the pump drive is utilized also for the automatic control of the mixer valve. The mixer unit is locked in specific positions by a remote-control unlatching device either by a likewise remote-controlled synchronizing device in engagement with the pump impeller making this possible over one rotation, or this is effected by a hydromechanical coupling whereby liquid raised through the pump is put into a rotary motion.

3,664,374
BISTABLE PNEUMATIC FLIPFLOP APPARATUS
John D. Reid, Monrovia, Calif., assignor to Hamilton Company, Whittier, Calif.
Filed June 16, 1970, Ser. No. 46,691
Int. Cl. F16k 11/10
U.S. Cl. 137—596.2 **9 Claims**



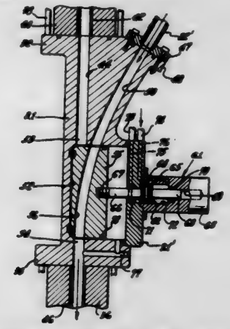
A pressure switching and venting pneumatic control valve for use wherever reciprocating motion is desired. The pressure control and venting apparatus controls pressure actuating fluid and venting for a mechanism having a reciprocating part to be moved in opposite directions and to be stopped. There is a shuttle having a pair of interconnected, oppositely arranged pistons operated by venting or relief of fluid pressure in the pneumatic system, and there is a simple remote control means for the control valve.

3,664,375
COUPLING MECHANISM
Ralph Thomas Marette, Orange Village, Ohio, assignor to The Hansen Manufacturing Company, Cleveland, Ohio
Filed Aug. 10, 1970, Ser. No. 62,566
Int. Cl. F16l 37/28
U.S. Cl. 137—614.04 **12 Claims**



An improved coupling mechanism includes an actuator assembly which is manually operable to connect and disconnect a coupling having valves which are biased closed by fluid pressure. The actuator assembly includes a lever which is pivotally mounted on one coupling member. A linkage connected to the actuator lever is engageable with the other coupling member. Once the linkage has been engaged with the other coupling member, the lever is pivoted to actuate the linkage and move the coupling members toward each other to a connected condition. Simultaneously therewith, the valves are operated to the open condition against the influence of the fluid pressure bias to thereby connect the conduits in fluid communication. A second linkage is connected with the actuator lever to operate a coupling retainer or latch assembly to a release condition to facilitate disconnection of the coupling.

3,664,376
FLOW LINE DIVERTER APPARATUS
Bruce J. Watkins, Palos Verdes Estates, Calif., assignor to Regan Forge and Engineering Company, San Pedro, Calif.
Filed Jan. 26, 1970, Ser. No. 5,662
Int. Cl. F16k 11/06
U.S. Cl. 137—625.68 **5 Claims**



A chambered housing mounted, or in association with, a subsea wellhead with fluid passages therein communicating with the well casing and at least two or more associated fluid conduits, a diverter valve member within said chamber including an arcuate transverse passage therethrough and means for moving such diverter valve member in the chamber for selectively diverting communication with said well casing between two of such fluid conduits.

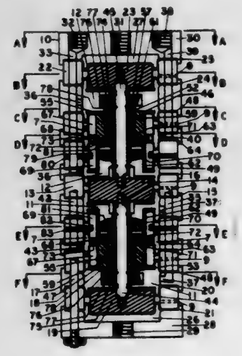
3,664,377
CONTROL FOR A RECIPROCATING FLUID MOTOR
Charles Passaggio, Cheshire, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.
Filed Sept. 21, 1970, Ser. No. 73,987
Int. Cl. F01l 31/08; F16k 31/56
U.S. Cl. 137—625.69 **2 Claims**



A control for a reciprocating fluid motor in which a sliding valve is moved back and forth by a two-piece drive sleeve of resilient material. The drive sleeve comprises a slotted tubu-

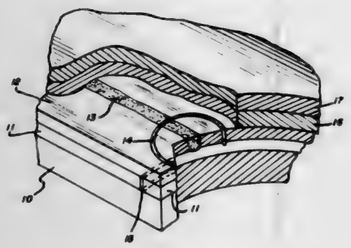
lar member adapted to be radially compressed to receive the second piece, a nut having a part fitting into the slot to avoid accidental disassembly. The nut and an enlarged portion of the tubular piece work on opposite sides of the slide valve.

3,664,378
VALVE
William F. Brecht, Jr., 141 East Atlantic Ave., Audubon, N.J.
Filed Mar. 9, 1970, Ser. No. 17,821
Int. Cl. F16k 31/44
U.S. Cl. 137—635 5 Claims



A valve having a body and a shaft moving longitudinally within the body, wherein the shaft selectively opens and closes concentric annular orifices which function either in a balanced condition or unbalanced condition.

3,664,379
MULTIPLE-LAYER VESSEL WITH CRACK ARRESTING WELDED JOINT
John Stanton McCabe, Naperville, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.
Int. Cl. F16l 9/02
U.S. Cl. 138—143 7 Claims



A multiple-layer vessel having an inner shell over which a filler or dummy layer is wrapped. The edges of the filler or dummy layer are left unjoined and with a gap between them. The gap can be longitudinal or circumferential with respect to the longitudinal axis of the vessel. A load-bearing layer is placed around the filler layer. The adjacent edges of the load-bearing layer are welded together and to the filter layer. The area of intersection in which the welded joint of the load-bearing layer crosses the gap in the filler layer is cut-out at least to the full thickness of the load-bearing layer to provide a mechanical discontinuity or crack arrester. The cut-out area extends at least partially into the filler layer.

3,664,380
LOOM WITH TRAVELING SHED
Karl Haberhauer, and Hertha Haberhauer, both of Grunstadt, Germany, assignors to Weinheimer Gummiwerke Gesellschaft mit beschrankter Haftung, Mannheim, Germany
Continuation-in-part of application Ser. No. 849,564, July 23, 1969. This application May 8, 1970, Ser. No. 35,818
Claims priority, application Germany, July 5, 1969, P 19 34 298.4
Int. Cl. D03d 47/06, 47/26
U.S. Cl. 139—12 15 Claims

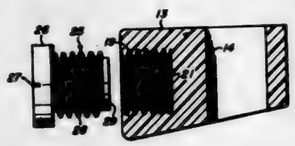


A flat or circular loom produces a flat or tubular fabric in a multiplicity of web sections each served by an individual weaving unit including a weft needle whose thread, after traversing the shedded warp threads of the associated section, is engaged by the weft thread of an adjoining needle whereby an interlinked chain of weft loops is formed to act as a filling. An intermittently operable thread clamp prevents a contraction of a loop prior to its engagement by the next weft needle and, especially in a flat loom, may also be used to draw the node between two loops into the fabric of the preceding section. In a circular loom, a loop inverter associated and synchronized with each weft needle causes the cross-links between the nodes of adjacent tiers to come to lie on the inside of the tubular fabric.

3,664,381
PRESS FREE TEXTILE FABRIC
William F. Ibech; Franklin S. Looney, Jr., both of Wilmington, Del., and David C. Reitz, Chadds Ford, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of application Ser. No. 690,099, Dec. 13, 1967, now abandoned. This application May 22, 1970, Ser. No. 39,912
Int. Cl. D03d 15/00; D06m 13/34
U.S. Cl. 139—420 9 Claims

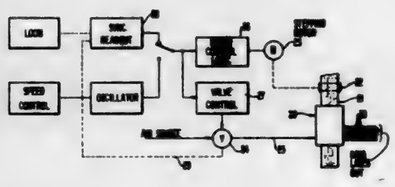
Press-free polyester-cotton fabrics of improved durability are obtained by applying a textile resin only to the yarns that travel in one direction in the textile fabric, e.g., either the warp yarn or the filling yarn.

3,664,382
LOOM PICKER
Mayo B. Tell, 6 Blackwood Road, Asheville, Ohio; Donald D. Kidd, 106 Balsam Drive; William T. Wickham, 903 Brunswick Drive, both of Waynesville, N.C., and Frank Brown, 5556 Viewpoint Drive, Dayton, Ohio
Filed Nov. 13, 1970, Ser. No. 89,331
Int. Cl. D03d 49/36
U.S. Cl. 139—159 5 Claims



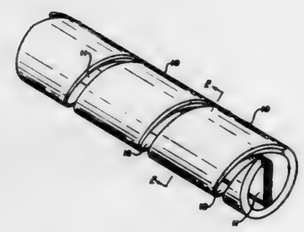
A loom picker which has a body of resilient elastomeric material and a shuttle-contacting insert of a wear-resistant material which is harder than the body. The insert has a threaded configuration and is mounted in a cavity which also has a threaded configuration, the cavity extending partially through the body but terminating short of the picket stick.

3,664,383
PNEUMATIC CONTROL MECHANISM FOR LOOMS AND THE LIKE
Jerry M. Mlnchey, 202 Sycamore Drive, and Willard A. Ramsey, 108 Paxton Street, both of Mauldin, S.C.
Filed June 11, 1970, Ser. No. 45,385
Int. Cl. D03d 49/00; D03c 13/00
U.S. Cl. 139—317 4 Claims



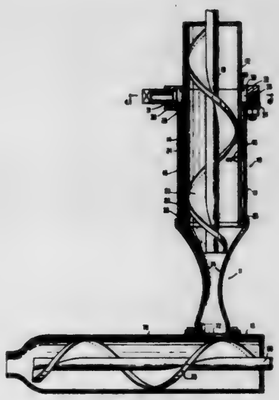
A pneumatic tape reader utilizes standard 1 inch wide 8 column punched data tape to activate pattern control elements of a loom dobby head or Jacquard head to produce variations in the weave pattern. The advancement of the tape through the reader is synchronized with the pick cycle of the loom and an air supply valve for the reader, is similarly synchronized. A simplified pneumatic actuator for each loom pattern control element is operated by a small pneumatic output tube on the reader, thus eliminating relatively expensive conventional air cylinder and piston units. The reader possesses general utility in the reading of pneumatic data to any pneumatic logic system of fluidic system of gates, flip-flops, amplifiers or the like.

3,664,384
WIRE FORMING MACHINE
Herbert W. Scott, Burnaby, British Columbia, Canada, assignor to Gilbey Equipment Ltd., West Vancouver, Province of British Columbia, Canada
Filed Sept. 11, 1969, Ser. No. 858,569
Int. Cl. B21f 21/00, 45/00
U.S. Cl. 140—92.94 2 Claims



A wire forming die for link fencing comprising a cylinder with a helical slot cut through it of which the inner edges of the slot are relieved to prevent damage to wire formed by the die.

3,664,385
METHOD AND APPARATUS FOR FEEDING AND COMPACTING FINELY DIVIDED PARTICULATE MATERIAL
Clarence F. Carter, Danville, Ill., assignor to Carter Engineering Company, Danville, Ill.
Continuation-in-part of application Ser. No. 718,123, Apr. 2, 1968, now Patent No. 3,580,419. This application Feb. 12, 1971, Ser. No. 114,897
Int. Cl. B65b 1/04, 3/04
U.S. Cl. 141—12 22 Claims



A method of feeding and compacting finely divided particulate material which utilizes a first rotating screw feeder for advancing the material along a first sleeve passage provided by a stationary foraminous sleeve mounted closely about the first screw feeder, and a second rotating screw feeder for advancing the material along a second sleeve passage to a container filling station. The method includes the steps of advancing the particulate material axially along the sleeve with the interstitial air between the particles in the sleeve at an internal sleeve pressure. Suction pressure relatively lower than the internal sleeve pressure is applied to the exterior of the sleeve to withdraw air from between the particles of the material to effect compaction of the material. At predetermined times gas pressure relatively higher than the internal sleeve pressure is applied to the exterior of the sleeve to back-flush material from openings in the sleeve to prevent clogging thereof. Cool, dried air may be utilized for back-flushing to cool the material without causing condensation to form within the densifier. The densified material may then be mechanically advanced along the second sleeve passage to the container filling station.

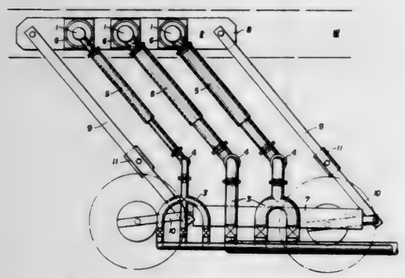
An apparatus for feeding and compacting finely divided particulate material, which includes a housing having fixedly mounted therein a tubular sleeve. The sleeve and housing define at least one closed hollow chamber extending about the sleeve with a plurality of perforations in the sleeve placing the interior thereof in fluid communication with the interior of the chamber. An axially extending screw feeder concentrically and rotatably mounted in the sleeve is adapted to advance material axially along the sleeve, with the interstitial air present between the particles of material in the sleeve at an internal sleeve pressure. Suction means in fluid communication with the chamber applies suction pressure relatively lower than the internal sleeve pressure to withdraw air from between the particles of material to effect compaction thereof. Gas pressure means in fluid communication with the chamber provides gas, preferably cool, dried gas, at a relatively higher pressure than the internal sleeve pressure at predetermined times to back-flush particulate material from the perforations, to prevent clogging thereof. The densifier material is discharged into a second screw feeder which

delivers the material to a container filling station while maintaining back pressure on the material in the densifier and while maintaining material compaction.

3,664,386
APPARATUS FOR FILLING FLUIDS INTO VEHICLE CONTAINERS

Hermann Wenzel, Vienna, Austria, assignor to Waagner-Biro AG, Vienna, Austria

Filed Feb. 24, 1970, Ser. No. 13,375
Claims priority, application Austria, Feb. 24, 1969, 1848
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—100 **16 Claims**



An apparatus for filling fluids into vehicle containers such as tanks of tank cars or tank trucks. An elongated pipe assembly has an inner fluid-receiving end and an outer fluid-discharging end for discharging fluid into the vehicle container. This assembly includes a support which supports the assembly for swinging movement at its inner end about a vertical axis. The assembly also includes structure for enabling the assembly to change the distance of the outer end of the assembly from its inner end. A movement-limiting arrangement is operatively connected with the outer end of the pipe assembly for limiting the latter to movement along a substantially straight, horizontal path while the assembly swings about the vertical axis at its inner end, so that in this way the outer end of the pipe assembly is constrained to move in a direction parallel to the travel of a vehicle. The pipe assembly automatically changes the distance of its outer end from its inner end as required to maintain the outer end of the assembly along this path.

3,664,387
LIQUID DISPENSING DEVICE

John D. Cates, Jr., 3653 Bennett Drive, Montgomery, Ala.

Filed Apr. 6, 1970, Ser. No. 25,830
Int. Cl. B65b *3/06*
U.S. Cl. 141—238 **4 Claims**

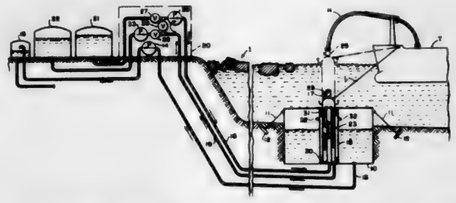


A liquid dispensing apparatus for the simultaneous filling of a plurality of containers. A funnel housing placed over the containers has depending funnel members, each being positioned over a separate container for filling same with a premeasured quantity of liquid.

3,664,388
SUBMERSIBLE TANKER MOORING SYSTEM

Ernest G. Frankel, Cambridge, Mass., assignor to Seatrain Lines, Inc., New York, N.Y.

Filed July 9, 1970, Ser. No. 53,443
Int. Cl. B63b *27/00*
U.S. Cl. 141—284 **15 Claims**

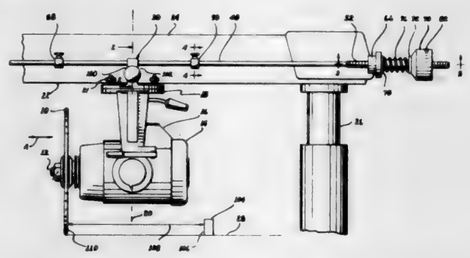


A submerged buoy anchored to the sea bottom at depths below surface hazards. A vertically extendable mooring-transfer apparatus defining an accumulator volume, and providing manifold means fitting it as a mooring attachment for tankers and other types of ships, and for connecting to the receiving or delivery pipelines of such ships. Submerged pipelines connecting the extendable apparatus to shore or other supply or receiving points. Means for receiving-delivering oil through said pipes and apparatus and between said ships and shore or other points, and for pressuring said accumulator volume to extend said apparatus to operating position above, at, or near the surface.

3,664,389
LATERAL ADJUSTMENT MEANS FOR RADIAL ARM SAWS

Exil E. Bower, 1430 West 4th Place, Mesa, Ariz.

Filed June 1, 1970, Ser. No. 41,871
Int. Cl. B27b *5/28*
U.S. Cl. 143—6 A **7 Claims**



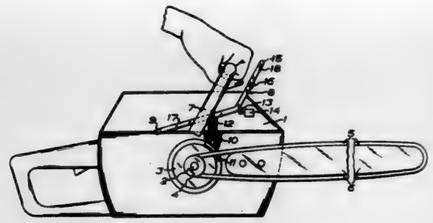
A lateral adjustment means for radial arm saws comprising an elongated traverse rod precisely axially adjustable in a longitudinal direction relative to the radial arm of a radial arm saw and means fixed to the carriage of a respective radial arm saw adapted to traverse said traverse rod longitudinally thereof and means for releasably fixing said last mentioned means to said traverse rod.

3,664,390
SAFETY MEANS FOR POWER-DRIVEN CHAIN SAWS

Leif Erling M. Mattsson, and Karl Garry Kenneth Fredriksson, both of Brastad, Sweden, assignors to Jonsereds Fabrikers Aktiebolag, Jonsered, Sweden

Filed Oct. 20, 1970, Ser. No. 82,342
Claims priority, application Sweden, Oct. 29, 1969, 14771
Int. Cl. B27b *17/02;* **B27g** *19/00*
U.S. Cl. 143—32 R **6 Claims**

In a chain saw driven by an internal combustion engine a safety means comprising switch and brake means adapted to break the ignition current of the engine and stop the saw chain, and actuating means which is situated in a position in front of the handle of the saw and arranged to be operated by

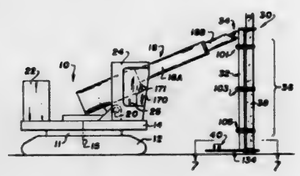


the hand of the operator in case of an accident to bring said switch and brake means into operation to stop the engine and the saw chain.

3,664,391
TREE CUTTING AND PILING APPARATUS

Horace D. Coffey, P.O. Box 211, Quesnel, British Columbia, Canada

Filed Mar. 16, 1970, Ser. No. 19,696
Int. Cl. B27b *17/02, 11/12;* **A01g** *23/08*
U.S. Cl. 143—32 N **6 Claims**



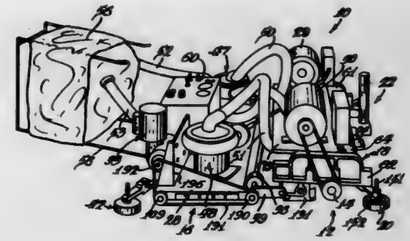
Apparatus having a mast the upper end of which is secured to a boom and the lower end of which supports a saw. Gripping devices on the mast grasp and hold a tree as the tree is engaged by the saw. The saw includes a support plate which is entered into the kerf as the cut progresses and, at the completion of the cut, the support plate can be used to form a seat for the butt end of the tree. The gripping devices are independently operable to obtain a grip on a second tree while a first tree is still clamped to the mast. The connection between the boom and mast is such that the mast is rotatable to a horizontal position wherein the tree is suspended below the mast which is movable by the boom both vertically and horizontally to deposit the tree at an adjacent unloading site.

3,664,392
LANE RESURFACER WITH CUTTER POSITION CONTROL ECCENTRICS

Anthony J. Gretsky, Muskegon, Mich., assignor to Brunswick Corporation

Filed Dec. 23, 1969, Ser. No. 887,598
Int. Cl. B27c *1/02*
U.S. Cl. 144—117 C **23 Claims**

A lane resurfacer for a bowling lane having a carriage with a milling cutter mounted for rotation transversely thereof, there being provide a front skid for supporting the carriage and two laterally spaced rear skids, with means to vary the cutting depth as desired, and means to vary the inclination of the milling cutter in response to an automatic level detector, the cutting depth adjustments being effected by a first pair of eccentrics carrying the laterally spaced rear carriage skids,

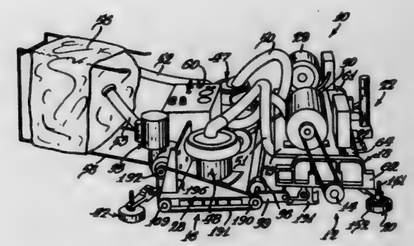


and the level adjustments being effected by a second pair of eccentrics mounting the cutter frame.

3,664,393
LANE RESURFACER

David P. J. McLeod, and Anthony J. Gretzky, both of Muskegon, Mich., assignors to Brunswick Corporation

Filed Dec. 23, 1969, Ser. No. 887,599
Int. Cl. B27c *1/02*
U.S. Cl. 144—117 C **10 Claims**



A lane resurfacer having a cutter carriage slidably supported on the lane to be resurfaced with a travel unit independently supported for movement on the lane and interconnected to drive the cutter carriage, with the cutter carriage having lane engaging supports spaced a short distance apart to improve resurfacing accuracies, and with a selective locking linkage, locking the cutter carriage to the travel unit as a portion of the carriage support goes over the end of the lane to maintain an accurate resurfacing to the tail plank of the lane.

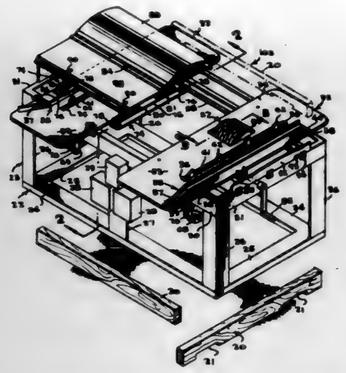
3,664,394
DOUBLE HEAD NOTCHING MACHINE

Sylvan O. Wells, Springfield, Mo., assignor to Kenwal Machine Company, Inc., East Harrison, Republic, Mo.

Filed Nov. 14, 1969, Ser. No. 876,795
Int. Cl. B27c *5/06*
U.S. Cl. 144—133 R **3 Claims**

A double head notching machine for pallet stringers

wherein there is provided a pair of cutting heads, a crank ad-

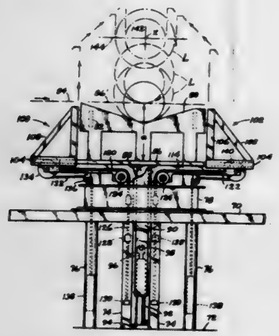


justment, spring loaded hold down mechanisms, and a feed mechanism.

3,664,395
LOG PRE-CENTERING APPARATUS FOR VENEER LATHES

Gaylard O. Reed, Portland, Oreg., assignor to Salem Equipment, Inc., Salem, Oreg.

Filed Apr. 3, 1970, Ser. No. 25,368
Int. Cl. B27l 5/02
U.S. Cl. 144—209 A 14 Claims



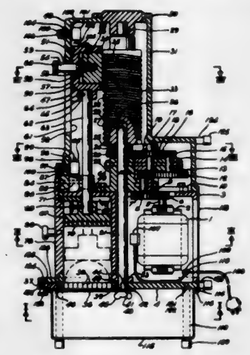
Each of a pair of independently, vertically movable log-supporting bases mounts a pair of opposed knees for confining a log between them. The knees are movable horizontally inward in direct proportion to the vertical movement of the associated base, so that when the confronting faces of the knees are brought into abutment with a log supported on the bases the axial centerline of the log is aligned with the axial center of log transfer mechanism which, in turn, is aligned with the rotational axis of veneer lathe chucks in the log transferring position of said mechanism.

3,664,396
DICING MACHINE

Gerard A. Tremblay, 2780 Jeanne D'Arc Ave., Apt. 1, Montreal 403, Quebec, Canada

Filed Jan. 4, 1971, Ser. No. 103,430
Int. Cl. B26d 3/26
U.S. Cl. 146—78 A 8 Claims

A reversible motor is connected through a speed reducing drive train to rotate a worm having pitched and pitchless grooves to advance intermittantly a ram mounted pressing head within a box fastened to a face plate holding interchangeable cutting frames and orificed plates to produce desired protrusions; the same drive train to rotate a shaft to which attach interchangeable cutting knives to revolve flush with the outward face of said face plate to sever the extrusions only upon the stationary position of said pressing head. The length of the extrusions for dicing is determined by the distance between the centers of the pitched and pitchless grooves of said worm, which is equal to the spacing between

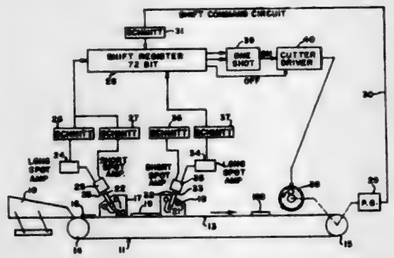


the blades disposed in quadrillations of the specific cutting frame chosen to produce said square extrusions. Reversing the rotation of the motor retracts the pressing head to its starting position in the box. A motor switch supplies electrical power to the motor and its direction of rotation is controlled by a forward reverse switch actuated by the closing and opening of the box door. A forward rotation limit switch stops the motor automatically at the completion of a full extrusion cycle and a reverse rotation limit switch stops the motor automatically at the completion of a full retracting cycle.

3,664,397
APPARATUS AND METHOD FOR DETECTING AND PROCESSING MATERIALS ACCORDING TO COLOR OR SHADE VARIATIONS THEREON

George W. Raye, Noroton, Conn.; Henry J. Dumas, Jr., Framingham, Mass., and Lloyd N. Duncan, Caribou, Maine, assignors to American Kitchen Foods, Inc., Greenwich, Conn.

Original application Mar. 9, 1966, Ser. No. 533,037, now Patent No. 3,543,035. Divided and this application Mar. 24, 1970, Ser. No. 24,907
Int. Cl. B26d 5/06
U.S. Cl. 146—117 R 5 Claims

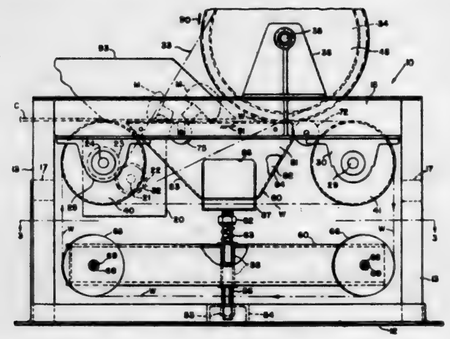


A rotary cutter for use in an apparatus for the inspection and removal of defects from strip-like articles in which the cutter is a rotary driven member having a plurality of slots containing blade members which are capable of movement between a retracted position and a cutting position and are activated to a cutting position in response to signals from an inspection device.

3,664,398
MUSHROOM SLICER

Richard E. Moyer, 2815 Baird Road, Fairport, N.Y.

Filed Jan. 7, 1971, Ser. No. 104,657
Int. Cl. B26d 4/06
U.S. Cl. 146—129 R 15 Claims



An endless wire is wound a plurality of times around a pair of spaced parallel drums and two pulleys whose axes are inclined to the axes of the drums. Each drum has in its periphery a plurality of axially spaced grooves for guiding the upper reaches of the wire in closely spaced relation. A third rotary, grooved drum is disposed above the upper reaches of the wire and in operative relation thereto. The mushrooms, which are to be sliced, are fed, their stems parallel to the upper reaches of the wire, into the nip between said upper reaches, and the third drum. The third drum forces an advancing mushroom downwardly through the upper wire reaches slicing mushrooms simultaneously into a plurality of slices of uniform thickness.

3,664,399
GOLF CLUB HEAD PROTECTOR

Samuel G. Neff, River Road Route #2, Beaver Falls, Pa.

Filed Feb. 18, 1970, Ser. No. 12,398
Int. Cl. B65d 65/02
U.S. Cl. 150—1.5 R 8 Claims

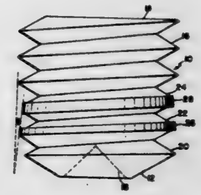


This disclosure pertains to a protector for the heads of the wooded golf clubs of a set of clubs which is mounted on the conventional tube carried in golf bags for receiving the golf club. This protector has cooperating cover and body portions for housing and protecting the heads of the "woods" golf clubs and a shank portion which partially encircles the shaft of the club so as to expose a portion of the shaft for affording easy access thereto for quick removal of the club from the tube and the protector when the cover portion is in its open position. The protector is capable of adjustment with respect to the tube to accommodate clubs of different lengths and golfers of different heights.

3,664,400
LOCKING SET SCREW

Harrington Moore, Newbury, Mass., assignor to George W. Moore, Inc., Waltham, Mass.

Filed Mar. 2, 1970, Ser. No. 15,522
Int. Cl. F16b 39/30
U.S. Cl. 151—22 3 Claims

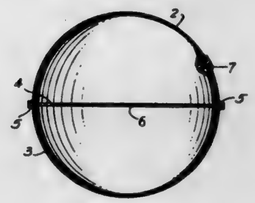


A locking set screw is provided by forming a screw with threads of conventional configuration and then rolling two or more of the thread crests on a taper. The taper-rolled threads bite into the threads of a nut or other tapped part to which the screw is threaded and with tapered rolling the locking connection of one thread is in a different plane from the locking connection of the other thread.

3,664,401
METHOD FOR THE MANUFACTURE OF INFLATED ARTICLES

Louis Trovati, Lyon, France, assignor to Dodelino S.A.

Filed Oct. 24, 1969, Ser. No. 869,318
Int. Cl. B32b 31/06
U.S. Cl. 156—145 5 Claims



A method of manufacturing inflated articles of plastics materials, of which the shapes and volumes are obtained by controlled over-extension of the plastics films, consists in fabricating a central section of the article by a film or a sheet of substantially unelastic plastics material, having a coefficient of extensibility as low as possible. The periphery is made to correspond to the profile of the desired section, this film being sandwiched between two films of plastics material of the same shape, to whose edges it is bonded by welding. At least, one film comprises an inflating valve. The article is inflated to a definite pressure by the desired deformation of the outer films as a function of their nature and their thickness, the balancing of the inflating pressures, on each

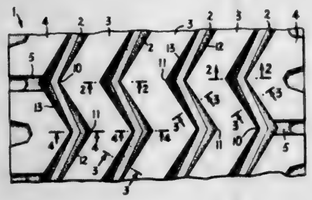
side of the central film being ensured by a communicating orifice arranged at the center of the central film. Preferably, the orifice arranged at the center of the central film has a profile geometrically similar to that of the section of the fabricated article through the said central film, e.g. circular. The cutting out and welding of the films may be effected in a single operation. The plastics material may be polyvinyl chloride.

3,664,402

TREAD FOR HEAVY-DUTY RADIAL-CARCASS TIRE

Jean B. Montagne, Cebazat, France, assignor to Compagnie Generale Des Etablissements Michelin raison sociale Michelin & Cie, Clermont-Ferrand (Puy-de-Dome), France

Filed June 15, 1970, Ser. No. 46,282
Claims priority, application France, June 19, 1969, 6920626
Int. Cl. B60c *11/04, 11/06*
U.S. Cl. 152—209 **6 Claims**



A tire tread formed with circumferential zigzag ribs bordered by circumferential zigzag grooves is characterized in that the lateral walls of the ribs have a variable inclination with respect to the perpendicular to the tread. The minimum inclination is close to and on the side of portions of the ribs that project with respect to the grooves, and the maximum inclination is close to and on the side of portions of the ribs that are re-entrant with respect to the grooves.

3,664,403

VULCANIZED RUBBER COMPRISING A SILICEOUS PIGMENT, A RUBBER AND AN ORGANIC COUPLING AGENT HAVING AN ACTIVE OLEFINIC LINKAGE

Thomas J. Doran, Norton; Melvin P. Wagner, Barberton, and Henry C. Stevens, Akron, all of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed July 7, 1969, Ser. No. 839,644
Int. Cl. B60c *5/00;* **C08d** *13/20*
U.S. Cl. 152—330 **14 Claims**

The novel rubber compound and tire tread made therefrom include a silica-filled unsaturated rubber compound and a reactive olefinic coupling agent such as 5-triethoxysilyl norbornene. The coupling agent is a compound which forms a bond or connection between the rubber polymer and the silica.

3,664,404

PNEUMATIC VEHICLE TIRE

Georg Twardzik, Marienhagen, Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany

Filed June 8, 1970, Ser. No. 44,061
Claims priority, application Germany, June 9, 1969, P 19 29 174.8
Int. Cl. B60c *9/20*
U.S. Cl. 152—361 **1 Claim**

A pneumatic tire with a belt extending over the width of the tread strip and comprising two superimposed laterally free ending steel wire layers with the strength members of one of said layers extending in one inclined direction and with the strength members of the other one of said layers extending in the oppositely inclined direction while between said two cord fabric layers of the belt within the marginal regions thereof there are interposed folded textile cord fabric



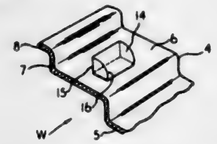
layers, the strength members of said steel wire layers and the strength members of the respective adjacent folded over sections being inclined in the same direction.

3,664,405

WHEELS

James Poyner, Burntwood, England, assignor to The Dunlop Holdings Limited, London, England

Filed June 17, 1970, Ser. No. 47,093
Claims priority, application Great Britain, Jan. 10, 1970, 1,311/70
Int. Cl. B60b *25/00*
U.S. Cl. 152—375 **6 Claims**



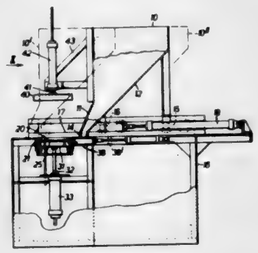
A wheel for a pneumatic tire, particularly for use on racing cars, provided with at least one localized projection axially inwards of the wheel rim for preventing axially inwards displacement of the tire bead from the wheel rim flange and into the wheel well. Preferably the projections are members welded to the rim and formed with axially outward tire bead toe abutment faces and axially inwards sloping faces to assist tire fitting.

3,664,406

MOLD MAKING MACHINES

Desmond Leonard Mawson, Sherwood, Aston near Sheffield, and Bernard Malone, Mytchett, Camberley, both of England, assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Dec. 1, 1969, Ser. No. 881,276
Int. Cl. B22c *13/02, 5/12*
U.S. Cl. 164—161 **11 Claims**



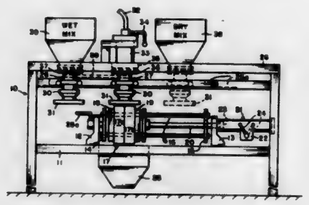
An apparatus is provided for use in producing shell molds particularly suited to stack molding operations. In one embodiment, there is provided an electrically heated pressure plate which is arranged above the pattern frame so that it can be lowered by means of a pneumatic cylinder to compact and cure granular material treated with a bonding agent, such as resin coated sand, in the core box. In another embodiment in which the apparatus is used to make hollow shell molds, the heater plate above the core box is replaced by an electrically heated or gas heated hood. In this arrangement, the pattern frame is hinged so that it can be inverted to remove surplus sand from the pattern frame, after which the heated hood is lowered by means of a pneumatic cylinder to a position over the pattern frame to cure the back of the shell mold. The resulting cured sand molds are ready for immediate use in stack molding without further handling.

3,664,407

APPARATUS FOR MAKING SHELL MOLDS

Robert H. Barron, 8414 Buckthorn, Berkeley, Mo.

Original application Feb. 27, 1967, Ser. No. 618,772, now Patent No. 3,511,302. Divided and this application Oct. 20, 1969, Ser. No. 870,706
Int. Cl. B22c *13/08*
U.S. Cl. 164—165 **9 Claims**



The subject shell mold consists of applying dry molding sand the granules of which are coated with a resin binder to a heated pattern to render the sand capable of faithfully reproducing the shape of the pattern with as thin a facing layer of the binder treated sand as is possible so that the least amount of finer grades of sand are used to make a mold as thin as possible. The subject shell mold is the product or the result of a process in which the formation of the shell mold, before its removal, has applied thereto a wet backfill mixture of refractory media and an air-set binder as a backing to the shell to render it rigid for withdrawal from the pattern and strong enough to stand up during the pouring of molten metal and its solidification. Thereafter the mold is intended to break down so that the material may be easily separated from the solidified casting. The resulting shell mold is gas permeable and obtains high fidelity of pattern shape reproduction and dimensions.

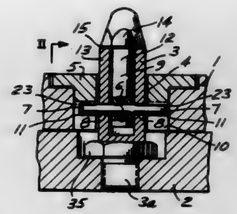
3,664,408

DEVICE FOR FASTENING A PATTERN PLATE TO A MOLD TABLE OR BOX

Helmut Eibe, Offenbach am Main, Germany, assignor to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Offenbach am Main, Germany

Filed June 2, 1970, Ser. No. 42,842
Claims priority, application Germany, June 4, 1969, P 19 28 362.6
Int. Cl. B22c *7/04*
U.S. Cl. 164—241 **14 Claims**

A pattern plate is releasably fastened to a mold table or box of a molding machine in a locally fixed position by extending a guide or locating pin through a suitably dimensioned and located guide hole in the pattern plate, and providing a cam follower riding on a helicoidal surface provided on or coacting with one of the two parts to be fastened to each other. Turning of the cam follower and the helicoidal



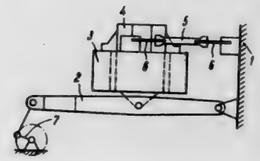
surface relative to each other causes pulling of the table or box and of the pattern plate against each other.

3,664,409

MOLD ROCKING MECHANISM IN A CONTINUOUS METAL CASTING PLANT

Adolf Petrovich Kolomeitsev, ulitsa Ilicha, 4, kv.2, and Vladimir Igorevich Kulikov, prospekt Ordzhonikidze, 3, kv.I, both of Sverdlovsk, U.S.S.R.

Filed Aug. 8, 1969, Ser. No. 848,478
Int. Cl. B22d *11/02*
U.S. Cl. 164—260 **4 Claims**



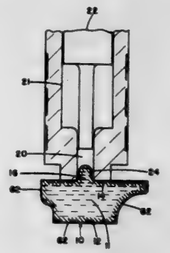
A mold-rocking mechanism installed in a continuous metal casting plant, comprises a system of pivotal links on which is mounted a frame carrying the mold. The link system includes links which resist only forces directed along their axes and these links are attached to the frame and to the framework of the plant by means of flexible members.

3,664,410

DIE CASTING DENSIFIER AND EJECTOR APPARATUS

Daniel Edward Groteke, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.

Filed June 12, 1969, Ser. No. 833,912
Int. Cl. B22d *17/22*
U.S. Cl. 164—303 **6 Claims**



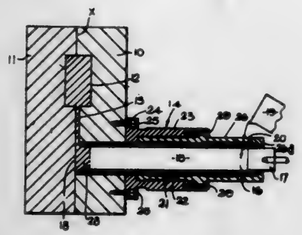
Covers metal casting methods and apparatus to minimize the formation of voids and to improve the quality of the final cast product. The casting mold, which is preferably posi-

tioned adjacent to other parts of the casting apparatus, is provided with an opening preferably adjacent to a "hot spot" of the casting space where the poured metal would be expected to solidify at a relatively slower rate, so that some of the molten metal will reach through and beyond the opening and form a metallic nib or projection. The casting equipment, which includes a movable rod, is operated to drive the rod against the nib or projection to force it through the opening surface and into pressurized contact with the casting material to overcome the voids which would otherwise be produced within the cast product.

3,664,411
DIE-CASTING APPARATUS WITH CERAMIC SHOT DUCT LINER

Bryan George Carver, Birmingham, and Ronald Crooks, Wolverhampton, both of England, assignors to G.K.N. Group Services Limited, Wurley, England

Filed Oct. 19, 1970, Ser. No. 82,220
Claims priority, application Great Britain, Oct. 25, 1969, 52,378/69
Int. Cl. B22d *17/10*
U.S. Cl. 164—312 9 Claims

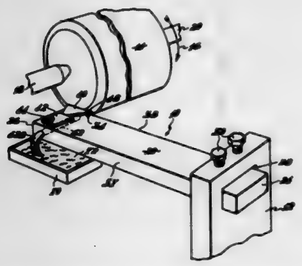


Die-casting apparatus, primarily for ferrous metals, in which the shot duct comprises a ceramic liner supported by a casing, the liner and the casing being of complementary tapered form and assembled together as a press fit. The casing may be shrunk onto the liner and may be so dimensioned that, at the working temperature, the liner is under radial compression.

3,664,412
COOLING SYSTEM FOR CUTTING TOOL AND THE LIKE

Ronald D. Zerkle, Cincinnati, Ohio, assignor to Neal P. Jeffries, Cincinnati, Ohio, a part interest

Original application Apr. 4, 1968, Ser. No. 718,772, now Patent No. 3,571,877, dated Mar. 23, 1971. Divided and this application Dec. 22, 1970, Ser. No. 100,589
Int. Cl. F28f *13/00*
U.S. Cl. 165—1 2 Claims

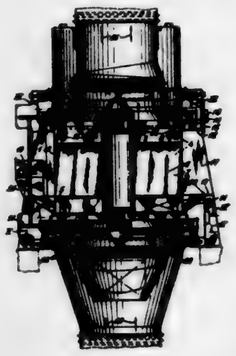


A cutting tool cooling system including a cutting tool having an external cutting edge and an internal cavity with a heat receiving surface in heat exchange and fluid sealed relationship to the cutting edge, and a coolant in the cavity vaporizable at the cavity heat receiving surface for extracting heat therefrom and thereby cooling the tool cutting edge.

3,664,413
COLLECTION HEAT EXCHANGERS FOR GASEOUS FLUIDS IN GENERAL, PARTICULARLY HEATERS OF BURNING AIR FOR STEAM HEATERS IN MARINE AND LAND INSTALLATIONS

Carlo Bo, Genoa, Italy, assignor to Ansaldo Meccanico-Nucleare S.p.A., Genoa, Italy

Filed Nov. 10, 1969, Ser. No. 875,313
Claims priority, application Italy, May 31, 1969, 7079 A/69
Int. Cl. F28d *17/04*
U.S. Cl. 165—4 12 Claims



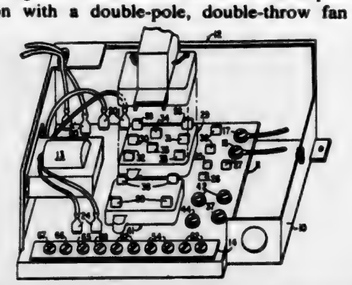
A regenerative heat exchanger of the type used in heating air for furnaces by the heat of gaseous combination products comprises a stationary cylindrical casing divided by flat radial walls into a plurality of like compartments. Regenerative material occupies central portions of the compartments while leaving distribution spaces at opposite ends. The cylindrical casing is disposed between two stationary concentric pipe connections at opposite ends of the casing for supplying, transporting and discharging the air and combustion products respectively. Valving of the gas and air successively to the several compartments containing the regenerative material is effected by circular flat plates disposed at opposite ends of the cylindrical casing and between the casing and the pipe connections. Each plate has at least one port for each of the gaseous fluids disposed facing the respective pipe connection. The plates are rotatably supported and are driven in synchronism with one another. Sealing means is provided between the plates, cylindrical casing and pipe connections.

3,664,414
FURNACE HAVING MULTIPLE SPEED MOTOR AND ACCESSORY CONTROL SYSTEM

William F. Raleigh, Hacienda Heights, Calif., assignor to Carrier Corporation, Syracuse, N.Y.

Original application July 23, 1969, Ser. No. 827,223. Divided and this application July 6, 1970, Ser. No. 60,985
Int. Cl. F25b *29/00*
U.S. Cl. 165—/26 2 Claims

A heating and cooling system including a furnace having a control module comprising a prewired printed circuit board having a pair of line voltage conductors connected to the primary winding of a power transformer and a pair of low voltage conductors connected to the secondary winding of a power transformer. Terminal means are provided for connecting a plug-in fan relay and a thermostat in the low voltage circuit. Additional terminal means are provided for connecting a fan motor and a humidifier and humidifier relay to the line voltage circuit. Terminal means are also provided in conjunction with a double-pole, double-throw fan motor



relay switch for connecting an air cleaner accessory unit to the circuit. The circuit is arranged to provide the desired optimum programing of control functions with any combination of accessories.

3,664,415
METHOD AND APPARATUS FOR TESTING WELLS

Gary Q. Wray, Duncan, Okla., and George E. Petty, Montalve, Calif., assignors to Halliburton Company, Duncan, Okla.

Filed Sept. 14, 1970, Ser. No. 71,695
Int. Cl. E21b *27/00*
U.S. Cl. 166—.5 20 Claims



A method and apparatus for testing offshore wells where variations in well annulus pressure are utilized to control the valving operation of a testing tool and entrap a formation sample.

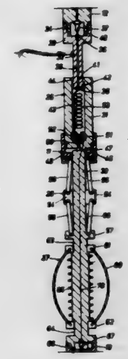
A confined body of pressurized fluid positioned in a testing string is utilized to predetermine the annulus pressure changes which will effect said valving and sample entrapping operations.

3,664,416
WIRELINE WELL TOOL ANCHORING SYSTEM

Yves Nicolas, Versailles, and Jean-Loup Bonnet, Essonne, both of France, assignors to Schumberger Technology Corporation, New York, N.Y.

Filed June 1, 1970, Ser. No. 42,179
Claims priority, application France, June 3, 1969, 6918133
Int. Cl. E21b *23/00*
U.S. Cl. 166—65 8 Claims

An illustrative embodiment of the present invention includes apparatus for use in anchoring a probe in a well bore. The apparatus includes a body member which is attached to the upper part of the probe. A ballast weight is telescopically mounted on the body member and is attached to the wireline cable for operating the device. Movement of the ballast

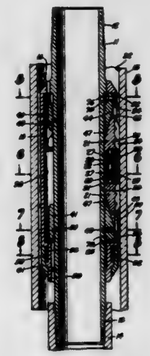


weight is amplified by a force multiplying hydraulic system and utilized to spread anchoring means outwardly against the wall of the well bore. A surface-actuated solenoid control valve may be utilized to control the anchoring system.

3,664,417
TUBING ANCHOR AND CATCHER

Martin B. Conrad, 1980 Paquita Drive, Carpinteria, Calif.

Filed Sept. 4, 1970, Ser. No. 69,664
Int. Cl. E21b *23/00*
U.S. Cl. 166—216 19 Claims



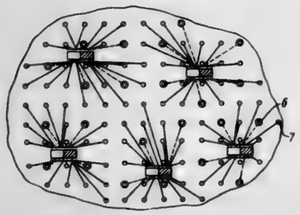
A tubing anchor and catcher set by rotary motion of a threaded mandrel employs slip-cone rings on the mandrel to move wedge slip members outward into engagement with the casing. The wedge slip members are interfitted with friction dragblock members frictionally engaging the casing. Springs confined between each wedge slip member and its respective dragblock member hold the wedge slip member in retracted position against the mandrel surface and move the dragblock member into casing engagement while running in the hole. The wedge slip members are carried directly on the slip-cone rings without any intermediate supporting member. An emergency release is provided by a shear ring between the mandrel and one of the slip-cone rings. In the modified form of the device, an emergency release is provided by continued turning of the mandrel in the same direction used to set the wedge slip members, to shear the ring.

3,664,418

METHOD FOR THE DEVELOPMENT OF OIL FIELDS HAVING ZONALLY NON-UNIFORM COLLECTOR PROPERTIES

Valery Isaakovich Graifer, ulitsa Parizhskoi Kommuny, 17, Almetievsk; Alexandr Ivanovich Komarov, ulitsa Korobkovskogo, 66, kv. 6; Vladimir Dmitrievich Lysenko, ulitsa Tukaeva 75-a, kv. 16, both of Bugulma; Ravkhat Shagimardanovich Mingareev, ulitsa Bronnaya, 29, kv. 75, Moscow, and Enver Davydovich Mukharsky, ulitsa G. Gaflatullina, 55-V, Kv. 26, Bugulma, all of U.S.S.R.

Filed Mar. 17, 1970, Ser. No. 20,271
Int. Cl. F21b *43/16*
U.S. Cl. 166—245 3 Claims



A method for the development of oil fields, having zonally non-uniform collector properties, which method consists in that after the industrial drilling of the field, some individual sections comprising at least one injection well surrounded by production wells are selected for the independent development of the oil field, the injection well or wells passing through the maximum number of productive formations completed by said production wells.

3,664,419

OIL RECOVERY METHOD USING CRUDE OIL BASE SOLUBLE OIL COMPOSITIONS

Leroy W. Holm, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed July 22, 1970, Ser. No. 57,327
Int. Cl. E21b *43/22*
U.S. Cl. 166—274 16 Claims

Improved crude oil base soluble oils are prepared from crude oils exhibiting gravities between about 27° and 50° API and pour points below about 55° F. These soluble oil compositions contain about 45 to 90 volume percent of the selected crude oil, 4 to 30 volume percent surface active agents, 0.5 to 8 volume percent of a partially oxygenated liquid organic stabilizing agent, and up to about 60 volume percent water. Both the substantially anhydrous soluble oil containing only incidental water and the high water content microemulsions formed by the addition of from about 10 to 60 volume percent water to the soluble oil can be employed as miscible flooding agents for oil recovery and as water injection and producing oil well treating agents.

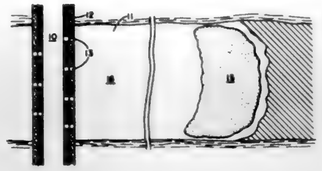
3,664,420

HYDRAULIC FRACTURING USING PETROLEUM COKE

John W. Graham; Othar M. Kiel; William M. Terry, and Albert R. Sinclair, all of Houston, Tex., assignors to Esso Production Research Company

Filed Aug. 17, 1970, Ser. No. 64,338
Int. Cl. E21b *43/26*
U.S. Cl. 166—280 11 Claims

A fluid containing suspended particles of petroleum coke is injected into a fracture formed in a subterranean formation. The injection conditions are such that the coke particles are carried to the ends of the fracture where they screen out and form low permeability zones. Continued injection of a



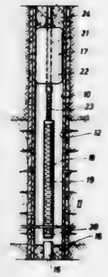
fluid produces an increase in fracture pressure increasing the dynamic width of the fracture.

3,664,421

METHODS FOR INHIBITING THE PRODUCTION OF LOOSE FORMATION MATERIALS

Harold J. Urbanosky, Pearland, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Sept. 18, 1970, Ser. No. 73,277
Int. Cl. E21b *33/134*, *43/04*
U.S. Cl. 166—278 9 Claims



As a representative embodiment of the methods of the invention disclosed herein, a through-tubing bridge plug having an expansible packing element and a tubular screen dependently coupled thereto is passed through a production string into a well bore therebelow and positioned adjacent to a perforated formation interval containing loose formation materials. The initial production of connate fluids from the well is controlled at a reduced rate for slowly drawing loose formation materials into the perforated well bore interval to at least substantially fill the annular space around the tubular screen with such formation materials. Then, once it is believed that the annular space around the tubular screen is filled with such loose formation materials, production of the well is commenced in the usual manner with the packed formation materials around the screen serving as a filter media to inhibit the entrance of further formation materials into the well bore.

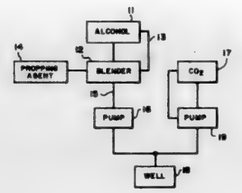
3,664,422

WELL FRACTURING METHOD EMPLOYING A LIQUIFIED GAS AND PROPPING AGENTS ENTRAINED IN A FLUID

Ronald S. Bullen, Calgary, Alberta, Canada, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 17, 1970, Ser. No. 64,271
Int. Cl. E21b *43/26*
U.S. Cl. 166—283 14 Claims

The formations surrounding a well bore are subjected to hydraulic fracturing. A liquified gas and a fluid containing entrained propping agents are injected into the formations.



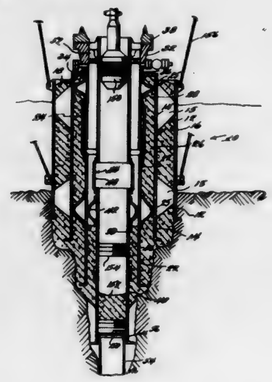
The liquified gas returns to its gaseous state and is therefore easily removed from the formation.

3,664,423

TIE-BACK SYSTEM FOR UNDERWATER COMPLETION

Marvin L. Holbert, Jr., Houston, Tex., assignor to Gray Tool Company, Houston, Tex.

Filed Mar. 23, 1970, Ser. No. 21,980
Int. Cl. E21b *29/00*
U.S. Cl. 166—297 7 Claims



The tie-back collar of an inner casing is provided with a protector sleeve which is sealed in place and supported against rotation. To temporarily abandon the well after the annulus between the inner and an outer string has been fully cemented up past the tie-back collar, the inner and outer strings are severed with a casing cutter above the tie-back collar. When tying back into the well, a spear may be used to retrieve the remaining part of the protector and a thread-in or stab-in tie-back sub may then be connected to the inner string to reestablish communication with the well.

3,664,424

METHOD FOR INSULATING A WELL

Walter L. Penberthy, Jr.; Jack H. Bayless, and Robert C. West, all of Houston, Tex., assignors to Esso Production Research Company

Filed Dec. 21, 1970, Ser. No. 100,462
Int. Cl. E21b *43/24*
U.S. Cl. 166—303 10 Claims

An improved method for thermally insulating a well for use in a thermal process for oil recovery. In a process for forming a coating of alkali metal silicate on a tubing string within the well, excess alkali metal silicate solution is displaced from the tubing-well annular space by a fluid having a low solubility for the silicate coating.

3,664,425

WELL INSULATION METHOD

Walter L. Penberthy; Jack H. Bayless, and Robert C. Ayers, Jr., all of Houston, Tex., assignors to Esso Production Research Company

Filed Dec. 21, 1970, Ser. No. 100,499
Int. Cl. E21b *43/24*
U.S. Cl. 166—303 10 Claims

A method for thermally insulating a well which may be used in a thermal process for oil recovery. The well is insulated by boiling a solution containing a water-soluble alkali metal silicate and a foaming agent in contact with the well tubing to form a coating of alkali metal silicate on the tubing. The foaming agent assists in removing excess silicate solution from the well annulus and improves the quality of the coating on the tubing.

3,664,426

HYDRAULIC FRACTURING METHOD

Martin E. Chenevert, Houston, Tex., assignor to Esso Production Research Company

Continuation-in-part of application Ser. No. 726,693, May 6, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 675,490, Oct. 16, 1967, now abandoned, and a continuation-in-part of 699,255, Jan. 19, 1968, now abandoned. This application May 4, 1970, Ser. No. 34,216
Int. Cl. E21b *43/26*
U.S. Cl. 166—308 12 Claims

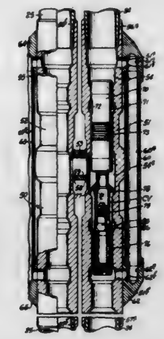
A method of fracturing water-sensitive formations is disclosed. The new method involves determining the aqueous vapor pressure of the formation and injecting a fluid having a continuous oil phase and a dispersed water phase containing a sufficient quantity of a water-soluble aqueous vapor pressure depressant therein to reduce the aqueous vapor pressure of the fluid to a level that is about equal to that of the formation into the formation at a pressure and rate sufficient to open a fracture in the formation.

3,664,427

WELL FLOW CONTROLLING SYSTEMS, METHODS AND APPARATUS

Thomas Michael Deaton, Dallas, Tex., assignor to Otic Engineering Corporation, Dallas, Tex.

Filed Nov. 23, 1970, Ser. No. 91,761
Int. Cl. E21b *23/00*, *43/00*
U.S. Cl. 166—313 14 Claims



A well flow controlling system, method and apparatus for wells having a plurality of flow conductors therein for establishing flow communication between pairs of the flow conductors at a point down-hole in the well by opening normally closed valve means and positively holding the valve means open during operations of circulating or flowing fluids

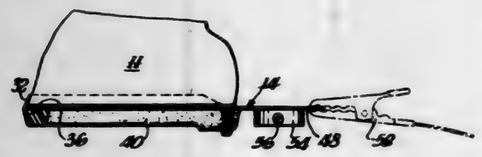
through the conductors in the well until it is desired to close the valve to shut off flow communication between the pairs of conductors. The valve is pressure operable to open position by pressure of fluids in the conduits and is held open mechanically to permit the flow or circulation of fluids at pressures lower than the pressure required to open the valve. The valve is also fluid pressure operable for movement to closed position. A pressure responsive valve for controlling fluid flow between a pair of well flow conduits connected together by a cross-flow passage at a subsurface point in a well to provide U-tube flow communication between the conduits to permit circulation of fluids through the conduits to move well tools into and out of the well through one or the other of the conduits or to perform other service or production operations in the well. The valve is positively mechanically held in open position when moved to such open position to permit circulation of fluids at pressures lower than the pressures required to move the valve to open or closed positions.

3,664,428

HORSESHOE MANUFACTURE ELECTRICALLY RESISTIVE HORSESHOE AND METHOD OF ATTACHMENT

Dudley W. C. Spencer, 619 Shipley Rd., Wilmington, Del.

Filed Sept. 10, 1970, Ser. No. 71,121
Int. Cl. A01l *5/00*
U.S. Cl. 168—4 **31 Claims**



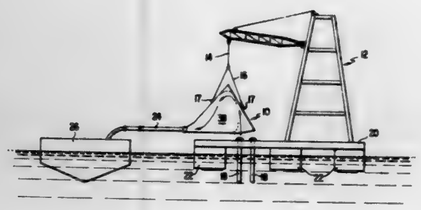
A horseshoe includes an electrically resistive stiffening frame which is secured to the hoof by means of thermo accelerated adhesive. The frame is provided with tabs so that electrical power may be applied to the tabs for accelerating the curing of the adheaive.

3,664,429

APPARATUS FOR PREVENTING POLLUTION FROM OFFSHORE OIL WELLS

Eugene G. Jones, 2637 N. Johnson St., New Orleans, La.

Filed June 7, 1971, Ser. No. 150,430
Int. Cl. A62c *3/00*
U.S. Cl. 169—2 R **8 Claims**



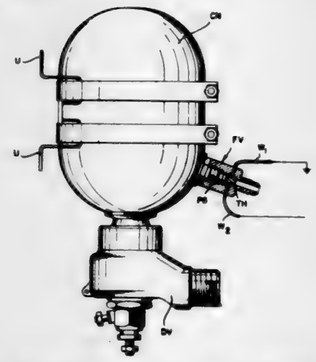
An apparatus for catching oil from high pressure offshore oil wells so as to prevent pollution of the adjacent water. A substantially enclosed container is provided with an entrance throat area at one end of the container, and an exit at an opposite end thereof. The incoming oil from the oil wells is deflected rearwardly by a formed front wall means whereby the oil is deflected rearwardly of an upturned marginal edge of a bottom wall for the substantially enclosed container and is removed therefrom, preferably by gravity. The bottom wall ensures that no oil spills into and pollutes the adjacent water.

3,664,430

ELECTRICAL MONITOR FOR FIRE EXTINGUISHER

Abdul N. Sitabkhan, El Monte, Calif., assignor to HTL Industries, Inc., Monrovia, Calif.

Filed Oct. 6, 1970, Ser. No. 78,440
Int. Cl. A62c *39/02, 37/30*
U.S. Cl. 169—23 **11 Claims**



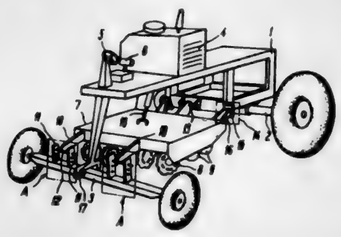
Covers a fire extinguisher for use on aircraft. The fire extinguisher includes a container equipped with mechanism for signalling the pilot in the cockpit in the event that the fire extinguishing fluid has been discharged through the safety relief valve of the container. The fire extinguisher is equipped with a thermally responsive material, which is positioned on or adjacent to the surface of the container and is electrically conductive. The material melts when its temperature reaches a predetermined value. The material is wired to the cockpit of the aircraft and the circuitry includes an indicating device, such as a lamp, to indicate instantly to the pilot that the fire extinguisher has been discharged and that, therefore, the fire extinguisher is not suitable for extinguishing a fire.

3,664,431

AGRICULTURAL SELF-PROPELLED HARVESTING MACHINE

Nikolai Vasilievich Tatianko prospekt Gagarina, 175, kv. 43; Alexandr Gavrilovich Tsymbal ulitsa Naberezhnaya, 9, kv. 4; Vladimir Vasilievich Stetsenko ulitsa Kharkovskikh divizy, 5, kv. 118; Sergei Alexandrovich Isikov ulitsa Matrosova, 8, kv. 49; Fedor Leontievich Rodenko poselok Zhikhor, ulitsa Tsiolkovskogo, 4; Alexandr Samuilovich Betcher ulitsa Bairona, 175, kv. 133; Petr Dmitrievich Shamarai prospekt Gagarina, 163/4, kv. 30; Mikhail Afanasievich Dulya prospekt Gagarina, 163/4, kv. 32; Viktor Vasilievich Dudka prospekt Gagarina, 163/4; Ivan Petrovich Klimchuk ulitsa Pyatigorskaya, 8, kv. 76; Anatoly Mikhailovich Dolgov, prospekt Gagarina, 169, kv. 89, all of Kharkov, U.S.S.R.

Filed July 15, 1970, Ser. No. 55,160
Int. Cl. A01d *25/04*
U.S. Cl. 171—58 **2 Claims**



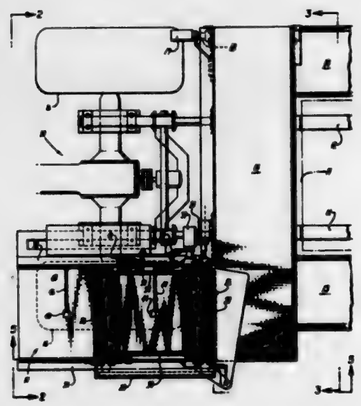
In an agricultural self-propelled harvesting machine a hinge-joint connection of the fixed frame with the movable frame which carries the working members, said hinge-joint connection enabling the movable frame to turn both round the longitudinal and the transverse axes of the machine. The front axle of the machine carries stop blocks upon which the cantilevers of the movable frame are free to rest, said stop blocks enabling the movable frame to move both horizontally and vertically depending upon the variation of the front axle position.

3,664,432

SOD HANDLING APPARATUS

John F. Nunes, Jr., 2037 Loquot Ave., Patterson, Calif.

Filed Mar. 17, 1969, Ser. No. 807,594
Int. Cl. A01b *45/04*
U.S. Cl. 172—19 **11 Claims**



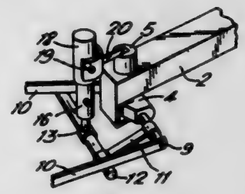
A sod handling apparatus for folding sod employs a first means for engaging and advancing a length of sod relative to the apparatus while a second means for further engaging and advancing the length of sod is selectively reversible. Means are provided for detecting an appropriate moment for reversing the feeding of the forward portion of the sod. At that time, the forward feeding means is reversed and raised to form a gap through which cyclically moving surfaces travel in a common direction so as to feed the folded edge of the sod through the gap and onto a conveyor forming a continuation of the original sod path. A cross conveyor is mounted to receive the rearwardly advancing folded sod whereby workmen standing in work stations of a trailing vehicle can remove the sod and place it on a pallet or other platform within the sod carrier vehicle following the sod folding apparatus. As the folded sod is placed upon the cross conveyor, a portion of the under surface of the folded sod is not permitted to contact the cross conveyor whereby the remaining portions engage the cross conveyor and serve to twist the orientation of the line of fold of the sod commodity with respect to the direction of movement of the cross conveyor. The machine pursues a method following the steps of continuously advancing a length of sod along a path, reversing the direction of movement of one of the portions of the sod relative to the movement of another portion of the same length of sod while conjointly therewith elevating the reversed portion with respect to the other portion so as to initiate folding one of the portions onto the other.

3,664,433

STABILIZER MEANS FOR PLOW WITH STEERABLE TAILWHEEL

Isak T. Bo, Randaberg Pa Jaeren, Norway, assignor to A/S Kyllingstad Plogfabrik, Kleppe, Norway

Filed June 30, 1970, Ser. No. 51,228
Claims priority, application Norway, July 1, 1969, 2744/69
Int. Cl. A01b *69/08, 59/06*
U.S. Cl. 172—450 **2 Claims**



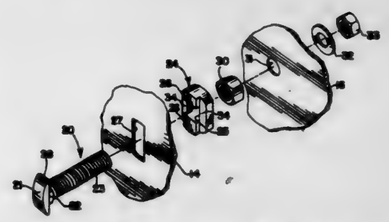
A semi-supportable plough apparatus comprises a frame carrying a number of individual plough beams and having a running wheel mounted at its rear end. A universal pivot structure comprising vertical and horizontal pivots is mounted on the frame for pivotally connecting the latter to the three-point system of a tractor. A transversely extending stabilizer rod is disposed in underlying relationship to the lower side of the draw links of a tractor and a spring mechanism interconnects the stabilizer rod and the pivot structure whereby the tendency of the frame to rotate relative to the tractor links about the horizontal pivot is yieldably limited.

3,664,434

QUICK ATTACHABLE PLANTER DISK DEPTH DRUMS

Donald E. Connor, Plainfield, and Charles Bostto, Naperville, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed July 17, 1970, Ser. No. 55,638
Int. Cl. A01b *21/08;* **A01c** *5/06;* **F16b** *35/06*
U.S. Cl. 172—536 **1 Claim**



In a planter having furrow opener discs and depth bands to control the depth of cut of the discs, means for quickly attaching the depth bands to the discs comprising a bolt having a rectangular head and a bolt retaining member adapted to be inserted into an opening in the disc and positioned therein to receive the bolt which secures the depth band to the disc.

3,664,435

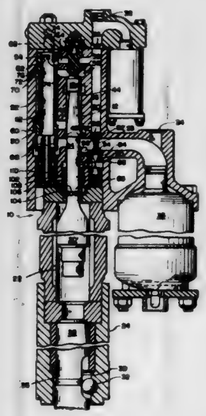
HYDRAULIC HAMMER WITH AUTOMATIC STOPPING ACTION

Ernest F. Klenig, Racine, Wis., assignor to Worthington Corporation (Worthington Compressor and Engine International Division), Holyoke, Mass.

Filed Nov. 9, 1970, Ser. No. 87,965
Int. Cl. B25d *9/18*
U.S. Cl. 173—17 **8 Claims**

An improved hydraulic hammer assembly including an automatically operable system for connecting the inlet to the

outlet and bypassing the control system of the hammer when the hammer moves past a predetermined point as when the work performing element of the assembly is not in contact with the work. In the exemplary embodiment, a bypass conduit extends from the inlet to the outlet and is normally closed by a valve. When the hammer does not move past the position where it would normally encounter the tool, the application of fluid under pressure to first and third surfaces of



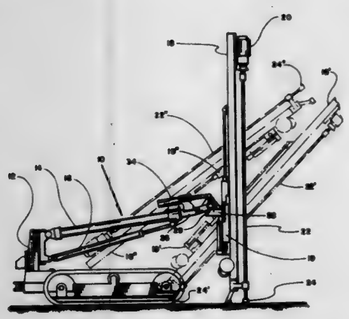
the valve maintains the valve closed notwithstanding the application of pressure to a second surface thereon in opposed hydraulic relation to the first and third surfaces. However, when the hammer moves past the position mentioned above, the third surface on the valve is vented to the outlet and the application of fluid under pressure to the second surface causes the valve to open to establish a bypass flow path for the hydraulic fluid which avoids entirely the control system used to control reciprocation of the hammer.

3,664,436

ADJUSTABLE MOUNTING FOR ROCK DRILLS

Michael A. Beagan, Jr., 255 Pleasant, Claremont, N.H.

Filed May 15, 1970, Ser. No. 37,628
Int. Cl. E21c *11/02*
U.S. Cl. 173—43 10 Claims



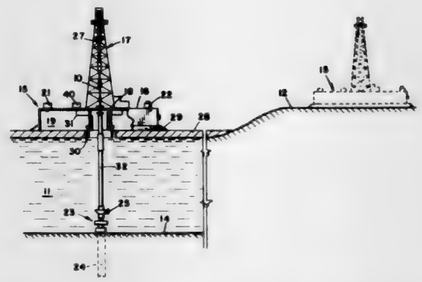
An adjustable mounting for a rock drill having a feed tilt mechanism whereby the elongated drill guide frame is pivotable by a tilt cylinder through at least 150°. This capability is made possible by the use of a cylinder rod extension having its motion controlled by a pivot arm pivotably mounted on the same yoke as is the guide frame.

3,664,437

DRILLING ON WATER AND ICE WITH A MOVABLE VESSEL

Thomas B. McCulloch, Houston, Tex., assignor to Esso Production Research Company, Houston, Tex.

Filed Jan. 23, 1970, Ser. No. 5,432
Int. Cl. E21b *7/12*
U.S. Cl. 175—5 22 Claims



Drilling operations are conducted on water and ice with a movable vessel which moves on shore as water freeze-up approaches and then moves back onto the ice after freeze-up to resume drilling operations, the well location being located by a signal and connection being established between the vessel and the well through the ice.

3,664,438

UNDERWATER ROCK CORE SAMPLING DEVICE AND METHOD OF USE THEREOF

Clifford L. Winget, Woods Hole; George W. Gibson, E. Falmouth, and William S. Sheltz, Catsumet, all of Mass., assignors to The United States of America as represented by the Secretary of the Navy

Filed Aug. 26, 1970, Ser. No. 66,935
Int. Cl. E21b *3/10, 7/12, 49/02*
U.S. Cl. 175—6 10 Claims



A rotary diamond rock core drill capable of obtaining a three-quarter inch diameter core four inches long at any depth down to 6,000 feet is provided. The drill is adapted to be used with manned deep submersibles and is operated by the submersible's power supply. The drive motor is encased in an oil-filled, pressure-compensated chamber. A water pump in the drill maintains a steady low pressure flow of

water against the sample during drilling operations, washing away rock chips and mud. The water flow may be reversed after the core has been cut, holding the specimen within the core tube as the drill is extracted from the rock outcrop. The sample is then ejected by again reversing the drive motor and pump, forcing the water flow down through the core tube and expelling the specimen.

3,664,439

INDEXING MEANS FOR DRILL ROD STORAGE RACK

Malcolm N. Council, Richardson, Tex., assignor to Gardner-Denver Company, Quincy, Ill.

Filed Oct. 2, 1970, Ser. No. 77,476
Int. Cl. E21b *19/00*
U.S. Cl. 175—85 11 Claims



A positive indexing mechanism for positioning a movable drill rod storage rack on a mobile rock drill unit. The storage rack includes spaced apart rack members having a plurality of receptacles for storing elongated drill rod sections laterally seriatim with respect to the axis of the drill string. The indexing mechanism includes movable plungers associated with the individual receptacles on one of the rack members and operable to be actuated by the drill rod sections when placed in the receptacles. The plungers are responsive to the absence of a drill rod section from a receptacle to engage a sliding catch mechanism for arresting the movement of the storage rack in a predetermined position for loading or unloading a drill rod section. A hydraulic control circuit associated with the storage rack and the indexing mechanism includes a selector valve and actuator device for providing positive alignment of the rack for removing a rod section therefrom or alternatively loading a rod section, which has been disconnected from the drill string, into an empty receptacle.

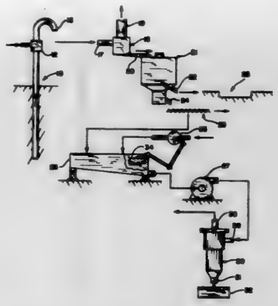
3,664,440

FORMATION CHIP SAMPLING APPARATUS

Wayland D. Elenburg, Box 1588, Monahans, Tex.

Filed Jan. 21, 1970, Ser. No. 4,546
Int. Cl. E21b *21/00*
U.S. Cl. 175—206 11 Claims

Formation chip sampling method and apparatus for separating solids from the liquid contained in drilling mud which has been obtained from an earth boring operation. The returned drilling mud is flow connected in series relationship to a gas separator, a splitter which reduces the amount of sample to be treated, and to a reservoir. A pump flow connects the reservoir to a cyclone type separator which removes the solids from the sample. The reservoir further in-



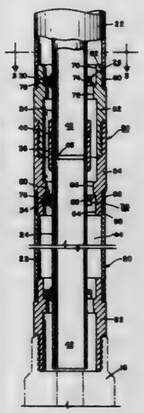
cludes a level controller which provides make-up liquid so as to provide the pump with optimum suction conditions.

3,664,441

CONCENTRIC PIPE DRILL STRING

Paul P. Carey, Houston, Tex., assignor to Carey Machine and Supply Company, Houston, Tex.

Filed June 1, 1970, Ser. No. 42,238
Int. Cl. E21b *43/00, 21/00*
U.S. Cl. 175—215 1 Claim



This invention contemplates stands of concentric drill pipes with tool joints which are disconnectable from the pipes for use in oil well drilling. The removable tool joints provide means for supporting and maintaining the inner tube in coaxial relationship within the surrounding outer pipe within each stand.

3,664,442

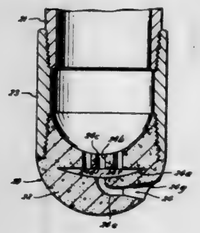
UNDERWATER PIPE POSITIONING APPARATUS

Eugene P. Rosser, and Howard I. Lorenz, both of Houston, Tex., assignors to Noble Drilling Corporation, Tulsa, Okla., by said Rosser

Filed May 11, 1970, Ser. No. 36,231
Int. Cl. F21b *9/00*
U.S. Cl. 175—231 13 Claims

In lowering a pipe string assembly from an above water drilling rig or platform into a subbottom well bore, a

destructible positioning and protecting device is affixed to the lower end of the pipe string assembly. Such positioning and protecting device comprises a protective closure member for closing the lower end of the pipe string assembly. A fluid passageway system is formed within the body of the closure member for enabling fluid to be pumped down the pipe string assembly and emitted from the closure member in a lateral



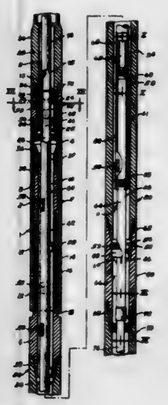
direction relative to the pipe string assembly for causing lateral movement of the lower end thereof, whereby such lower end may be brought into alignment with the mouth of the well bore. In some embodiments, a signal radiating device is carried within and protected by the closure member for use in ascertaining the position of the lower end of the pipe string assembly relative to the mouth of the well bore.

3,664,443

DUAL CIRCULATION BUMPER SUBS

John David Campbell, Wichita Falls, Tex., assignor to Walker-Neer Manufacturing Co., Inc., Wichita Falls, Tex.

Filed Nov. 28, 1969, Ser. No. 880,751
Int. Cl. E21b *1/10, 17/00*
U.S. Cl. 175—293 14 Claims



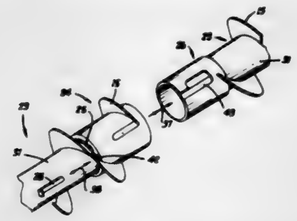
A dual circulation bumper sub comprising an outer, hollow tubular member connectable to outer tube of a string of dual tube pipe and an inner, hollow tubular member disposed inside the outer tubular member and connectable to the inner tube of a dual tube pipe string. The outer and inner tubular members have slip joints to allow vertical expansion of both the inner and outer tubular members without destroying the torque transmitting capability or the dual circulation characteristics of the dual string drilling pipe.

3,664,444

AIR DRILLING METHOD USING CONTROLLED SPLIT STREAM

William P. Henson, Indianapolis, Ind., assignor to Mobile Drilling Company, Inc., Indianapolis, Ind.

Filed May 11, 1970, Ser. No. 36,279
Int. Cl. E21b *17/046*
U.S. Cl. 175—323 4 Claims



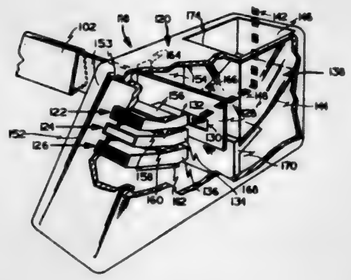
A coupling for fastening together sections of an earth boring hollow auger. An outer sleeve fastened to one end of an auger section has a cavity for receiving an inner sleeve fastened to an end of an adjacent auger section. The outer sleeve has a key welded thereto and extending into a bayonet slot on the outer surface of the inner sleeve. The outer sleeve is rotated so that its welded key is slipped into a side portion of the bayonet slot. A loose key is slipped through the outer sleeve into the remaining open space of the bayonet slot locking and coupling the adjacent sections axially and radially. Helical flights extending around each section and sleeve automatically match when the sections are coupled together.

3,664,445

AVAILABLE LIGHT ILLUMINATED INSTRUMENT READ-OUT

Joseph P. Conklin, Fairfield, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed May 5, 1969, Ser. No. 821,835
Int. Cl. G01g *23/18, 23/30*; G03b *21/00*
U.S. Cl. 177—45 1 Claim



A read-out for an instrument such as a postal scale which provides either a discrete postal weight range classification or a quantitative weight read-out. The light used for this purpose is merely the available light collected by a plastic prism and internally reflected toward a back-lighted display. In the discrete form of read-out, the display includes a plurality of light pipes, each one of which represents a possible output indicator to be illuminated. Which one is illuminated depends upon the position of a mask which moves in response to the weight indication of the postal scale, and has a transparent window which lines up with the selected one of the light pipes.

3,664,446

ARTICULATED SNOWMOBILE VEHICLE

Wilson A. Burtis, 5011 Harvard Avenue, Westminster, Calif., and Thomas T. Omori, 1601 Parway Drive, Glendale, Calif.

Filed Oct. 16, 1970, Ser. No. 81,363
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 R 16 Claims



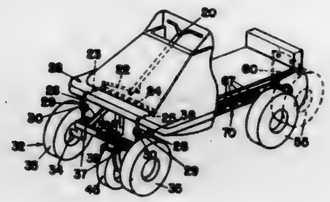
An articulated snowmobile vehicle that includes first and second frame assemblies that are pivotally connected to one another, with the first frame assembly being partially supported on snow, ice or bare ground by either skis, wheels or endless belts that are used for steering purposes, and the skis, wheels and belts being so supported that they may be pivoted laterally as well as longitudinally relative to the first frame assembly as the vehicle travels. The second frame assembly rotatably supports at least one power driven longitudinally extending endless belt of substantial width, with the lower reach of the belt being in frictional contact with the ground or snow thereon, and the belt when driven providing the motive power for the vehicle. The power driven belt when the vehicle travels over rough terrain may pivot in a vertical plane relative to the skis, wheels or steering belts due to the articulated connection between the first and second frame assemblies.

3,664,447

CONVERTIBLE SNOWMOBILE

Patrick A. Kane, Hartline, Wash.

Filed Oct. 9, 1970, Ser. No. 79,431
Int. Cl. B62m *27/02*; B62d *11/08*
U.S. Cl. 180—5 R 11 Claims



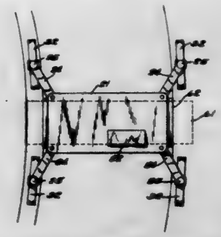
A conversion kit for adapting a snowmobile with wheels for traversing dry surfaces including wheel assemblies for replacing the front-end-supporting skiis and in addition to the conventional drive track and movable between a ground engaging position wherein the track is supported spaced upwardly from the surface and a retracted position wherein the wheels are elevated and the track is supported upon the ground. Means are provided to drive the last-named assemblies from the powered track and selectively de-clutch each driven wheel to facilitate steering.

3,664,448

VEHICLE FOR CARRYING AGRICULTURAL OR CONSTRUCTION TOOLS AND THE LIKE

Michael L. Hanks, Brookfield, Wis., assignor to Rex Chainbelt, Inc., Milwaukee, Wis.

Filed May 6, 1970, Ser. No. 35,169
Int. Cl. B62d *11/20*
U.S. Cl. 180—9.46 6 Claims



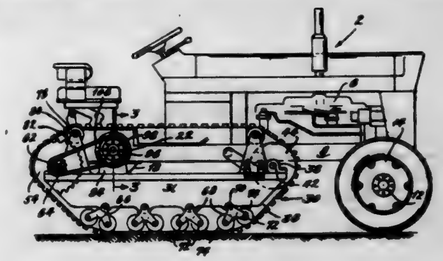
Horizontally extending legs are pivotally connected to and support the four corners of a rigid, rectangular frame. Individually driven wheeled or crawler track carriages support vertically extensible columns connected to the extended ends of the legs and are turnable for the dirigible control of the vehicle.

3,664,449

TRACK LAYING ACCESSORY FOR A TRACTOR

Joseph R. Vardell, 219 North Main Street, Kennett, Mo.

Filed May 4, 1970, Ser. No. 34,180
Int. Cl. B62d *55/04*
U.S. Cl. 180—9.48 12 Claims



Tractors having extended drive axles are provided with improved traction by removing the large drive wheels normally on those axles and replacing each of them with a track laying accessory which includes a beam having a track sprocket at one end, a guide wheel at its opposite end, and a plurality of bogie wheels along its underside. An endless track is trained over the track sprocket as well as over the guide and bogie wheels. A hub is journaled on the frame and that hub receives and is secured to the extended drive axle of the tractor in the same manner as a conventional wheel hub. The hub and track sprocket are connected through a chain-and-sprocket drive which affords the tractor the same ground speed as the wheel the accessory replaces.

3,664,450

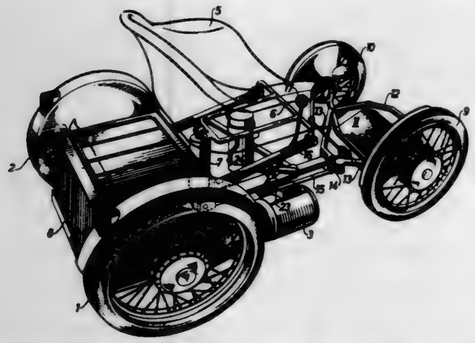
ELECTRICALLY POWERED FOUR-WHEELED SINGLE VEHICLE

Per Edward Carl Udden; Bert Hjalmar Engman, and Siegfried Graf, all of Box 90, 861 00 Timra, Sweden

Filed June 1, 1970, Ser. No. 42,116
Claims priority, application Sweden, June 2, 1969, 7712/69
Int. Cl. B60k *1/00*; B60l *11/18*
U.S. Cl. 180—65 R 4 Claims

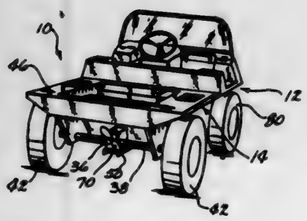
Electrically powered four-wheeled single vehicles especially for disabled persons and invalids and specifically made

for out-door use must have such stabilizing qualities that under all circumstances there is no risk for the chair to turn over even if it will have to force different kind of obstacles such as curbs. A further object of such vehicles is to provide a simple and safe steering operation so that the forces from the obstacles to be forced must not be transmitted to the steering handle, since patients in many cases have considerably reduced power to control such forces by hand.



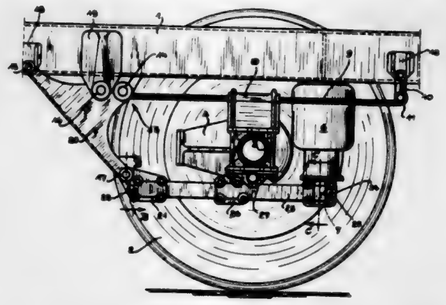
These objects are realized in the present invention substantially by the fact that the vehicle comprises a rear and a front portion which are swingably connected to each other by means of telescopic pipes or the like running substantially in parallel with the ground and in the longitudinal direction of the vehicle. To meet the requirement of a safe and unaffected steering operation the front wheels are neutrally positioned in a way that the extension of the swivel axles will cut the contact surfaces between the corresponding wheels and the ground.

3,664,451
VEHICLE REAR WHEEL DRIVE ASSEMBLY
John A. Rogers, and Frodrick R. Bossard, both of Fort Dodge, Iowa, assignors to Standard Engineering Co., Inc., Fort Dodge, Iowa
Filed Jan. 26, 1970, Ser. No. 5,740
Int. Cl. B60k 17/28
U.S. Cl. 180—70 R 3 Claims



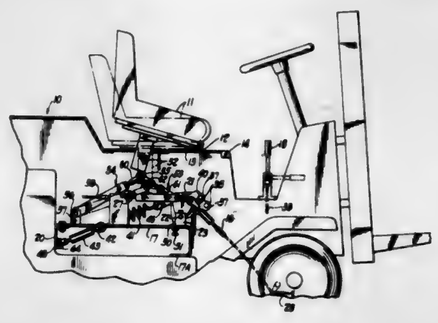
A vehicle having front and rear body sections rotatably interconnected along the longitudinal axis of the body sections. An engine is located in the front body section and a drive shaft extends through the coupling between the body sections through the compartment of the rear body section and to a gear box on a rear axle located entirely outside of the compartment of the rear body section. The rear axle is supported by frame members extending rearwardly from the rear body section. A wall extends horizontally over the rear axle and provides a seat for the compartment in the rear body section. A propeller may be connected to a drive shaft extending rearwardly from the gear box on the rear axle.

3,664,452
AXLE SUSPENSION FOR AUTOMOTIVE VEHICLES
Friedrich Schaeff, Am Hollberg 19, Bensheim-Auerbach, Germany
Filed Dec. 4, 1969, Ser. No. 882,159
Claims priority, application Germany, Dec. 4, 1968, P 18 12 634.6
Int. Cl. B60g 9/00, 11/12, 11/34
U.S. Cl. 180—71 8 Claims



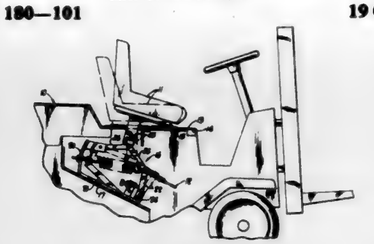
In automotive vehicles, in order to ensure that the engine stub shaft and the differential stub shaft (both connected with the drive shaft by universal joints) form identical angles with the drive shaft at all times during springing motions of the driven axle, the latter is mounted on the vehicle chassis by means of a quadrilateral suspension. One side of said suspension is a vertically pivotable axle bracket made of a horizontally flexing leaf spring that carries the axle tube and an air spring engaging said chassis; an opposite side of said suspension is a vertically flexing leaf spring held at its ends and attached at its mid portion to said axle tube.

3,664,453
DEADMAN SEAT ACTUATED BRAKE AND HANDBRAKE CONSTRUCTION
Samuel H. Cottrell, Mound, and Sam R. Montgomery, Minnetonka, both of Minn., assignors to White Farm Equipment Company
Filed June 8, 1970, Ser. No. 44,385
Int. Cl. B60t 7/00; F16d 65/30
U.S. Cl. 180—101 14 Claims



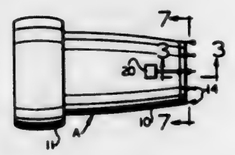
A brake-actuated lever is movable to apply brakes by a hand-operated cable. A spring applies the brakes through a second lever having a pin-engaging first lever. Lost motion between cable and first lever permits movement of first lever by second lever without movement of cable. Second lever moved from first lever by toggle joint shifted towards dead center by weight of operator on seat.

3,664,454
DEADMAN SEAT ACTUATED BRAKE
Samuel H. Cottrell, Mound, Minn., assignor to White Farm Equipment Company
Filed June 5, 1970, Ser. No. 43,854
Int. Cl. B60b 7/12
U.S. Cl. 180—101 19 Claims



A spring for urging the application brakes of a fork-lift truck is overpowered by a toggle joint moved toward its dead center by depression of the knee thereof by the weight of the operator in the operator's seat. The mechanical advantage provided by the toggle joint between the seat and the brake-applying spring is such that the seat may bounce normally without permitting application of the brake. Further, the seat can be tilted forwardly for access to the truck without additional attention to disconnection and reconnection of parts.

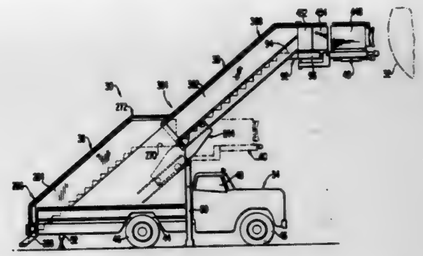
3,664,455
TWISTED VANE SOUND SUPPRESSOR FOR AIRCRAFT JET ENGINE
Thrumaleus Duvvuri, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.
Filed Mar. 15, 1971, Ser. No. 124,366
Int. Cl. F01n 1/14, 1/18; B64d 33/06
U.S. Cl. 181—33 HC 4 Claims



A plurality of vanes, each twisted about a longitudinal axis, and of airfoil sectional shape, are mounted peripherally about the exit end of a jet engine duct from which a jet exhaust stream is discharged. Control means adjust the vanes about their longitudinal axis from stowed position with their leading ends substantially tangent to the edge portion of the duct upon which they are mounted, to deployed position with their leading ends disposed substantially radially of such duct. In their stowed position the vanes cause minimum mixing of the jet stream gases with the surrounding ambient air, while in their deployed position the outer portions of the vanes project into the surrounding ambient air, and their inner portions project into the jet exhaust stream to cause a substantial but smooth intermixing of such gases, thereby tending to reduce noise producing turbulence.

3,664,456
CONVEYANCE SERVICING STRUCTURE
James W. Smith, Sr., Coral Gables; Benjamin E. Evans, Hialeah; William M. Riggins, Jr., Miami Lakes, and Urmas Schormann, Miami, all of Fla., assignors to Wollard Aircraft Equipment, Inc.
Filed July 20, 1970, Ser. No. 56,288
Int. Cl. E06c 5/06
U.S. Cl. 182—62.5 27 Claims

Conveyance servicing structure includes a truck-mounted platform and elevator structure for raising and lowering the platform to various heights for servicing conveyances of various sizes or at various levels. The platform defines a path for traffic to and from the conveyance, and the platform can extend and retract in a direction along the path. The platform can also move bodily in a direction which is lateral to the traffic path, and can also swing upwardly and downwardly. A



bumper on the end of the platform can swing in a direction which is lateral relative to the path. In one embodiment, the elevator structure takes the form of a stair assembly which is extensible and includes a lower section, an upper section, and a carriage for the upper section. The stair assembly can be locked in increments of one riser height. In another embodiment, the elevator structure comprises a scissors lift.

3,664,457
FIRE ESCAPE APPARATUS
James M. York, P.O. Box 176, South Elgin, Ill.
Filed Jan. 11, 1971, Ser. No. 105,360
Int. Cl. A62b 1/20
U.S. Cl. 182—70 8 Claims

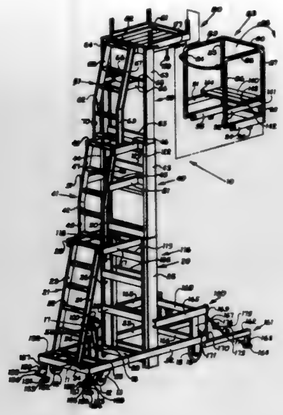


A fire escape apparatus including a descending chain or ladder normally concealed within a weatherproof container and retained therein by readily releasable means.

3,664,458
LADDER SCAFFOLD VEHICLE
Lorance E. Sterns, and Arthur G. Howard, both of Indianapolis, Ind., assignors to M. S. Churchman, Inc., Indianapolis, Md. and Keyless Lock Company, Inc., Indianapolis, Ind., part interest to each
Filed Jan. 20, 1971, Ser. No. 108,123
Int. Cl. E06c 5/04, 7/04
U.S. Cl. 182—102 9 Claims

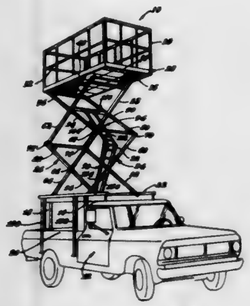
A vehicle having a ladder and a scaffold which may be extended and retracted by a winch and cable arrangement. A main frame mounted on wheels has a sloping ladder fixedly mounted to its top. The ladder is telescopic, having a middle

and top ladder section retractable into a lower ladder section. A first platform is fixedly mounted to the top of the uppermost ladder section. A cage surrounds the platform and is



pivotable downward. A second smaller platform is erectable on the first platform. Adjustable jack assemblies and braces fixed to the main frame are engageable to prevent movement of the vehicle. The braces are retracted when not in use.

3,664,459
EXTENDABLE SCAFFOLD
James M. Stephens, Long Beach, and Erven Tallman, Los Angeles, both of Calif., assignors to Shur-Lift Trailer & Manufacturing Co., a division of Norco Sales & Manufacturing Co., Sun Valley, Calif.
Filed Aug. 28, 1970, Ser. No. 67,705
Int. Cl. E04g 1/22
U.S. Cl. 182—141 9 Claims



An extendable scaffold mountable to a standard pickup truck body and including a working platform, two scissor linkages, a base and a hydraulic mechanism which combine to allow the working platform to be extended to a maximum height or any intermediate height and yet be collapsed to a very compact position when not in use.

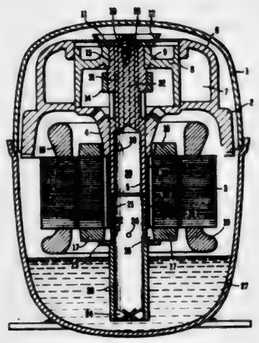
3,664,460
TREE SEAT
Melvin M. Zdrolk, 2060 South 77th Street, Milwaukee, Wis.
Filed Mar. 8, 1971, Ser. No. 121,876
Int. Cl. A47c 9/10
U.S. Cl. 182—187 6 Claims

A collapsible and portable tree seat for hunters, campers, etc. comprises two narrow hinged seat sections suspended from a tree trunk by a sling and a telescoping strut with a curved tip which engages the trunk of a tree to space the seat



from the tree trunk so that the user can comfortably center himself on the seat without touching the tree trunk.

3,664,461
OIL PUMP FOR A MOTOR COMPRESSOR
Hans Ulrik Leffers; Bendt Wegge Romer, both of Augustenborg, and Knud Vagan Vahjera, Nordborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Continuation of application Ser. No. 836,118, June 24, 1969, now abandoned. This application Mar. 31, 1971, Ser. No. 129,994
Int. Cl. F16n 7/18
U.S. Cl. 184—6.16 1 Claim



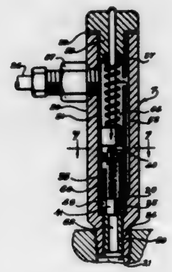
The invention relates to a lubricating system for a motor compressor assembly. The assembly has an oil sump and the motor compressor unit has vertically extending shaft means with a central lubricating bore, the lower part of the shaft means being disposed in the sump with the mouth of the bore being in fluid communication with the lubricating oil in the sump. The mouth of the shaft bore is provided with a propeller to effect an increased rate of lubricating oil delivery.

3,664,462
LUBRICANT METERING VALVE
William O. Smith, Sr., 2806 Amsterdam Road, Ludlow, Ky.
Filed May 27, 1970, Ser. No. 40,878
Int. Cl. F16n 23/00
U.S. Cl. 184—7 D 9 Claims

A self-contained metering valve for a centralized lubrication system in which the metering valve comprises a valve body having a longitudinal bore, an input passageway leading to one end of the bore, and a normally closed one-way valve assembly comprising a check valve sleeve and spring-biased piston disposed adjacent the input passageway. The bore of

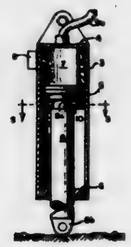
the valve body further includes a spring-biased main discharge piston located above the check piston, together with transfer passageways leading from the one-way valve assembly to the opposite sides of the spring-biased discharge piston.

The arrangement is such that the lubrication system supplies timed surges of high pressure lubricant, forcing the check piston open and permitting lubricant to pass to the lower end of the main discharge piston, thus forcing the



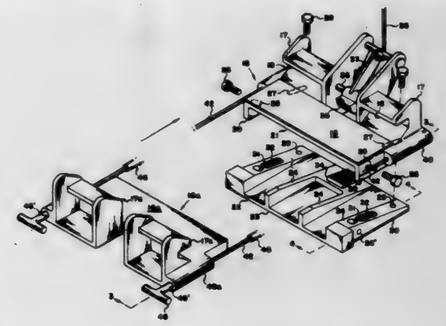
piston upwardly. The bore above the main piston comprises a metering chamber which dispenses a metered quantity of lubricant through an output passageway to a bearing as the piston is forced upwardly. When the pressure in the system drops to zero, then the check piston is closed by its biasing spring, blocking the inlet passageway and opening the transfer passageway to transfer lubricant from the pressure chamber below the piston to the metering chamber above the piston so as to condition the valve for the next cycle.

3,664,463
DEPLOYABLE SHOCK ABSORBER
Melvin W. Knothe, Littleton, Colo., assignor to Martin Marietta Corporation, New York, N.Y.
Filed Nov. 10, 1970, Ser. No. 88,323
Int. Cl. F16f 7/12
U.S. Cl. 188—1 C 11 Claims



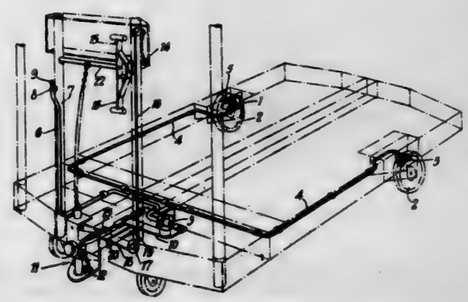
A deployable shock absorber including a cylinder closed at one end and a piston having a latch assembly disposed at the opposite end; a tubular sleeve of crushable shock absorbing material is mounted in the cylinder, coaxially therewith, one end of the sleeve abutting the closed end of the cylinder, and the opposite end of the sleeve abutting the inner face of the piston. A piston rod is slidably mounted within the tubular sleeve, whereby in the retracted position the inner end of the piston rod abuts the closed end of the cylinder; when extended, the inner end of the piston rod becomes latched to the piston, and upon impact, the piston rod and associated piston are driven inwardly toward the closed end of the cylinder to thereby crush the sleeve, whereby the impact shock is absorbed.

3,664,464
ANTISKID DEVICE
Charles V. Southard, Marietta, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed June 24, 1970, Ser. No. 49,338
Int. Cl. B60t 1/14
U.S. Cl. 188—5 6 Claims



This device attaches to the undersurface of a cargo pallet at the "uphill" side thereof and serves to restrain the palletized load if released as by accident during on and off loading operations of a vehicle. The device consists of a spring-loaded wedge held in a bracket in the retracted position off the adjacent surface during loading by tying a lanyard from the wedge to the tow cable. If the tow cable should fail, tension on the lanyard is automatically released and the spring-loaded wedge moves to the lower position to apply friction against the surface, when the palletized load begins moving by gravity down the incline. The foot of the wedge and the upper portion of the bracket which mates with the undersurface of the pallet are both covered with rubber or the like which serves to increase the frictional coefficient between the wedge and surface to prevent damage to the pallet.

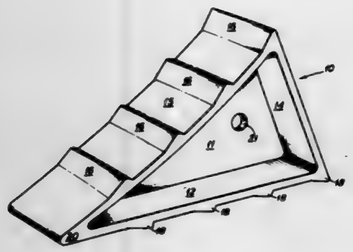
3,664,465
TROLLEYS
Gordon Christopher Yardley Holland, London, England, assignor to Lansing Bagnall Limited, Basingstoke, Hampshire, England
Filed Feb. 24, 1970, Ser. No. 13,384
Claims priority, application Great Britain, Feb. 24, 1969, 9,853/69
Int. Cl. B62c 5/04
U.S. Cl. 188—10 3 Claims



A wheeled trolley provided with an hydraulic braking system for the wheels thereof. The hydraulic braking system according to one aspect has a reservoir comprising a verti-

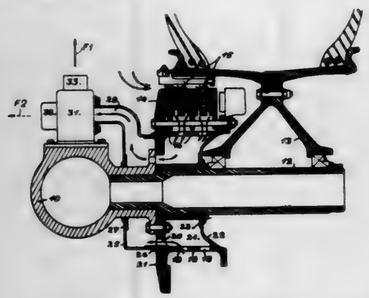
cally extending tube of uniform cross section and according to another aspect has a single master piston and cylinder arranged to be actuated by any one of an over-run device, a squeeze-grip device and a hand-lever device.

3,664,466
WHEEL WEDGE
Jordan I. Rotheiser, Highland Park, Ill., assignor to Central Specialties Co., Chicago, Ill.
Filed Aug. 26, 1970, Ser. No. 66,982
Int. Cl. B60t 3/00
U.S. Cl. 188—32 6 Claims



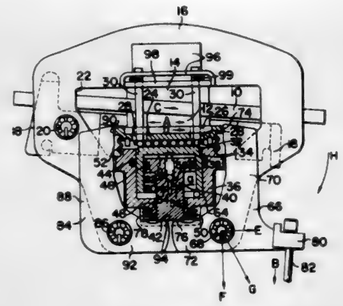
A one piece molded bilaterally symmetrical wheel wedge is disclosed, having a central supporting web, a planar base flange perpendicular to the supporting web, a rear flange intersecting the base flange and at an acute angle therewith, and a concave upwardly facing rim flange which extends at an acute angle from the forward portion of the base flange to the upper portion of the rear flange. A plurality of generally triangular wheel grip wedges extend laterally of the base flange and the ramp flange.

3,664,467
DISC BRAKE COOLING DEVICE
Rene Lucien, Neuilly-sur-Seine, and Jean Masclet, Paris, both of France, assignors to Meinser, Paris, France
Filed Aug. 4, 1969, Ser. No. 847,325
Claims priority, application France, Aug. 7, 1968, 162243
Int. Cl. F16d 65/84
U.S. Cl. 188—71.6 4 Claims



In a disc-brake comprising a stub-axle, a brake structure and a plurality of discs, some of which rotate while others do not rotate, a system of cooling by forced centripetal air-circulation, comprising passages formed in said brake structure and located in the region at the center of said discs and communicating in said region with the external air passing between said discs, an annular conduit mounted on said brake structure and adapted to communicate with said passages, an air-suction means mounted on said stub-axle and adapted to suck the air from said annular conduit.

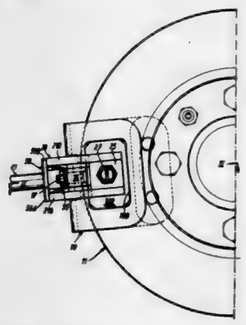
3,664,468
SELF FORCE-INCREASING DISK BRAKE
Hiroyuki Oka, Toyota-shi, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan
Filed Jan. 5, 1970, Ser. No. 655
Int. Cl. F16d 55/48
U.S. Cl. 188—72.2 18 Claims



A disk brake is provided with means for intensifying the braking pressure. A friction member for engagement with a side of a rotary disk is fixed to a plate which is mounted at the front end of piston means for movement therewith and in a lateral direction. A pivoted lever is related to the plate so that one arm of the lever is cooperable with a side of the plate and a second arm is cooperable with the rear end of the piston means. When the piston means is actuated to cause engagement of the friction member with the side of the rotating disk, the friction member, which is moved laterally by virtue of its frictional engagement with the rotating disk, carries the plate with it and causes the plate to engage and rotate the lever, thereby causing the lever to exert an increased braking pressure upon the piston means and its associated friction member.

Also, means is provided to compensate for the wear of the friction member or members; and the means is provided for maintaining the brake in engaged or parked condition.

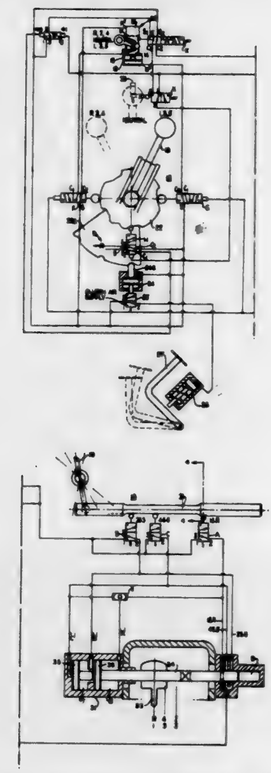
3,664,469
MECHANICALLY-OPERATED DISC-BRAKE
Jean Maurice, Paris, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France
Filed Dec. 29, 1969, Ser. No. 888,355
Claims priority, application France, Dec. 31, 1968, 812404
Int. Cl. F16d 55/224
U.S. Cl. 188—72.9 4 Claims



A mechanically operated disc-brake of the kind comprising a disc fast for rotation with the member to be braked, a fixed support, two brake shoes disposed one on each side of said disc and slidably mounted in housings formed in said fixed

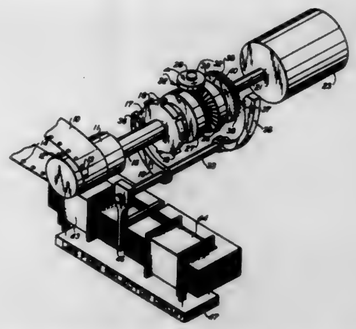
support, an operating lever adapted to co-operate with one of said shoes through a cam surface, and a transfer member on which said lever is articulated and which transmits to the second said shoe the braking action applied by said operating lever on the first shoe, in which said transfer member is coupled to the fixed support of the brake by an elastic blade which permits a rocking movement of said member with respect to said fixed support.

3,664,470
FLUID CONTROLS WITH INTERLOCK FOR CLUTCH AND TRANSMISSION
Austin Sidney Beech, Harpenden, and Roy Burrows, Wolverton, both of England, assignors to Austin S. Beech & Company Limited-Energy Works, Leighton Buzzard, Bedfordshire, England
Filed July 1, 1970, Ser. No. 51,559
Claims priority, application Great Britain, July 24, 1969, 37,366/69
Int. Cl. B60k 21/00
U.S. Cl. 192—3.57 14 Claims



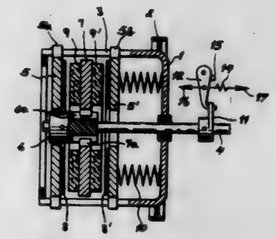
A pressure fluid operated control system incorporates an actuator member movable in a first direction along a path from which, at predetermined positions on the path, the actuator is movable into and out of operative positions in a second, transverse, direction. The invention provides first and second fluid actuator means for displacing the member in the two directions and incorporates, in controlling valve means for the actuator means, two interlock valves each of which is responsive to the operation of one of the fluid actuators and is connected in the supply to the other whereby each fluid actuator can only be operated if the other is correctly positioned.

3,664,471
SELECTIVE DRIVE MECHANISMS
Raymond R. Seidlitz, Rolling Meadows, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed Aug. 7, 1970, Ser. No. 61,882
Int. Cl. F16d 67/00, 71/00
U.S. Cl. 192—4 R 6 Claims



An intermittent motion transmitting device wherein the output of a continually rotating shaft is transferred selectively through an epicyclic gear train to advance a driven member. In one instance, the epicyclic gear train has associated therewith an input shaft attached to a constant speed motor and an output shaft attached to a platen of a printer. A plurality of spaced cogs project from the output shaft and are singularly engaged by a first stop lever to insure precise line feed spacing and to prevent rotation of the platen while the printer is printing. Upon engaging a ratchet wheel controller with a second stop lever, the rotation of the input shaft is transmitted through the epicyclic gear train to the platen. When the second stop lever engages the ratchet wheel, the first stop lever disengages from a cog on the output shaft to release the platen for positive rotation by the motor through increments corresponding to one or more line feed operations.

3,664,472
COUPLING WITH THERMOPLASTIC AND CELLULOSIC FRICTION DISC
Karl Martini; Peter Forster; Dieter Bierbrauer, and Gunther Hahn, Karl-Marx-Stadt, all of Germany, assignors to Kombinat VEB Messgeratewerk Zwonitz, Zwonitz, Germany
Filed Dec. 10, 1969, Ser. No. 883,834
Int. Cl. F16d 67/02, 69/02
U.S. Cl. 192—12 R 11 Claims



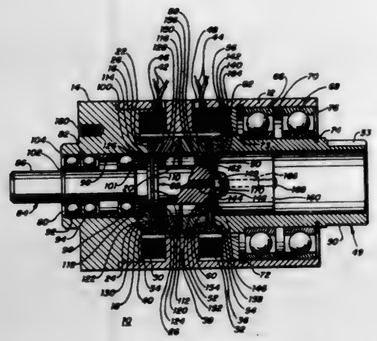
In a friction clutch, in order to ensure the transmission of a torque that is substantially independent of the temperatures generated by the slippage of the contacting driving and driven friction elements urged into engagement by spring means, the work face of one friction element is a thermoplastic material, such as Teflon, while the work face of the other friction element is cork.

3,664,473

COMBINATION MAGNETIC PARTICLE CLUTCH AND BRAKE ASSEMBLY

James R. Hendershot, Jr., and Robert F. Searle, Amherst, both of N.H., assignors to Vibrac Corporation, Chelmsford, Mass.

Filed July 9, 1970, Ser. No. 53,651
Int. Cl. F16d 27/00
U.S. Cl. 192—21.5 11 Claims



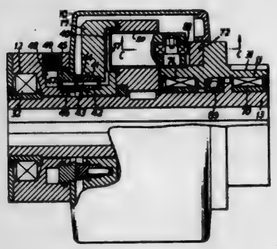
A combination magnetic particle clutch and brake device and a method of assembling the same which comprises a single output shaft having a pair of spaced discs mounted thereon, with one disc used as part of a brake unit and the other disc used as part of a clutch unit. Brake and clutch driver coils are provided for energizing each of the units. Bearing assemblies are provided at opposite ends of the device to rotatably support the output shaft and an input rotor pole which is part of the clutch unit. The device is designed so as to facilitate assembly and to maintain very close tolerances in spacing of the parts without need for shimming.

3,664,474

TORQUE TRANSMITTING DEVICES

John Berchmans Blake, Preston, and Roger Anderton Ashworth, Clitheroe, both of England, assignors to Allspeeds Holdings Limited, Accrington, Lancashire, England

Filed Feb. 18, 1970, Ser. No. 12,383
Claims priority, application Great Britain, Feb. 18, 1969, 8,807/69
Int. Cl. F16d 43/20, 31/02
U.S. Cl. 192—56 F 10 Claims



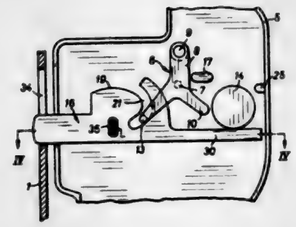
A torque transmission device consists of a resilient coupling between two shafts. The resilient coupling comprises an assembly mounted on one shaft and provided with a plurality of cylinders each having a piston and a cam arrangement mounted on the other shaft and controlling the piston as regards movement in their respective cylinders upon angular displacement between the two shafts under load conditions. A fluid-filled passage connects the cylinder heads with an outlet for indication or control purposes. The cylinders may be arranged radially with respect to the shaft axes or parallel thereto. A suitable indicating instrument may be connected to the outlet for torque sensing and the device may also be used for torque limiting by connecting to the outlet, means, for instance a metallic bellows, which, at a predetermined value of fluid pressure, increase the volume occupied by the fluid. In addition, the device may be used as a fluid clutch by the provision of manually-operated means for increasing the volume occupied by the fluid.

3,664,475

COIN CONTROLLED LOCKING DEVICE WITH COIN HOLDING MEANS

Evaristo Koch, Gollau, Switzerland, assignor to Klaus Schwieser, Gossau, Switzerland

Filed Aug. 10, 1970, Ser. No. 62,529
Claims priority, application Switzerland, Aug. 21, 1969, 12677/69; Oct. 24, 1969, 15892/69
Int. Cl. G07f 5/26
U.S. Cl. 194—51 8 Claims



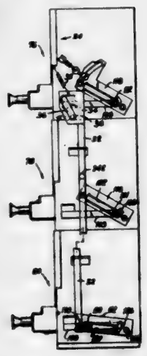
Insertion of a coin permits locking of the lock. The coin is retained until the key is inserted and the lock is turned into the open position, in which position the key is secured in the lock and the coin, representing a key deposit returned, or, representing a use fee, is finally collected.

3,664,476

VENDING MACHINE

Guy Mauro, Elmont, L.I., N.Y., assignor to Transvac Electronics Corp., Plainview, Long Island, N.Y.

Filed Mar. 30, 1970, Ser. No. 23,782
Int. Cl. G07f 11/20
U.S. Cl. 194—58 24 Claims



A mechanical vending machine including: a coinage totalizer, comprising a rotatable counting wheel having a notch

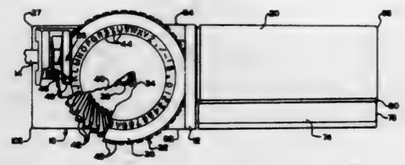
therein, which notch moves opposite a latch release post upon required coinage being deposited in the vending machine. A coin lockout slide, which is released by movement of the latch release post into the counting wheel notch, has a cam follower connected to it. The cam follower rides along a cam comprised of a slot which is oblique and transverse to both the slide and a vending machine lockout release means post. The cam is secured to the lockout release means post. That post has pivotally secured to it guide means having slots therein for receiving and directing the movement of merchandise release lever guide bars. Upon operation of a merchandise release lever, a guide bar therefor slides through the guide means slot and pivots the guide means to a release position. This axially shifts the lockout release means post, which correspondingly moves the cam, which, in turn, moves the cam follower and slides the slide. If the slide is not unlatched, the guide means cannot pivot and release of merchandise is precluded. Each merchandise release lever has a wedge element connected to it, which moves with the lever. A row of tabs is aligned next to the row of merchandise release levers. Upon operation of one of these levers, its wedge moves between neighboring tabs, causes the tabs in the row to separate and enables the tabs to block operation of other merchandise release levers in the row. There are also vertical tabs between neighboring horizontal rows of merchandise release levers. Upon the tabs in one horizontal row shifting sideways, one moves between two neighboring vertical tabs and shifts all the vertical tabs vertically away from their initial positions. The now shifted vertical tabs contact each horizontal row of vertical tabs, shift the horizontal tabs of each of those rows and prevent any other merchandise release lever in every other row from being operated. A recycling cam device is associated with the totalizer and with the coin lockout device for recycling both back to the start position after each vend transaction. Collected coins travel to an escrow container which retains the coins until the completion of a vend transaction. The escrow container includes two pivoting doors, one leading to a coin return chute and the other leading to a coin collection receptacle upon vending of an item. The two pivoting doors meet at their free ends and are held together by a spring which joins them.

3,664,477

COMPACT EMBOSSING TOOL

Georg Fritz Bernor, Sao Paulo, Brazil, assignor to Dymo Industries, Inc., Emeryville, Calif.

Filed Apr. 30, 1970, Ser. No. 33,250
Int. Cl. B41j 1/30
U.S. Cl. 197—6.7 14 Claims



An embossing tool for embossing indicia in an elongate strip of embossable material, the tool having a generally rectangular frame, an embossing station adjacent a first corner of the frame, embossing means at the embossing station, an actuating lever pivoted at one end thereof adjacent a diagonally opposite second corner of the frame, a supply of strip material held adjacent a third corner, and a link pivoted at one end thereof adjacent a fourth corner of the frame diagonally opposite the third corner, the lever and link being arranged end-to-end in general alignment between the second and fourth corners and coupled at juxtaposed ends thereof such that upon depression of the actuating lever by an actuating force applied thereto adjacent the juxtaposed ends, the link will be pivoted laterally to operate actuating means for actuating the embossing means at the embossing station.

3,664,478

MUTUAL LOCKING DEVICE FOR AN OFFICE MACHINE WITH ELECTRIC KEYBOARD

Adriano Menicanti, Ivrea, and Giacomo Oberto, Samone, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Torino, Italy

Filed Sept. 2, 1970, Ser. No. 68,820
Claims priority, application Italy, Sept. 16, 1969, 53351 A/69
Int. Cl. B41j 23/08, 5/22
U.S. Cl. 197—17 10 Claims

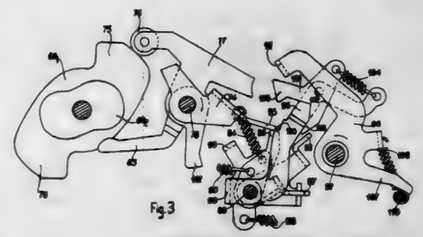


Fig.3

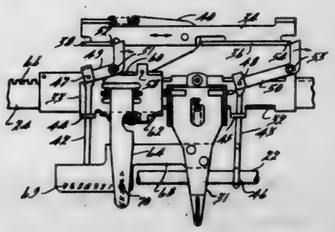
In an electric office machine having a keyboard and a cyclic operating mechanism responsive to the keyboard, locking means for preventing the mechanism from operating if two keys are depressed simultaneously until such time as the locking means are released by a motor-driven releasing means consisting of an oscillating member and a release element arranged to be operated by the oscillating member when a release key is depressed.

3,664,479

MARGIN CONTROL APPARATUS WITH VARIABLE LENGTH MARGIN ZONE

Farouk D. Arjani, San Mateo, Calif.; Kenneth C. Campbell, Greeley, and Craig B. Sanden, Longmont, both of Colo., assignors to Intercontinental Systems, Inc., Palo Alto, Calif.

Filed Feb. 2, 1970, Ser. No. 7,507
Int. Cl. B41j 21/02
U.S. Cl. 197—63 7 Claims



There is herein disclosed apparatus for providing a variable length margin zone in margin control apparatus comprising, in one form, variable positionable switch actuating means operably associated with a printer carriage and, in another form, adjustable electronic counter means associated with printer and margin control apparatus circuitry.

3,664,480

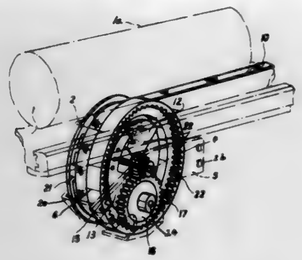
APPARATUS FOR BRAKING A TABULATING CARRIAGE MOVEMENT

Helmut Helmers, Wilhelmshv.; Georg Werner, Heidmuehle, and Albert Ritz, Wilhelmshv, all of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Germany

Filed Nov. 20, 1969, Ser. No. 878,372
Claims priority, application Germany, Nov. 29, 1968, P 18 11 758.3
Int. Cl. B41j 19/02
U.S. Cl. 197—64 10 Claims

The drive member of a spring motor, which is connected

with a typewriter carriage for moving the same in a writing and tabulating direction, is mounted for rotation about the same axis as a centrifugal brake means which is surrounded by an annular brake member integral with the drive member

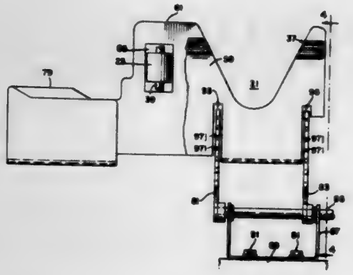


and connected by a reversing transmission and a one-way coupling with the brake means so that during tabulating the brake means and the brake member rotate in opposite directions and the carriage movement is braked.

3,664,481
DOCUMENT ELEVATION APPARATUS FOR A STRIP PRINTER

Herbert V. Dreimanis, Southfield; Albert S. Spisz, Livonia; Eugene L. Merlino, Jr., Dearborn, and Jonas Ellis, Birmingham, all of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 16, 1970, Ser. No. 19,633
Int. Cl. B41j 15/00
U.S. Cl. 197—133 R 8 Claims



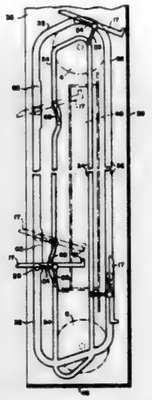
Elevation apparatus for printing at various vertical levels on a document in a strip printer including a chamber for laterally supporting the document and for defining a printing area, a front edge stop for indexing the leading edge of the document and an elevation mechanism for adjusting the vertical position of the document. The elevation mechanism includes a plurality of rotatable cams on a common shaft; the cams having like series of steps or shoulders to support the bottom edge of the document at different heights.

3,664,482
VERTICAL CHAIN TYPE CONVEYOR WITH TILTING SHELVES

Andrew T. Koraylak, 400 Heaton Street, Hamilton, Ohio

Filed Apr. 24, 1970, Ser. No. 31,602
Int. Cl. B65g 47/00
U.S. Cl. 198—20 5 Claims

A conveyor for transporting loads between vertically spaced stations. A plurality of shelves are pivotally connected to a pair of chains which are power driven to carry the shelves to the stations. The shelves are tilted at the unloading station for gravity discharge of the load from the front and are tilted in the opposite direction at the loading station to slide the load toward the rear to prevent escape from the

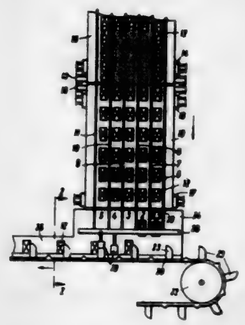


front during transport. Guide devices are provided at the tilting axis to prevent deflection of the chain by the tilting forces.

3,664,483
METHOD OF AND APPARATUS FOR RELEASING OBJECTS TO A TRANSPORTING DEVICE

Leon Revaz, Bienne, Switzerland, assignor to Otto Hansel GmbH, Hannover, Germany

Filed Mar. 12, 1970, Ser. No. 19,010
Claims priority, application Switzerland, Mar. 14, 1969, 3855/69
Int. Cl. B65g 47/26
U.S. Cl. 198—32 11 Claims

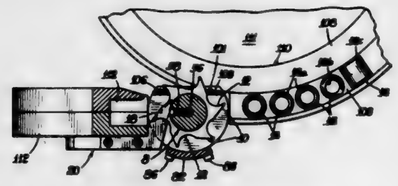


A method of and an apparatus for releasing of objects fed in a plurality of adjacent feeding channels to a transportation device with a feeding member passing in front of the terminal of the feeding channels, on which feeding member the objects are transferred to the latter in one row in series, which comprises the steps of releasing an object to the feeding member successively from each feeding channel terminal, starting with the last of the feeding channels seen in the direction of movement of the feeding channels. The feeding member is then advanced for a predetermined length from the movement of reception of an object from a feeding channel up to the moment of reception from an adjacent feeding channel. Finally, the transmission, after release of an object from the first feeding channel, of any further series of objects to the feeding member, until the object received from the first channel of the feeding member has passed the terminal of the last of the feeding channels is omitted.

3,664,484
ORIENTING WORKPIECES

Clifford A. Hasmiller, 960 East Chicago Street, Elgin, Ill.

Filed Oct. 2, 1970, Ser. No. 77,529
Int. Cl. B65g 47/24
U.S. Cl. 198—33 AA 9 Claims

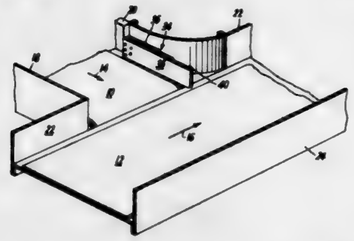


A conventional device for continuously delivering sleeves is arranged to deliver them to a delivery station or shelf of an orienter. The sleeves are delivered randomly on their sides or with their thin-section ends upwardly or with their thick-section ends upwardly, and the orienter comprises a rotor which during normal operation of the system rotates continuously and comprises a plurality of spaced arcuate fingers defining recesses complementary to the outside diameters of the sleeves and adapted to receive the same as they are delivered to the delivery station. The rotor comprises a plurality of independent clamps above respective recesses, each clamp having a moveable jaw adapted to automatically enter the thin-section end of a sleeve and clamp it against the rotor until the clamped sleeve passes over a delivery station or shelf whereupon the moveable jaw is automatically withdrawn from the sleeve, and the finger engaged therewith squeezes the sleeve against a stationary pick-off cam or finger to urge the sleeve, with its thin-section up, into a chute. If a sleeve is delivered, on its side or with its thick-section end up, to the delivery shelf the moveable jaw cannot enter the sleeve and as the moveable jaw moves downwardly it ejects the sleeve through a gap between the shelves downwardly into the feeder which redelivers the sleeve to the delivery shelf. If the chute, for any reason, fails to be emptied as fast as sleeves are delivered to the chute by the rotor, the jamming action of the last sleeve in the chute with a sleeve carried by the rotor causes the rotor to stop rotating, and a slip clutch is provided so that the rotor motor may continue to operate until the chute is open to receive one or more sleeves whereupon the rotor again rotates until the chute is again filled. While the rotor is stopped during such a jamming action, sleeves delivered to the delivery shelf by the feeder may fall off the delivery shelf back into the feeder.

3,664,485
INTER-CONVEYOR TURN DEVICE

John Herman Longenbop, York, Pa., assignor to AMF Incorporated

Filed May 29, 1969, Ser. No. 828,829
Int. Cl. B65g 47/52, 37/00
U.S. Cl. 198—78 1 Claim

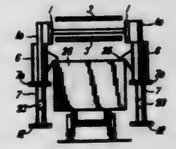


Materials handling apparatus which comprises a first conveyor belt, a second conveyor belt disposed to receive articles from said first conveyor belt, the direction of movement of said second belt being perpendicular to the first, and means mounted adjacent said conveyor belts for assisting articles around the ninety-degree turn from the first conveyor to the second conveyor.

3,664,486
LIFTING PROP FOR A TRANSFER CONVEYOR

Vladimir Mares, Pribram, Czechoslovakia, assignor to Ceskoslovensky uranovy prumysl oberovy podnik, Pribram, Czechoslovakia

Filed Sept. 23, 1970, Ser. No. 74,772
Claims priority, application Czechoslovakia, Sept. 9, 1969, 6754-69
Int. Cl. B60s 9/02; B65g 41/00
U.S. Cl. 198—126 4 Claims

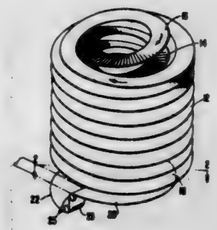


A lifting prop for a transfer conveyor enabling its displacement in gangways of mines and in tunnels. The prop is composed of a number of mutually vertically adjustable systems controlled by a pressure medium, enabling the conveyor to be seated on mine cars lifted above said cars, resting by means of said props on the ground, said props adapted to compensate any unevenness of the ground.

3,664,487
ENDLESS HELICAL CONVEYER AND BELT

Carl H. Ballenger, 1751 Circle Road, Ruxton, Md.

Filed May 23, 1969, Ser. No. 827,381
Int. Cl. B65g 17/06
U.S. Cl. 198—136 18 Claims



An endless conveyor having an endless flat link belt driven in two concentric helical paths by concentric rotary drums which engage the inner edges of the belt inwardly of the two helical paths to push the belt upwardly along one path crossing over at the top and downwardly along the other path. The belt links along the inner edge of the belt are collapsible to enable the belt to assume different curvatures while the links along the outer edge of the belt have a greater longitudinal dimension to accommodate the greater radius of curvature along the outer edge of the belt. Because the belt is driven along its inner edge and moves in a helical path, each link is pivoted about the inner edge in the forward direction of conveyance thus placing the outer edge of the belt under tension at all times during operation.

3,664,488
COLLAPSIBLE BELT CONVEYOR

Jaroslav Florian, Kralupy N. Vltavou, and Ladislav Binovec, Prague, both of Czechoslovakia, assignors to Vyzkumny ustav potravinarsk staveb

Filed Nov. 25, 1969, Ser. No. 879,814
Int. Cl. B65g 15/26
U.S. Cl. 198—139 1 Claim

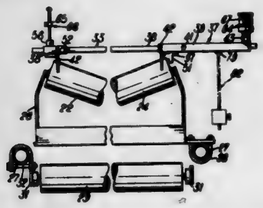


A readily collapsible belt conveyor wherein the ends of the belt are carried and driven at spaced abutment supports which are moved relatively toward each other when the conveyor is collapsed into inoperation condition. The runs of the belt are supported on normally longitudinally spaced roller stands, mounted on supporting ropes, the stands being movable close together when the conveyor is collapsed. The construction of the conveyor is such that it may be collapsed, and moved if desired, without cutting or disconnecting the belt.

3,664,489
APPARATUS AND METHOD FOR ALIGNING BELT CONVEYOR COMPONENTS SUCH AS IDLER FRAMES AND PULLEYS

Walter Francis Henry Krauss, 66 The Boulevard, Ivanhoe, Victoria, Australia, and Norman Ernest Westmore, deceased, late of 31 Third Street, Black Rock, Victoria, Australia (by Anna Mira Westmore, executrix)

Filed Jan. 27, 1971, Ser. No. 110,239
Int. Cl. B65g 13/11
U.S. Cl. 198—192 12 Claims



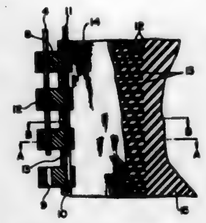
Apparatus and method of aligning idler frames of a belt conveyor. An optical square and a first line of sight indicator are mounted on the respective idler frame. The optical square provides a direct line of sight and an indirect line of sight perpendicular to the direct line of sight. One of the lines of sight extends along the idler frame and the other extends along the conveyor. A second line of sight indicator is located at a position along the conveyor from the idler frame and is displaced from the center line of the conveyor to the same extent as the optical square. The two sight indicators are then viewed through the optical square and the idler frame moved to bring them into apparent alignment.

3,664,490
JOINT REINFORCED CONVEYOR BELT

Hideyo Maruyama, Yokohama, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Sept. 12, 1969, Ser. No. 857,433
Claims priority, application Japan, Sept. 30, 1968, 43/84138
Int. Cl. B65g 15/30
U.S. Cl. 198—193 4 Claims

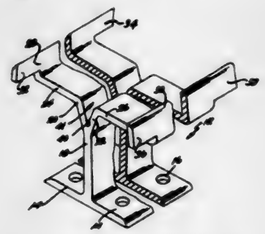
Joint reinforced conveyor belt comprising a conveyor belt including a rubber cover and a belt core embedded therein and formed at each end with recesses and projections to be engaged with corresponding projections and recesses of another conveyor belt. Each projection has embedded therein a doubled holed link having two holes at each end. Extending through one of the holes is a joint rod, while extended through the other hole is a spindle. Cords are wound around the spindle end of all of the double holed links and extended in a lengthwise direction of the conveyor belt and embedded in the rubber cover and serve to transmit uniformly the tension applied to the belt core of the conveyor belt all over the width of the belt conveyor.



3,664,491
CONVEYOR SLAT CONSTRUCTION

Robert M. Scanlan, Grand Rapids, Mich., and Hildreth C. Beckwith, Monett, Mo., assignors to Grumco Equipment, Inc., Grand Rapids, Mich.

Filed June 11, 1970, Ser. No. 45,318
Int. Cl. B65g 15/30
U.S. Cl. 198—195 11 Claims



This disclosure relates to a conveyor slat construction formed of a heat resistant bar and a support structure therefor. The support structure is formed in one piece from an extruded profile. A central portion of the support structure forms a V groove at the top. A bar receiving area is formed from outwardly extending flanges and upwardly extending flanges at the top of the V groove. The sides of the V-shaped groove are biased inwardly thereby compressing the upwardly extending flanges against the bar in the receiving area. A circular notch is formed at the bottom of the V-shaped groove to maintain resiliency within the V-shaped portion. In one embodiment a nut receiving and retaining means is formed at the top of the V-shaped groove and an end block fits within the bar receiving area at the end of the bar. The end block is held in place by fastening means which extend through the end block and engage the retaining means.

3,664,492
TAPE CASSETTE SLEEVE

Robert S. Wallace, 2706 South Robertson Boulevard, Los Angeles, Calif.

Filed Apr. 10, 1970, Ser. No. 27,296
Int. Cl. B65d 85/67
U.S. Cl. 206—1 R 9 Claims

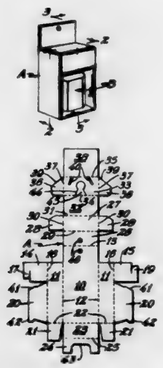
The invention concerns a sleeve to receive insertion of a cassette case endwise of the sleeve, there being retainer means on the sleeve to flex as the cassette is inserted or withdrawn, and to unflex into reel openings in the cassette.



3,664,493
DISPLAY CARTON

Daniel P. Dutcher, North St. Paul, Minn., assignor to Hoerner Waldorf Corporation, Ramsey County, Minn.

Filed Oct. 21, 1970, Ser. No. 82,731
Int. Cl. B65d 5/50
U.S. Cl. 206—45.14 11 Claims

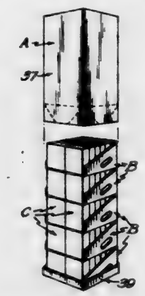


A display carton is provided having an opening in its front panel spaced from the top thereof. The rear wall extends above the level of the carton body to provide a display and a carton support. Liner panels are hinged to the carton at the edges of the opening and converge toward the rear carton wall to encircle the product.

3,664,494
SHIPPING AND DISPLAY CONTAINERS

Gerald R. Margeson, St. Paul, Minn., assignor to Reynolds Guyer, Inc., Minneapolis, Minn.

Filed Nov. 21, 1969, Ser. No. 878,782
Int. Cl. B65d 5/52
U.S. Cl. 206—44 10 Claims

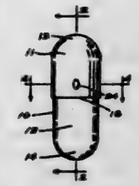


A series of open topped display trays are filled with a plurality of packages of a product, the packages terminating in a common plane parallel to the bottoms of the trays. The trays are stacked in superimposed relation in a tubular container having top and bottom closures. A removable tear strip encircles the container near to and spaced from, the lower closure. The area of the container walls above the tear strip is creased so that this area may be folded inwardly and upwardly after the tear strip has been removed to provide a display stand upon which the display trays may be stacked.

3,664,495
LOCKING CAPSULE

Richard J. Graham, Grosse Pointe; Ralph E. Mottin, Grosse Pointe Park, and Oscar B. Norus, Grosse Pointe Farms, all of Mich., assignors to Parke Davis & Company, Detroit, Mich.

Filed Dec. 21, 1970, Ser. No. 100,303
Int. Cl. A61b 19/02
U.S. Cl. 206—63.2 R 1 Claim

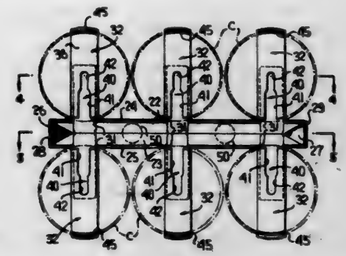


An economical locking capsule is provided having telescopically joinable cap and body parts adapted to be joined together in a prelocking position and optionally in a more fully joined position. The capsule, for packaging of medicaments and the like, is produced by the dip-molding technic on conventional automatic machinery and can be printed, filled, etc., using standard equipment.

3,664,496
CARRIER AND CAN OPENER COMBINATION

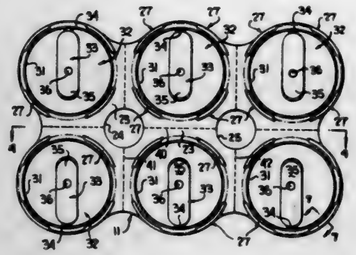
Carmen T. Mascia, Westchester, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed May 28, 1970, Ser. No. 41,303
Int. Cl. B65d 17/00, 85/62
U.S. Cl. 206—65 C 16 Claims



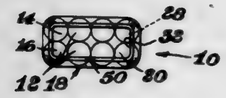
This disclosure relates to a package formed by a carrier to which is secured a plurality of containers having ends provided with tear-out portions, the carrier having a plurality of hollow arms, and each arm having a channel for receiving the rivet of each tear-out portion whereby the removal of each can from the carrier automatically removes the associated tear-out portion.

3,664,497
COMBINED CARRIER AND CAN OPENER
Carmen T. Mascia, Westchester, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed June 16, 1970, Ser. No. 46,656
Int. Cl. B65d 17/00, 85/62
U.S. Cl. 206—65 C 16 Claims



This disclosure relates to a carrier and a plurality of containers having ends provided with tear-out portions, the carrier being constructed as a one-piece molded member having a plurality of openings in each of which is adapted to be disposed a container end, and each opening having a pull tab projecting radially therein and being secured to an associated container end whereby upon grasping the pull tab and pivoting the same in an appropriate manner the tear-out portions can be removed in the absence of conventional pull tabs or similar opening means.

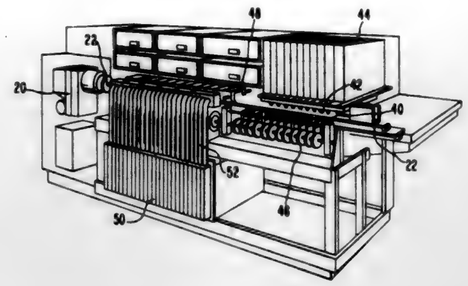
3,664,498
PACKAGE INCLUDING ENVELOPE WITH HEAT-SHRUNK BAND
Fred C. Dulmage, Findlay, Ohio, assignor to The Dow Chemical Company, Midland, Mich.
Filed Sept. 26, 1969, Ser. No. 861,325
Int. Cl. B65d 71/00, 65/16
U.S. Cl. 206—65 S 7 Claims



Strips of shrinkable material are secured to edge regions of a film package, and heat is applied to shrink the strips and thereby secure the package in such regions. For example, two such strips can be secured to opposite edges of a length of film, and the film wrapped as a sleeve about one or more articles such that the strips comprise peripherally continuous bands at the sleeve ends, respectively. Shrinking the bands gathers and secures the sleeve ends in a drawstring-like fashion.

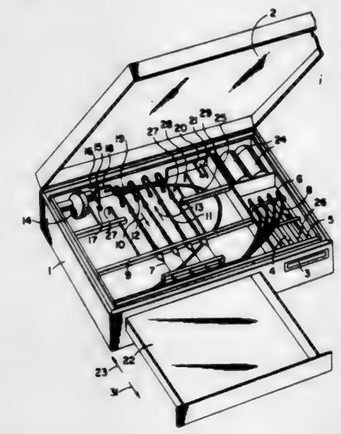
3,664,499
HIGH SPEED AUTOMATIC SEQUENTIAL TESTER-HANDLER
Vahak K. Sahakian, Santa Clara, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.
Filed Nov. 6, 1970, Ser. No. 87,389
Int. Cl. B07c 5/344
U.S. Cl. 209—73 8 Claims

A high-speed, high-accuracy, automatic sequential tester-handler that under control of a computer receives, tests and



sorts semiconductor devices into separate groups according to their electrical characteristics.

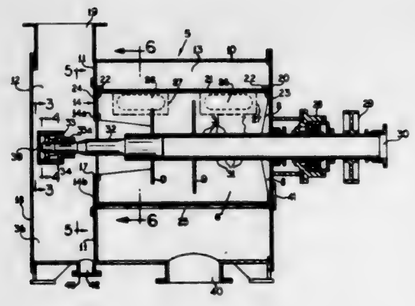
3,664,500
DEVICE FOR THE RETRIEVAL OF DATA
Klaus H. Krebs, Teodorpstr. 20, 2 Hamburg 13, Germany
Filed Sept. 21, 1970, Ser. No. 73,788
Int. Cl. B07c 3/18
U.S. Cl. 209—80.5 22 Claims



A data retrieval device, operable to retrieve a datum responsive to insertion of a datum selecting card into a data containing unit, has a drawer containing a stack of data sheets each having a different respective recess in an edge thereof. A number of selecting cards, equal to the number of sheets in the stack, are provided, and each card has a sheet releasing characteristic, such as an aperture, a projection, or recess, at a location respective to a different one of the data sheets. When a card is inserted into the unit, its releasing characteristic is engaged by a tension member in accordance with the lateral location of the characteristic, and the tension member is pulled along with the card through a distance corresponding to the spacing of the characteristic from the leading edge of the card. The tension member pulls a connected downturned hook toward the stack of sheets to engage all of the sheet edge recesses aligned with the hook, the hook being drawn to a recess corresponding to the distance of the characteristic from the leading edge of the card. When the card is fully inserted, it closes a switch to energize a motor rotating a crank which lifts all the hooks, with the drawn hook dividing the stack of sheets into two partial stacks. The lower partial stack remains in the drawer and the upper partial stack is engaged with latching pins entering holes in the

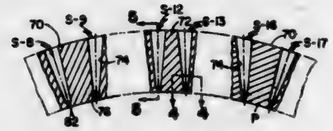
sheets. Upon further rotation of the crank, a detent is released providing for a spring to project the drawer with the lower partial stack of sheets. The selected sheet is the top sheet of the lower partial stack, so that the retrieved data is exposed. When the drawer is reinserted in the unit, the two partial stacks are recombined into the original stack and another switch is operated to actuate the motor to rotate the crank in the reverse direction lowering the hooks, and releasing the detent to engage the drawer. The hooks are retracted by associated springs. In addition to, or in place of, the retrieved data being presented visually, it may be presented audibly by a tape recorder connected to the unit.

3,664,501
PULP SCREENING MACHINE
Ben Cowan, 5460 Connaught Avenue, Montreal 29, Quebec, Canada
Filed Jan. 19, 1970, Ser. No. 3,963
Claims priority, application Canada, Nov. 21, 1969, 068114
Int. Cl. B07b 1/20
U.S. Cl. 209—273 8 Claims



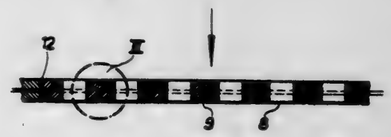
A pulp screening machine of the rotary type for either horizontal or vertical installation of either the open or pressure type in which the screen is made in sectors, joined together and one end place and a sector shaped screen supporting keeper plate and removed whereby the sectors of the screen plate can be removed axially of the machine without disturbing the screen housing in the line or the mounting of the impeller in the machine.

3,664,502
SLURRY SCREEN AND PROCESS OF MAKING IT
George E. Nichols, Jr., Norfolk, Mass., assignor to Bird Machine Company, South Walpole, Mass.
Filed June 26, 1970, Ser. No. 50,136
Int. Cl. B07b 1/18
U.S. Cl. 209—397 5 Claims



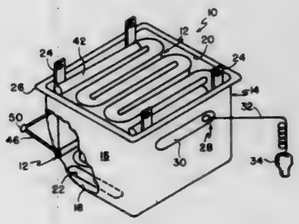
A slotted screen for slurry is produced by Electrical-Discharge Machining the slots in groups in a tubular screen plate. The slots have concave arcuate ends and smoothly curved junctures between walls, being characterized by an absence of sharp indented corners which have been a major cause of cracks and breakage in prior screens.

3,664,503
ELASTIC SIEVE BOTTOM
Alois Feiden, Munich, Germany, assignor to Stahlgruber Otto Gruber & Co., Munich, Germany
Filed Aug. 22, 1969, Ser. No. 852,215
Claims priority, application Germany, Aug. 22, 1968, P 17 58 860.2
Int. Cl. B07b 1/46
U.S. Cl. 209—397 6 Claims



An elastic sieve bottom includes abutting elastic sieve bottom sections with spaced sieve apertures therethrough, and a reinforcing mesh received in grooves in portions of the sieve bottom between the apertures.

3,664,504
METHOD AND APPARATUS FOR DEPLOYING A FLOATABLE BARRIER
Ray R. Ayers; Paul E. Tims, both of Houston, Tex., and James R. Hansen, Martinez, Calif., assignors to Shell Oil Company, New York, N.Y.
Filed Sept. 9, 1970, Ser. No. 70,744
Int. Cl. B01d 21/00
U.S. Cl. 210—83 15 Claims

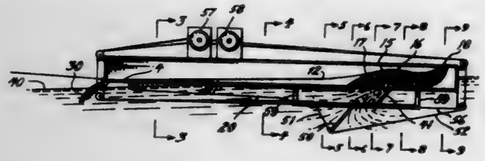


Method and apparatus for deploying a floatable barrier is disclosed wherein the barrier is initially collapsed in a storage location provided by a container having means allowing escape of the barrier from the storage location upon sinking of the container and means for sinking the container. As the container is sunk, the barrier floats out of the storage location and may be deployed merely by uncollapsing the same.

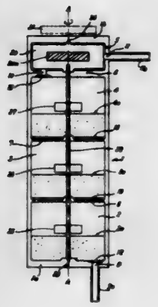
3,664,505
OIL COLLECTION DEVICE
Charles J. Brittingham, 112 Wooden Bridge Road, Holland, Pa.
Filed Feb. 18, 1970, Ser. No. 12,200
Int. Cl. C02b 9/02
U.S. Cl. 210—242 4 Claims

Floating collection apparatus for skimming oil slicks from a body of water. The oil and water is subjected to pressure

generated by the weight and movement of the apparatus to eliminate the water adjacent to and entrained in the oil film prior to sending the oil to a collection tank.



3,664,506
APPARATUS FOR PURIFYING BLOOD
Renee Louise Meunier, Paris, and Monique Adele Marmonier, Lyon, both of France, assignors to Sertna, Societe d'Etudes Et De Recherches De Techniques Nouvelles Appliquees S.A.
Filed Dec. 3, 1969, Ser. No. 881,800
Claims priority, application France, Dec. 3, 1969, 176342
Int. Cl. B01d 15/04
U.S. Cl. 210—282 5 Claims



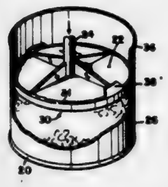
Apparatus for purifying blood comprises a vessel containing one or more chambers arranged in series and containing micro-beads which enclose adsorbents and reagents for purifying blood. The vessel also includes a stator cavity which contains a pump rotor, preferably driven by an external rotary magnet. Means for agitating the beads in the chamber preferably consist of vanes connected to the pump rotor. In a preferred arrangement of the apparatus, the beads in a first chamber nearest the inlet contain urease and a cation-exchange resin in the sodium state, the beads of the second chamber contain activated charcoal and an exchange resin in the hydrogen state, and the beads of the third chamber contain an anion-exchange resin in the OH state.

3,664,507
FILTER TUBES IN A RESILIENT HOLDER
George V. Jordan, Roslyn, Pa., assignor to Solas Corporation of America, Dresher, Pa.
Filed Apr. 15, 1970, Ser. No. 28,689
Int. Cl. B01d 29/20
U.S. Cl. 210—323 7 Claims

The invention is a filter unit for the fine filtration of various fluids with the filter element comprising a plurality of elongated, hollow rods made of a rigid porous material that are individually held in position by a resilient holder.



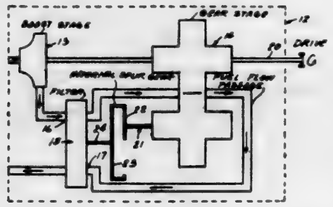
3,664,508
DISPENSING CONTAINER FOR PLASTIC MATERIALS
Joseph Linder, Cincinnati, Ohio, assignor to Fibre Glas-Evercoat Co., Inc., Cincinnati, Ohio
Filed Mar. 11, 1971, Ser. No. 123,324
Int. Cl. B67d 5/42
U.S. Cl. 222—386 17 Claims



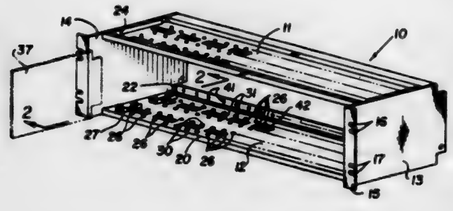
The dispensing container comprises a cylindrical body having end closure members one of which is securely though releaseably positioned to an end of the cylindrical body in such a manner as to be displaced therefrom and progressively advanced axially into and through the body, incident to advancement of a platen against the closure member for initially dislodging it from the cylinder body while simultaneously causing it to overlie the lower face and side edges of the platen, to extrude the contents of the container through an opening in the other closure member, or through a dispenser valve lid which replaces or which engages openings in the other closure member, incident to advancement of the platen into the container.

3,664,509
FLUIDS FLOW SYSTEM WITH SELF-FLUSHING REVOLVING FILTER
Raymond J. Grill, Richmond Heights, Ohio, assignor to TRW Inc., Cleveland, Ohio
Filed Nov. 4, 1969, Ser. No. 873,970
Int. Cl. B01d 33/22
U.S. Cl. 210—391 8 Claims

Pumps or other fluids handling devices are protected from contaminants in the fluids by alternately presenting localized portions of a filter media to the flow paths of fluids entering and leaving the device to filter out the contaminants from the fluids entering the device and to flush out the filter media with the fluids leaving the device. In a preferred embodiment, a continuous revolving filter intersects the inlet and discharge passages of a pump to divert contaminant particles in the fluid from the pump inlet to the pump outlet without allowing the particles to pass through the pump, and concurrently backwashing the filter element by pressurized fluid from the pump.

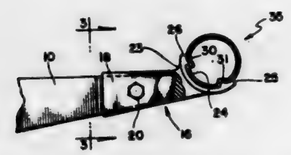


3,664,510
CARD CAGE FOR PRINTED CIRCUIT CARDS
Walter E. Kerschbaum, Wellsboro, Pa., assignor to Elma Corporation
Filed Apr. 16, 1970, Ser. No. 29,057
Int. Cl. A47g 19/08; B42f 17/16
U.S. Cl. 211—41 5 Claims



A card cage for printed circuit cards in which flexible plastic elements mounted in a metal frame securely but yieldably hold printed circuit cards in place.

3,664,511
HANGROD ASSEMBLY
Jay G. Fenwick, Albert Lea, Minn., assignor to Streator Industries, Inc., Albert Lea, Minn.
Filed Oct. 2, 1970, Ser. No. 77,648
Int. Cl. A47b 1/02
U.S. Cl. 211—105.1 6 Claims



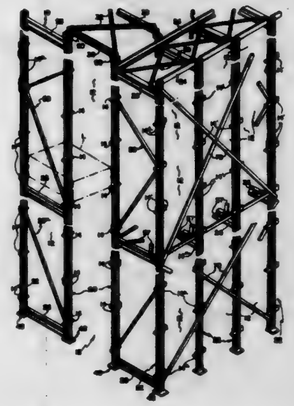
A hangrod assembly which comprises an adapter which may be readily secured to a conventional support bracket and a longitudinally split tubular hangrod which is attachable to the adapter without the use of tools or fastening devices. The adapter and hangrod have mutual engaging and cooperable ridges and grooves which allows the hangrod to be snapped into place by pressing the hangrod from an open unconfined state to a closed, confined state.

3,664,512
HANGER CONSTRUCTION
Marjorie O. Smith, 325 North Highway 59, Barrington, Ill.
Filed Oct. 23, 1970, Ser. No. 83,291
Int. Cl. A47f 5/08
U.S. Cl. 211—113 7 Claims



A hanger construction is provided for removably mounting various articles such as cups, pails, and various tools on a supporting surface. The construction includes a channel member secured to the supporting surface, and a hanger element carried by said channel member and adjustable longitudinally thereof to selected positions. The hanger element is provided with a head portion and a manually adjustable member, the latter being adapted, when in one position of adjustment, to resiliently sandwich portions of the channel member between said head portion and resilient member and retain said hanger element in a selected position.

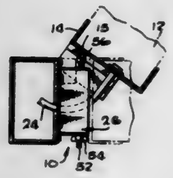
3,664,513
STORAGE FRAME COMPONENTS AND ASSEMBLY THEREOF INTO A STORAGE RACK FOR USE IN AUTOMATIC WAREHOUSING SYSTEMS
Wayne G. Atwater, Willoughby, Ohio, assignor to The Trinz Company, Cleveland, Ohio
Filed July 20, 1970, Ser. No. 56,269
Int. Cl. A47f 5/00
U.S. Cl. 211—134 23 Claims



A storage framework composed of a plurality of storage frame elements or components assembled into a storage rack for use in an automatic warehousing system. The framework comprises generally parallel rows of vertical columns with each of the columns comprising in certain embodiments a pair of channel-like members with the cross webs thereof disposed in spaced back-to-back relation. Load carrying

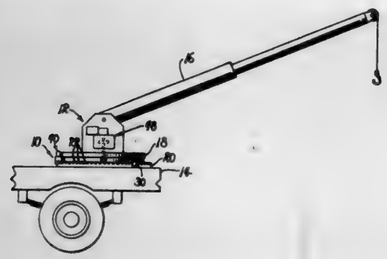
members are spaced vertically along the columns and define the storage volumes in the storage rack. The load carrying members each comprise a portion disposed in sandwiched relation between the respective pair of channel-like members and means extending between each of the load carrying members and the channel-like members of the columns for connecting the latter together. The components are adapted to be shipped to the location of use and assembled there. The arrangement facilitates the fabrication, preparation, and handling of the storage rack components and also facilitates their assembly at the location of use. Other embodiments provide a double K-like load support arrangement tying outer and aisle columns together, with the latter comprising single channel-like members.

3,664,514
LOCK FOR HINGED RACK
King B. Drake, Los Angeles, Calif., assignor to Dracon Industries, Chatsworth, Calif.
Filed Mar. 2, 1970, Ser. No. 15,506
Int. Cl. A47f 5/02
U.S. Cl. 211—169 6 Claims



A rack for heavy equipment is hinged on a post and the lock is secured therebetween. A finger extends from the rack into an opening in the post and engagement means secures the finger with respect to the post to lock the rack with respect thereto. In the preferred embodiment, the finger is a curved channel having openings in its web and the engagement means is a plunger which selectively engages the web openings.

3,664,515
ACTUATABLE STOP
Maxwell C. Orendorff, and Harvey L. Mattern, both of Fresno, Calif., assignors to Ely Enterprises, Inc.
Filed Jan. 5, 1970, Ser. No. 627
Int. Cl. B66c 13/48
U.S. Cl. 212—39 1 Claim



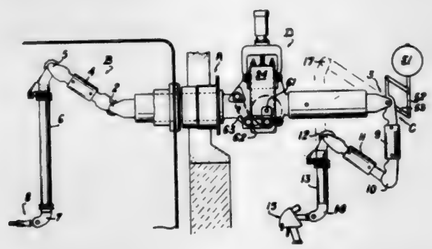
An actuatable stop particularly suited for use as a "dead man" stop in arresting "drift" for cranes and the like, characterized by a rigid stop ring circumscribing an associated crane's pedestal and an actuatable locking mechanism including a reciprocating shaft adapted to extend from the pedestal into locking engagement with the ring in response to an actuation of an associated control, a feature of the stop being the inclusion of means for extending the shaft in response to a detected power-off condition for the crane, whereby rotation of the pedestal automatically is arrested as the crane's power train is de-activated.

3,664,516
FOLDING CRANE BOOM
William E. Goudy, Gainsville, Tex., assignor to Armco Steel Corporation, Middletown, Ohio
Filed July 30, 1970, Ser. No. 59,454
Int. Cl. B66c 23/62
U.S. Cl. 212—46 A 8 Claims



A truck-mounted, fully collapsible boom for material handling and the like which carries at least 100 feet of boom and jib within reasonable highway limitations when in the traveling position, the overhang thereof when in the traveling position being substantially equally distributed between the front and the rear of the carrying vehicle to provide improved maneuverability and weight distribution on the axles of the carrying vehicle.

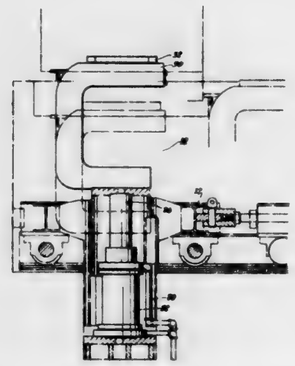
3,664,517
ARTICULATED MASTER-SLAVE MANIPULATOR
Jean-Claude Germond, Paris; Jean-Pierre Guilband, Jouars-Pont-Chartrain, and Jean Vertut, Paris, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France
Filed Sept. 28, 1970, Ser. No. 76,139
Claims priority, application France, Oct. 3, 1969, 6933811
Int. Cl. B25j 1/02
U.S. Cl. 214—1 CM 8 Claims



An articulated master-slave manipulator comprises a master assembly and a slave assembly articulated to opposite ends of a tube extending through a wall.

The slave assembly comprises a first segment and a second segment which are disposed in that order from the tube which extends through the wall, whereas the master assembly comprises, from its articulation to the tube, a top second half-segment which drives the slave-assembly second segment, a first segment which drives the slave assembly first-segment, and a bottom second half-segment, parallel to the top second half-segments.

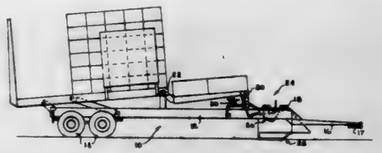
3,664,518
POWERED TURNAROUND FOR A COIL LIFT AND TRANSFER CAR AND THE LIKE
Andrew J. Petres, and Clement S. Rybar, both of Pittsburgh, Pa., assignors to Mesta Machine Company, Pittsburgh, Pa.
Filed July 22, 1969, Ser. No. 844,216
Int. Cl. B65g 7/00
U.S. Cl. 214—1 Q 11 Claims



We disclose a carriage structure for conveying coils and the like, which structure comprises a wheel-mounted platform, a lift housing carried on the platform, a lift structure slidably mounted in the housing and engaging lift means mounted within the lift housing so that the lift structure is raised and lowered upon actuation of the lift means. The lift structure includes an upper projection shaped for closely fitted insertion into an opening in an external load support. Load bearing platen is rotatably mounted adjacent the upper surface of the projection and substantially within the confines thereof, and a turnaround mechanism for the platen is mounted within the confines of the projection and in operative engagement with the platen. In certain applications, a thrust bearing is mounted between the platen and adjacent surfaces of the projection. The platen and the projection surfaces can be shouldered to accomodate the bearing. The turnaround mechanism can b both double-acting and bidirectional for the application of maximum torque to the platen.

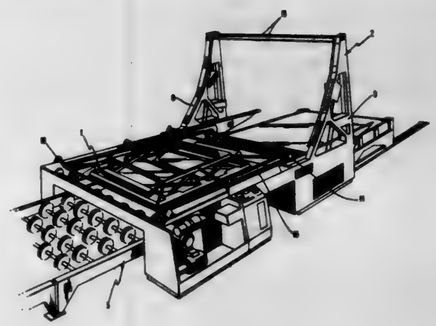
3,664,519
METHOD AND APPARATUS FOR FORMING A TIE PATTERN OF BALES ON A BALE WAGON
Donald M. Grey, Selma, Calif., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed Aug. 7, 1970, Ser. No. 61,966
Int. Cl. B65g 57/26
U.S. Cl. 214—6 B 20 Claims

A method and apparatus for forming a tie pattern of bales on a stacking table of a bale wagon. The method includes the steps of receiving a first array of longitudinally aligned bales on the stacking table, fixing the outermost or flanking bales of the first array for pivotable movement about a point, removing the bale or bales extending between the flanking bales of the first array, and inserting a series of a second array of longitudinally aligned bales generally midway between the fixed flanking bales. The apparatus for forming the tie pattern comprises tines extending through a stacking table for fixing the flanking bales for pivotal movement about a point, paddles for removing the bale or bales extending



between the flanking bales of the first array and a receiving table disposed adjacent the stacking table for transferring bales thereto in either the first array or second array.

3,664,520
HANDLING AND TRANSFERRING DEVICE FOR PLANE OBJECTS, PARTICULARLY GLASS SHEETS
Bernard Parnet, Courbevoie, France, assignor to Compagnie de Saint-Gobain, Neuilly-sur-Seine, France
Filed Jan. 21, 1970, Ser. No. 4,547
Claims priority, application France, Jan. 22, 1969, 6901146
Int. Cl. B65g 67/00
U.S. Cl. 214—7 6 Claims

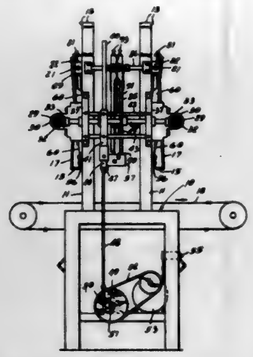


A method for the handling of flat articles and the transfer of these articles from one supporting means to another. More precisely, a device permitting the transfer of flat articles from a feeding carrier to a removable support on which the articles are piled from separate and individual pieces without damage into suitable shipping cases or the like as desired.

3,664,521
SEPARATOR FOR NESTED ARTICLES
Jozsef Feher, Chicago, Ill., assignor to Alfred Eisenberg, Chicago, Ill.
Filed Aug. 13, 1970, Ser. No. 63,437
Int. Cl. B65g 59/06
U.S. Cl. 214—8.5 K 4 Claims

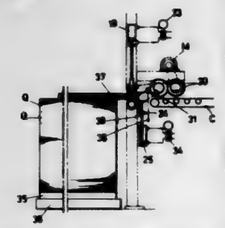
Separator for nested articles, such as compartmented cartons including a rectangular open frame forming a hopper for a stack of nested cartons. The bottom carton of the stack of cartons is supported on swingable support members moved into and out of supporting engagement with the bottom carton under the control of individual cams. Separator fingers on the ends of swingarms are positioned at all four sides of the frame and come into the space between the rim of the bottom carton and the next adjacent carton, as the support members move out of engagement with the bottom carton and exert a downward separating force on the bottom carton as the stack of cartons is supported by support fingers engag-

ing under the rim of the next to the bottom carton of the stack. The cam moving the separator fingers into the space between the rims of the two lowermost cartons also moves the support fingers into supporting engagement with the rim



of the next adjacent uppermost carton. This cam has means thereon moving the separator fingers downwardly to separate the bottom carton from the stack of cartons, while holding the stack by the support fingers.

3,664,522
ARTICLE HANDLING APPARATUS
Yuro Goto, 250 Motoichiba, Fuji, Japan
Filed Sept. 2, 1970, Ser. No. 68,988
Claims priority, application Japan, Sept. 4, 1969, 44/69862
Int. Cl. B65g 59/02
U.S. Cl. 214—8.5 SS 3 Claims



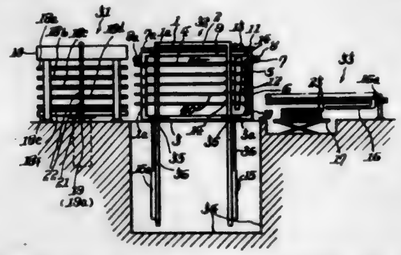
An article handling apparatus is disclosed for feeding and transferring layers of sheet materials from one working station to another in a paper-making mill. The apparatus includes a pair of elongated rollers concentrically disposed and rotated by a chain and sprocket drive in a direction opposite to each other for gripping the article therebetween and moving the same forward toward a conveyor, means for limiting the position of feed of articles between the rollers and two pneumatic or hydraulic cylinders, one for imparting a vertical movement to one of said pair of rollers and the other for moving said means vertically into and out of the path of movement of the articles.

3,664,523
VEHICLE PARKING APPARATUS WITH AN ANNULAR ELEVATOR PLATFORM
Carl Heinrich Hagel, Eisenachstrasse 24, 46 Dortmund, Germany
Original application Mar. 25, 1965, Ser. No. 442,654, now Patent No. 3,419,161, dated Dec. 31, 1968. Divided and this application Dec. 18, 1967, Ser. No. 721,891
Claims priority, application Austria, Apr. 13, 1964, A 3186/64
Int. Cl. E04h 6/06
U.S. Cl. 214—16.1 A 6 Claims



An elevator structure in combination with a building having an external helical track therearound, wherein there are load-storage spaces in the building and load-transfer means on the elevator and wherein the elevator rides on the external helical track by virtue of drive means mounted in the elevator, there being provided separate drive means adapted to transfer loads from the building to the elevator and vice-versa.

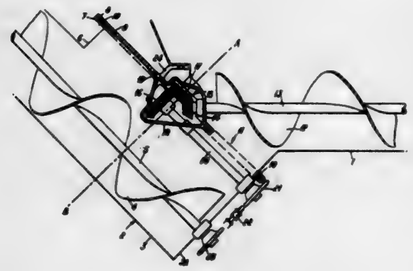
3,664,524
BLANK SHEET FEEDING DEVICE
Toshio Yamauchi, Nagoya, Japan, assignor to Kabushiki Kaisha Meikisohsakusho, Nagoya-shi, Aichi-ken, Japan
Filed Sept. 15, 1970, Ser. No. 72,252
Claims priority, application Japan, Sept. 19, 1969, 44/74896
Int. Cl. B65g 65/02
U.S. Cl. 214—16.6 7 Claims



Apparatus for feeding sheets to a multistage hot press is characterized by including a plurality of interconnected sheet-feed racks which are reciprocably carried on a supporting framework for the racks to be horizontally moved in unison relatively to the framework and into and out of multiple stages of a multistage hot press. Movably mounted pusher and restrainer means are provided for pushing sheets away from locations on rearward portions of the racks to locations on forward portions of the racks, and for occupying a given position wherein to restrain sheets disposed on rearward portions of the racks to move from the racks into a multistage hot press within multiple stages of the latter during horizontal movement of the racks out of multiple stages of a multiple stage hot press. Positioning means in the apparatus includes movable stops for the stops in a given position to restrain sheets disposed on forward portions of the racks to move from the racks onto a multistage hot press during horizontal movement of the racks out of multiple stages of a multistage hot press while the pusher and restrainer means in a given position restrains sheets on rearward portions of the racks to move from the racks onto a multistage hot press within multiple stages of the latter.

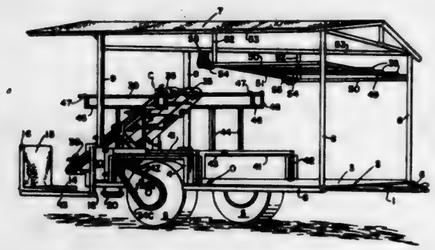
3,664,525
ROTATING GRAIN TANK UNLOADER
Franz Joseph Herbsthofer, Kassel-Harleshausen, Germany, assignor to Massey-Ferguson G.m.b.H., Kassel, Germany
Filed July 6, 1970, Ser. No. 52,489
Claims priority, application Great Britain, July 25, 1969, 37,523/69
Int. Cl. B65g 65/46
U.S. Cl. 214—17 D 3 Claims

A grain handling apparatus for a combine harvester including a horizontal transfer auger in the bottom of the tank for conveying grain to a discharge opening in the bottom of the tank and a discharge conveyor including a conduit and a discharge auger. The lower end of the discharge conveyor is rotatably mounted in continuous communication with the discharge opening for movement about an axis extending transversely of the conduit between an unloading position



inclined upwardly and outwardly and an out of use position. The discharge auger is driven by the transfer auger through bevel gears, an intermediate shaft rotatable about an axis parallel to the axis of the discharge auger, sprockets on the discharge auger and the intermediate shaft outside the conduit and an endless chain trained around the sprockets.

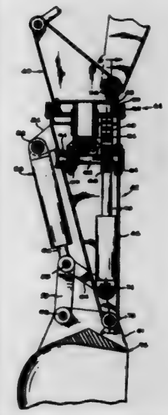
3,664,526
HARVESTER
Kelly S. Dilday, deceased, late of Ahoskie, N.C. (Stewart Anthony Dilday and Kelly Wayne Dilday, executors)
Filed Nov. 5, 1969, Ser. No. 874,320
Int. Cl. A01d 45/16
U.S. Cl. 214—83.1 26 Claims



A harvester particularly useful in harvesting tobacco by providing a vehicle having vertically adjustable seats for persons who pick the leaves of tobacco with the vehicle having a support in the form of a conveyor for receiving the picked leaves from the persons and transporting the leaves to another location on the vehicle where one or two other persons place the tobacco on racks and such racks may be either the conventional tobacco sticks for drying in tobacco barns or may be pallets on which the tobacco leaves are laid and the pallets with the loaded leaves may be removed.

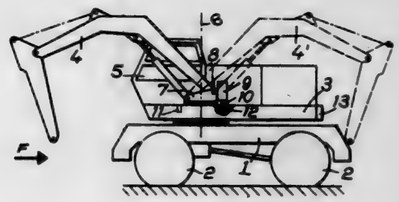
To obtain maximum advantage of the invention the crop is arranged in rows with two adjacent rows close together and alternate adjacent rows being spaced apart a sufficient distance for the vehicle to pass so that the vehicle has a low center of gravity and can be pulled by a conventional tractor.

3,664,527
MATERIAL HANDLING APPARATUS
Ralph H. Short, Lima, Ohio, assignor to Clark Equipment Company, Buchanan, Mich.
Filed Nov. 10, 1969, Ser. No. 875,272
Int. Cl. E02f 3/00
U.S. Cl. 214—138 R 4 Claims



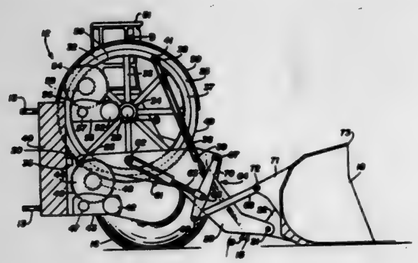
An excavating shovel and backhoe combination including a telescopic boom on the outer end of which a boom arm is pivotally mounted. The boom arm is rotatable about its longitudinal axis to rotate a bucket pivotally mounted on the lower end thereof. A bucket pivot hydraulic cylinder is mounted completely on the rotatable portion of the boom arm to be rotatable with the bucket.

3,664,528
EARTH-WORKING MACHINES
Yves M. Gauchet, Senlis, France, assignor to Societe Anonyme Poclain, Le Plessis-Belleville Oise, France
Filed Dec. 2, 1969, Ser. No. 881,405
Claims priority, application France, Dec. 4, 1968, 176600
Int. Cl. E02f 3/00
U.S. Cl. 214—138 R 3 Claims



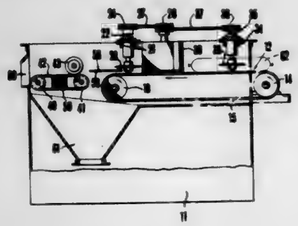
This invention relates to an earth-working machine comprising a platform equipped with a driver's cabin which is fast therewith and is oriented in the direction of translation of the machine, and with an operating equipment mounted to pivot, with respect to the driver's cabin, about a substantially vertical axis, said operating equipment being able to pivot at least substantially through 90°, while the axis of rotation is disposed to the side of the driver's cabin, wherein said driver's cabin is disposed at the front of the platform, while rotation locking means may render integral the operating equipment and the driver's cabin for two positions of the operating equipment moved from one to the other by a pivoting through at least 90°.

3,664,529
APPARATUS FOR MANIPULATING LOAD SUPPORTING MEMBER
Nick Potelski, Dallas, Tex., assignor to Peerless Mfg. Co., Dallas, Tex.
Filed June 15, 1970, Ser. No. 46,325
Int. Cl. E02f 3/62
U.S. Cl. 214—140 9 Claims



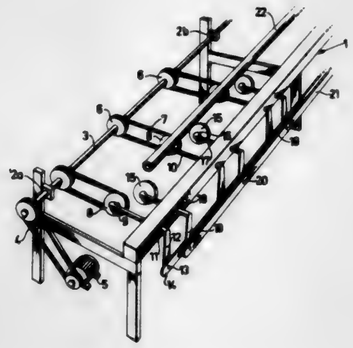
A front end loader vehicle having a pair of booms attached to an excavating bucket which is to be manipulated relative to the vehicle by a spaced pair of first arcuate gear segments which have corresponding ends of the booms attached thereto to permit substantially linear movement of the booms and a spaced pair of second arcuate gear segments connected to the booms to permit elevating and lowering of the booms. Each of the first gear segments has a peripheral ring provided with radially outwardly extending teeth. Each of the second gear segments is contained within the peripheral ring of a first gear segment and is provided with a peripheral ring having radially inwardly extending teeth to form a compact apparatus for manipulating the bucket.

3,664,530
APPARATUS FOR AUTOMATICALLY AND SUCCESSIVELY OPENING THE BAGS OF POWDER
Hirofumi Takiguchi, Osaka, Japan (2-kumi, 7-chome, Kumagaya-cho Kokura-ku, Kitakyushu, Fukuoka Prefecture, Japan)
Filed June 15, 1970, Ser. No. 46,106
Claims priority, application Japan, June 14, 1969, 44/56,252; Sept. 3, 1969, 44/70,878, 44/84,900; Oct. 30, 1969, 44/104,940; Nov. 24, 1969, 44/111,541
Int. Cl. B65b 67/00
U.S. Cl. 214—302 27 Claims



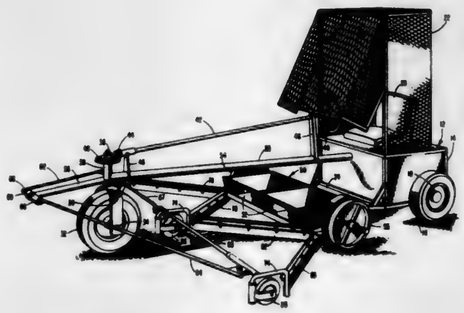
An apparatus for automatically and successively opening powder containing bags. A conveyor is provided on which the bag is transported. Cutters are positioned along the conveyor which cut open usually three sides of the bag as it is transported by said conveyor. The contents of the opened bag are collected in a collecting means positioned below the end of the conveyor, and a bag takeup means takes up the opened bag as it is unfolded around the uncut side of the bag.

3,664,531
DEVICE FOR IMPARTING A ROTATIONAL AS WELL AS A LONGITUDINAL MOVEMENT TO TUBES OR RODS
Kjell I. Magnusson, Fack 33 67050, Eda Charlottenberg, Sweden, and Rune T. Owarfort, Lya O. Karup, Ostra Karup, Sweden
Filed Nov. 19, 1969, Ser. No. 878,097
Int. Cl. B65h 51/26
U.S. Cl. 214—339 2 Claims



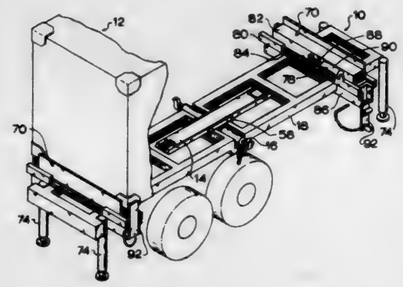
A device for supporting an elongated work piece such as tubes or rods with circular or annular section during treatment thereof and giving the work piece a rotational feeding movement as well as a longitudinal feeding movement with the speed of the longitudinal movement being very slow as compared with the rotational movement of the workpiece.

3,664,532
PROPULSION MEANS FOR BALL RETRIEVING APPARATUS
August W. Gustafson and Edna L. Gustafson, both of 4750 Baldwin Blvd., Corpus Christi, Tex. 78408
Filed July 24, 1970, Ser. No. 57,955
Int. Cl. B60p 1/00
U.S. Cl. 214—356 6 Claims



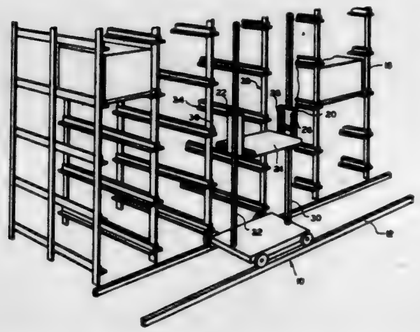
A ball retrieving mechanism in the form of a self propelled vehicle having a tricycle type running gear with the ball gathering and retrieving means arranged between the front wheel and the rear driving wheels so that the balls are picked up before the rear driving wheels pass over the ground area from which the balls are recovered.

3,664,533
FREIGHT CONTAINER TRANSFER SYSTEM
Albert Michael Hand, York, Ontario, Canada, assignor to Steadman Industries (Nassau) Limited, Nassau, The Bahamas
Filed Dec. 8, 1969, Ser. No. 882,893
Int. Cl. B60p 1/64
U.S. Cl. 214—516 15 Claims



A freight container transfer system wherein an elongated rack is detachably connectable between a push-pull transfer motor on a transfer vehicle and the base of a freight container. The rack has a movable stop on its upper surface, selectively engageable with a container base, and a series of openings in its lower surface engageable successively, with a ratcheting action, by the push-pull motor enabling the container to be transferred over the side of the transfer vehicle. A set of slidable support bolsters on the transfer vehicle, extendible and retractable over the side thereof, facilitate the transfer operation.

3,664,534
LATERAL SHUTTLE DEVICE FOR MATERIAL STORAGE SYSTEM
Calvin W. Hunter, Battle Creek, Mich., assignor to Clark Equipment Company
Filed Sept. 2, 1970, Ser. No. 69,077
Int. Cl. B66f 9/14
U.S. Cl. 214—730 1 Claim



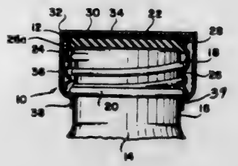
Apparatus for moving material on and off of supports in which the material is conveyed horizontally on a belt conveyor and both horizontally and vertically by swinging the conveyor through an arc.

3,664,535
SEALING CONSTRUCTION
Herbert B. Metts, Strongsville, Ohio, assignor to Questor Corporation
Filed Mar. 26, 1970, Ser. No. 22,859
Int. Cl. A61j 9/00
U.S. Cl. 215—11 R 1 Claim



The sealing construction herein is shown in a preferred embodiment in a disposable nurser which includes a plastic shell, a sack-like container partially disposed within the shell and having its top draped over the top of the shell, and a screw cap-nipple combination. A lower flange on the nipple and the sack top cooperate to act as a gasket means. The shell top terminates in an inwardly extending flange. A circular projection is formed on the shell flange extending up toward the combination gasket. The projection is spaced inwardly from the junction of the inner side of the wall of the shell top and the shell flange to provide a spring action by the flange which will maintain a sealing relationship between the circular projection and the gasket combination when the cap is screwed on. The spring action of the shell flange permits the flange to yield when excessive cap torque is applied to prevent the circular projection from cutting, weakening or otherwise damaging the inner container portion of the gasket combination. A fillet is advantageously formed between the shell top inner wall and the shell flange to reinforce the junction and control the spring action of the shell flange.

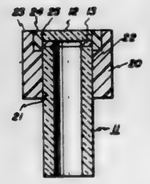
3,664,536
SCREW TYPE CLOSURE CAP
Byron E. Emery, El Cerrito, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.
Filed May 22, 1970, Ser. No. 39,611
Int. Cl. B65d 23/00, 53/00
U.S. Cl. 215—40 11 Claims



The screw type closure cap includes a first cap for directly sealing a container opening having internal engagement means for engaging closure retaining means on the container. The internal engagement means is formed to permit limited longitudinal movement of the first cap relative to the closure retaining means after engagement

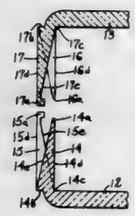
therewith. An overcap is formed to overlie said first cap and apply pressure thereto to move said first cap longitudinally and increase the sealing pressure thereof against the open end of the container.

3,664,537
SEAL AND CLOSURE FOR ION-SELECTIVE ELECTRODE
Willard T. Grubb, Schenectady, N.Y., assignor to General Electric Company
Filed Dec. 2, 1970, Ser. No. 94,284
Int. Cl. H01j 61/30
U.S. Cl. 220—2.1 R 4 Claims



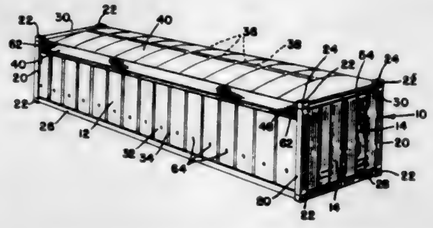
A closure seal for an ion-selective electrode has a room temperature sealant sealing an ion-selective material disc with a flat surface or with a controlled radius of curvature to one open end of a non-ion selective tube, an apertured member surrounding the disc, sealant and a portion of the tube, one end of the member being flush with the exterior surface of the disc, the same end of the member having an enlarged portion defining an opening adjacent the disc, sealant, and a portion of the tube, and a second room temperature sealant in the opening of the enlarged portion of the member. One such ion-selective electrode includes also a silver wire with a silver chloride portion positioned within the tube, a buffered chloride solution within the tube and in contact with the silver chloride portion of the silver wire, a closure over the opposite end of the tube with an aperture therein and a portion of the silver wire extending through the aperture in the closure to the exterior of the tube. A method of forming such a closure seal is also described.

3,664,538
NESTABLE RECEPTACLE AND CONTAINER
Donald W. Fioretti, 414 Wintergreen Ave., Hamden, Conn. 06515
Filed Dec. 21, 1970, Ser. No. 100,158
Int. Cl. B65d 7/00
U.S. Cl. 220—4 E 11 Claims



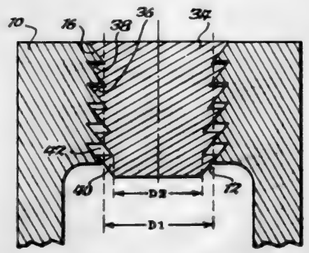
A nestable receptacle comprising a bottom member and a plurality of upstanding, flexible, first and second ear members on the periphery of the bottom member. The first ear members alternate in position on the periphery with the second ear members. Each of the first ear members has an outwardly projecting bottom edge adjacent the periphery of the bottom member, and has an outer wall inclined inwardly from the bottom member. Each of the second ear members has an inner wall inclined outwardly from the bottom member. The receptacles when engaged as described form a container having a cavity between the bottom members of the receptacles defined by the vertical dimensions of the walls of the first ear members.

3,664,539
TARPAULIN TIE DOWN ASSEMBLY FOR OPEN TOP CONTAINERS
Prakash W. Shahani, Edison, N.J., assignor to Sea-Land Service, Inc., Elizabeth, N.J.
Filed Jan. 7, 1970, Ser. No. 1,083
Int. Cl. B60p 7/04
U.S. Cl. 220—24 4 Claims



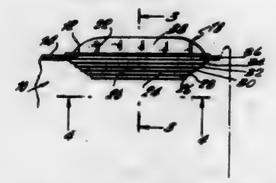
A tie-down assembly for securing a tarpaulin to an open top freight container in a weathertight, tamperproof manner including a plurality of displaceable ring members secured to a tarpaulin by a rope extending around the container. The rings, spaced from the container side walls by brackets, are aligned with eyelets extending around the marginal edges of the tarpaulin. The rope, laced through the ring members exteriorly of the tarpaulin, is provided with means for securing the ends together for receiving a seal.

3,664,540
VARIABLE CLEARANCE THREAD CLOSURE
Donald E. Wilkin, Warren, Pa., assignor to National Forge Company, Irvine, Pa.
Filed June 11, 1970, Ser. No. 45,365
Int. Cl. B65d 41/04
U. S. Cl. 220—39 R 8 Claims



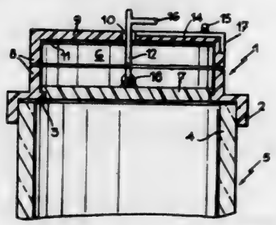
A thread system for use on screw type closure structures for high pressure vessels wherein the thread form of either the closure plug or the pressure vessel is machined such that when the vessel is unpressurized the load bearing surfaces of the vessel and plug threads are spaced apart by distances which vary from a predetermined maximum between the innermost threads to a predetermined minimum at the outermost threads. The variable clearance between the threads is calculated so as to enable the outer threads to deflect as levers in order that all of the threads are uniformly stressed when the vessel is pressurized.

3,664,541
CLOSURE PLUG
Asa P. Raskin, 865 West End Ave., New York, N.Y. 10025
Filed Feb. 20, 1970, Ser. No. 13,114
Int. Cl. B65d 41/00
U.S. Cl. 220—42 B 1 Claim



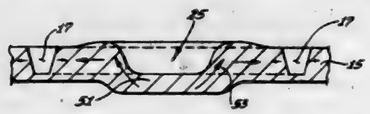
A closure device for resealing openings in containers comprising a resilient body having a horizontal top plate and a downwardly and inwardly extending tapered and stepped body portion. A handle is provided which extends substantially the length of the longitudinal axis of the body for facilitating the removal of the closure device from the opening.

3,664,542
VACUUM CLOSURE FOR OPEN ENDED CONTAINERS
Gregory John Wolfe, 15 Rue de Neufchatel, 1060 Brussels, Belgium
Filed Mar. 16, 1970, Ser. No. 19,864
Int. Cl. B65d 51/16
U.S. Cl. 220—44 7 Claims



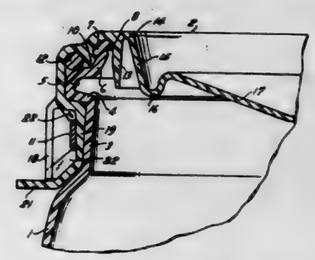
This invention has for its object a vacuum closure adapted for containers with one open end. Said closure is provided with means for reducing the pressure of air in the containers which use such closure.

3,664,543
EASY-OPEN TEAR STRIP REINFORCING MEANS
Omar L. Brown, Kettering, Ohio, and Ermal C. Fraze, 355 W. Stroop Road, Dayton, Ohio 45429; said Brown assignor to said Fraze
Filed Oct. 8, 1970, Ser. No. 79,218
Int. Cl. B21d 51/38
U.S. Cl. 220—54 6 Claims



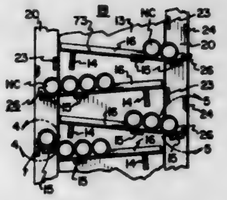
A coined indentation at the bending line of an easy-open can end tear strip. The indentation has nearly vertical side walls of increased thickness and the metal between the coined area and the tear-strip severing score is in compression. This prevents the formation of cracks in the score and increases the strength of the strip to prevent its breaking when a crease is formed when the can is opened improperly.

3,664,544
CONTAINER CONSTRUCTION
Wilhelm Hansmeo, Hauptstrasse 38, D-8203, Misch, Germany
Filed Feb. 19, 1971, Ser. No. 116,797
Claims priority, application Germany, Feb. 21, 1970, P 20 08 111.2
Int. Cl. A47j 27/08, 36/10; B65d 45/00
U.S. Cl. 220—60 R 10 Claims



A barrel of synthetic plastic material includes a substantially cylindrical main body portion and a head portion at one axial end and of one piece with the main body portion. The head portion has a circumferential wall having a first annular section substantially parallel with the longitudinal axis of the main body portion, a second annular section inclined inwardly at a greater angle and a third annular section projecting axially from the second section and inclined inwardly at a lesser angle. The third section has an outer free edge provided with a radially outwardly projecting circumferential bead and an inner free edge bounding an opening. A cover of synthetic plastic material overlies the head portion and comprises an outer annular rim portion of which exteriorly surrounds the head portion and has a circumferential rib abutting the second and third sections and engaging beneath the bead, and inner annular rim portion projecting into the opening proximal to the inner free edge, and a transverse portion of one piece with the inner annular rim portion spanning the opening. A sealing element is sealingly confined between and in abutment with the second annular section, the outer rim portion and the rib. At least one strap element encircles the outer rim portion and tightly urges the same into contact with the first annular section.

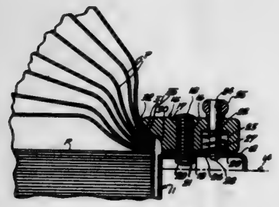
3,664,545
CYLINDRICAL CONTAINER STORAGE CONSTRUCTION
Scott L. Beesley, 464 West 5566 South, Murray, Utah 84107
Filed Aug. 6, 1970, Ser. No. 61,589
Int. Cl. B65g 57/28
U.S. Cl. 221—176 7 Claims



A storage and dispensing cabinet for cylindrical containers having chute rails, along which cylindrical containers, or cans, are progressed by means of vertically

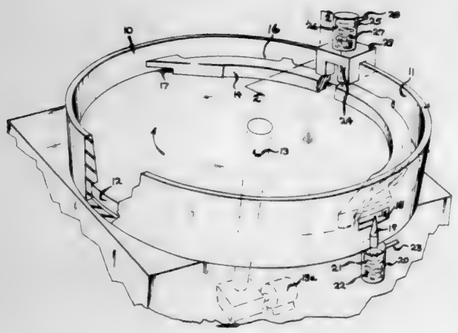
reciprocating chute rail extensions having hold back means. In the uppermost position the chute rail extensions receive cans and in the lower position, transfer previously received cans to the lower rails while holding back the upper rows of cans.

3,664,546
PLATE SEPARATOR FOR SELF-LEVELING PLATE DISPENSERS
George R. Shelley, 4225 NW. 72nd Ave., Miami, Fla. 33166
Continuation-in-part of application Ser. No. 35,771, May 8, 1970. This application June 17, 1970, Ser. No. 46,958
Int. Cl. A47f 1/06
U.S. Cl. 221—279 5 Claims



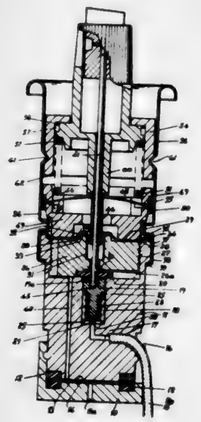
A plate separator for use with disposable paper or plastic plates being dispensed from a self-leveling well-type plate dispenser is described. A body member having a convex undersurface portion projecting radially into the dispensing well opening presses reactively against a plurality of the uppermost plates of an inverted stack in the dispenser well, at one side thereof, to separate them in fan-like fashion at the other side for easy withdrawal in a dispensing operation.

3,664,547
ARTICLE FEEDING MECHANISM
Raymond J. Dwyer, 4737 Secor Road, Toledo, Ohio 43623
Filed May 12, 1970, Ser. No. 36,606
Int. Cl. B65g 59/00
U.S. Cl. 221—259 2 Claims



A rapid feeder of articles, such as nuts, in which, by the use of a rotating disc, the articles are arranged in a row and when a predetermined number has been reached, a stop plunger is actuated to prevent feeding additional articles to such row and another stop plunger at the outlet end retracts to discharge those articles in the group. Both the feeding and discharge of the articles is accomplished speedily by the same rotating disc. After a group of articles is discharged, the stop plungers are again actuated, one to prevent the discharge of articles, and the other to admit articles to form the group.

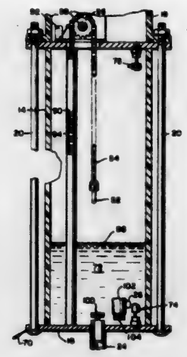
3,664,548
AEROSOL CONTAINERS AND VALVES THEREOF
Rory Wilson Broderick, Dalkey, Ireland, assignor to Institute for Industrial Research and Standards, and Norman John Thompson, both of Dublin, Ireland
Filed July 9, 1970, Ser. No. 53,591
Claims priority, application Ireland, July 10, 1969, 941/69
Int. Cl. B67d 5/08
U.S. Cl. 222—61 24 Claims



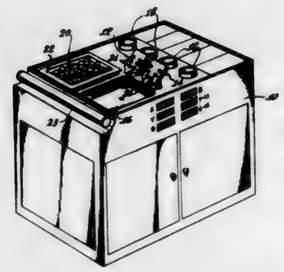
The disclosure illustrates a valve which may be used for the automatic or manual actuation of a dispenser for pressurised fluids. The valve incorporates a permeable membrane, for example a low density polyethylene film, which allows vapour from the dispenser to permeate into the valve and give rise to a pressure build-up under a sealed diaphragm. The pressure build-up eventually causes the diaphragm to release a spring mechanism to actuate the spray or aerosol discharge. Once discharge is complete the vapour under the diaphragm is discharged and the mechanism automatically reset to start the cycle again.

3,664,549
METHOD AND APPARATUS FOR MEASURING AND DISPENSING PREDETERMINED LIQUID VOLUMES
Matthew G. Maselli, Jr., 33 South St., Milford, Conn. 06460
Filed Jan. 26, 1970, Ser. No. 5,605
Int. Cl. B67d 5/08
U.S. Cl. 222—64 14 Claims

An upright cylindrical container is provided with a liquid level sensing probe which may be set at a predetermined position in the container. The container is filled from a predetermined minimum level until the top surface of the liquid is sensed by the probe, discontinuing filling. The liquid is then discharged to the predetermined minimum level. The probe is preferably mounted at the end of a cable or chain. The probe is lowered to contact the surface of the liquid at its minimum level. The chain or cable is driven by a synchronous motor or stepping motor. When driven by a synchronous motor, the motor is driven for a predetermined amount of time to raise the probe to the predetermined position. When driven by a stepping motor, a settable counter provides the stepping motor with a predetermined number of stepping signals from a pulse source.

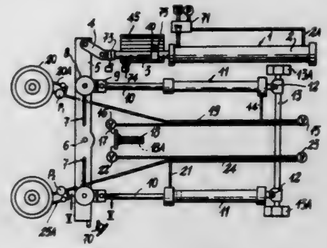


3,664,550
DISPENSING SYSTEM FOR BEVERAGES AND OTHER LIQUIDS
Olen E. Carothers, 15749 Gault St., Van Nuys, Calif. 91406, and Oliver E. Hinkle, 16012 Acre St., Sepulveda, Calif. 91343
Filed May 22, 1970, Ser. No. 39,586
Int. Cl. B67d 5/56
U.S. Cl. 222—129.2 19 Claims



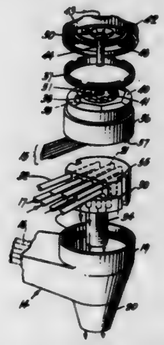
A liquid dispensing system is shown wherein a plurality of containers of water, syrups and liquors are connected to a source of carbon dioxide under pressure, and which have fluid outlets connected to ported dispensing heads containing pushbutton controlled valves for the different liquids. The CO_2 provides the pressure for forcing liquid from a container and through a dispensing head when the associated pushbutton is operated. For the liquors, hydraulic measure control valves are connected between the containers and respective ports in the liquor dispensing head. For obtaining carbonated water, different versions are disclosed which include a carbonator connected between the water container and a dispensing head for utilizing the CO_2 pressure as the force for mixing the CO_2 with and carbonating the water; and insulated containers for either or both carbonated water and plain water, wherein the CO_2 pressure is utilized to force either type of water from the container upon operation of the associated pushbutton at the dispensing head.

3,664,551
METERING ARRANGEMENT FOR POLYURETHANE ARTICLE PRODUCING MACHINES
Giuseppe Ferrari, Milan, Italy, assignor to S.p.A. Antonio Ferrari & Figli, Milan, Italy
Filed May 26, 1970, Ser. No. 40,628
Claims priority, application Italy, June 3, 1969, 17,717/69
Int. Cl. B67d 5/46
U.S. Cl. 222—134 5 Claims



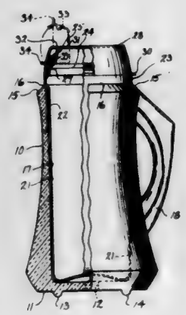
An arrangement for supplying metered amounts of different fluids to a station where said fluids are combined, wherein a reciprocating motor drives a rocking lever to which the pistons of metering cylinders are operatively connected, each of the metering cylinders are connected to a common head through a first valve and to a tank through a second valve, the shutting off for the metering is due to the cooperation of members, one of which is mounted along with the others on a drum which can be stepwise rotated, these members mounted on the drum being positioned along guides on the drum periphery.

3,664,552
CONTROL APPARATUS FOR FLUID DISPENSER
Clifford C. Carse, 8880 Kewen Ave., Sun Valley, Calif. 91352
Filed Feb. 2, 1970, Ser. No. 7,842
Int. Cl. B67d 5/60
U.S. Cl. 222—144.5 6 Claims



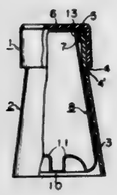
A multiple fluid dispenser having a dispensing head remotely located from the fluid control valves. The control valves are selectively operated by a plurality of microswitches mounted in a circle within the dispensing head. A circular touch plate mounted on a cammed surface above the microswitches has a shaft extending into an opening central to the microswitches. Pressure along a selected portion of the touch plate rotates the shaft to engage and actuate a respective microswitch which electrically opens an appropriate fluid valve to thereby initiate fluid flow through the dispensing head.

3,664,553
CARAFES
Carl H. Rickmeier, Jr., Sheboygan, Wis., assignor to The Volkrath Co., Sheboygan, Wis.
Filed May 25, 1970, Ser. No. 41,139
Int. Cl. B67d 5/06
U.S. Cl. 222—183 1 Claim



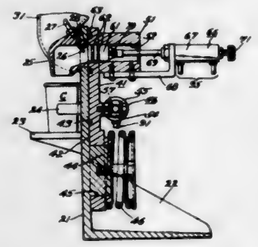
A plastic drinking water carafe featuring an outer, insulating shell formed of expanded polystyrene beads or similar inexpensive plastic material together with an inner container of polyethylene or other resilient, leakproof material which is adapted to removably fit within said outer shell, said inner container eliminating the possibility of the liquid leaking through said outer polystyrene shell, while the removable nature of said novel inner container permits the same to be withdrawn for washing or replacement when necessary.

3,664,554
CONTAINER FOR SPRINKLING POWDERED OR GRANULAR MATERIALS
Daiichi Shiozawa, Tokyo, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 12, 1969, Ser. No. 875,717
Claims priority, application Japan, Nov. 16, 1968, 43/99,417
Int. Cl. A47g 19/24
U.S. Cl. 222—183 8 Claims



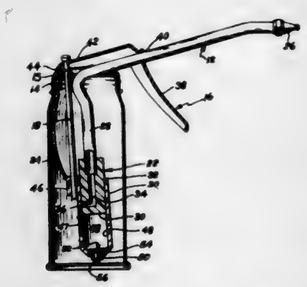
This invention relates to a container, which consists of a hollow cartridge and a bottomless hollow body used for sprinkling powdered condiments or granular materials. The hollow cartridge is charged with such powdered or granular materials and it has an opening mouth portion and a closed bottom wall or plate. The bottom plate has raised finger-grasping projections which are projected inwardly therefrom. The hollow body has a canopy in which a plurality of dispensing holes are provided for sprinkling such powdered or granular materials. The hollow cartridge can be inserted into and supported within the hollow body by suitable combination supporting and interlocking means.

3,664,555
MIXING AND DISPENSING UNIT
Wolf A. von Lernaer, Cherry Hill, N.J., assignor to Campbell Soup Company, Camden, N.J.
Filed Nov. 23, 1970, Ser. No. 91,872
Int. Cl. C01f 11/04
U.S. Cl. 222—145 5 Claims



A unit for mixing a metered quantity of a diluent with a metered charge of a concentrate and dispensing the combined ingredients. The unit includes two reservoirs for different concentrates and a common dispensing outlet with a displaceable element arranged to selectively withdraw a metered charge of concentrate from either of said reservoirs and to discharge the same through the outlet along with the diluent. The displaceable element includes an expandable chamber device, in one position operatively connected to one reservoir in a second position operatively connected to a second reservoir and in a third position intermediate said first and second positions operatively connected to said dispensing outlet. The diluent is added to the concentrate in such a manner as to thoroughly flush the chamber device and the dispensing outlet when the movable element is in registry with the dispensing outlet. The movable element also serves as a valve for the connections to the reservoirs and the dispensing outlet.

3,664,556
HAND PUMP OILER
Max W. Perry, Hastings, and Norman D. Brockelsby, Grand Island, Nebr., assignors to Dutton-Lainson Company
Filed June 24, 1970, Ser. No. 49,320
Int. Cl. B67d 5/42
U.S. Cl. 222—385 5 Claims

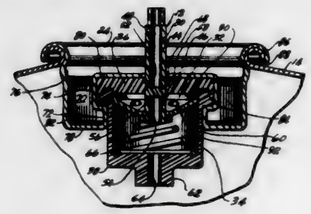


An improved hand pump oiler which includes a fixed piston having a port therethrough is connected with the oiler spout. A movable cylinder slides over the piston to pump oil through the spout upon each pumping stroke of the cylinder. A single inlet check valve is included in the cylinder and an integral piston valve is provided between the cylinder and piston. A plastic strap spring counteracts movement of the hand pump lever, thus insuring a return stroke of the cylinder.

ERRATUM

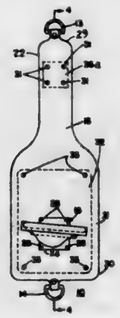
For Class 222—397 see:
Patent No. 3,664,508

3,664,557
BISTABLE SAFETY DISPENSING VALVE FOR FLUID DISPENSERS
Roger K. Bruce, Mission Viejo, Calif., assignor to Starigard Corporation, Santa Ana, Calif.
Filed Nov. 13, 1970, Ser. No. 89,179
Int. Cl. B65d 83/00
U.S. Cl. 222—397 18 Claims



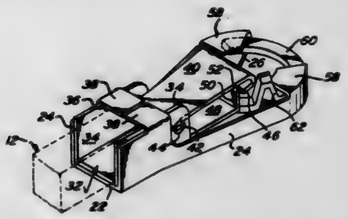
A valve stem of a dispensing valve for a pressurized dispenser is coupled to a bistable spring for movement to a vent position when the pressure within the dispenser exceeds normal dispensing pressures. The valve stem is maintained in the vent position by the bistable spring, which is in one of its stable positions, notwithstanding a drop in pressure within a dispenser. At normal operating pressures, the bistable spring is in its alternate stable position and resists dispenser pressure to maintain the valve stem out of the vent position. Under normal pressures, the valve is operated to dispense product by finger pressure applied to the valve stem against the spring to communicate a product port leading to a product passage with the interior of the dispenser. Actuation may be done by applying pressure either normal to the valve stem or axially along the valve stem.

3,664,558
GUN HOLSTER
Peter M. Tolliver, Brighton, N.Y., assignor of fractional part interest to Samuel R. Genca
Filed Oct. 23, 1970, Ser. No. 83,364
Int. Cl. F41c 33/00
U.S. Cl. 224—1 R 9 Claims



A gun holster wherein a rifle or gun may be carried in a horizontal position by a gun supporting member coupled normal to a side plate and is reversible for supporting the gun or rifle on the other side thereof in a vertical position for fast aiming and firing from the horizontal or vertical position.

3,664,559
REMOVABLE WATCH BAND
Mateo A. Bruner, 1113 Wynnbrook Place, Secane, Pa. 19018
Filed Oct. 10, 1969, Ser. No. 865,325
Int. Cl. A44c 5/18
U.S. Cl. 224—4 E 9 Claims



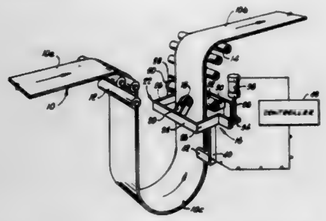
A removable watch band adapted to be secured on a watch casing of a woman's watch which has a circular opening at the top and bottom thereof. The watch band includes a hook-shaped member which is movable from a first position wherein one end can be inserted in the circular opening to a second position wherein the end will retain the band on the casing at the opening. Pivotable means are used for releasably securing the hook-shaped member in its retaining position.

3,664,560
BELT
Neale A. Perkins, Sierra Madre, Calif., assignor to Safariland Ltd., Inc., Monrovia, Calif.
Continuation-in-part of application Ser. No. 740,166, June 26, 1968. This application Jan. 16, 1970, Ser. No. 3,270
Int. Cl. F41b 13/04
U.S. Cl. 224—5 R 15 Claims



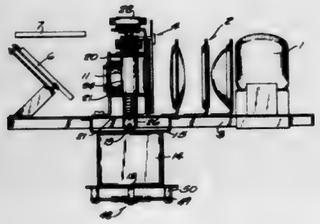
An elongated belt having an outer member and a lining secured to an inner side of the member. In one form of the invention, a portion of the outer member projects outwardly to define a pocket and a cartridge container for securing articles to the belt. The rear sides of the pocket and cartridge container are defined by the lining. In an alternative form of the invention, a pocket and a cartridge container are removably mounted on the belt. Brackets are mounted between the member and the lining and project through openings in the member to secure holding devices to the belt. Hidden hooks engage apertures in the belt to secure its ends to each other. A keeper for the free end of the belt includes a thistle-cloth fastener which mates with a cooperating fastener on the other end of the member. Alternatively, the keeper is drawn around the belt, through a guide loop at the free end of the belt, and folded back on itself for mating with a cooperating thistle-cloth fastener. A thistle-cloth fastener on the inner side of the belt secures the belt to the wearer's trousers or to a reversible dress belt which carries a mating fastener.

3,664,561
WEB GUIDING DEVICE
Bruce A. Feiertag, Oklahoma City, Okla., assignor to Fife Corporation, Oklahoma City, Okla.
Filed Nov. 26, 1969, Ser. No. 880,149
Int. Cl. B65h 25/26
U.S. Cl. 226—21 7 Claims



A device for guiding elongated flexible webs at a catenary or "free loop" in the web and including a steering roller carried by a framework which rotatably supports the roller for rotation about an axis extending substantially parallel to the plane of the web and in a position to contact the surface of the web. The framework is mounted for pivotation so that the rotational axis of the roller may be extended perpendicularly to the direction of travel of the web, or may be shifted to extend at various selected angles to such direction of travel. The roller is of a width, as measured along its axis of rotation, which is less than the width of the web as measured perpendicularly to its direction of travel. A suitable actuating device is provided for pivoting the framework in response to a sensed departure of the web from a desired course of travel.

3,664,562
PROJECTION APPARATUS FOR SEQUENTIAL TIMED PRESENTATION OF INDIVIDUAL FRAMES
Harold S. Montgomery and David J. Nutting, Milwaukee, Wis., assignors to Nutting Industries, Ltd., Milwaukee, Wis.
Filed June 30, 1969, Ser. No. 837,724
Int. Cl. G03b 1/24
U.S. Cl. 226—76 6 Claims

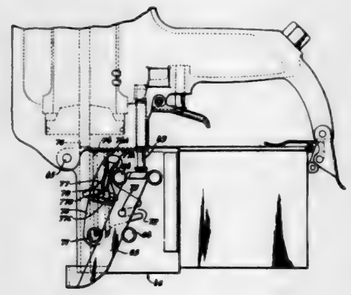


The disclosure includes a multiple frame film strip selectively aligned in a projector. The frames are divided into a plurality of different categories, with the corresponding sequenced information of the several categories presented as a group of adjacent frames on the film strip. A vibrating pole motor includes a one-way clutch driving a rotating shaft.

Film drive sprockets are connected directly to the shaft and movement of the shaft and sprockets stop within one-half cycle after removal of the applied alternating power.

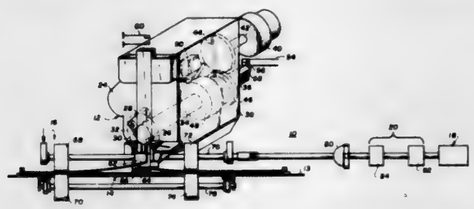
Each complete revolution of the shaft positions the film strip from a given question in a category to the next succeeding question in the same category. A switch unit is connected directly to the rotating shaft to control the sequential motor energization.

3,664,563
NAILING AND LIKE GUNS
Malcolm Edwin Hillier, Alresford, England, assignor to Gaston E. Marbaix, Limited, Basingstoke, Hampshire, England
Filed Sept. 12, 1969, Ser. No. 857,499
Claims priority, application Great Britain, Sept. 16, 1968, 43,933/68
Int. Cl. B27f 7/06
U.S. Cl. 227—7 9 Claims



The described invention resides in mechanism for feeding nails or other fasteners into a pneumatic nail-gun and it is basically a feed mechanism in which external power is applied in both senses of direction to a reciprocating nail-engaging element, the power for one sense deriving from dropping the gun on the workpiece and in the other sense from the available source of pneumatic pressure.

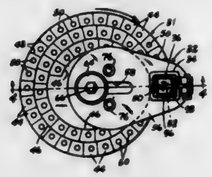
3,664,564
ELECTRONICALLY CONTROLLED STITCHING MACHINE
Stephen Stanton, Baltimore, and Edward Varholy, Glen Burnie, Md., assignors to Flynn & Enrich Company, Baltimore, Md.
Filed Sept. 16, 1970, Ser. No. 72,764
Int. Cl. B27f 7/06
U.S. Cl. 227—100 18 Claims



A stitching machine is disclosed which includes first means in the form of a stitching head for applying stitches to a work piece passing thereby; second means preferably in the form of cooperating pull rollers for conveying the work piece past the stitching head; a motor selectively connectable to the pull rollers for the operation thereof; interconnection means in the form of a clutch-brake combination responsive to preselected operating signals for selectively connecting and disconnecting the motor to the pull rollers to thereby effectuate incremental indexing of the work piece past the stitching head; and electronic control means for generating the preselected operating signals necessary to effectuate the incremental advance of the work piece through the machine. In a preferred embodiment, the electronic control means is responsive to the operation of the stitching head and includes circuitry designed to produce an extremely rapid energization and de-energization of the clutch brake combination

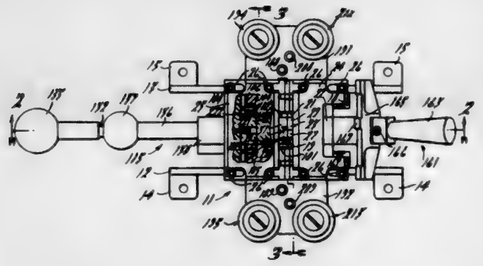
defining the aforementioned interconnection means whereby extremely accurate high-speed stitching is made possible.

3,664,565
AUTOMATIC FEED MECHANISM FOR NAILING GUNS
George P. Hellman, New York, N.Y., assignor to General Wire Overseas Corporation, St. Louis, Mo.
Original application Apr. 3, 1967, Ser. No. 627,952, now Patent No. 3,506,115, dated Apr. 14, 1970. Divided and this application Apr. 13, 1970, Ser. No. 48,704
Int. Cl. B25c 1/00
U.S. Cl. 227—137 15 Claims



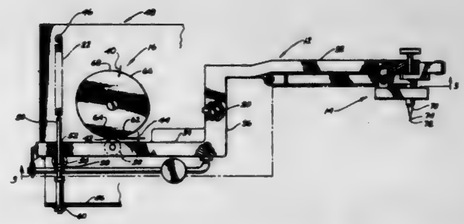
A nailing disk and feed mechanism for pneumatic nailing guns. The nailing disk is provided in the form of a plate with a helical or spiral string of nails inserted through the plate and weakened portions surrounding the nail head in order that the nail and surrounding material may be punched out from the nailing disk in the nailing operation. The feed mechanism supports the nailing disk and feeds the helical string of nails in sequence to a driving tube with means for advancing the nailing disk through a spring housing and ratchet arrangement to provide for automatic feeding and advancement of the next nail after the driving operation.

3,664,566
COLD BUTT WELDING MACHINE
Walter J. Rozmus, Hubbardsville, N.Y., assignor to Kelsey-Hayes Company
Filed Apr. 13, 1970, Ser. No. 27,591
Int. Cl. B23k 21/00
U.S. Cl. 228—3 14 Claims



A cold, multiple upset butt welding machine having a simplified construction. The machine embodies two pairs of dies. One die of each pair is located against a stationary surface of a supporting frame arrangement and the other die of each pair is movable toward and away from the first die between an opened position and a gripping position. A first cam is associated with the other dies of the pairs for moving them between these positions. The pairs of dies are supported for movement toward and away from each other between a spaced position and a welding position. Second cam means are associated with the pair of dies for moving them between their spaced and welding positions. An operating handle has a pivotal connection to each of the cam means and is operative to move the first cam means and bring pairs of dies to their gripping position before the second means is operated and when the dies are in their spaced positions. After a wire is gripped by the closure of the pairs of dies, the second cam means moves the pairs of dies from their spaced positions to their welding positions. This achieves an upset in the wire ends. The procedure is repeated a number of times to achieve a multiple upset.

3,664,567
ARM ASSEMBLY FOR BONDING APPARATUS
Joseph L. Lamb, Claremont, Calif., assignor to Unitek Corporation, Monrovia, Calif.
Filed June 27, 1969, Ser. No. 837,096
Int. Cl. B23k 21/00
U.S. Cl. 228—3 8 Claims



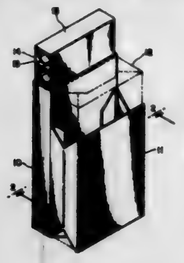
Apparatus for controlling the position and motion of a pivoted member. A pivoted bonding arm such as is provided in a bonding apparatus is biased into contact with a rotating cam during non-bonding intervals in the cycle of the bonding apparatus operation to limit the motion of the arm and overcome the inertial effects exerted on the arm due to the speed of apparatus operation.

3,664,568
INSULATED PLASTIC BUCKET
Gene D. MacDaniel, Lithonia, Ga., assignor to Sweetheart Plastics, Inc., Wilmington, Mass.
Filed Nov. 24, 1969, Ser. No. 879,448
Int. Cl. B65d 3/00
U.S. Cl. 229—1.5 B 9 Claims



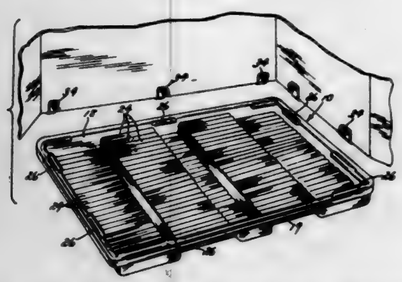
A container having a wrapped side wall of foam plastic sheet material with the side margins overlapped and welded together, and a separately formed bottom having a central portion generally perpendicular to the container axis and with an annular skirt extending away from the plane of the central portion and sealed to the lower margin of the side wall. A lid made of the same material fits over the upper margin of the container.

3,664,569
PACKAGING STRUCTURE
Mortimer Russell Dock, New York, N.Y., assignor to The H-2-O Filter Corporation, New York, N.Y.
Filed July 9, 1970, Ser. No. 53,396
Int. Cl. B65d 5/38, 85/10
U.S. Cl. 229—10 3 Claims



This invention relates to packaging means for an article designed to be used with another commercially available type of article, and provides means for attachment of the two in a unitary package.

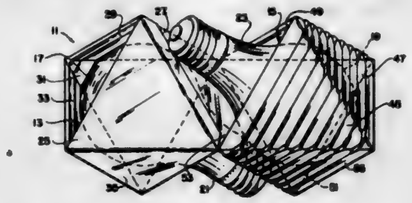
3,664,570
MOLDED PALLET FOR PALLETIZED CONTAINERS
Julius B. Kuperamit, 145—80 228th St., Springfield Gardens, New York, N.Y. 10013
Filed Nov. 25, 1970, Ser. No. 92,679
Int. Cl. B65d 19/06
U.S. Cl. 229—23 R 2 Claims



A molded pallet for use in conjunction with palletized containers. The device includes an integrally molded peripheral trough engageable with the lower edges of fibrous or plywood panels forming the side walls of a container. Clips are provided which are semi-permanently interconnected to the lower edge of the side wall of the container, and resiliently engage with a bead on the edge of the pallet bordering said trough, whereby replacement of a damaged side wall is facilitated. Replaceable side walls may also be used to engage the trough on the pallet in the absence of the clips, where the container is strapped in conventional fashion, or otherwise integrated.

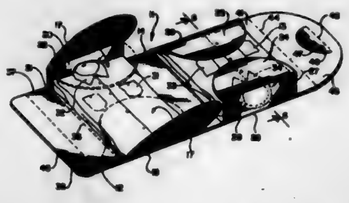
3,664,571
PACKAGE FOR LIGHT BULBS
Byron L. Lesar, University City, Mo. (7723 Blackberry, St. Louis, Mo. 63130)
Filed Oct. 29, 1970, Ser. No. 85,109
Int. Cl. B65d 71/00, 75/00
U.S. Cl. 229—39 B 9 Claims

A package for a pair of light bulbs. The package is folded from a blank of chevron shape having a pointed and a notched end. A slit along the center line of the blank begins at the notched end and extends toward the pointed end. The blank is provided with first and second sets of score lines, lines in each set being parallel to edges of the blank defining the pointed end and thus angled with respect to the side edges of the blank. The sets of score lines intersect substantially at the slit, dividing the blank into alternate sets of triangular panels to provide two sets of triangular panels on each side of the slit. Each triangular panel of one set of panels on each side has its base along a side edge of the blank and its apex at the slit. Each triangular panel of the other set on each side



of the slit has its base along the slit and its apex at a side edge of the blank. Thus, when the sections of the blank are each folded along the score lines in opposite directions and corresponding edges of said first and second pairs are secured together, the package has a pair of compartments each having a plurality of peripheral triangular openings at opposite ends of the compartment through one of which openings the portion of a light bulb may be inserted and thereby confined within the compartment.

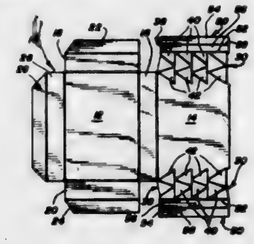
3,664,572
FOLDABLE SHIRT PACKAGING BOX AND CARRYING CONTAINER
Zalman P. Puchkoff, 1168 E. 86th St., Brooklyn, N.Y. 11236, and Vincent Topazio, 33 DeMartino Ave., Yonkers, N.Y. 10703
Filed Nov. 20, 1970, Ser. No. 91,281
Int. Cl. B65d 5/18
U.S. Cl. 229—40 4 Claims



A foldable shirt packaging box and carrying container has been provided by this invention, and comprises two main panel portions interconnected by an intermediate riser portion and having end riser portions with a locking flap and locking latch that overlie one another, when the box has been folded up over shirt packages positioned upon the main panels, one shirt package extending in one direction with the collar lying at one end and with the other skirt package extending in the opposite direction with the collar lying at the other end of the panels, so that when the box is folded and the shirt package is joined the collars of the shirt package will be stacked oppositely. Flaps extend from the main panels and each of the main panel flaps have a plain flap foldable along one line and a double foldable flap, foldable upon two lines and providing for a riser portion overlying the collar of the packaged shirt. The different flaps of one panel extend oppositely from the flaps of the other panel. The locking latch of the locking flap is extendable through an elongated slot in the

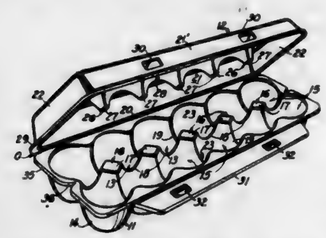
one panel and a handle is provided on one of the riser panels adjacent to the locking flap by which the package is carried. The elongated slot is closed on the inner face of the package by a closure plate providing for a pocket for receiving mainly the locking latch.

3,664,573
MAILING CONTAINER WITH CUSHIONING CELL CONSTRUCTION
James H. Partain, Norcross, Ga., and Richard H. Johnson, Arlington Heights, Ill., assignors to Stone Container Corporation, Chicago, Ill.
Continuation-in-part of application Ser. No. 50,447, June 29, 1970. This application Oct. 20, 1970, Ser. No. 82,316
Int. Cl. B65d 5/02
U.S. Cl. 229—40 5 Claims



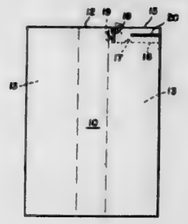
A single one-piece blank of paperboard or corrugated board capable of being folded into a mailer container having a pair of spaced apart parallel panels and an end cell cushioning construction connecting at least a pair of adjacent ends of the parallel panels. The portions of the blank which form each of the end cell cushioning constructions include a hinged flap of connected wall parts which cooperate to form an interior wall perpendicular to the said parallel panels and a wall parallel to said parallel panels and juxtaposed one of them having the book engaged thereagainst. Each end cell cushioning construction is located between said interior wall and an exterior wall of the mailer.

3,664,574
EGG CARTON
David L. Pearl, Atlanta, and John G. Waller, College Park, Ga., and Beverly P. Head, Jr., Birmingham, Ala., assignors to W. R. Grace & Co., Duncan, S.C.
Continuation-in-part of application Ser. No. 817,279, Apr. 15, 1969, which is a continuation-in-part of application Ser. No. 601,947, Dec. 15, 1966. This application June 29, 1970, Ser. No. 50,791
Int. Cl. B65d 1/24
U.S. Cl. 229—44 R 5 Claims



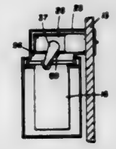
This invention relates to molded, foamed plastic egg cartons with elliptical cells which prevent the eggs stored therein from contacting each other. A locking flap pivotally attached along one edge of the carton includes locking lugs which mate with complementary apertures formed in the cover to firmly hold the cover in its closed position.

3,664,575
BAG CLOSURE
Connie Lake, 31 Kurt Road, Pittsford, N.Y. 14543
Filed Nov. 20, 1970, Ser. No. 91,262
Int. Cl. B65d 33/16
U.S. Cl. 229—62 15 Claims



A closure device for a plastic bag is formed of the plastic material of the bag itself during manufacture of the bag and is made by perforation and seal lines that form a keeper removable from the bag. The keeper has a loop end and a seal region spaced from the loop end to close the loop. The tail end of the keeper opposite the loop is wrapped around the neck of the closed bag and pulled through the loop. The keeper is sufficiently wide and flexible so that it is drawn down to a substantially narrower width where the loop and tail engage to hold the bag tightly closed.

3,664,576
SANITARY DISPOSAL DEVICE
Alfred M. Potvin, 81 Jalbert St., Thetford Mines, Quebec, Canada
Filed Nov. 5, 1969, Ser. No. 874,354
Claims priority, application Canada, Sept. 17, 1969, 62,209
Int. Cl. B65f 1/00
U.S. Cl. 232—43.2 6 Claims

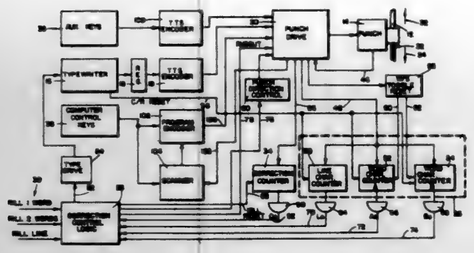


A sanitary disposal device comprising a trash receiving enclosure and a waste disposal drawer associated with the enclosure. The disposal drawer consists of a main drawer having a movable drawer therein to transport and release its contents in a trash receptacle located in the enclosure.

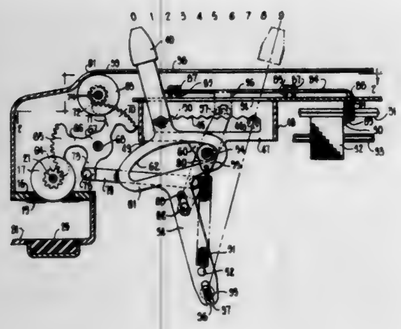
3,664,577
APPARATUS FOR THE PRODUCTION OF CODED INTELLIGENCE ON A RECORD MEDIUM
Frank G. Higgason, Jr., Arlington Heights, and Robert J. Schuert, Palatine, Ill., assignors to Ludlow Typograph Company, Chicago, Ill.
Original application Apr. 21, 1969, Ser. No. 817,987, now Patent No. 3,580,494, dated May 25, 1971. Divided and this application Aug. 5, 1970, Ser. No. 61,344
Int. Cl. G06k 1/02
U.S. Cl. 234—15 1 Claim

Apparatus produces coded intelligence on a record medium, such as by perforating a moving tape, and has a keyboard input. An error correction capability is provided which utilizes the input data, itself, such as the word spaces, to control the operation of the system for

deletion of the unwanted data on the medium. A computer word program capability may also be provided for producing selected multi-character instruction codes on the medium from a single key at the keyboard.



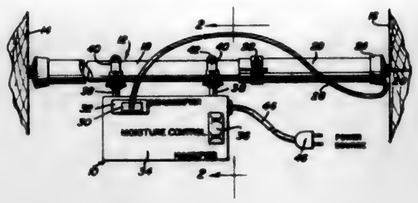
3,664,578
VALUE SELECTION SETTING MEANS
Harry F. Noller, Moraga, and John C. Morris, Castro Valley, Calif., assignors to The Singer Company, New York, N.Y.
Filed June 7, 1971, Ser. No. 150,322
Int. Cl. G07g 1/00
U.S. Cl. 235—101 5 Claims



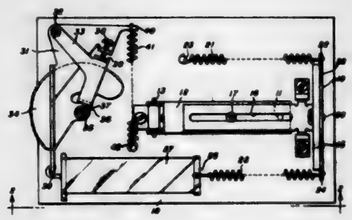
A value selection mechanism including ordinally arranged differentially settable levers pivotally supported on a common axis. Each lever is adjustable in a variable arc to selective positions representative of values "1" to "9" and "0." Upon adjustment of each lever, a corresponding check dial and type wheel are likewise adjusted to represent the selected value. At the same time, a corresponding gear means is adjusted to effect a registration of the selected value in one or more registers. As each lever is rocked about its axis, the manipulable end or exposed portion of each lever moves in a straight or planar path from one extreme angular position of the lever to the other.

3,664,579
COMBINATION HUMIDISTAT AND HEATER
Allen M. Foote, Flat Rock, N.C.
(P.O. Box 1610, Hendersonville, N.C. 28739)
Filed Aug. 12, 1970, Ser. No. 63,484
Int. Cl. G05d 22/02
U.S. Cl. 236—44 11 Claims

A humidistat for controlling moisture conditions in a piano, cigar case, or any other small enclosure where moisture control is necessary. The humidistat is combined with a heating device or a dehumidifier and a moisture producing device or humidifier and includes a housing attached to a heater or dehumidifier either by the use of a snap-on connection or a permanent installation to facilitate mounting of the humidistat in proper relation to the enclosed area and the heater or dehumidifier and the moisture producing device or humidifier.



3,664,580
CHANGEOVER APPARATUS FOR A CONDITION RESPONSIVE DEVICE
Ronald L. Martin, Mount Prospect, Ill., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Sept. 18, 1970, Ser. No. 73,398
Int. Cl. G05d 22/00
U.S. Cl. 236—44 9 Claims

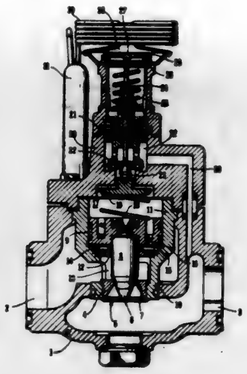


Apparatus for a pneumatic condition responsive device for facilitating the changeover from direct acting control to reverse acting control. A first biasing means including a condition responsive element and a second biasing means are connected to a rotatable member which is connected to a member pivotable about an axis to urge a flapper to variably restrict flow through a nozzle. Rotating the rotatable member from a first pre-selected position to a second pre-selected position causes a reversal of moments about the pivot means established by the first and second biasing means and thereby changes the condition responsive device from, for example, direct acting to reverse acting.

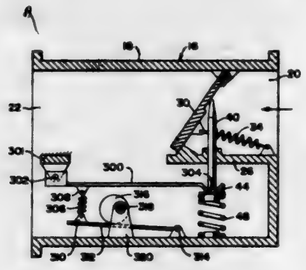
3,664,581
THERMOSTATICALLY CONTROLLED EXPANSION VALVE FOR REFRIGERATING EQUIPMENT
Jorgen Christian Stannow, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Continuation of application Ser. No. 821,816, May 5, 1969. This application Feb. 9, 1971, Ser. No. 114,041
Int. Cl. F25b 41/04
U.S. Cl. 236—80 6 Claims

The invention relates to a thermostatically controlled valve assembly for high capacity refrigeration equipment.

The valving includes main and auxiliary valves with the auxiliary valve functioning as a pilot valve. In the operation the main valve may occupy any intermediate position between fully opened and fully closed positions.



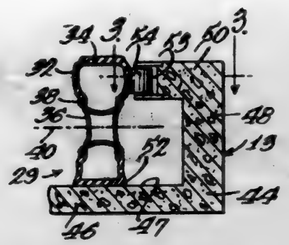
3,664,582
NON-LINEAR TEMPERATURE RESPONSIVE VALVE ASSEMBLIES
Wilbur F. Jackson, Rolling Hills, and James R. Willson, Garden Grove, Calif., assignors to Robertshaw Controls Company, Richmond, Va.
Filed Oct. 29, 1969, Ser. No. 872,088
Int. Cl. G05d 23/02
U.S. Cl. 236—93 20 Claims



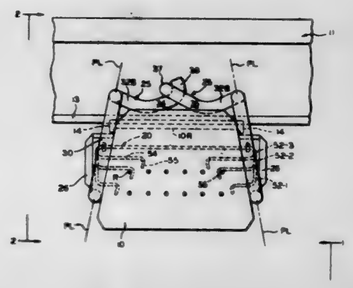
A temperature responsive valve assembly including an inlet, an outlet and a valve member mounted therebetween and adapted to be positioned by an operator member constructed of a material having a temperature-actuated shape memory. The operator member is located adjacent the downstream side of the valve assembly whereby fluid flow therethrough is regulated in relation to downstream fluid temperature. The particular actuating temperature of the operator member can be fixed or can be adjusted as by varying the stress applied thereto by springs.

3,664,583
VEHICLE TRACKWAY
Dillie V. Allen, 208 Euclid Ave., Arlington Heights, Ill. 60004
Filed Apr. 25, 1969, Ser. No. 819,211
Int. Cl. E01f 15/00
U.S. Cl. 238—5 3 Claims

A track for an inflatable rubber tired vehicle having a plurality of rollers mounted for rotation about a vertical axis and engageable with the rubber sides of the tires above the axis of rotation of the tires to reduce the axial and vertical friction between the tire and the track along the sides of the tire to a minimum.



3,664,584
CONCRETE TIES
Raymond J. Novotny, Sparta, assignor to Abex Corporation, New York, N.Y.
Filed Feb. 9, 1970, Ser. No. 9,852
Int. Cl. E01b 9/30
U.S. Cl. 238—349 3 Claims



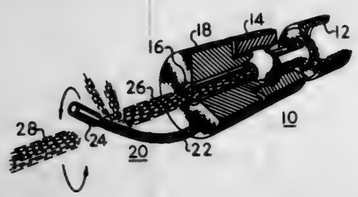
A concrete tie is provided with protuberances on opposite sides thereof serving to anchor a pair of one-piece spring-type rail fasteners. Each fastener has a bight tensioned on the protuberance, and a pair of legs extend upward from the bight. The upper ends of the legs are bent to afford extensions which overlie the base of the rail, and bends therein engage the base of the rail with a spring force. The free ends of the fasteners end in hooks, one hook being the complement of the other so that a pair of such fasteners may be complementally jointed at the free ends and tensioned one on the other.

The protuberances of the tie are under a great deal of compression and are reinforced by bends in a plurality of rod-like stringers embedded in the tie to extend between the protuberances.

3,664,585
THERAPEUTIC SHOWER HEAD
Daniel L. Curtis, 1956 Ardmore Ave., Manhattan Beach, Calif. 90266
Filed Dec. 18, 1970, Ser. No. 99,410
Int. Cl. B05b 3/04
U.S. Cl. 239—222.21 1 Claim

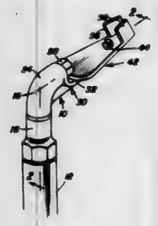
A therapeutic shower head is disclosed which includes a collimator for producing a single beam of water. A

swivel arrangement is provided to allow the direction of the beam to be altered. A beam interrupter is provided at the output that pulsates the beam. The interrupter can either be dormant or if set into motion will derive energy



from the beam and begin a sustained oscillation that will periodically interrupt the beam. The therapeutic benefits of the shower head are derived from both the single steady beam and from the pulsating beam.

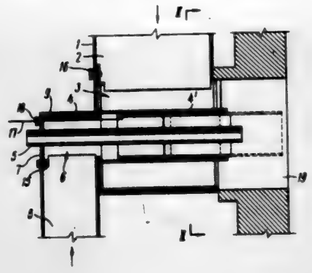
3,664,586
SPRINKLER HEAD
Charles R. Harris, Sr., 4671 E. Michigan, Fresno, Calif. 93703
Filed July 6, 1970, Ser. No. 52,258
Int. Cl. B05b *3/08*
U.S. Cl. 239—233 13 Claims



A tubular body including relatively angulated tubular legs joined at one pair of adjacent ends with their interiors communicated with each other. A rotary coupling member is carried by the free end of one leg for rotary connection with the outlet end of an associated water supply pipe and the free end of the other leg includes means defining a water jet outlet nozzle for endwise outwardly directing a discharge of water therefrom. The free end of the other leg further includes water jet deflecting panel structure supported from the other leg for adjustable registry with and inclination relative to the path of the jet of water from the nozzle.

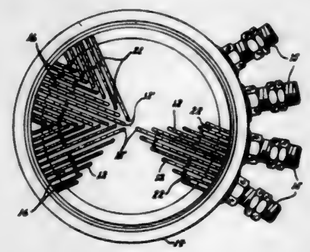
3,664,587
BURNER DEVICE FOR COMBUSTION GASES
Rustam Berovich Akhmedov, Massiv Cherdantseva 2, kv. 6; Zakhidzhan Sadykdzhanovich Talibdzhanov, Ulitsa Bokserskaya 57; Asomkhodzha Valikhodzhaev, Ulitsa Pavlenko 6; and Faizulla Karimovich Rashidov, Massiv Chilanzar 9–G kvartal 39, kv. 30, all of Tashkent, U.S.S.R.
Filed Jan. 22, 1970, Ser. No. 4,955
Int. Cl. B05b *7/10*
U.S. Cl. 239—402.5 5 Claims

A burner device for combustion gases, for use in boiler units. In said burner device, there are whirlers for air and gas, which are shaped as rotary pieces permitting, variation of the place of admission of gas and air streams as well as of the cross-section of the channel at the place of admission, said rotary pieces being provided with the



possibility of their mutual rotation in order to vary the direction of rotation of air and gas streams.

3,664,588
PLATELET INJECTOR
James H. Mitchell, Rancho Cordova, and Hans H. Muenzenburg, Diamond Springs, Calif., assignors to the United States of America as represented by the Secretary of the Air Force
Filed Oct. 22, 1969, Ser. No. 868,980
Int. Cl. F23d *11/10*
U.S. Cl. 239—418 1 Claim

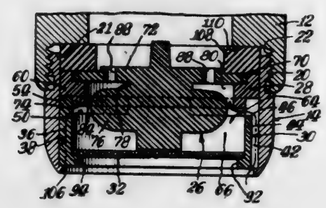


A platelet injector having a manifold ring, and a plurality of vanes arranged in groups of vanes secured to said manifold. Each groups of vanes having a radially extending vane, with the remaining vanes of that group parallel thereto. The vanes of each group being a constant width apart forming a passage therebetween. In operation the fuel is injected from said vanes while the oxidizer passes through said passage between said vanes.

3,664,589
AERATING DEVICE
George W. Jatho, Oak Lawn, and Louis F. Kint, Chicago, Ill., assignors to Wrightway Engineering Co., Chicago, Ill.
Continuation of application Ser. No. 709,992, Mar. 4, 1968. This application May 11, 1970, Ser. No. 56,038
Int. Cl. E03c *1/084*
U.S. Cl. 239—428.5 13 Claims

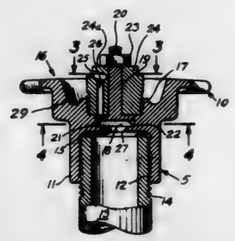
Disclosed herein is an aerating device for entraining air in water or other liquid flowing through a conduit. The aerating device includes a casing with a removable internal assembly comprising an annular partition mounted in the casing and having radially projecting and axially extending ribs which form air inlet passages between

a smooth inner surface of the casing and the partition. The ribs extend axially above an upstream end portion of the partition to form legs which removably support a seating ring in spaced relation above the partition to thereby define circumferential slots or apertures between



the legs. A body for breaking up the flow of liquid through the casing is removably mounted on a seat formed in the ring. Air is drawn through the passages and apertures and is entrained in and mixed with the liquid as the body breaks up the flow of liquid.

3,664,590
LAWN SPRINKLER WITH PATTERN CONTROL MEANS
William J. Knight, 1102 Fairview, Arcadia, Calif. 91006
Filed June 12, 1970, Ser. No. 45,700
Int. Cl. B05b *1/26*
U.S. Cl. 239—499 3 Claims



A lawn sprinkling spout or head is disclosed which is adjustable to spray a variety of shapes of lawn sectors selectively with water. The position of the sector of the lawn is also selectable. The sprinkler head has a plurality of outlet apertures arranged in a uniform distribution. Over these apertures a movable mask is operably located. The mask has a plurality of notches or apertures arranged in a predetermined pattern so that particular combinations of the apertures of the mask may be positioned in the path of predetermined groups of the outlet apertures to permit communication between a water source and the predetermined pattern of outlets which are in position over the mask. The remaining outlets are blocked. As a result a selectable lawn spray pattern is achieved.

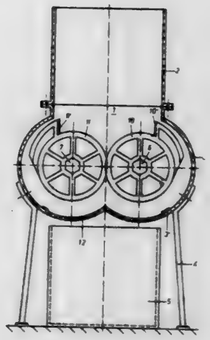
3,664,591
BURNER
Charles E. Stohrer, Jr., Hickory Hills, and Bissell J. Smith, Oak Brook, Ill., assignors to Harper-Wyman Company, Hinsdale, Ill.
Filed Aug. 19, 1970, Ser. No. 65,151
Int. Cl. B05b *1/14*
U.S. Cl. 239—552 6 Claims

A gas burner includes stamped sheet metal top and bottom plates of similar configuration and capable of being formed with a single die. The plate edges are spaced apart to form a gap receiving a metal strip including burner ports and including projecting tabs extending



through slots in the plates and bent over to clamp the strip between the plates.

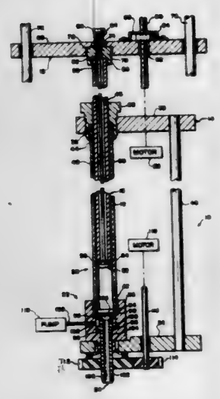
3,664,592
MACHINE FOR GRANULATING BULK RUBBISH OR BULKY REFUSE OF ANY KIND
Luitpold Schweigert, Lieneschurez 34, Osnabruck, Germany, and Kurt Rossler, Ringstrasse 28, Belm-Osnabruck, Germany
Filed Sept. 3, 1969, Ser. No. 854,821
Claims priority, application Germany, Sept. 3, 1968, P 17 58 913.8
Int. Cl. B02c *18/14, 18/20*
U.S. Cl. 241—73 7 Claims



A machine for comminuting bulky refuse of any kind. The machine includes a pair of rotary shafts which are parallel to each other and which are adapted to rotate in opposite directions. Each shaft has distributed therealong a plurality of rotary cutters fixed to the shaft for rotation therewith with the rotary cutters being spaced from each other along the shaft and with each cutter having a single tooth, the teeth of the cutters distributed along each shaft being angularly staggered about the axis of each shaft. The cutters on one shaft are aligned with the spaces between the cutters on the other shaft, and each cutter has a circular portion fixed to the shaft and the single tooth of each cutter projects beyond the circular portion of each cutter. These circular portions of the cutters on the pair of shafts have peripheries situated closely adjacent to each other so that the single cutting teeth on the several cutters of one shaft move through the spaces between the circular portions of the cutters on the other shaft. The rotary shafts with the cutters thereon are housed within a trough-shaped housing carrying an upper inlet through which material is supplied to the cutters, this housing having a lower outlet situated beneath the rotary cutters at a location adjacent to the space through which the teeth of the cutters turn during rotation of the shafts. This lower outlet of the housing carries a structure which prevents the comminuted material from passing through the outlet until this material has been reduced to a given size, and the cutting teeth function not

only to comminute the material but also to repeatedly raise it from the outlet and repeatedly act on the material until it has been reduced to the size required to pass through the outlet where a suitable collector can be provided to receive the comminuted material. The spaces on each shaft between the successive cutters distributed therealong accommodates a structure for cleaning comminuted material out of these spaces during rotation of the shafts and the cutters therewith.

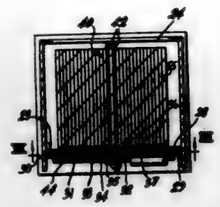
3,664,593
GEL FRACTIONATOR
Warren E. Gilson, 4801 Sheboygan Ave., and Robert E. Gilson, 4 Franklin Ave., both of Madison, Wis. 53705
Filed Apr. 1, 1970, Ser. No. 24,640
Int. Cl. B02c *19/00*
U.S. Cl. 241—60 10 Claims



A gel fractionator includes a cylinder for holding a column of gel, together with a piston assembly for advancing the column through the cylinder toward a fractionating apparatus. The piston assembly includes an air release valve operable from the exterior of the cylinder for releasing trapped air from above the gel column. The fractionating assembly includes a cutting screen engaged by the advancing column for severing the advancing column in a generally axial direction into subdivisions or segments. A rotating wire beneath the screen severs the subdivisions of gel as the gel advances. The wire is mounted across the mouth of a funnel which receives the severed gel particles, and the funnel includes structure for directing a stream of liquid at the underside of the screen for flushing the severed particles. The fractionating operation is carried out by repeatedly advancing the column a predetermined distance, pausing, and carrying out several discrete flushing operations to remove all severed particles.

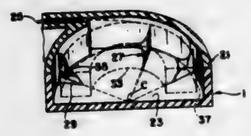
3,664,594
BANDAGE ROLL-UP PACKAGING DEVICE
Steve Novak, Rte. 2, Box 299, Battle Creek, Mich. 49017
Filed Sept. 8, 1970, Ser. No. 70,432
Int. Cl. B65h *17/02, 75/02*
U.S. Cl. 242—60 10 Claims

A container for storing and transporting rolled continuous webs or strips such as bandages is provided, including a device therein for rerolling the webs or strips for storage after use. The device comprises a spindle having one end mounted in a hub, the hub being rotatably mounted at a wall of the container, and having means engaging and restraining the hub against the axial and angular movement with respect to the container wall. A



crank means or electric motor is provided for rotating the hub and spindle.

3,664,595
FILM CARTRIDGE
Hubert Nerwin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 8, 1970, Ser. No. 96,101
Int. Cl. G03b *1/04*
U.S. Cl. 242—71.1 10 Claims



A film compartment in a film cartridge is provided with fins at its interior corners for supporting a roll of film by its edges to keep the roll out of contact with the compartment walls, thereby reducing the frictional force resisting displacement of the film.

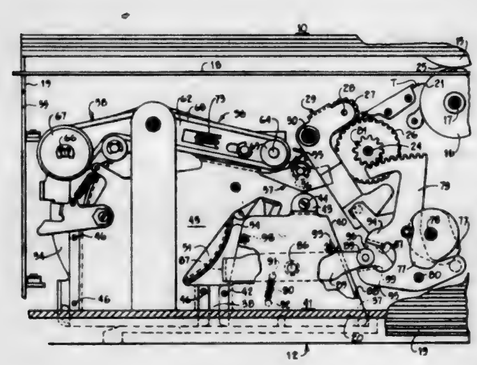
3,664,596
TRAVERSING DEVICE FOR WINDING MACHINES
Erich Lenk, Remscheid-Lennep, Germany, assignor to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany
Filed Jan. 8, 1970, Ser. No. 1,342
Claims priority, application Germany, Jan. 11, 1969, P 19 01 305.9
Int. Cl. B65h *54/30*
U.S. Cl. 242—43 3 Claims



Traversing device for moving a thread, wire, etc. back and forth in spooling machines, wherein the thread guiding traverse element has an arcuately elongated shoe adapted to ride the spiral grooves of a rotatable roller and a platelet form slide plate which is guided between

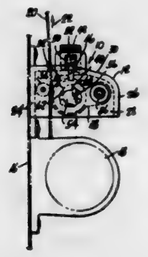
two rails running in traverse direction, characterized in that the platelet form slide piece, in a manner known in itself, engages in two parallel guide grooves running in traverse direction and is swingable in these about its vertical axis.

3,664,597
BRAKING DEVICE FOR A TAPE DISPENSER
Melvin H. Norman, Oakland, and Nathaniel F. Hawthorne, Alameda, Calif., assignors to The Singer Company, New York, N.Y.
Filed May 11, 1970, Ser. No. 36,330
Int. Cl. B65h *23/06*
U.S. Cl. 242—75.4 3 Claims



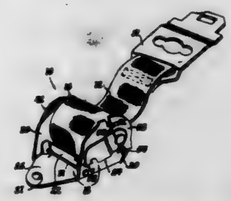
In a tape feed mechanism, a brake is provided for terminating the rotation of the tape supply roll immediately following advancement of the tape. Normally, the brake is spring-biased to an inoperative position and is moved to the operative, or braking, position under the control of the tape feed drive means whereby overrunning of the supply roll is prevented.

3,664,598
PILOT SUPPORT
Gale K. Sherman, Tustin, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.
Filed July 31, 1970, Ser. No. 59,883
Int. Cl. A62b *35/00*
U.S. Cl. 242—107.3 6 Claims



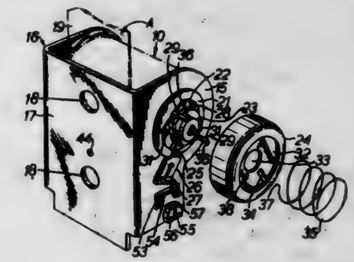
An attachment providing drag on a shoulder harness strap sufficient to prevent an unconscious torso from slumping forward, yet not enough drag to prevent a conscious pilot from achieving normal reach. In one embodiment a friction clutch on an inertia reel is used and in another a friction clutch unit is positioned between the inertia reel and the occupant.

3,664,599
DOUBLE LOCKING RETRACTABLE SEAT BELT ASSEMBLY
Gerald J. Partridge, Roseville, Mich., assignor to Jim Robbins Seat Belt Company, Mount Clemens, Mich.
Filed Jan. 13, 1970, Ser. No. 2,565
Int. Cl. A62b *35/00*
U.S. Cl. 242—107.4 5 Claims



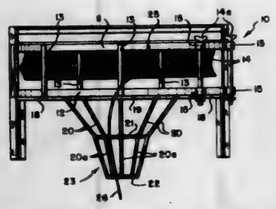
A retractable seat belt assembly including a U-shaped support bracket rotatably supporting a reel means from which the seat belt is protracted and retracted by being unwound and wound thereabout. A locking pawl is supported by the bracket for movement to and from a locking position for preventing rotation of the reel means in the unwinding direction. A clutch member engages the locking pawl and is rotated by the reel means for moving the locking pawl to the locked position. A cam operated stop member is movable to and from a position for preventing the movement of the clutch member which would move the locking pawl to the locked position until a predetermined length of the seat belt is unwound from the reel means. The locking pawl has an extension extending through an opening in one of the walls of the bracket and which coacts with a recess in a latch plate for maintaining the locking pawl in the locked position to prevent protraction or retraction of the seat belt in response to a predetermined protraction and retraction of the seat belt. The latch plate may be moved out of the latched position for allowing the locking pawl to move to the unlocked position by a manually operated push-pull remote control assembly.

3,664,600
INERTIA REELS FOR SAFETY BELTS
Archibald Sargeant, Bognor Regis, England, assignor to Wingard Limited, Chichester, Sussex, England
Filed Sept. 11, 1969, Ser. No. 857,172
Claims priority, application Great Britain, Sept. 12, 1968, 43,357/68
Int. Cl. A62b *35/00*
U.S. Cl. 242—107.4 5 Claims



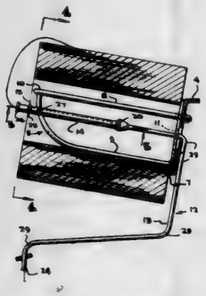
A spring-loaded reel for a vehicle safety belt incorporates an inertia member which is sensitive to a lateral tilt on lateral acceleration of the vehicle and activates a pawl and ratchet mechanism for temporarily locking the reel. A pivoted block permanently jams the inertia member in the locked position when the vehicle tilt exceeds a predetermined value.

3,664,601
WIRE PAY-OFF APPARATUS
James H. Richardson, Jr., Littleton, Colo., assignor to CF & I Steel Corporation, Denver, Colo.
Filed June 1, 1970, Ser. No. 42,211
Int. Cl. B65h 49/00
U.S. Cl. 242—129 4 Claims



There is disclosed an apparatus for receiving and holding a coiled and tempered wire in a vertical position, the apparatus securely holding the coiled wire while permitting paying out of the wire from the coil horizontally without coil rotation.

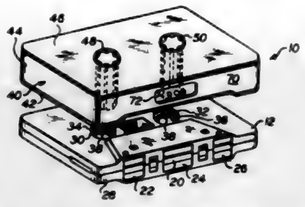
3,664,602
CREEL WITH TUBULAR YARN GUIDE
Kazimer Renzi, 7601 Fawndale Drive, Chesterfield, Va. 23832
Filed Aug. 25, 1970, Ser. No. 66,730
Int. Cl. B65h 49/02; D02h 1/100; D03j 5/08
U.S. Cl. 242—131 7 Claims



A bucketless yarn creel, or carrier, for holding yarn packages and guiding the yarn during withdrawal from the packages wherein each package is mounted on a holder which has a yarn guide tube with an entrance portion extending axially of the holder and of a package on the holder. The guide tube has one or more bends to create a direction change in the yarn path and bring the yarn into frictional contact with the tube wall at the bend, to create a drag on the yarn to tension the yarn. The entrance portion of the guide tube is adjustable lengthwise to adapt it to use with yarn packages of different size.

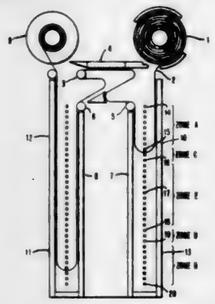
3,664,603
MEANS FOR CONVERTING MAGNETIC TAPE CASSETTE TO AUDIO-VISUAL CASSETTE
Marion M. Eskay, Scarsdale, N.Y., assignor to Hubbell, Cohen & Stiefel, New York, N.Y.
Filed June 1, 1970, Ser. No. 41,993
Int. Cl. G03b 1/04; G11b 15/32
U.S. Cl. 242—180 17 Claims

An attachment for a standard magnetic tape cassette (and the composite product resulting therefrom) which attachment includes a pair of rotatable splined shafts connectable with the toothed hubs of the spools of the standard tape cassette for rotation therewith, the splined shafts having a pair of spools thereon with an indicia bearing tape extending therebetween. Guide means are also included for guiding the indicia bearing tape from one spool to the other. The indicia bearing tape may be provided with visual indicia such as lettering, or with



tactile indicia such as for braille, whereby to convert a standard magnetic tape cassette into an audio-visual or audio-tactile instruction device.

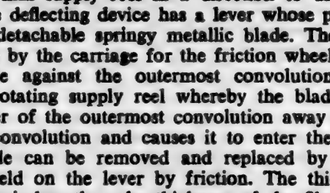
3,664,604
REEL CONTROL SYSTEM FOR MAGNETIC TAPE APPARATUS
Jesse I. Aweida and William C. Arthur, Boulder, and Gale A. Powers, Longmont, Colo., assignors to Storage Technology Corporation, Boulder, Colo.
Filed Jan. 27, 1970, Ser. No. 6,181
Int. Cl. G11b 15/06, 15/58, 23/12
U.S. Cl. 242—185 10 Claims



In magnetic tape handling apparatus, diaphragm operated switches in the slack tape vacuum column are connected to produce a continuous error signal applied to the reel motor. When the capstan drive is in a direction taking tape out of the column, the tape loop is positioned about an upper null point. When the tape loop moves above this upper null point, an error signal, linear with loop position, is applied to drive the reel motor. In a zone below the upper null point the reel coasts. When the capstan drives the tape in a direction which puts tape into the column, the tape loop is positioned at a lower null point. Below the lower null point an error signal which is linear with tape loop position is applied to drive the reel motor. When the tape loop is in a zone above the lower null point, the reel coasts. Between the two coasting zones, dynamic breaking is applied to the reel motor.

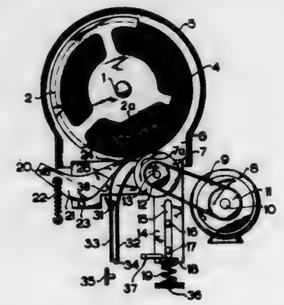
3,664,605
REVERSIBLE WEB TRANSPORTING APPARATUS
Donald O. Easterly, Rush, and Morris E. Brown, Fairport, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 23, 1970, Ser. No. 91,698
Int. Cl. G03b 1/04; B65h 25/00
U.S. Cl. 242—189 10 Claims

A web-handling apparatus having means selectively shiftable between a first condition for transporting a web from a supply roll, through an operating station to a web take-up and a second condition for transporting the web from the take-up through the operating station onto the supply roll. Movable means are provided for shifting the transporting means between its first and second conditions. The movable means is releasably latched in its first condition against a biasing force. Means responsive



to an increase in web tension causes a latch release member to engage a source of power to be moved thereby into contact with the latch means to thereby release the latch means and to shift the web transporting means to its second condition.

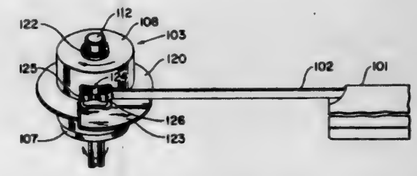
3,664,606
DEVICE FOR DEFLECTING THE LEADERS OF CONVOLUTED PHOTOGRAPHIC FILMS OR THE LIKE
Wolfgang Riedel, Wiesenden, Germany, assignor to Robert Bosch Photokino GmbH., Stuttgart-Unterturkheim, Germany
Filed June 26, 1970, Ser. No. 50,097
Claims priority, application Germany, July 1, 1969, P 19 33 288.8
Int. Cl. G03b 1/04; G11b 15/32
U.S. Cl. 242—192 10 Claims



A deflecting device for directing the leader of convoluted photographic film into a channel in a cinematographic apparatus wherein a friction wheel serves to rotate the film supply reel in a direction to unwind the film. The deflecting device has a lever whose pallet supports a detachable springy metallic blade. The lever is pivotable by the carriage for the friction wheel to move the blade against the outermost convolution of film on the rotating supply reel whereby the blade deflects the leader of the outermost convolution away from the nearest convolution and causes it to enter the channel. The blade can be removed and replaced by the user and is held on the lever by friction. The thickness of the blade is less than the thickness of the film.

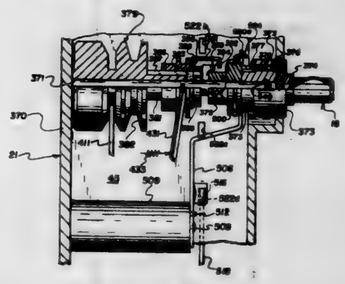
3,664,607
DUAL TAKE-UP REEL
Edwin W. Trefzger, Ilion, and Bruce Crimmins, Little Falls, N.Y., assignors to The Singer Company
Filed Mar. 23, 1970, Ser. No. 21,565
Int. Cl. G11b 15/66; B65h 75/28
U.S. Cl. 242—195 3 Claims

A take-up reel having inner and outer concentric hubs for the temporary storage of tape, such as magnetic tape, from a supply reel is disclosed. Typically the tape will include a leader tape associated with both the take-up reel and the supply reel with the tapes coupled together by means of a leader hook. The leader tape of the take-up reel is wound on the inner hub of the take-up reel while the leader tape of the supply reel and the information bearing tape from the supply reel are wound on the outer hub of the take-up reel. The inner and outer hubs are arranged for coaxial but independent rotation. The outer hub has a cutaway portion which provides an aperture into which the leader hook coupling the leader tape of the take-up reel and the leader tape of the supply reel is lodged. When the leader hook is lodged in the aperture, the inner and outer hubs are coupled together for coincident rotation. Since the leader hook is lodged in the



aperture, the information bearing tape from the supply reel, which is wound on the outer hub of the take-up reel, is not stretched nor distorted as it is wound on the outer hub of the take-up reel. Driving power for turning the take-up reel is applied to the inner hub. When the leader hook is lodged in the aperture, the inner and outer hubs are coupled together so that the inner and outer hubs rotate at the same angular velocity. In a similar manner when the tape is being rewound on the supply reel, the leader hook maintains the coupling between the inner and outer hubs of the take-up reel thereby maintaining their rotation at the same angular velocity. However, as soon as the leader hook is withdrawn from the aperture, the outer hub ceases to rotate and only the inner hub is rotated.

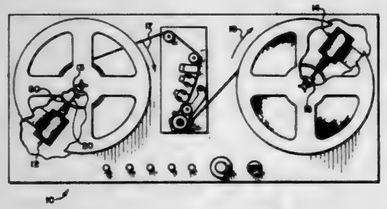
3,664,608
CINEMATOGRAPHIC PROJECTOR HAVING A FILM SUPPLY SPINDLE ASSEMBLY
Donald O. Easterly and Raymond E. Olcott, Rush, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 6, 1970, Ser. No. 34,959
Int. Cl. B65h 23/08; G03b 1/04
U.S. Cl. 242—204 7 Claims



A cartridge loading motion picture projector has a film supply spindle assembly that is adapted to support a film reel positioned within a cartridge on the projector or to support an unenclosed reel of film or the like. The spindle is substantially "free wheeling" when the projector is in the cartridge mode of operation to insure reliable threading of film from the cartridge to automatic threading

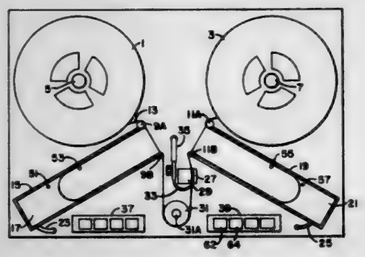
devices of the projector. On the other hand, when the projector is adjusted to its reel mode of operation a frictional force is automatically applied to the spindle assembly to prevent such free wheeling and thereby substantially to prevent over travel of the reel when (for example), the projector is shifted from forward projection of film to projection of a simple frame of film, thereby minimizing the possibility of "spilling" film from the reel.

3,664,609
TAPE RECORDER BRAKE ASSEMBLY
Grant L. McMillin, Jr., Racine, Wis., assignor to Webster Electric Company, Inc., Racine, Wis.
Filed May 25, 1970, Ser. No. 40,096
Int. Cl. B11b *15/32*; G03b *1/04*
U.S. Cl. 242—204 10 Claims



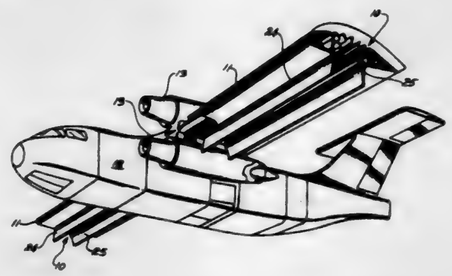
A tape recorder brake assembly stops the tape takeup and supply reels quickly and without tape breakage or spillage in the event of a power failure during high speed tape handling operations. Each reel is provided with a brake mechanism including a solenoid normally energized to overcome a spring force and to withdraw a brake shoe from the reel drive shaft. The brake shoe is supported on an arm fastened to a slot in the solenoid armature by a resilient coupling. When the solenoid is deenergized, as upon a power failure, the brake shoe is applied to the shaft by the spring. The arm extends through a slot which acts as a fulcrum or pivot point for the arm. The slot, arm and shoe are arranged so that if the reel is moving in the supply direction the braking force is greater than if the reel is moving in the takeup direction. The braking force developed is sufficiently large to bring the reels quickly to a halt, but the braking force differential between the two reels is not great enough to stretch or break the tape.

3,664,610
AUTOMATIC SYSTEM FOR LIFTING MAGNETIC TAPE FROM MAGNETIC HEADS
John H. Sanseen, Houston, Tex., assignor to Esso Production Research Company
Filed July 6, 1970, Ser. No. 52,355
Int. Cl. B65h *75/34*; G03b *1/04*; G11b *15/60*
U.S. Cl. 242—210 3 Claims



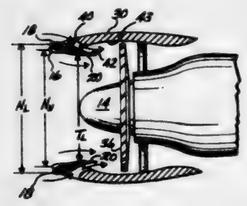
Magnetic tape transport apparatus for use with digital computers and recorders use tape tension control devices in conjunction with the speed control mechanism controlling speed and direction of the tape transfer between a storage reel and a "take-up" reel. The wear rate of the magnetic head used for recording and/or reproducing data signals is minimized by directing a stream of compressed air between the head and the tape.

3,664,611
AERODYNAMIC VEHICLE
Gordon L. Harris, Alhambra, Calif., assignor to Flight Dynamics Research Corporation, Burbank, Calif.
Filed Dec. 17, 1969, Ser. No. 885,940
Int. Cl. B64c *3/28*, *3/00*
U.S. Cl. 244—42 CD 10 Claims



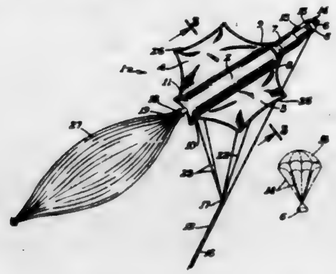
An aerodynamic vehicle capable of vertical take off and landing employing a jet ejector system utilizing the Coanda effect. The jet ejector system is constructed within the wing of the vehicle to receive the engine exhaust for vertically lifting the vehicle into flight. The ejector has fluid ducts for receiving and conveying the engine exhaust and dividing the exhaust flow into jet sheets. Coanda airfoils are arranged adjacent the fluid ducts for entraining the ambient air into the exhaust flow over their exterior surfaces and for rotating the flow through approximately 90°. A mixing chamber is arranged downstream of the airfoils for receiving and mixing the rotated jet sheets along with means for diffusing and controlling the boundary layer of the mixed flow.

3,664,612
AIRCRAFT ENGINE VARIABLE HIGHLIGHT INLET
Wallace E. Skidmore, Redmond, Bjarne E. Syltebo, Bellevue, and Wilton S. Viall, Des Moines, Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Dec. 22, 1969, Ser. No. 887,181
Int. Cl. F02b *27/02*; F02k *11/00*; B64d *29/00*
U.S. Cl. 244—53 B 4 Claims



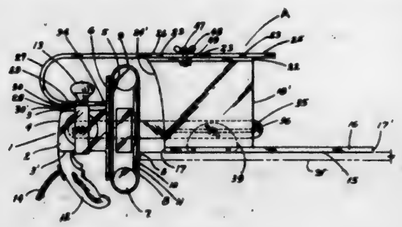
An aircraft jet engine leading edge double foil structure comprising a pivotally mounted exterior foil which forms the leading edge contour and exterior cowl fairing in a closed position during high-speed flight and which is responsive to aerodynamic pressures to pivot to expand the leading edge diameter or highlight during take-off or low-speed flight. A pivotally mounted interior foil acts as an internal cowling fairing for high-speed flight and pivots to combine with said exterior foil to form an aerodynamically clean auxiliary air intake passageway which directs the auxiliary air longitudinally along the interior wall of the intake cowling, thereby providing boundary layer control and decreasing pressure recovery losses.

3,664,613
INFLATABLE KITE WITH RELEASABLE ACCESSORY
Orin B. Johnston, 5548 W. 78th St., Minneapolis, Minn. 55435
Filed Nov. 25, 1970, Ser. No. 92,641
Int. Cl. A63h *27/08*
U.S. Cl. 244—155 R 6 Claims



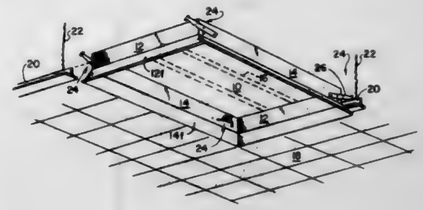
An inflatable kite, designed to simulate a rocket. The kite has a variable dihedral angle for self-stabilization. An accessory nose cone, mounted on the top of the kite with a parachute attached to the nose cone, is releasable by the operator so that it parachutes to the ground to simulate a space vehicle command module.

3,664,614
POWER TOOL ACCESSORY
Charles H. Baechle, 7701 Telegraph Road, St. Louis County, Mo. 63129
Filed Nov. 26, 1969, Ser. No. 880,289
Int. Cl. F16m *11/00*
U.S. Cl. 248—2 10 Claims



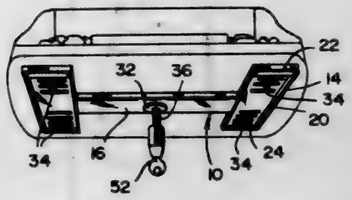
An accessory for a portable power tool, such as a sander, for supporting same with relation to the work and for presenting same at the preselected angle thereto, said accessory comprising a base plate for disposition upon the upper surface of the work, an arm adjustable longitudinally of said accessory and having a handle, a leg pivotally mounted on said handle and being engageable to said tool whereby a tool may be swung with relationship to the work and a bar for maintaining said tool in selected position.

3,664,615
CEILING FIXTURE SUPPORT
Michael H. Kruger, Chestnut Hill, Mass., assignor to Smithcraft Corporation, Wilmington, Mass.
Filed Aug. 21, 1969, Ser. No. 851,958
Int. Cl. H05k *5/00*
U.S. Cl. 248—27 10 Claims



Ceiling fixtures are shown secured in openings by slideable arms which move to project over ceiling members and rotate and are locked down thereagainst. A plurality of such arms are shown to draw a flange of the fixture upwardly to align with or press against the ceiling as the arms press down on the ceiling member. The slideable movement is shown achieved by matching pin and elongated slot, with the arm rotating about the pin in the projected position. Guidance of the arm is achieved by a member which follows a guide that curves downwardly in the region corresponding to the projected position of the arm. A projection is shown serving as a handle and defines the locking surface engageable by the locking member, while the locking member is shown as a cam. All parts can be simply formed out of sheet metal and occupy little space in the retracted position.

3,664,616
OFFICE MACHINE ANTITHEFT LOCKING APPARATUS
Archie Raskin, Engelwood, N.J., assignor to Componentry Research and Development Enterprises, Inc., Great Neck, N.Y.
Filed Sept. 21, 1970, Ser. No. 73,881
Int. Cl. E05b *73/00*
U.S. Cl. 248—25 6 Claims

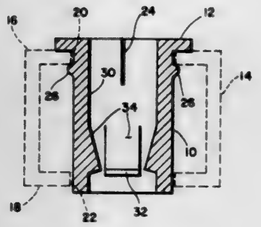


An office machine antitheft locking apparatus including a member designed to be placed on the top of a furniture surface. The member includes means for selectively securing a plurality of bolts to which the office machine may be secured. A fastening device projects away from said member and is adapted to extend through a furniture surface and means are provided for securing said fastening device when it extends through the surface. The device is designed so that when an office machine is secured to the bolts there is no access to the bolts.

3,664,617
SIGN MOUNTING SOCKET

Jay G. Fenwick, Albert Lea, Minn., assignor to Streater Industries, Inc., Albert Lea, Minn.

Continuation of application Ser. No. 735,454, June 7, 1968. This application Mar. 9, 1970, Ser. No. 17,029
Int. Cl. E04h 12/22
U.S. Cl. 248—38 1 Claim



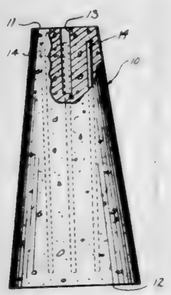
The invention relates generally to signs used in retail merchandising stores such as department stores, and in particular, to the mounting of such signs on display cases.

It is known to equip display cases and counters with tubular frame members which are formed or adapted to have sockets inserted therein at desired points for receiving small sign carrying poles. This invention is directed to a socket of this type which is provided with a slit to facilitate its insertion and retention in a tubular frame member and has a form of tapered bore for receiving and holding sign posts.

3,664,618
DUAL-PURPOSE BASE FOR USE AS A SIGN SUPPORT OR TO FORM A VEHICLE BARRICADE

Alfred H. Krueger, Palmyra, Wis., assignor to A. H. Krueger Inc., Milwaukee, Wis.

Filed June 19, 1970, Ser. No. 47,753
Int. Cl. G09f 17/00
U.S. Cl. 248—44 1 Claim



A frusto-conical precast concrete base member which is portable but of sufficient weight to form a semi-permanent installation is provided with a vertical bore in its top surface into which a staff or rod can be removably inserted to permit the use of the unit as a support for an indicator sign or flag in parking areas or the like, or permitting the mounting of an eye bolt therein and the fastening of chains or the like between a plurality of said base members to form a temporary or permanent vehicle barricade.

3,664,619
CHAIN FOR SUPPORTING ENERGY CONVEYING MEANS, AND CHAIN LINK THEREFOR

Klaus Heidrich, Siegen, Alfred Krewitt, Kreutzal, Kurt Loos, Dreis-Tiefenbach, and Fritz Pithan, Huttental-Weidenau, Germany, assignors to Kabelschlepp Gesellschaft mit beschrankter Haftung, Siegen, Germany

Filed June 24, 1970, Ser. No. 49,347
Claims priority, application Germany, June 26, 1969, P 19 32 428.8
Int. Cl. F16l 3/16; F16g 13/02
U.S. Cl. 248—51 16 Claims

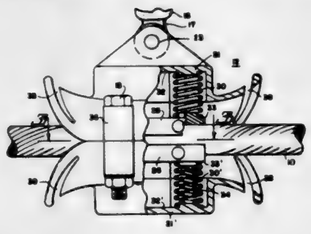


A chain for supporting energy conveying means, especially power lines and hoses, and a chain link therefor, according to which the chain links are of H-shape having two oppositely located laterally elastically yieldable arms interconnected by a transverse wall while two oppositely located arm sections of each link are provided with holes and the other two oppositely located arm sections of the same link are provided with studs having a diameter corresponding to a slide fit in said holes, the arrangement being such that the studs of one chain link pivotally engage the holes of the next following chain link.

3,664,620
VIBRATION DAMPENING CLAMP FOR ELECTRICAL TRANSMISSION AND DISTRIBUTION LINES

Lonnie J. Brannum, 2412 W. Stella Lane, Phoenix, Ariz. 85015

Filed Feb. 16, 1971, Ser. No. 115,629
Int. Cl. H02g 7/00; F16l 3/00; F16g 11/06
U.S. Cl. 248—63 5 Claims



A clamp for electric power lines employing a pair of cooperating jaws having clamping shoes mounted therein for movement laterally of the conductor, each shoe being spring biased into engagement with the conductor for balanced dampening action.

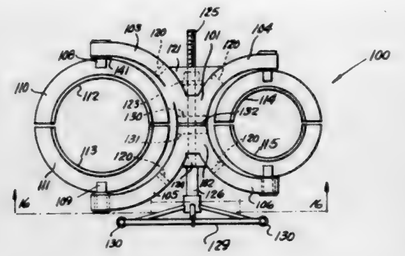
3,664,621
UNDERWATER PIPELINE-RISER CLAMPS FOR USE ON OIL AND GAS PIPELINES

Hilbert J. Savoie, Jr., P.O. Box 98, Boutte, La. 70070

Filed Aug. 28, 1970, Ser. No. 67,864
Int. Cl. F16l 3/10
U.S. Cl. 248—74 R 7 Claims

The invention consists of double clamp assemblies which have segments pivoted relative to each other for attaching

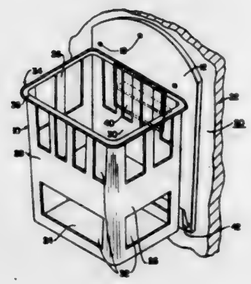
gas and oil vertical pipelines to platforms located offshore. The clamps allow swiveling adjustment of a pipe relative to the leg member of a platform to which it is to be attached. The clamps may include screw-adjusted link means for regulating the relative orientation of the clamping segments.



3,664,622
GARBAGE BAG RETENTION MEANS

Angelo L. Vaccaro, 218 St. Francis Blvd., Daly City, Calif. 94015

Filed July 8, 1970, Ser. No. 53,044
Int. Cl. B65b 67/12
U.S. Cl. 248—95 7 Claims



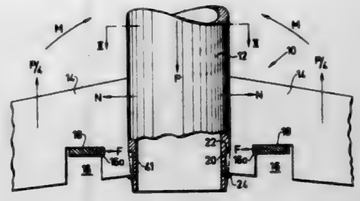
Apparatus for supporting flexible garbage bags constructed of paper and the like in garbage receiving position which retains the bags to the inside of a kitchen cabinet door. A mounting plate is secured to the door and includes a pair of vertically spaced upper and lower members that define a storage space for folded bags and which demountably connect to the plate and the door inside a basket into which the open bag is placed.

3,664,623
BASE STRUCTURE FOR FURNITURE

Sigvard Svenson, P.O. Box 127, 560 10 Skillingaryd, Sweden

Filed July 9, 1970, Ser. No. 53,401
Claims priority, application Sweden, July 18, 1969, 10,194/69
Int. Cl. F16m 11/20
U.S. Cl. 248—188.7 5 Claims

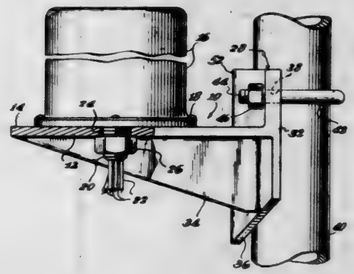
There is provided a new type of supporting base structure to be used as, for example, a furniture pedestal or foot, the structure forming a completely "screw joint free" assembly comprising radial support members connected and held together at their inner ends by, first, a locking ring engaging in and received in recesses on the underneath of the members and, secondly, a hub member introduced through the center of the locking ring between the ends of the supporting members, engaging said ends, the arrangement being such that when the hub member is placed under load, a strong assembly is formed wherein all members are rigidly interlocked by wedge action.



3,664,624
UNIVERSAL BRACKET FOR MOUNTING MERCURY BALLASTS

Ernest M. Freegard, Evanston, Ill., assignor to Advance Transformer Co., Chicago, Ill.

Filed Aug. 17, 1970, Ser. No. 64,470
Int. Cl. F16m 13/02
U.S. Cl. 248—221 4 Claims



A bracket is provided which is a unitary casting having a shelf that acts as a floor with an opening upon which the end of the ballast rests in heat-sink relationship. The ballast nipple passes through the opening so that the connections to the ballast are made from below the shelf. At least two braces are provided extending from the bottom of the shelf to the back-plate. The back-plate is of V construction but having flats which are perforated substantially above the shelf so that the V may be secured to a pole by a suitable shackle or the flats may be engaged against a flat surface and secured by screws or bolts passing through the perforations.

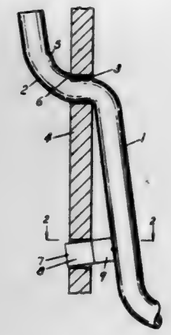
3,664,625
PEGBOARD HOOK FOR ALTERNATE THICKNESS PEGBOARDS

John R. Price, Michigan City, Ind., assignor to Leigh Products, Inc., Coopersville, Mich.

Filed Aug. 14, 1970, Ser. No. 63,762
Int. Cl. A47f 5/00
U.S. Cl. 248—223 7 Claims

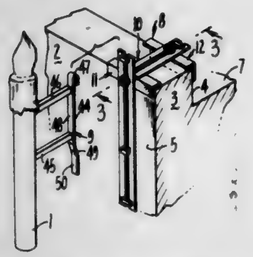
A vertical wire has a rearwardly turned hook at its upper end to engage through holes in thick or thin apertured panels. A stepped stud is secured to the wire below the upper hook to project into a lower hole in the apertured panel. The rear end of the stud is sized to fit within

smaller holes in thin apertured panels, while the enlarged forward end is sized to fit into holes in thicker apertured panels. The stud is a flat block of generally



rectangular cross section with the corners of the sections fitting the two sizes of holes. As an alternate, a stepped rectangular stud is molded on a supporting ring, and the ring is slid into position along the wire of the hook.

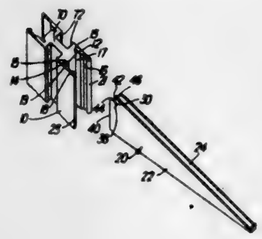
3,664,626
BRACKET FOR MOUNTING DECORATIONS ON A BUILDING FRONT
Leo J. Sueller, Fresno, Calif., assignor to Valley Decorating Company, Pinedale, Calif.
Filed July 30, 1970, Ser. No. 59,576
Int. Cl. E04b *7/18*; F21v *33/00*
U.S. Cl. 248—224 6 Claims



A bracket assembly for attaching an ornament to a building roof line or marquee including: an adjustable support having one member which is adjustable horizontally to snugly fit over the top of the roof line or marquee and another member which extends along the front side of the roof line or marquee and is vertically adjustable; and an ornament holder which interlocks with said other member.

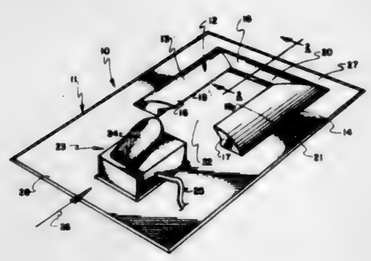
3,664,627
ADJUSTABLE SUPPORTS
Christopher Charles Sykes, London, and Charles Henry Pentland Desroche, Kingston-on-Thames, England, assignors to Nexus Limited, London, England
Filed Feb. 10, 1970, Ser. No. 10,193
Claims priority, application Great Britain, Feb. 21, 1969, 9,565/69
Int. Cl. A47g *29/02*
U.S. Cl. 248—246 14 Claims

Shelving structure comprising uprights and brackets, each upright being a simple extrusion and having one or more forwardly opening grooves along its rear face, the upright being preferably U-sectioned to have a forwardly extending wall, out of which laterally projects a respective rearwardly facing abutment face; a bracket comprises one or two sidewalls out of which extends a respective projection. With the bracket tilted upwards, the projection can be hooked behind the abutment face; lowering of the



bracket then forces the end edge of the sidewall into the groove. The bracket can thereby be releasably and rigidly held at any point along the length of the upright without further fastening. The uprights can be composite free-standing and interconnectable.

3,664,628
FLOOR MAT FOR STABILIZING FOOT PEDAL BOX
Hartsel Ledahl Noble, 4400 Cathedral Oaks Road, Santa Barbara, Calif. 93110
Filed Feb. 13, 1969, Ser. No. 799,007
Int. Cl. A47b *91/04*
U.S. Cl. 248—350 1 Claim

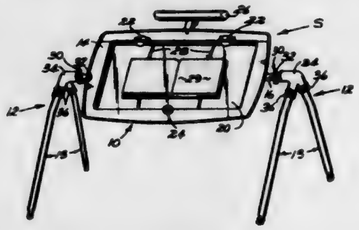


A floor mat incorporates a retention slot defined by a pair of parallel stop walls and a barrier wall that intersects the stop walls. The stop walls limit side movement tendencies of a foot pedal control box, such as that used to operate a sewing machine, while the barrier wall limits forward motion tendencies of the box so that the box can be accurately and stably held at a desired location.

3,664,629
ADJUSTABLE STAND
Dwight L. Reed, 2951 Central, Riverside, Calif. 92506
Filed May 14, 1970, Ser. No. 37,199
Int. Cl. A47b *23/02*
U.S. Cl. 248—445 1 Claim

A book-holding stand having a shallow tray with a flat bottom against which an open book can be placed and held for reading purposes. The tray is fixedly secured to a tubular crosspiece which is supported between two pairs of spreading legs in such a way as to permit rotatable adjustment of the tray through 360 degrees around the axis of the crosspiece. Disposed within the tray are two

strips of exerciser cord, designed and positioned to hold the outstretched covers of a book flat against its bottom. Additionally, the tray has a stiff, transparent plastic cover fastened in place by means of spring cabinet hinges. The parts of the stand cooperate to hold an open book in reading position in the tray behind the plastic cover, and



permit the cover to be opened as necessary for easy turning of the pages of the book. The tray can be turned to face any reader, even one lying on his back. The legs of the stand are bent, and can be swiveled and telescopically adjusted to vary the height and position of the book-holding tray.

3,664,630
CONCRETE WALL FORM LINER
James D. Maynes, Arlington Heights, and George F. Bowden, Northbrook, Ill., assignors to Symons Mfg. Company, Des Plaines, Ill.
Filed June 19, 1970, Ser. No. 47,771
Int. Cl. B28b *7/36*
U.S. Cl. 249—112 2 Claims



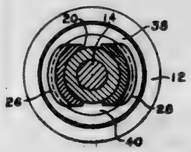
A concrete wall form liner for producing a ribbed concrete wall side surface, formed of sheet plastic material, having generally sinuous contour, and provided with complementary overlapping and interlocking end edge regions by means of which side-to-side continuity of adjacent liners may be attained. End-to-end continuity may be effected by the use of special filler blocks which align the sections longitudinally.

3,664,631
CYLINDRICAL LENS SYSTEMS FOR SIMULTANEOUS BIMERIDIONAL MEASUREMENT IN A LENS MEASURING INSTRUMENT
David Guyton, 460 Walnut St., Brookline, Mass. 02160
Filed Feb. 25, 1970, Ser. No. 14,051
Int. Cl. A61b *3/00*, *3/02*
U.S. Cl. 351—27 9 Claims



In a lens measuring instrument or optometer of the type employing a target, scale, and converging lens for measuring the power of a lens or the power error of an eye in two principal meridians, a pair of interposed cylindrical lens systems having orthogonal axes are disclosed for separating the target into two individually movable image segments. The lens systems are disposed such that one orthogonal target image segment may be moved through the plane of the other facilitating simultaneous power measurement of the two meridians and allowing the use of a plurality of types of targets.

3,664,632
LOCKING MEANS FOR A VALVE OPERATING PLUNGER
Harry M. Valentine, Elyria, Ohio, assignor to Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio
Filed Dec. 10, 1970, Ser. No. 96,846
Int. Cl. F16k *35/00*
U.S. Cl. 251—101 9 Claims



In a valve device of the type having a reciprocable manually operable plunger and a knob carried thereby, the knob and plunger being movable downwardly within a casing a predetermined distance for operating a valve member together with a locking device cooperating with the casing for normally preventing movement of said plunger to said predetermined distance, the locking device being movable to a released position by relative movement of the knob with respect to the plunger.

3,664,633
REMOTE CONTROLLED OIL AND LIQUID DRAIN VALVE
Myer J. Schaffner, Westminster, Colo., assignor to E-Z Serv, Inc., Arvada, Colo.
Continuation-in-part of application Ser. No. 7,058, Jan. 30, 1970. This application Oct. 2, 1970, Ser. No. 77,623
Int. Cl. F16k *5/00*, *31/64*
U.S. Cl. 251—294 2 Claims

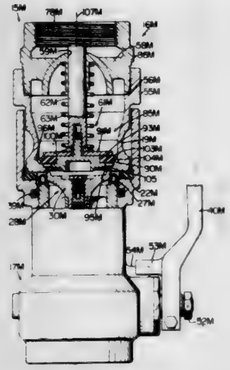


Oil is readily drained from an automotive vehicle engine crank case or oil pan by a remotely controlled especially adapted valve arranged to maintain closure tension on the valve in closed position.

3,664,634
VALVE SEAL FOR COUPLING DEVICE
Robert W. Guertin, 9312 Neil Drive, Cincinnati, Ohio 45231, and Robert L. Murray, 331 6th Ave., Dayton, Ky. 01074
Continuation-in-part of application Ser. No. 538,411, Mar. 29, 1966. This application Sept. 19, 1968, Ser. No. 760,948
Int. Cl. F16l *37/28*, *19/00*
U.S. Cl. 251—333 4 Claims

This disclosure relates to a normally closed valve for use in a fluid system which has a poppet means provided

with a sealing gasket and which has an offset annular sealing surface against which the gasket is urged to provide an improved seal which assures that fluid does not leak past such sealing surface; and, a coupling device utilizing such a valve and having improved sealing characteristics.



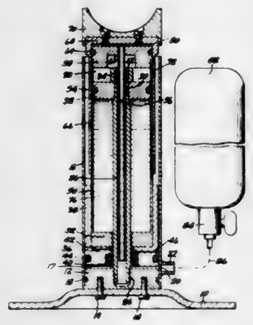
3,664,635
VEHICLE LIFT
Gary L. Kincaid, St. Joseph, Mo., assignor to Gray Manufacturing Company, Inc., St. Joseph, Mo.
Filed Mar. 23, 1970, Ser. No. 21,913
Int. Cl. B60p 1/48
U.S. Cl. 254—8 B 4 Claims



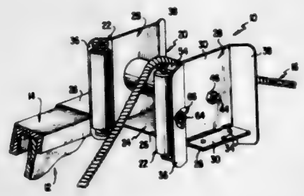
A low profile fluid operated lift for vehicles having a wheeled frame with a generally horizontally disposed cylinder carried thereby, the cylinder having a plurality of interconnected pressure chambers therein, there being movable means corresponding to each of the chambers, means for introducing pressurized fluid into each of the chambers substantially simultaneously whereby to cause the movable means to exert a force as they are moved, there being a shiftable assembly interconnecting the movable means in such a manner that the resultant force produced upon movement of the movable means and transmitted to the shiftable assembly is the sum of the forces produced by the individual movable means, the shiftable assembly being coupled with means for engaging and lifting a vehicle whereby such resultant force may be utilized to lift the vehicle. Safety retaining means are provided for holding the vehicle lift in a raised position regardless of the pressure of fluid in the chambers, said retaining means being mechanically disengageable to permit lowering of the lift.

3,664,636
FLUID PRESSURE VEHICLE JACK
John F. Sherrill, P.O. Box L, Plymouth, Ind. 46563
Filed Jan. 11, 1971, Ser. No. 105,458
Int. Cl. B66f 3/24
U.S. Cl. 254—93 HP 8 Claims

A fluid pressure vehicle jack comprising three telescoping cylinders and a piston fixed to one cylinder and located within a second cylinder. Said cylinders and piston are arranged to define four chambers. One of said chambers is connected to a supply of gas under pressure. Two other chambers contain liquid and are arranged to communicate and to permit expansion of one thereof while the other contracts. The fourth chamber is vented to atmosphere. Supply of gas under pressure causes simultaneous extension of each of the cylinders.



3,664,637
TROTLINE GUIDE
Emilio A. Troiano, 718 Sherbrook Drive, Silver Spring, Md. 20904
Filed Sept. 1, 1970, Ser. No. 68,717
Int. Cl. B66d 1/36
U.S. Cl. 254—190 R 7 Claims



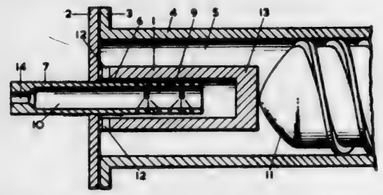
A guide to be mounted on a boat to pick up and guide a trotline to a convenient point on the boat to facilitate the removal of the catch from the trotline. The guide utilizes a horizontal roller and a pair of vertical rollers to maintain the trotline in position in the guide once the line is picked up and placed therein. In addition to preventing the loss of the trotline from the guide, the three rollers permit the boat to smoothly traverse the length of the trotline without causing a loss of the catch due to snagging or other discontinuity as the line passes through the guide.

3,664,638
MIXING DEVICE
Kenneth M. Grout, Wakefield, and Richard D. Devellian, Rockport, Mass., assignors to Kenics Corporation, Danvers, Mass.
Filed Feb. 24, 1970, Ser. No. 14,266
Int. Cl. B01f 5/00
U.S. Cl. 259—4 3 Claims

A device for thoroughly mixing components of a fluidic material flowing through a conduit which contains a plurality of curved sheet-like elements extending longitudinally through the conduit in which consecutive elements are curved in opposite directions and the adjacent edges of consecutive elements are spaced from each other by a distance dependent on the Reynolds number of the fluid and angularly displaced with respect to each other by an angle which differs from 90° by an amount dependent on said distance.

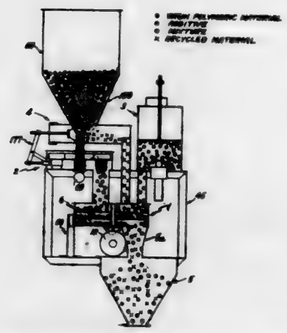


3,664,639
MIXING DEVICE
David Robin Lander, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England
Filed May 14, 1970, Ser. No. 37,187
Claims priority, application Great Britain, May 21, 1969, 25,863/69
Int. Cl. B01f 15/02
U.S. Cl. 259—4 11 Claims



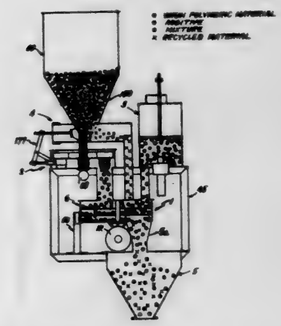
A mixing device consisting of a sleeve and a hollow core which define a passageway; the sleeve and the core being movable in an axial direction with respect to each other to alter the length of the passageway; the material to be mixed being forced along the passageway under pressure and then through the centre of the core.

3,664,640
METHOD AND APPARATUS FOR MIXING PARTICULATE SOLIDS
Joseph C. Morin, Northville, Mich., assignor to Application Engineering Corp., Elk Grove, Ill.
Filed July 17, 1970, Ser. No. 55,753
Int. Cl. B01f 7/20
U.S. Cl. 259—8 15 Claims



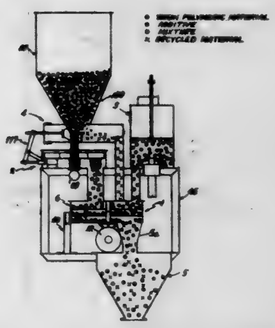
Methods and apparatus for continuous, multi-stage mixing of at least two particulate solids. The materials to be mixed are introduced into an annular horizontal mixing zone and advanced therealong as a tumbling leading mass with a portion of the outer end of the mass derived continuously as a residual stream trailing along the outer periphery of the zone while a second, larger portion of the leading mass is diverted inwardly as a trailing mass along the inner periphery of the zone, the trailing mass being diverted in a tumbling mode so that a part thereof is combined with the trailing residual stream. The invention is especially useful for mixing particulate polymeric material with an addtive such as a dry colorant.

3,664,641
MIXING APPARATUS
Joseph C. Morin, Northville, Mich., assignor to Application Engineering Corp., Elk Grove, Ill.
Filed July 17, 1970, Ser. No. 55,875
Int. Cl. B01f 7/20
U.S. Cl. 259—8 7 Claims



Apparatus for combining a first particulate material, such as a particulate mixture of polymeric material and a colorant, with a predetermined proportion of a second particulate material, such as reground and recycled polymeric material, characterized by employing two feeding devices for the respective particulate materials, with one feeding device operating to feed a fixed quantity in response to each occurrence of a predetermined feed operation of the other feeding device.

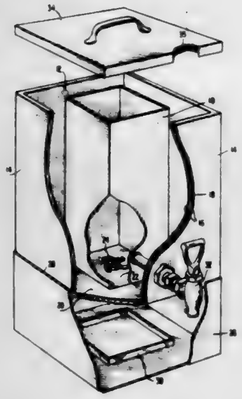
3,664,642
MIXING APPARATUS
Joseph C. Morin, Northville, Mich., assignor to Application Engineering Corp., Elk Grove, Ill.
Filed July 17, 1970, Ser. No. 55,926
Int. Cl. B01f 7/20
U.S. Cl. 259—8 8 Claims



In a multi-stage mixing apparatus, typically for mixing particulate polymeric materials with colorants, characterized by a mixing unit having a housing which can be

moved between an operative position and a laterally displaced position, the interior of the housing being divided into a plurality of mixing zones by a series of pans nested in the housing, each pan being equipped with a mixing and advancing rotor, and the rotors and pans being easily removed, for cleaning, and replaced when the housing is in its laterally displaced position. The pans are identical and the rotors are identical, and special provision is made to allow the pans and rotors be replaced without requiring special skill and attention on the part of the operator.

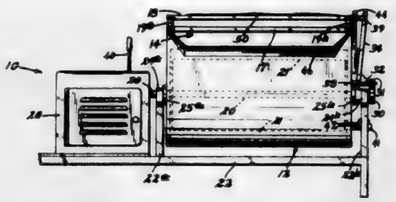
3,664,643
BEVERAGE MIXER AND DISPENSER
Angelo L. La Neve, West Paterson, N.J., assignor to ALN Enterprises
Filed May 11, 1970, Ser. No. 36,268
Int. Cl. B01f 7/16; B67d 1/00
U.S. Cl. 259—44 12 Claims



An improved beverage dispenser comprising a non-circularly cross-sectioned, upright mixing chamber having a closed bottom and an open top; an agitating means within said mixing chamber adapted to be actuated through the mixing chamber bottom by a rotatable shaft; an insulated cooling chamber surrounding the mixing chamber in at least its vertical extension; a base beneath and upon which the mixing and cooling chamber rests and adapted to support an electric motor with a rotatable shaft whereby the agitating means in said mixing chamber is actuated; a removable, leakproof top covering the open top of the mixing chamber; and a beverage withdrawal spigot communciating with the mixing chamber. The dispenser is useful in dispensing mixed drinks requiring substantial mixing prior to consumption.

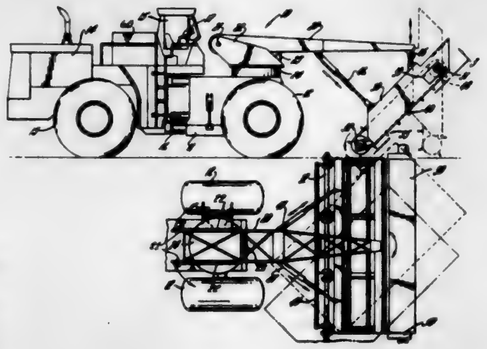
3,664,644
SHAKER SCREEN APPARATUS FOR MORTAR MIXERS
Dale L. Wicklund, R.R. 2, Box 157A, Deer River, Minn. 56636
Filed July 6, 1970, Ser. No. 52,545
Int. Cl. B28c 5/14
U.S. Cl. 259—164 7 Claims

A plaster and mortar mixer including a generally cylindrically shaped mixing drum having a horizontal inlet opening in the top thereof above which is mounted a shaker screen for screening the plaster or mortar prior to mixing. The screen is mounted on rubber supports carried by the mixing drum and is moved in a reciprocal manner above the inlet opening. The reciprocal motion is provided by first and second arms which are normally joined and pivotally mounted to the mixing drum; the first arm having motion imparted thereto by a cam coaxially mounted



on the mixing shaft and the second arm being connected to the shaker screen.

3,664,645
COMPOST AND REFUSE SHREDDING AND SHIFTING APPARATUS
Herbert T. Cobey, P.O. Box 313, Crestline, Ohio 44827
Filed Mar. 30, 1970, Ser. No. 23,566
Int. Cl. B01f
U.S. Cl. 259—183 20 Claims

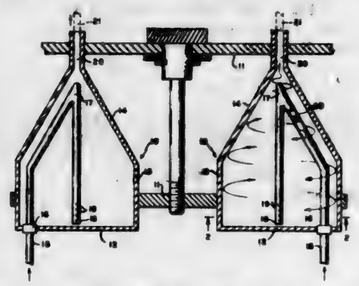


An endless web carrying a plurality of outwardly projecting elements is moved in an upwardly and forwardly extending orbital path so that the projecting elements successively shred, shift and aerate organic wastes, refuse and other material as the working face of the web engages the material. In the preferred embodiment the web is supported from a self-propelled chassis and the plane of the web is adjustable relative to both the longitudinal and vertical axes of the chassis.

3,664,646
CARBURETOR VAPOR SUPERHEATER
Frederick A. Jordan, R.D. Madrid Road, Potsdam, N.Y. 13676
Filed Dec. 2, 1970, Ser. No. 94,316
Int. Cl. F02m 15/02
U.S. Cl. 261—23 R 3 Claims

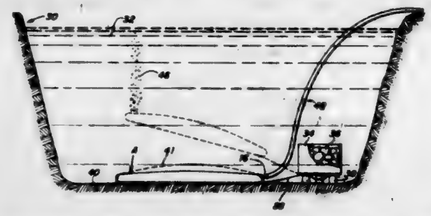
For more complete combustion in internal combustion engines, a swirl chamber is supplied in the fuel line between the fuel supply vessel and the carburetor venturi. The chamber is circular at the bottom and has an inverted funnel-shaped top, the top having a conduit line leading to the venturi. A fuel pipe leading from the supply vessel extends through the floor of the chamber, sealed

thereto, to the top of the chamber where it is bent sharply downward to extend axially to a closed end at the chamber floor. The closed end has a plurality of openings therearound through the pipe wall, each opening being inclined from radially toward tangentially in the same sense from the radial for imparting a circularly swirling motion to the emitted gas which is drawn upward by suction at the venturi increasing in velocity as it nears the



chamber top. The helically swirling gas at the top heats the top of the fuel pipe and superheats the vapor drawn to the venturi. For increased vacuum at starting and for heavy engine loading a high vacuum carburetor is used having a pair of venturis, a pair of swirl chambers being provided, each chamber being connected to a respective venturi, and with valve means in the carburetor for shutting off the air flow through one of the venturis.

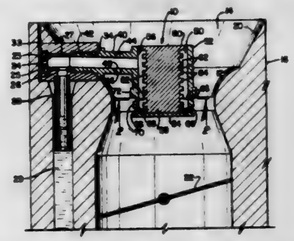
3,664,647
AERATING SYSTEM
John F. Snow and Roy L. Clough, Jr., Bristol, N.H., assignors to Xodar Corporation, Warwick, R.I.
Filed July 22, 1970, Ser. No. 57,171
Int. Cl. B01f 3/04
U.S. Cl. 261—30 24 Claims



Apparatus for introducing fine air bubbles into sewage and waste water of a sewage treatment plant to effect biological purification with air treatment. The apparatus comprises an aerating body that normally has negative buoyancy in the water and is adapted to trap and be rendered buoyant by injected air which escapes into the water when the aerating body rises in the water. The aerating body rises and falls in the water periodically so that it agitates as well as aerates the water.

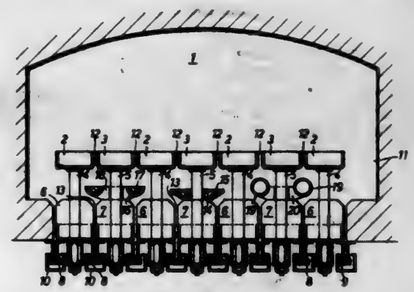
3,664,648
METHOD AND APPARATUS FOR MIXING AND METERING FUEL IN AN INTERNAL COMBUSTION ENGINE
Harvey E. Seeley, Jr., Aurora, Colo., assignor to American Pollution Controlled, Inc., Aurora, Colo.
Continuation-in-part of application Ser. No. 803,168, Feb. 28, 1969. This application Apr. 20, 1970, Ser. No. 29,874
Int. Cl. F02m 7/02
U.S. Cl. 261—41 R 24 Claims

An improved method and means are disclosed for mixing liquid fuel with air for discharge in metered quantities into the airstream of a carburetor or other air induction passage of an internal combustion engine. The liquid fuel is induced to flow through a delivery tube for mixture with air by the negative preasure differential developed across a series of small discharge orifices which are so spaced and arranged in the airstream as to disperse metered quantities of the fuel/air mixture into the airstream with a high degree of lateral penetration. The forms of devices disclosed achieve extremely fine atomi-



zation, mixing and dispersion of the liquid fuel with air to the extent of effecting substantially complete foaming of the fuel/air mixture as it is discharged into the airstream, making it possible to schedule leaner fuel/air ratios which will remain constant over a wide range of speed and resulting in more complete combustion and a substantial reduction in the amount of pollutants exhausted from the engine.

3,664,649
FURNACE HAVING STRUCTURE FOR FEEDING WORK THROUGH A HEAT TUNNEL
Heinz Brockmann, Duesseldorf-Gallberg, Germany, assignor to Brockmann & Bundt Industrie-Ofenbau, Duesseldorf, Germany
Filed Jan. 26, 1970, Ser. No. 5,742
Claims priority, application Germany, Apr. 16, 1969, P 19 19 154.1
Int. Cl. F27b 9/14
U.S. Cl. 263—6 A 10 Claims



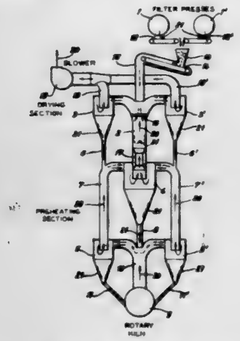
A furnace having an elongated heat tunnel through which the work passes to be heated therein. A pair of sets of beams extend longitudinally of the heat tunnel and form a floor thereof for supporting work, and at least one of the sets of beams is cyclically movable with respect to the other in such way that this one movable set of beams moves upwardly and forwardly with respect to and downwardly and rearwardly with respect to the other set of beams to provide in this way a stepwise advance of the work through the tunnel. The beams have laterally offset work-engaging surfaces to provide a more uniform heat distribution at the lower surface of the work. Also, the structure which controls the movement of the beams provides for the latter a smooth, gradual movement when the work is raised up from and again set down on the upper surfaces of the beams.

3,664,650

APPARATUS FOR HEAT TREATMENT OF MATERIAL FROM WHICH WATER HAS BEEN MECHANICALLY EXTRACTED

Paul Weber, Oelde, Horst Ritzmann, Neubeckum, and Gerhard Butschko, Ennigerloh, Germany, assignors to Polysius AG, Neubeckum, Germany

Filed Mar. 30, 1970, Ser. No. 23,859
Claims priority, application Germany, May 23, 1969, P 19 26 485.8
Int. Cl. F27b 7/32
U.S. Cl. 263—32 1 Claim



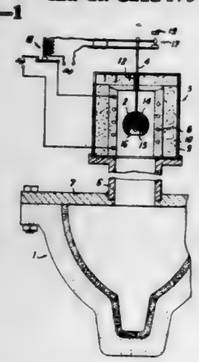
An apparatus for heat treatment of non-tacky material which has been prepared by a wet process comprises apparatus for drying the material from which water has been mechanically extracted, including a drying stack adapted to be charged centrally from above with such material and two cyclone separators connected symmetrically to the upper end of the stack, for contacting the material with hot gas. The stack is narrowed in cross section in its lower portion and has a deflector in its upper portion arranged in the path of the falling material. An apparatus for preheating the dried material includes two lower cyclone separators connected in parallel and a central cyclone separator arranged above them whose dip pipe is the lower end of the drying stack.

3,664,651

DEVICE FOR INITIATING AN EXOTHERMIC REACTION

Jean Meneret, Sevres, France, assignor to Comissariat a l'Energie Atomique et Societe Desmarquest SA, Paris and Sevres, France

Filed May 1, 1969, Ser. No. 820,734
Claims priority, application France, May 9, 1968, 151,093
Int. Cl. C21d 1/34
U.S. Cl. 266—1 7 Claims



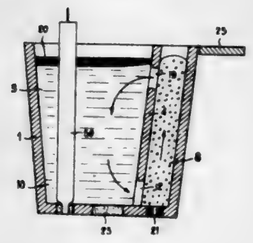
An exothermic reaction in a reactional mass is initiated by dropping under the action of gravity a block of refractory material which has previously been suspended above the reactional mass and heated to a predetermined temperature which is sufficient to start the reaction as the refractory block comes into contact with the reactional mass.

3,664,652

METHOD AND APPARATUS FOR THE TREATMENT OF MOLTEN METAL

Etienne Spire, Westmount, Montreal, Quebec, Canada, and Pierre Karinthi, Champaigny-sur-Marne, France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Oct. 14, 1969, Ser. No. 866,250
Claims priority, application France, Oct. 22, 1968, 170,842
Int. Cl. C21c 7/00
U.S. Cl. 266—34 A 11 Claims



The molten metal to be treated is made to ascend from a compartment in a first vertical conduit by an injection of gas. From the first conduit, the metal flows through a substantially horizontal conduit where farther gas may be injected.

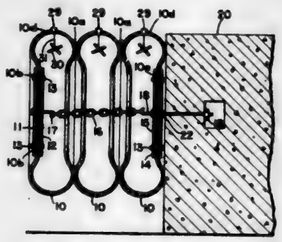
The treated metal may return to the compartment it comes from or to another vessel.

3,664,653

ENERGY ABSORBER

Brooks Walker, 1280 Columbus Ave., San Francisco, Calif. 94133

Filed Dec. 29, 1969, Ser. No. 888,421
Int. Cl. B60r 19/10; F16f 9/10
U.S. Cl. 267—139 3 Claims



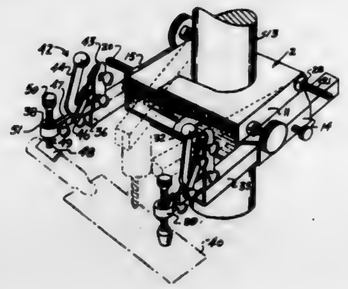
This invention pertains to an energy absorber for use on abutments or the front of vehicles to absorb energy when the vehicle abuts against another vehicle or a vehicle abuts against an abutment; the absorber to be joined by one or more tires, filled with a liquid such as water and with one or more blow out plugs to allow the liquid to escape when impacted, the ends or rim sides of the tires to be closed and connected by flexible or collapsible means.

3,664,654

DUAL ARM ATTACHMENT FOR DRILL PRESS

George D. Manville, 35520 Oak Glen Road, Yucaipa, Calif. 92399

Filed Mar. 30, 1970, Ser. No. 23,759
Int. Cl. B23q 3/04, 3/10; B25b 5/14
U.S. Cl. 269—9 3 Claims



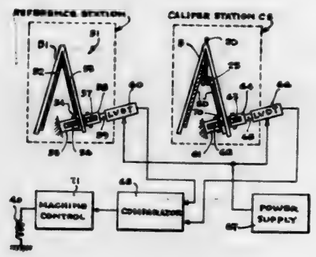
A universal attachment mountable on the column of a drill press, or the like, in which a pair of angularly, linearly adjustable arms extend from opposite sides of the support above the drill press work table to position and clamp elongated work pieces of any cross-sectional shape during drilling operations thereon.

3,664,655

CALIPER SYSTEM FOR SIGNATURE MACHINES

William B. McCain, Hinsdale, and James F. Cosgrove, Western Springs, Ill., assignors to McCain Manufacturing Corp., Chicago, Ill.

Continuation-in-part of application Ser. No. 748,380, July 29, 1968, now Patent No. 3,561,752, dated Feb. 9, 1971. This application Sept. 25, 1970, Ser. No. 75,550
Int. Cl. B65h 43/02
U.S. Cl. 270—56 13 Claims



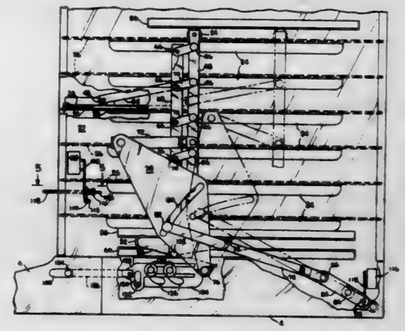
A caliper system for a cyclically operable signature gathering machine in which each unbound book of signatures moving toward a binding station passes between a fixed support and a movable roller probe that is biased toward the support so that the probe position is a function of book thickness. The probe is connected to the movable element of a linear voltage differential transformer or other electrical transducer, developing a book thickness signal of given frequency and amplitude. The book thickness signal is compared with a reference signal of corresponding frequency having an amplitude representative of a correct book thickness to control machine operation and prevent binding of incorrectly assembled books.

3,664,656

COLLATOR HAVING GATHER ACTUATED CONTROL

Peter M. Ryland, Ridgefield, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Oct. 15, 1970, Ser. No. 80,904
Int. Cl. B65h 39/02
U.S. Cl. 270—58 5 Claims



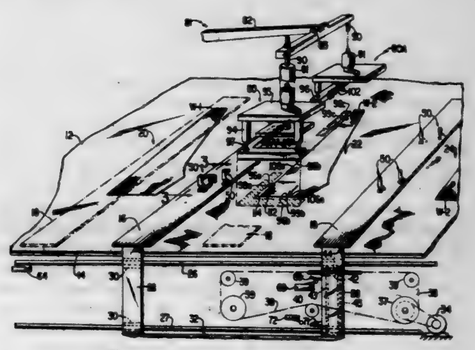
A collator having trays spaced one above the other in a frame, pusher means associated with each station on the trays and having a common drive means for cyclically pushing a sheet from each stack of sheets at each station to a position where a user can gather the sheets with a continuous hand movement, and actuating means responsive to the movement of the sheets as they are gathered, which actuating means initiates the drive means to repeat the feed cycle so that when the user has finished gathering and stacking the sheets from the collator a next set of sheets are waiting to be gathered.

3,664,657

METHODS AND APPARATUS FOR AUTOMATICALLY TRANSFERRING AND REGISTERING FABRIC WORKPIECES AND FOR COMBINING THEM

George F. Hawley, Bogota, N.J., and John H. Buettner, Williston, Vt., assignors to Ivanhoe Research Corporation, New York, N.Y.

Original application July 30, 1965, Ser. No. 475,986, now Patent No. 3,544,098, dated Dec. 1, 1970. Divided and this application Dec. 9, 1969, Ser. No. 879,975
Int. Cl. B65h 39/02
U.S. Cl. 270—58 5 Claims



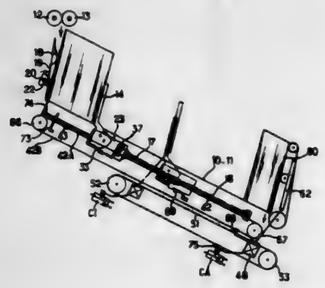
Methods and apparatus for automatically transferring, registering and combining fabric workpieces, including

means for moving the fabric workpieces over a supporting surface upon which they can be slid, means for impelling one or more of their edges outwardly against one or more stop surfaces in known positions to register the workpieces with respect to the positions of the stop surfaces, and means for maintaining the known orientation and relationship relative to the other workpieces during the subsequent transfer of the workpieces following registration and during the combining thereof.

3,664,658
COMBINED SYSTEM FOR RECEIVING AND FEEDING CARDS

Gerben Jan Keulen and Johannes Petrus Kroes, Amsterdam, Netherlands, assignors to Bull General Electric (Nederland) N.V., Amsterdam, Netherlands

Continuation of abandoned application Ser. No. 830,301, June 4, 1969. This application Jan. 19, 1971, Ser. No. 107,693
Claims priority, application Netherlands, June 7, 1968, 6808091
Int. Cl. B65h *1/30*
U.S. Cl. 271—9 20 Claims

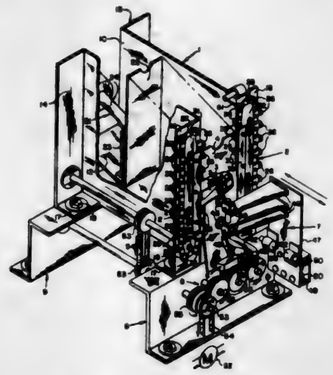


Sorting machine for record cards, comprising a plurality of receiving compartments disposed parallel alongside one another. Each compartment comprises an inclined bottom forming a descent track for the cards, a carriage arranged so that it can slide parallel to the said bottom and an upper card retaining device pivoted on this carriage and normally occupying a holding position for retaining collected cards in the upper portion of the compartment, these cards resting on edge on the inclined bottom. A common carriage extends beneath and transversely of all the descent tracks and comprises as many lower card retaining devices as there are compartments. This carriage can be displaced along the lower portion of the compartments, the lower card retaining devices normally being disposed at the lower end of the compartments. Mechanical coupling means permit the displacement of the individual carriages of the compartments in a direction opposite to the movement of the common carriage. Control means are provided which, when operated, initiate the upward movement of the common carriage and of the lower card retaining devices and simultaneously the downward movement of the cards and of the upper card retaining devices. When the bearing faces of the lower card retaining devices are disposed in the same plane as the bearing faces of the upper card retaining devices, these latter are retracted. Immediately after the retraction of the upper card retaining devices, the movement of the common carriage is reversed so as to permit the descent of the cards and of the lower card retaining devices to the bottom end of the compartments.

3,664,659
BAG STACK HOLDING AND SEPARATING DEVICE

Doyle R. Hudson, West Monroe, La., assignor to Oliakraft, Inc.

Filed Nov. 9, 1970, Ser. No. 87,764
Int. Cl. B65h *3/32*
U.S. Cl. 271—18 5 Claims

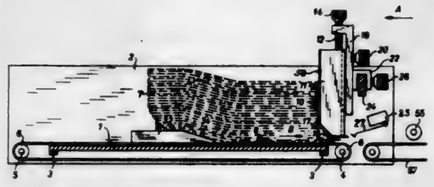


An apparatus for removing flat, flexible articles from a supply of such articles. The apparatus comprises: means for holding the foremost article in place; means for rotating an edge of said article outwardly from the supply; means for effecting a positive separation between the foremost and next successive article and means for holding the next successive article in place as the foremost article is removed. In a preferred embodiment the means for holding the bags in place comprise a circular outer periphery and will be rotatably mounted.

3,664,660
DEVICE FOR FEEDING FLAT OBJECTS TO A PROCESSING MACHINE

Kurt Ruzal, Kunzachterstrasse 59, Zumikon, Switzerland

Continuation-in-part of application Ser. No. 784,594, Dec. 18, 1968. This application Apr. 28, 1970, Ser. No. 32,525
Claims priority, application Switzerland, Dec. 20, 1967, 18,664/67
Int. Cl. B65h *3/04*
U.S. Cl. 271—35 6 Claims

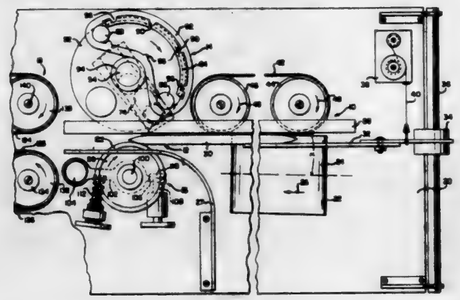


To feed stacked flat objects of varying size and/or thickness such as paper or carton sheets, newspapers, periodicals, printed matter envelopes or the like which are to be addressed in an addressing machine or otherwise processed, conveyor belts are located in frictional contact with the lowermost object of the stack. Two or more stop members, displaceable in lateral direction form, with the belt, a feed gap. The lower part of the abutment surfaces of the stop members are inclined relative to the vertical in transport direction. A vertically adjustable feed gap member having a curved gate surface, and a driven separator roller therebelow form, at the lowest point of the gate member, a feed passage. They are located laterally offset with respect to the stop members. Switch means are located beyond the gate to interrupt movement of the belts after an object has passed the gap.

3,664,661
LETTER FEEDER, SYNCHRONOUS FRICTION TYPE

Horace W. Weeks, Bellbrook, and John R. Frazier, Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Sept. 4, 1970, Ser. No. 69,560
Int. Cl. B65h *3/06*
U.S. Cl. 271—36 3 Claims

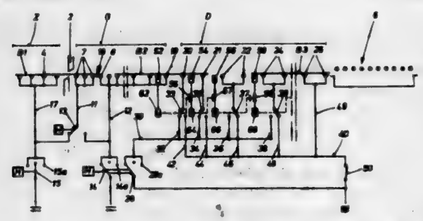


A synchronous-type apparatus for feeding letter mail of various sizes and thicknesses. A feed wheel and a stripper wheel are positioned in opposed relation at a feed area in the apparatus to receive therebetween letters which are to be singulated and fed to a processing unit. An elastomeric member is wrapped around a sector of the feed wheel to engage the letters along a line parallel to the long dimension of the letters. The feed wheel is rotated at varying angular velocities, so that the leading portion of the elastomeric member engages a letter to be fed at a low velocity, and the trailing portion of the elastomeric member discharges the letter at a higher velocity. The low velocity at engagement reduces the "scrubbing" action on the letters being fed and reduces wear on the feed and stripper wheels.

3,664,662
DRIVE FOR A ROLLER BED MOUNTED BEHIND THE CROSS-CUT SHEARS IN A SHEARING LINE FOR METAL PLATES

Peter Alois Linz, Niederwurzbach (Saar), Germany, assignor to Moeller & Neumann GmbH, St. Ingbert (Saar), Germany

Filed June 2, 1970, Ser. No. 42,689
Claims priority, application Germany, June 2, 1969, P 19 28 019.4
Int. Cl. B65h *5/06*
U.S. Cl. 271—51 8 Claims

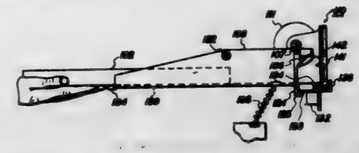


In the electrical drive for the rollers of a roller bed mounted behind the cross-cut shears of a shearing line for metal plates a first group of rollers in a roller bed are driven with direct current, a second group is driven with three-phase current. For positioning the plates which are advanced by the shears the rollers of the roller bed in the first group may be connected or driven in common while upon the crossing of plates over the joint between the two roller groups either individually and/or in groups the rollers of the second group driven with three-phase current are switched over by light barriers or the like in an additive matter on the advancing mode of the rollers driven with direct current.

3,664,663
PAPER CASSETTE LOADING DEVICE

Donald F. McPherson, Hilton, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 18, 1970, Ser. No. 38,466
Int. Cl. B65h *1/04*
U.S. Cl. 271—61 3 Claims

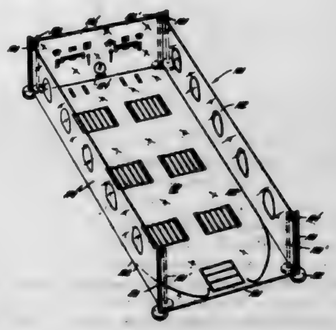


Apparatus for locating the feed rollers and paper snubbers of a sheet feeding mechanism in an inoperative position remote from the leading edge of sheets in a cassette while the cassette is being loaded into a copier so that the sheets in the cassette are not bent, ripped or otherwise deformed during loading, and then locating the feed rollers and paper snubbers in an operative position on the top sheet in the cassette in preparation for feeding the sheets from the cassette to the copier.

3,664,664
CHILD'S VEHICLE-SIMULATING COLLAPSIBLE PLAYPEN

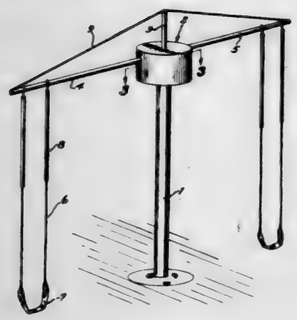
Jeff W. Napier, 19 Glen Hill Court, Glendale Heights, Ill. 60137

Filed Apr. 3, 1970, Ser. No. 25,448
Int. Cl. A63g *31/00*
U.S. Cl. 272—1 C 2 Claims



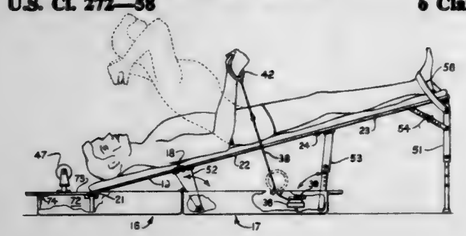
A simulated collapsible playpen of rectangular configuration having three side walls and a floor leaving one side of the playpen without a wall. The playpen is formed by folding a single sheet of flexible material. The side walls are supported at the corners of the playpen by a set of uprights which may be placed either inside the playpen on base supports or adjacent its outer periphery pushed into the ground. The interior of the playpen is embossed with features which are identified with the inside of a vehicle or building structure.

3,664,665
OCCUPANT PROPELLED ROTATING SWING
Walter L. Scott, 3101 E. 2nd St.,
Long Beach, Calif. 90803
Filed Apr. 2, 1970, Ser. No. 25,171
Int. Cl. A63g *1/20*
U.S. Cl. 272—33 R 1 Claim



In a rotating swing structure which is caused to progressively rotate step by step as the occupant swings back and forth in the swinging unit of the device. The swing will rotate by small increments as long as the swinging unit reciprocates. The rotating movement will continue only in one direction, and is prevented from regressing by a member which grips a stationary ring.

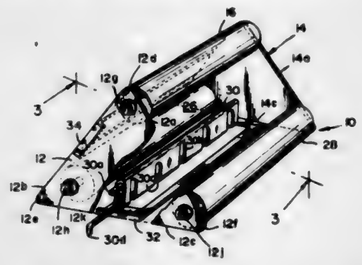
3,664,666
PORTABLE GYMNASIUM
William R. Lloyd, 3386 Sutton Loop,
Fremont, Calif. 94536
Filed Nov. 5, 1970, Ser. No. 87,249
Int. Cl. A63b *21/02*
U.S. Cl. 272—58 6 Claims



A folding portable case, suitcase or the like which may be opened to fold out a three-section exercise board disposable in a plurality of different positions in extension beyond the original dimensions of the unit for providing substantially all configurations employed in physical culture exercises. Spring loaded cables provide for all types of lifting, pulling and pushing exercises so that complete weight reduction and body building exercises are capable of being performed on a single portable unit.

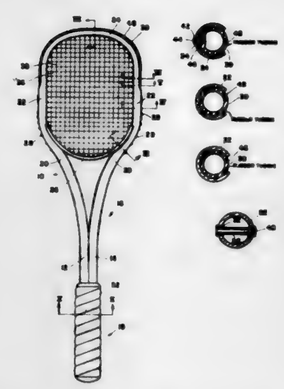
3,664,667
PUSH-PULL ROLLER OR STATIONARY TYPE EXERCISING APPARATUS
Edward J. McCarthy, 31—41 85th St.,
Jackson Heights, N.Y. 11370
Filed May 18, 1970, Ser. No. 37,957
Int. Cl. A63b *21/00*
U.S. Cl. 272—83 R 10 Claims

An exercising apparatus constituting two exercising members, each including three rollers freely rotatable and supported by two parallel side plates. The rollers are arranged with respect to the side plates so that in one orientation of the side plates relative to a flat surface two of the rollers may be placed in contact with the surface with the side plates elevated therefrom to enable the exercising member to be rolled along the surface. In a second orientation of the exercising member relative to the sur-



face the side plates may contact the surface with all the rollers being elevated therefrom so the exercising member is stationary on the surface. Elongated elastic strands can have their ends attached to the members. The apparatus can be used as a pulling tension exerciser, or as individual rolling supports for the hands, or as stable supports for the hands.

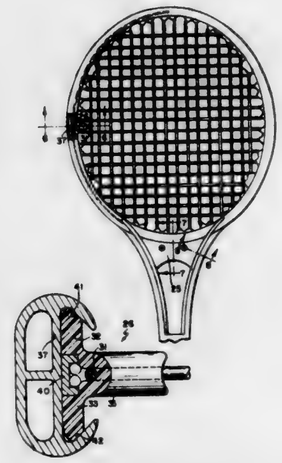
3,664,668
RACKETBALL OR TENNIS RACKET HAVING A TUBULAR METAL FRAME
Franklin W. Held, 7079-E Mission Gorge Road,
San Diego, Calif. 92120
Filed Apr. 3, 1970, Ser. No. 25,528
Int. Cl. A63b *49/06, 49/12, 49/14*
U.S. Cl. 273—73 C 11 Claims



Racquetball and tennis racquets having frames formed of a length of metal, preferably aluminum, tubing or extrusion, the end portions of which extend parallel to one another and are welded together to form the handle and shaft portions of the racquet and the intermediate portion of which forms the frame of the racquet. The frame is completed by a throat piece which spans the diverging portions of the tubing immediately above the shaft. A slot is provided in the tubing along the upper half of the racquet to alter the response frequency of the frame so that it coincides with that of the ball. Holes are provided in the tubing of the racquet and in the throat piece to receive the racquet strings. Hollow rivets or bushings may be provided in these holes to prevent cutting of the strings

by the edges of the holes. A length of rubber or plastic may be positioned in the slot of the frame to add weight to the racquet and for protective purposes.

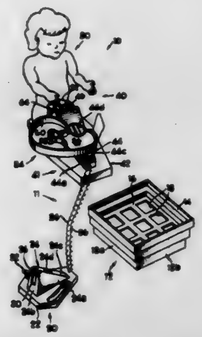
3,664,669
GAME RACKET WITH STRING SUPPORT INSERT MEANS
Peter A. Latham, Newburyport, and Paul E. Brefka, Southboro, Mass. (both % LBA, Inc., 39 Commercial Wharf, Boston, Mass. 02110)
Filed Sept. 29, 1969, Ser. No. 861,701
Int. Cl. A63b *49/12, 51/00*
U.S. Cl. 273—73 D 12 Claims



A game racket comprises an aluminum extrusion that includes a central wall separating the hollow outside portion from a pair of flanges pointed toward each other to define an inside that receives a series of plastic string supporting elements in the head portion of the frame. The string support elements are formed with upwardly and downwardly extending base portions seated in the upper and lower grooves, respectively, of the inside channel in the extrusion. A hollow string support portion extends transversely from the base portions and has an inward edge of generally C-shape through which a string may be looped. Keeping the base portions urged apart seats the string support in the inside channel. A cross piece at the lower end of the head portion of the racket carries additional string support elements and fastens together opposed portions of the aluminum extrusion to form the head portion of the racket. A handle member secures the lower portions of the extrusion together to define the handle portion of the racket and complete the racket assembly.

3,664,670
DOLL LAUNCHER GAME
Marvin I. Glass and Jeffrey D. Breslow, Chicago, and Eugene Jaworski, Park Ridge, Ill., assignors to Marvin Glass & Associates
Filed Jan. 28, 1971, Ser. No. 110,699
Int. Cl. A63h *33/26*
U.S. Cl. 273—101 18 Claims

A doll capable of being utilized with associated game apparatus including a grid-like game board for receiving ball-like missiles. An active player launching means is provided together with a launching means for the doll. Motor means in the doll is associated with linkage for driving an arm of the doll through a path of travel to launch a missile towards the game board. Circuitry connects the active player launching means to the doll to activate the doll responsive to launching of a missile from the active player launching means.



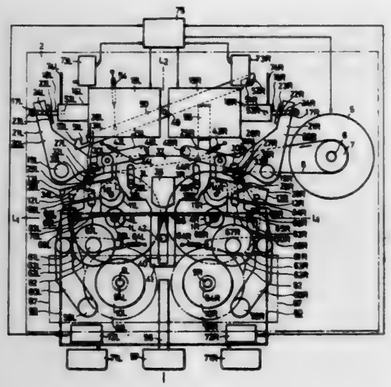
3,664,671
THREE-DIMENSIONAL GAME BOARD
Joseph W. Davis III, 651 Elm St., Buffalo, N.Y. 14203
Filed Mar. 25, 1970, Ser. No. 22,448
Int. Cl. A63f *3/02*
U.S. Cl. 273—131 AC 6 Claims

A game board comprising eight vertically aligned and spaced horizontal slats, each having defined on its upper face a row of eight squares, alternate squares being of two different colors and the coloring extending downwardly over an edge of the slat, whereby the game board pattern is reproduced in a vertical plane for convenient viewing.

3,664,672
MAGNETIC RECORDING AND REPRODUCING APPARATUS
Sukeyoshi Fujikawa and Yasuhiro Uemura, Tokyo, Japan, assignors to Teac Corporation, Tokyo, Japan
Filed Dec. 19, 1969, Ser. No. 886,469
Claims priority, application Japan, Dec. 25, 1968, 43/94,663, 43/94,664; Apr. 3, 1969, 44/25,476, 44/25,477
Int. Cl. G11b *15/26*
U.S. Cl. 274—4 D 7 Claims

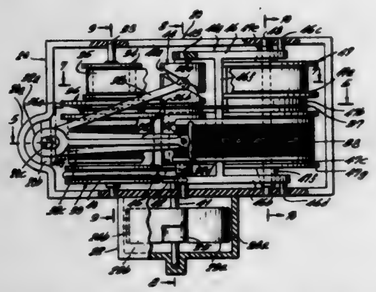
A magnetic recording and reproducing apparatus wherein a pinch roller mounted on a pinch roller arm is disposed into or out of rotational contact with a capstan

for transporting a magnetic tape unwound from a reel mounted on a reel shaft, with said magnetic tape being held between said pinch roller and said capstan, wherein when a plunger is energized, said pinch roller is brought into rotational contact with said capstan by means of a spring interposed directly or indirectly between an operating lever of said plunger and said pinch roller arm, with said magnetic tape being held between said pinch roller and said capstan, wherein an idler which is adapted to be disposed in and out of contact with a driving source



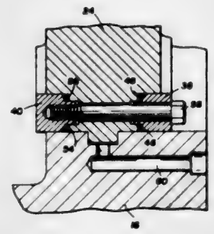
is brought into rotational contact with a reel shaft wheel provided on the reel shaft or the reel shaft is connected to the driving source through said idler and rotary frictional engagement means, and said idler and said rotary frictional engagement means are utilized as means for imparting a back tension to the magnetic tape and means for braking said reel shaft, and wherein the in-contact or out-of-contact relationship between said pinch roller and said capstan is secured by a locking mechanism associated with the operating lever of the plunger.

3,664,673
TAPE TALKING MECHANISM
Gerhart Weiss and Burt W. Enemann, Flushing, N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.
Filed Nov. 18, 1969, Ser. No. 877,636
Int. Cl. G11b *25/06*; A63h *3/28*; G11b *17/06*
U.S. Cl. 274—11 R 6 Claims



A miniature tape talking mechanism. The tape is supported by a rotatable capstan positioned below the stylus to minimize noise in the audible message. The capstan is made of metal so that its relatively large inertia prevents up-and-down movement of the capstan during play of the device in order that maximum vibrations be transmitted to the speaker cone. The tone arm element has two legs in the shape of a V. At the tip of one leg is the stylus for tracking a tape groove, and at the tip of the other leg is a cam follower for tracking a cam groove which is rotated during wind-up of the unit. The final position of the cam follower determines the message on the tape selected for play. The resilient tone arm element prevents jumping from track to track during a play of the device even if the mechanism is jarred. Either (or both) of the ends of the tape can be attached to a respective drum simply by folding it and inserting the folded end of the tape into a notch on the drum; this eliminates the need for a fastening element and reduces assembly time.

3,664,674
SPLIT HOUSING WITH IMPROVED SEAL
Frank A. Yebl, Allegany, N.Y., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Apr. 22, 1970, Ser. No. 30,729
Int. Cl. F16j *9/00*
U.S. Cl. 277—66 7 Claims



A split housing including improved sealing means forming a fluid-tight seal between a circular end member and a pair of mating semicylindrical housing or casing members. The improved housing/sealing arrangement includes an end plate, a split casing such as is utilized on high pressure, turbine-type compressors, an annular member carrying a deformable seal having a diameter less than the inner diameter of the casing and means for deforming the seal into sealing engagement with the end plate and casing.

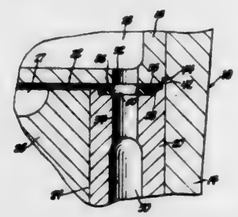
3,664,675
SEAL BETWEEN ROTATING PARTS, MOVEMENT OF WHICH IS RELATIVE TO EACH OTHER
Sven-Erik Malmstrom, Reftele, Sweden, assignor to Forsheda Gummifabrik Aktieboleg, Forsheda, Sweden
Continuation-in-part of application Ser. No. 809,743, Mar. 24, 1969. This application May 5, 1971, Ser. No. 140,425
Claims priority, application Sweden, Apr. 1, 1968, 4,276/68
Int. Cl. F16j *15/32*
U.S. Cl. 277—84 5 Claims



A seal for relatively rotatable members such as a shaft member and a wall member having a sealing surface disposed generally transversely to the axis of the shaft member, comprising an annular body portion adapted to be

mounted on the shaft member, a flexible lip projecting angularly from said body portion and having at least one circumferential rib projecting from the lip engaging the sealing surface of the wall member and a plurality of fin-shaped elements projecting radially from said rib disposed generally parallel to the sealing surface, said fin-shaped elements adapted to press with a light pressure against the sealing surface with freely suspended side edges and which, due to friction upon relative rotation of the members, deflect rearwardly in relation to the direction of movement of the sealing rib and sealing surface thereby providing a pumping effect directed radially from the sealing rib.

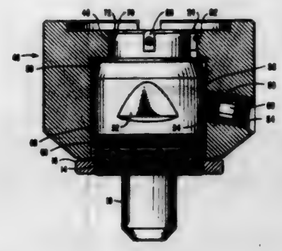
3,664,676
CYLINDER HEAD GASKET ASSEMBLY
Victor Petersen, Westmont, Ill., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 11, 1970, Ser. No. 71,321
Int. Cl. F16j *15/10*
U.S. Cl. 277—166 7 Claims



In a preferred embodiment, a cylinder head gasket includes a thin annular sheet metal member having raised copper portions on its upper and lower surfaces adjacent the inner periphery to act as a combustion seal and having a plurality of coolant openings, each receiving a snap-in grommet. The grommets preferably comprise a soft elastomeric inner seal portion bonded or otherwise retained to a plastic resin base outer insulating portion. A peripheral groove adjacent one end of each grommet permits loose retention of the grommets within their respective openings of the sheet metal member such that upon installation of the gasket, the grommets may move laterally to seat squarely within counterbored portions surrounding the water passages of the associated cylinder liner.

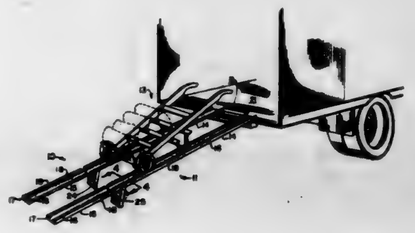
3,664,677
TOOL HOLDER
Elwin Sunderman, Inglewood, and Merle Hilliard, Los Angeles, Calif., assignors to Sonnet Tool and Manufacturing Co., Hawthorne, Calif.
Filed June 15, 1970, Ser. No. 46,229
Int. Cl. B23b *31/04*
U.S. Cl. 279—83 13 Claims

The tool holder is a generally cylindrical body with one end threaded and with a cylindrical concentric tail integrally attached to the opposite end. A bore for receiving the stem of a machine tool extends through the bore and the tail. A bead, semi-circular in cross-section, is formed on the opposite end of the cylindrical body adjacent the plane of the junction between the cylindrical tail and the cylindrical body. The region immediately adjacent the bead is relieved axially a distance on the order of a sixth of the diameter of the cylindrical body. The diameter of the beaded end of the cylindrical body is slightly smaller than the diameter of the cylindrical body for ease in penetrating the bore of the adapter and the relieved axially extending region prevents the tool holder from becoming jammed in the bore of the adapter. The cylindrical surface of the body and the cylindrical surface of the



tail are precision ground and then these surfaces fit into a correspondingly dimensioned bore and counter-bore in the adapter. In this way the tool holder is supported in the adapter on spaced bearing surfaces for greater stability.

3,664,678
MATERIAL HANDLING APPARATUS
Benjamin van der Melde, 5296 South 2nd West, Murray, Utah 84107
Original application Apr. 16, 1968, Ser. No. 721,819, now Patent No. 3,532,058. Divided and this application June 8, 1970, Ser. No. 57,000
Int. Cl. B62b *1/08*
U.S. Cl. 280—47.2 5 Claims

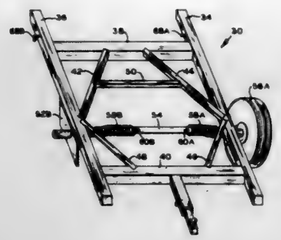


A hand truck and track system for loading and unloading vehicle trucks and the like. The hand truck is provided with folding rest legs and can be fitted with either skid shoes having retarding surfaces or with roller means having brakes to automatically prevent reverse travel. The tracks are rails that provide selectively an untreated skid path and a path coated with a non-skid surfacing material for the skid shoes or rollers.

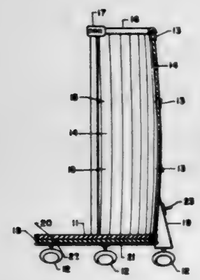
3,664,679
STABILIZING DEVICE FOR TRUCKS
Dale H. Hille, Bowling Green, Ohio, assignor to Dale H. Hille Company, Bowling Green, Ohio
Filed Jan. 22, 1970, Ser. No. 4,850
Int. Cl. B60p *3/40*
U.S. Cl. 280—81 R 4 Claims

A stabilizing device for a truck which is a supplemental frame extension supported on wheels and attached, in combination, with the rearward portion of the main frame of the truck so as to be a rearwardly extending addition

to the main frame of the truck, this supplemental frame extension being positioned beneath the load carrying surface of the truck as a stabilizer and additional weight bearer.

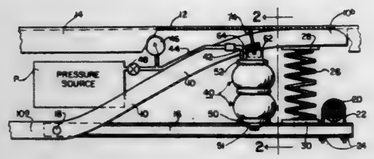


3,664,680
SCOOTER-TYPE VEHICLE
Jasper A. Booker, 29 Woodbury Forest Drive, Hampton, Va. 23366
Filed Aug. 18, 1970, Ser. No. 64,744
Int. Cl. B62b 3/00
U.S. Cl. 280—87.04 R 3 Claims



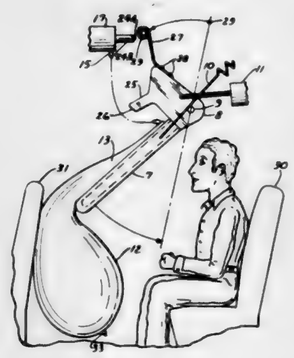
This invention relates to a scooter-type vehicle having a half-barrel structure with creeper wheels attached to the bottom thereof. An optional handle is provided in order that the device can be a pull-type vehicle.

3,664,681
AIR SPRING MOUNTING FOR PICKUP TRUCKS
Ellis B. Thaxton, Arlington, Tex., assignor to Ride-Rite Corp., Arlington, Tex.
Filed Dec. 4, 1970, Ser. No. 95,117
Int. Cl. B60g 11/56
U.S. Cl. 280—124 F 6 Claims



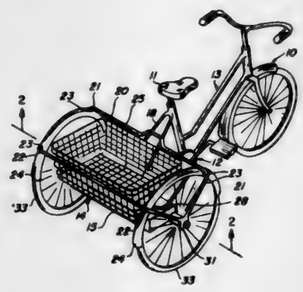
Mountings for auxiliary air springs to prevent overloading of the regular spring system of a vehicle of the type having longitudinal chassis frame members which are arched over the vehicle axle, which axle is supported on radius arms pivotally connected to the frame members ahead of their arched portions, the mountings compensating for non-parallel relationships between the frame members and the radius arms at the locations where the air springs are mounted, and the mountings being easily installed without requiring drilling of the vehicle structures.

3,664,682
COMBINED CRASH PAD AND AIR BAG FOR MOTOR VEHICLES
Casimir E. Wycech, 5941 Argyle, Dearborn, Mich. 48126
Continuation-in-part of application Ser. No. 41,841, June 1, 1970. This application July 15, 1970, Ser. No. 55,158
Int. Cl. B10r 21/10
U.S. Cl. 280—150 AB 10 Claims



This application discloses a combined Crash Pad and Air Bag for motor vehicles, which is arranged to automatically move into protective position in front of the driver and passenger upon impact of the vehicle with another object at and above a pre-determined speed.

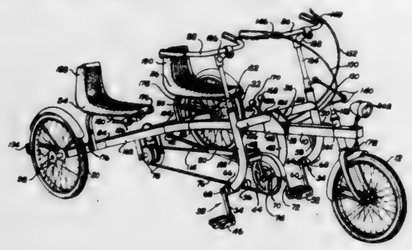
3,664,683
BASKET ATTACHMENT FOR TRICYCLE
Alan B. Gobby, Glendale, Ariz., assignor to Gobby Mfg., Inc., Glendale, Ariz.
Filed Nov. 28, 1969, Ser. No. 880,739
Int. Cl. B21j 9/00
U.S. Cl. 280—202 1 Claim



A basket attachment mechanism for a tricycle having the usual steerable front wheel assembly, pedal-sprocket mechanism, and a rear axle assembly with contains the mechanism that transmits the driving force from the

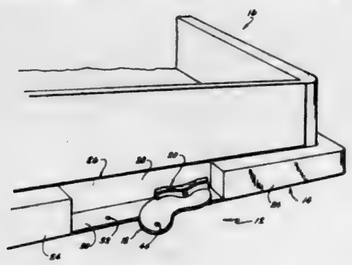
sprocket to at least one of the rear wheels which are journaled on opposite ends of the axle assembly. A demountable basket assembly is attached between the rear wheels and above the axle assembly.

3,664,684
TWO-PASSENGER CYCLE
Cyril E. Long, 3055 Hayes, Costa Mesa, Calif. 92626
Filed July 1, 1970, Ser. No. 51,429
Int. Cl. B62k 5/04
U.S. Cl. 280—231 13 Claims



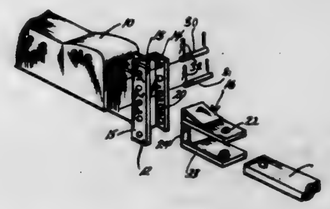
A two-passenger tricycle in which separate saddle and handlebars are provided on opposite sides of an axis defined by a medial, longitudinal frame member. A central crankshaft is journaled across the longitudinal axis and a set of pedals are provided on each side of the longitudinal axis. An inboard pedal of each set of pedals is connected by crank arms to the central crankshaft which, in turn, is connected by sprocket wheels and chain to a drive wheel. The medial seating surface of the saddles are spaced a greater distance horizontally from the axis of rotation of the crankshaft than vertically therefrom so that the horizontal thrust vector on the pedal is greater than the vertical thrust vector, allowing push pedaling. Other features include a novel brake control, rear mounting feet for vertical storage and knockdown construction.

3,664,685
CUSHION HITCH FOR VEHICLE BUMPERS
Elmer Ray Moline, 103 E. Railroad, Waterville, Kans. 66548
Filed Dec. 28, 1970, Ser. No. 101,612
Int. Cl. B60d 1/14
U.S. Cl. 280—486 5 Claims



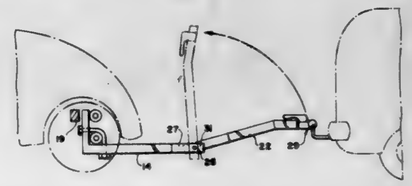
A cushion hitch for use with conventional rear safety bumpers for vehicles. Such hitch has a horizontal member and an adjacent vertical portion. There is a coupling pivotally mountable with the horizontal member, and having an attachment for trailer vehicles. A cushion is attached to the coupling to contact a bumper portion when mounted on the safety bumper and when the coupling is rotated.

3,664,686
TWO PIN ADJUSTABLE HITCH
Robert DuWayne Anderson, Murdock, Minn., assignor to TCI, Inc., Benson, Minn.
Filed July 28, 1970, Ser. No. 58,795
Int. Cl. B60d 1/02
U.S. Cl. 280—490 3 Claims



A quick adjustable hitch utilizing two removable pins that hold a hitch clevis stable with respect to a connecting channel, and which permits a wide range of vertical adjustment for the clevis in a convenient manner.

3,664,687
VEHICLE TOW BAR
Thomas O. Nutt, Jr., and Thomas O. Nutt III, both of 3536 Queen Anne Drive, Fairfax, Va. 22030
Filed Jan. 21, 1970, Ser. No. 4,589
Int. Cl. B62d 53/00
U.S. Cl. 280—491 6 Claims

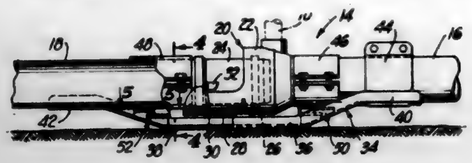


A tow bar is provided for towing vehicles which have upper and lower front axles but which do not have a frame or a bumper to which a tow bar could be secured. A tow bar according to the invention comprises a generally horizontal rigid platform provided at the rear end with two clamp members for holding and encircling the lower front axle of the towed vehicle. The rear end of the platform is also provided with two upstanding members which engage the upper axle and prevent the platform from rotating downwardly about the lower axle. The forward end of the platform is provided with means to connect the platform to a towing vehicle. The connecting means conveniently comprises an A-frame, the rear, wider, end of which is secured to the forward end of the platform and the forward end of which is connectable to the towing vehicle.

3,664,688
IRRIGATION TOWLINE ASSEMBLY
Wells D. De Loach, 3353 Rio Benito, Covina, Calif. 91722
Filed July 6, 1970, Ser. No. 52,577
Int. Cl. F16l 37/00
U.S. Cl. 285—6 10 Claims

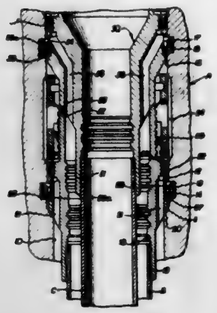
An irrigation towline assembly including a pair of water pipes releasably joined end to end by a sealed coupling having slidably interfitting parts with coacting thrust shoulders which permit limited relative axial movement of the parts, a coupler skid having a clamp at one end firmly clamping one pipe to the skid, and coacting lugs on the

other pipe and skid which engage to firmly anchor the pipe to the skid as a result of limited axial separation movement of the latter pipe relative to the clamped pipe



when a towing force is applied to the towline. The lugs are disengaged to permit uncoupling of the pipes by relative axial movement of the pipes toward one another.

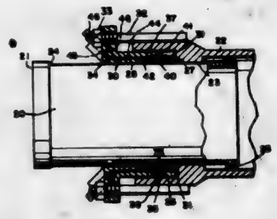
3,664,689
SELECTIVELY LOCKABLE CASING HANGER
James W. E. Hanes, Ventura, Calif., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.
Filed Aug. 14, 1969, Ser. No. 850,194
Int. Cl. F16l 35/00
U.S. Cl. 285—18 8 Claims



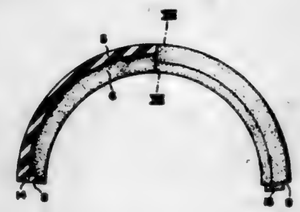
Casing hanger apparatus for hanging a well casing string from underwater well head apparatus, in which a lock ring engageable with a shoulder on the casing hanger, to lock the casing hanger in place, can be held from engaging the shoulder by a filler ring which is removably disposed on the casing hanger body. The filler ring is removed if the lock ring is to be permitted to function. Thus, the presence or absence of the filler means renders the lock ring selectively inoperable or operable, permitting easy removal of the casing hanger or its locking in place.

3,664,690
SLIP-TYPE EXPANSION JOINT AND PACKING JOINT
James W. Williams III, 705 Whites Road, Lansdale, Pa. 19446, and John S. Fetterolf, 750 Spruce St., Royersford, Pa. 19468
Filed Sept. 9, 1970, Ser. No. 70,639
Int. Cl. F16l 17/02
U.S. Cl. 285—96 6 Claims

A packing joint has an inner circular member or sleeve, and an outer tubular member engaging the outside of the inner member or sleeve, slidable and telescoping with respect to the inner member, for example, as in a slip-type expansion joint. A stuffing box is at one end of the outer member, having an annular packing space between the inner and outer members open at one end, and a packing gland surrounds and engages the inner member and has a sleeve entering the packing space and enclosing the open end of the packing space. The gland is urged toward the packing space by suitable means such as screws. There is a preformed annular packing in the packing space which engages the inner member and extends in outside diameter substantially less than the outside diameter of the packing space. Plastic packing fills the packing space radially outside the preformed annular packing and in the recesses of the preformed annular packing. The gland, suitably by means of an annular tongue on the end, engages the outside diameter of the packing space, and applies hydraulic pressure to the preformed packing, the tongue being of an inside diameter at least as large as the outside diameter of the preformed packing, so that it does not bear directly on the preformed packing. The annular tongue preferably has an annular wedge surface on its radial inside adjoining its forward end. In a preferred embodiment pump means insert supplementing plastic packing, preferably at a plurality of points around the circumference.



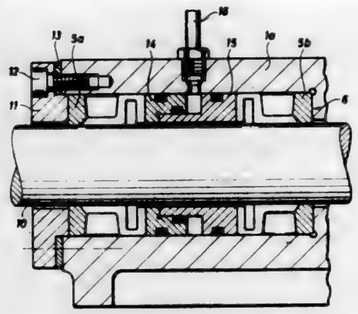
3,664,691
PIPE JOINTS
Tomomi Nakamura, 11–17, 3-chome, Nishi-Ikebukuro, Toshima-ku, Tokyo, Japan
Filed May 15, 1970, Ser. No. 37,784
Int. Cl. F16l 17/04
U.S. Cl. 285—112 1 Claim



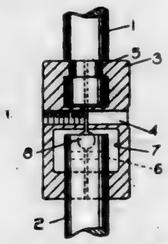
A pipe joint is provided which is easy for attachment or detachment and replacement in repair and effective for tight sealing. Splitted packing is provided in splitted housing and fastened over opposite ends of two pipes. Tongues are provided on the packing to compress the pipes. On the splitted end surfaces of the packing are provided inclined surface and inside the splitted end surfaces are formed also tongues to compress with each other. These tongues form an annular tongue portion enveloping the inlet of an inner hollow chamber of the packing.

3,664,692
DEVICE FOR MEASURING A CYLINDRICAL BODY
Rudolf Spieth, Kennenburger Strasse 48, D73 Esslingen am Neckar, Kennenburg, Germany
Filed July 29, 1970, Ser. No. 59,091
Claims priority, application Germany, July 29, 1969, P 19 38 449.7
Int. Cl. F16d 1/06
U.S. Cl. 287—52 5 Claims

A device for securing a cylindrical body to a locating body comprising a locking ring having one annular groove extending into it from its interior and one extending into it from its exterior, the locking ring being supported on a surface of the locating body in a manner whereby the exterior annular groove is adjacent such surface, and that of the locking ring which is adjacent the locating body abutting axially against the cylindrical body in such a manner that when the locking ring is tightened up, it retains its position relative to the other parts of said locking ring. The intermediate outer portion of the ring between the grooves is displaced when the ring is tightened up and the locking ring section adjacent said locating body surface retains its position during the locking operation so that there will be no mutual displacement between the cylindrical body and the locating body.



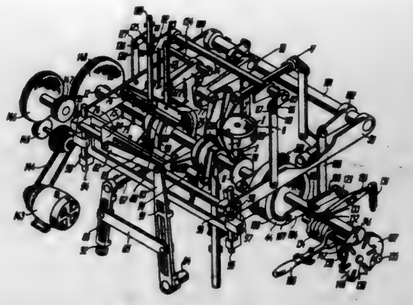
3,664,693
COUPLINGS FOR CONNECTING TWO COMPONENTS
Brian Pemberton Gyles Irons, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Jan. 14, 1970, Ser. No. 2,904
Claims priority, application Great Britain, Jan. 24, 1969, 4,047/69
Int. Cl. F16d 1/00
U.S. Cl. 287—111 2 Claims



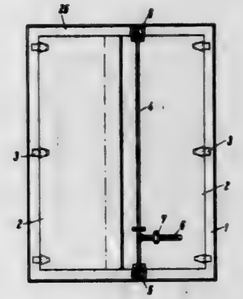
A couping for connecting two components comprising a sleeve connected to one of the components and defining a cavity for the end of the other component, the cavity having a pouring hole through which molten material can be poured to fill the cavity and also a keying opening in said end of the component.

3,664,694
APPARATUS FOR SEWING TOGETHER NET SHEETS
Manivald Maximovich Pajulaid, Roo 10, kv. 6 ulitsa, and Khugo Gustavovich Teoming, Ulitsa Waplas 8, kv. 24, both of Tallin, U.S.S.R.
Filed Sept. 16, 1970, Ser. No. 72,795
Int. Cl. B65h 69/04
U.S. Cl. 289—18 6 Claims

A machine for sewing net sheets together includes a shuttle carrier having a shuttle for jointing thread. A device is provided for pulling a loop out of the shuttle and a device is provided for threading the loop taken therefrom through the meshes of the net sheets. Still further there is provided a mechanism for expansion of the loop and a mechanism for tightening the knot formed as a result of the shuttles passing through the loop.

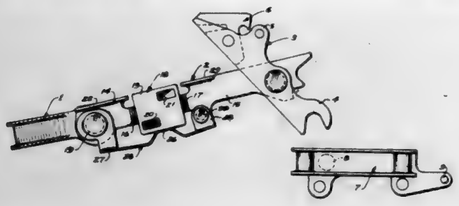


3,664,695
TURNING BOLT LOCKING DEVICE FOR TRANSPORT VEHICLES
Hans-Werner Sickel, Hagen, Germany, assignor to Firma F. Hesterberg & Sohne, Westphalia, Germany
Filed Nov. 18, 1970, Ser. No. 90,715
Claims priority, application Germany, Dec. 3, 1969, P 19 60 697.4
Int. Cl. B65c 3/04, 7/02
U.S. Cl. 292—54 3 Claims



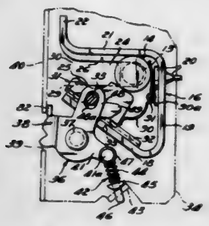
A turning bolt locking device for transport containers comprising a bolt provided at each end with eccentrically offset locking elements which during the locking turning movement tighteningly engage receivers affixed to the container frame, the locking element comprising an angularly recessed cylindrical body axially of the bolt and integrally formed with locking surfaces both at its upper and bottoms ends in the form at each such end of two cams of which the inside locking surfaces have a screw pitch, the axial distance between the cams corresponding to the axial distance between co-operating surfaces forming a corresponding screw thread in the receiver. The locking element may have surfaces that extend parallel in the axial direction and in the locking position make thrust transmitting contact with corresponding flat surfaces in the receiver.

3,664,696
LATCH ADJUSTER
Lloyd Richard Poe, Beverly Hills, Calif., assignor to Hartwell Corporation, Los Angeles, Calif.
Filed Jan. 15, 1971, Ser. No. 106,793
Int. Cl. E05c 5/00
U.S. Cl. 292—26 **5 Claims**



A latch adjuster or turnbuckle for flush type latches installed in aircraft, the adjuster including an adjusting member which is provided with opposed screwthreads, is square in cross section and is so mounted that each of its sides may occupy a position flush with the surrounding surface of the aircraft; each side being provided with tool receiving recesses accessible from the exterior of the aircraft for turning the adjusting member ninety degrees in either direction to expose a flanking side. Yieldable means engages the adjusting member to retain a side in its flush position.

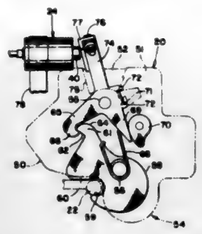
3,664,697
LATCH MECHANISM
Angelo R. De Vito, 1354 S. Belvoir Blvd., South Euclid, Ohio 44121, and Otto V. Pazik, 5600 Clairidge Drive, Willoughby, Ohio 44094
Continuation-in-part of application Ser. No. 634,271, Apr. 27, 1967, now Patent No. 3,507,530. This application Apr. 13, 1970, Ser. No. 27,879
Int. Cl. E05b 65/22
U.S. Cl. 292—173 **3 Claims**



An automobile door latching mechanism characterized, among other things, by a slidable one-piece contactor that is movable between working and idling positions in one or both of which it is capable of pivotal deflection. Incorporated in the mechanism are levers, preferably levers of the bell-crank type, at least one of which can initiate movement of the contactor between working and idling positions. The mechanism includes connections extending from one of said levers to an externally housed latch element adapted to cooperate with an external striker.

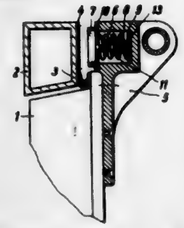
3,664,698
ELECTRIC ACTUATING MECHANISM
George P. Stropkay, Willoughby, Ohio, assignor to Product Design & Manufacturing Corp., Willoughby, Ohio
Filed Apr. 2, 1970, Ser. No. 25,175
Int. Cl. E05c 3/26, 13/00
U.S. Cl. 292—201 **6 Claims**

Electrically operated automobile latch mechanisms utilizing a linear actuator which develops operating force by the vaporization of Freon 113. The actuator includes a sealed chamber having a flexible annularly folded diaphragm which imparts movement to a linearly guided



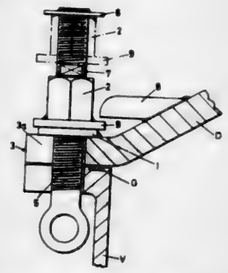
plunger, the Freon being contained in the chamber together with a coiled resistance heater element which is remotely energized from the automobile power source.

3,664,699
MAGNETIC DOOR CLOSURE DEVICE
Peter Weigelt, 4521 Bakum 156, Germany
Filed Mar. 12, 1970, Ser. No. 19,059
Claims priority, application Germany, Mar. 15, 1969, P 19 13 330.3
Int. Cl. E05c 19/16
U.S. Cl. 292—251.5 **1 Claim**



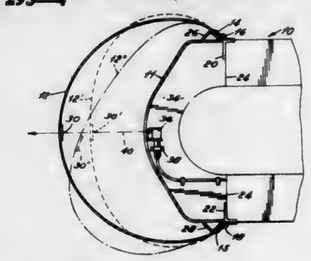
The present invention relates to a door closure device in which a permanent magnet is attached to one and a magnetically permeable member is attached to the respective other one of two door members movable relatively to each other. The permanent magnet is movably mounted in its respective member and resiliently urged in a direction opposite to the direction of its movement under the effect of the attractive force between the permanent magnet and the magnetically permeable member.

3,664,700
SWING BOLTS
Henry Maurice Hattersley Pickard, Stanningley, Pudsey, England
Filed Jan. 5, 1971, Ser. No. 103,987
Int. Cl. B65d 45/30
U.S. Cl. 292—256.75 **3 Claims**



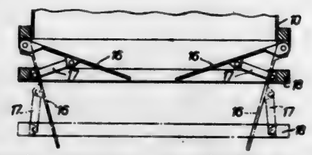
Swinging of a swing bolt on the door of a pressure vessel to a release position is only possible when a securing nut has been slackened sufficiently on the bolt to uncover a portion of the bolt formed with opposed flats which present a reduced diameter portion of the bolt which can pass through a restricted space when the bolt is swung. The door is also formed with a stop or lug which is engaged by said nut when commencing to slacken the nut to forcibly open the door should it "stick" and before the bolt is free to swing.

3,664,701
SAFETY BUMPER FOR DRIVERLESS VEHICLE
Louis Kondur, Birmingham, Mich., assignor to Jervis B. Webb Company
Filed Nov. 12, 1970, Ser. No. 88,634
Int. Cl. B60r 19/02, 21/02
U.S. Cl. 293—4 **12 Claims**



A driverless self-propelled industrial vehicle is provided with a deflectable safety bumper and a vehicle stopping control which includes a photoelectric scanner on the vehicle and a reflector on the bumper to sense deflection thereof and automatically stop the vehicle when the bumper encounters an obstruction.

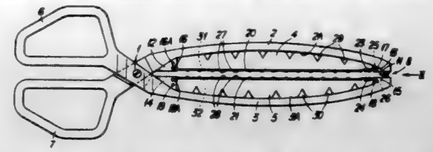
3,664,702
RELEASE MECHANISM
Eric Ambrose Hyde, Bromley, England, assignor to The British Iron and Steel Research Association
Filed May 21, 1970, Ser. No. 39,472
Claims priority, application Great Britain, May 27, 1969, 26,687/69
Int. Cl. B65c 13/00
U.S. Cl. 294—69 **6 Claims**



The invention concerns a scrap basket or pre-heater of the petal type. The basket or pre-heater of the invention is characterised in having a member coupled to the underside of the petals by way of link means and being movable towards and away from the body of the basket or pre-heater to effect opening and closing of the petals, and releasable means for holding said member in a position at which the petals will be closed.

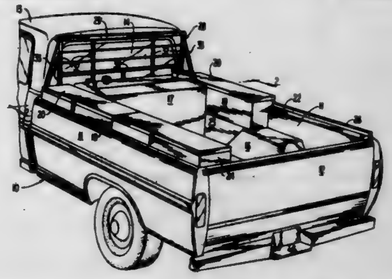
3,664,703
FISH-HANDLING DEVICE
Billy D. Talley, 1A Victoria Circus, Glasgow, Scotland
Filed Nov. 20, 1970, Ser. No. 91,243
Claims priority, application Great Britain, Sept. 26, 1970, 45,974/70; Oct. 28, 1970, 51,115/70
Int. Cl. B25b 7/02
U.S. Cl. 294—118 **9 Claims**

Hand tongs, especially for use in manipulating caught fish, whereof the pivotal jaws take the form of a pair of elongated legs together forming an elongated opening to receive the fish's body, gripping means being provided on the legs at the opposed longitudinal sides thereof to pierce the fish's body on closure of the legs so that slippage of the fish from between the legs is resisted, said gripping



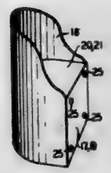
means consisting of elongated plates disposed in the opening side-by-side with the legs and lateral projections on the opposed faces of the plates, and said gripping means being spaced laterally from and resiliently yieldable towards the legs so as to engage the body yieldingly.

3,664,704
INTEGRATED ACCESSORY GROUP FOR PICK-UP TRUCKS
Clarence E. Ellis, P.O. Box 6, Red Rock, Okla. 74651
Filed Dec. 15, 1970, Ser. No. 98,358
Int. Cl. B60r 7/00
U.S. Cl. 296—24 R **7 Claims**



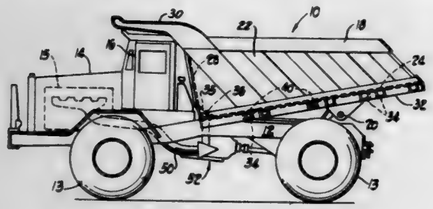
Tool boxes, storage tanks, a cab protecting rack and other accessory units are arranged compactly in the pick-up truck body and tied together so that the accessory components will not shift. The arrangement is neat and compact and does not result in a loss of truck bed length or accessibility. Space sometimes wasted fore and aft of wheel wells is utilized to advantage.

3,664,705
CARDBOARD CHAIRS
Irwin L. Brody and Bruce S. Brody, Franklin Township, Somerset County, N.J., assignors to The Spencer-Mitchell Co., New Brunswick, N.J.
Filed June 18, 1969, Ser. No. 834,458
Int. Cl. A47c 1/12, 5/00, 7/00
U.S. Cl. 297—445 **2 Claims**



A chair having two parts each made of cardboard. The first part forms by means of a cylindrical surface the back, sides, and a portion of the base; the curve of the cylindrical surface being substantially perpendicular to the forces exerted by a person sitting in the chair. The second part completes the base structure and has a cylindrical surface whose curve is substantially perpendicular to the force exerted on the base by a person sitting in the chair.

3,664,706
EXHAUST DIVERTING VALVE FOR DUMPABLE VEHICLES HAVING HEATED DUMP BODIES
Leonard H. Chant, Euclid, Ohio, assignor to Euclid, Inc., Cleveland, Ohio
Filed June 3, 1970, Ser. No. 43,141
Int. Cl. B60h *1/18*
U.S. Cl. 298—1 H 6 Claims

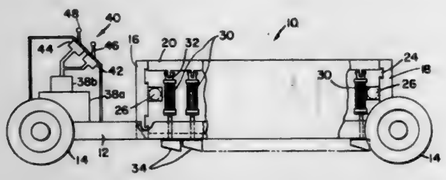


A load carrying vehicle is disclosed which has an engine, an operator's cab, a dump body which is tiltable between a load carrying position and a dump position and an engine exhaust system communicating engine exhaust to the dump body for heating the dump body when in its load carrying position.

A diverter valve directs the engine exhaust gas to the dump body when the body is in its load carrying position and operates to direct exhaust gas to atmosphere away from the operator's cab when the dump body is in its dumping position. The diverter valve is operated by an actuator including a push rod operated by movement of the dump body to its load transporting position. The actuator also includes a spring which yields to limit the force applied to the valve by the push rod so that overtraveling of the rod does not damage the valve.

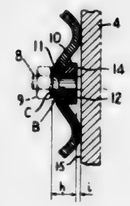
When the dump body is in its dump position, the valve member is biased to its other position. In one preferred form of the invention, a counterweight is included in the valve actuator for biasing a valve member. In another embodiment, the spring biases the valve member against the push rod.

3,664,707
PAVEMENT SLICER
Charles W. Fleigher, Stoneham, Mass., assignor of a fractional part interest to Lloyd M. Gordon, Newton Center, Mass.
Filed Aug. 5, 1970, Ser. No. 61,136
Int. Cl. E01c *23/09*
U.S. Cl. 299—38 14 Claims



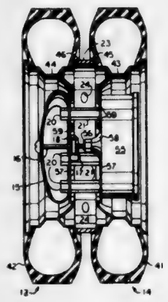
A slicer for slicing through large sections of asphalt or other readily cuttable pavement material comprises a wheeled body which carries two rows of cutting blades driven by hydraulic actuators. The blades extend longitudinally along the body and are aligned end to end with each other so that a continuous cut equal to the total longitudinal extent of the blades may be made. Each blade is individually forced against and through the pavement by a single hydraulic actuator so that the overall length of the cut, as well as its depth, can readily be controlled. The position of the blades is adjustable from side to side to control the width of the slice.

3,664,708
WHEEL ASSEMBLY
Henri Verdier, Beauregard-l'Eveque, France, assignor to Compagnie Generale des Etablissement Michelin raison sociale Michelin & Cie, Clermont-Ferrand, Puy-de-Dome, France
Filed June 2, 1970, Ser. No. 42,839
Claims priority, application France, June 6, 1969, 6918894
Int. Cl. B60b *3/16*
U.S. Cl. 301—9 DN 3 Claims



A casing or sleeve fits over a stud on the hub of the wheel of an automotive vehicle and through a hole formed in a dished portion of the wheel disk which projects in relation to the part of the disk that contacts the hub. A nut screwed onto the stud crimps the casing to the disk. The casing extends to a location near the hub but ordinarily does not touch the hub. When the nut is tightened to a certain point, thereby deforming the disk to some extent, the casing abuts the hub, preventing further deformation of the disk.

3,664,709
DUAL WHEEL ADAPTOR SYSTEM
Lester J. Barr'e, 2302 Shelter Island Drive, San Diego, Calif. 92106
Filed May 6, 1970, Ser. No. 35,156
Int. Cl. B60b *11/02*
U.S. Cl. 301—36 R 7 Claims



A dual wheel adaptor system for single tire vehicles uses stock wheels and fasteners to clamp an open ended torque ring between the confronting rim peripheries of the dual wheels on each side of the vehicle.

The edges of the torque ring are rounded to interfit with the radii of the engaged peripheries so that radially directed spring and clamping forces produce both frictional interlocking and concentric alignment of the inner and outer wheels resulting in a unitary drive, dual wheel traction unit.

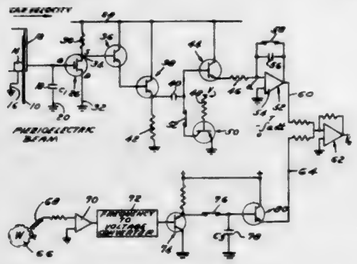
Auxiliary fenders are added, as required.

3,664,710
RESILIENT HUB
Raymond B. Leach, Omaha, Nebr., assignor to Miracle Hub and Wheel, Inc.
Filed Dec. 4, 1969, Ser. No. 882,190
Int. Cl. B60b *9/02*
U.S. Cl. 301—136 9 Claims



A resilient hub connecting a rotatable annular member to an axle incorporating a resilient biased slide member to enable relative lateral movement between the annular member and axle with such movement being cushioned by and resisted by the resiliently biased slide member.

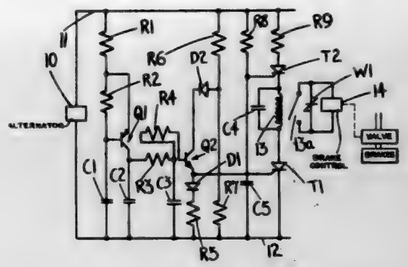
3,664,711
VEHICLE SPEED SYNTHESIZER
James I. Berry, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Jan. 19, 1970, Ser. No. 3,666
Int. Cl. B60k *8/08*
U.S. Cl. 303—21 BE 4 Claims



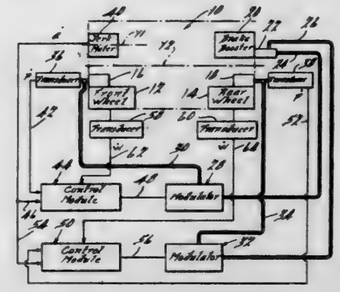
A speed synthesizer for measuring the translational velocity of a moving body at any instant during a period of acceleration or deceleration including an inertia sensor, suitable amplifiers and impedance buffers on the output side of the inertia sensor, a capacitor storage subcircuit receiving the output voltage signal of the impedance buffers and an integrator circuit adapted to receive and integrate the stored voltage potential in said storage subcircuit beginning at the instant the acceleration or deceleration mode begins.

3,664,712
BRAKING SYSTEMS FOR VEHICLES
Leonard R. Hiscox, Birmingham, England, assignor to Girling Limited, Birmingham, England
Filed July 14, 1969, Ser. No. 841,251
Claims priority, application Great Britain, July 29, 1968, 36,031/68
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 CF 8 Claims

A braking system for vehicles, particularly rail vehicles, includes apparatus for applying braking force to a wheel. The speed of a wheel is sensed by a speed sensitive device, and the speed sensitive device operates a control device which reduces the braking pressure applied to the wheel until the speed of the wheel falls to a predetermined value, at which point full braking force is applied.



3,664,713
SKID CONTROL SYSTEM UTILIZING VEHICLE DECELERATION
Hugh E. Riordan, Ann Arbor, and Frank L. Moncher, Farmington, Mich., assignors to Kelsey-Hayes Company, Romulus, Mich.
Filed Sept. 25, 1969, Ser. No. 860,960
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 P 6 Claims



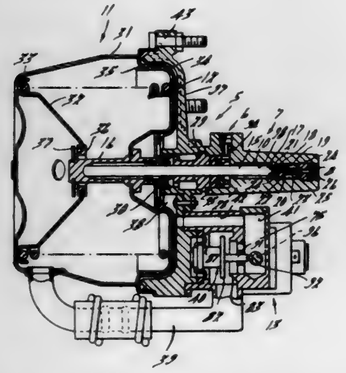
A skid control system for a wheeled vehicle utilizing vehicle deceleration to control brake pressure and including apparatus for measuring the rate of change of vehicle deceleration.

3,664,714
SKID CONTROL VALVE ASSEMBLY
Peter Every, Livonia, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed Dec. 8, 1969, Ser. No. 883,166
Int. Cl. B60t *8/06*
U.S. Cl. 303—21 F 23 Claims

A control system and force motor assembly for controlling the skidding of a vehicle under braked conditions when the control system provides a signal for controlling the position of an armature or fluid pressure controlling device in one of three conditions; the first condition being the "dump" mode of operation when the force motor is controlled to preclude braking pressure from being supplied to the wheels of the vehicle, the "hold" mode of operation when the braking force presented at the time the system goes into the "hold" mode of operation is maintained, and the "return" mode of operation when full applied braking pressure is returned to the vehicle wheels.

The control system is effectively responsive to a critical slip signal, the signal being generated in response to a

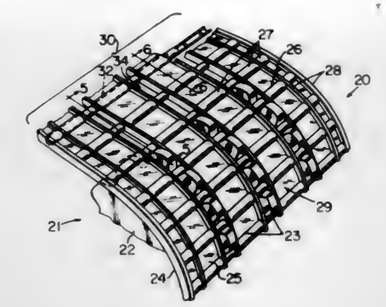
sensed difference between a hypothetical vehicle deceleration, as approximated by a decreasing ramp signal, and the vehicle wheel speed. This comparison is made on a differential basis to provide an output signal which is utilized in controlling an output gate. The gate is also responsive to the sensing of a positive wheel acceleration signal and a change in sign of the rate of change of wheel acceleration. The signal from the output gate is fed to an output logic circuit, the output logic circuit also being rendered responsive to the first derivative of the wheel velocity signal and a combination of first and second derivative of the wheel velocity signal.



The output signals are utilized in the output logic circuit to generate one of three signal conditions across the voice coil of the force motor actuator assembly. In the return mode of operation, the polarity of the output signals generated across the voice coil are of the same polarity to cause zero current to flow through the voice coil. In the dump mode of operation, the coil is provided with current flow in a first direction and in the hold mode of operation the solenoid coil in a first direction and in the hold mode of operation the solenoid coil is supplied with current flowing in a second direction opposite to the first direction. The force motor is fabricated with a three positioned armature which is adapted to be placed either in the return or deactuated position, where no signals are provided from the control circuit; a dump mode of operation which disconnects the manually actuated brake cylinder hydraulically to the wheel cylinders to provide reduced braking pressure; and the hold position which maintains the pressure being fed to the wheels at the time the hold position is achieved.

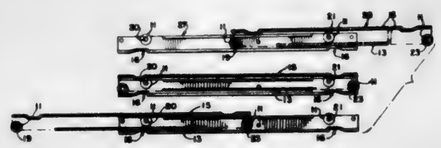
3,664,715
ENDLESS TRACK
Walter E. Huber, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio
Filed July 9, 1970, Ser. No. 53,607
Int. Cl. B62d *55/24*
U.S. Cl. 305—38 **8 Claims**

An endless track of substantially uniform width is provided which is particularly adapted for use on motor driven vehicles such as snowmobiles, or the like, and such track has a plurality of reinforcing members embedded therein in equally spaced apart relation along the endless path of such track and each member has at least one exposed cylindrical portion extending therealong. A pair of openings extends through the track on opposite sides of each cylindrical portion with each pair of openings being adapted to receive an associated pair of teeth of a drive sprocket for the track therethrough enabling the track to be driven by direct engagement of sprocket teeth against the outside surfaces of the cylindrical portions and the openings are constructed to allow unobstructed engagement and disengagement by the drive sprocket teeth.



Improved reinforcing members for such a track are also provided together with an apparatus for and method of making such members.

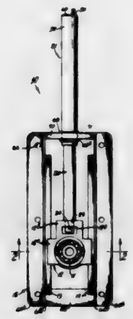
3,664,716
DRAWER SUSPENSION
Ronald C. Johnson, Rochester, Minn., assignor to The General Fireproofing Company, Youngstown, Ohio
Filed Dec. 22, 1970, Ser. No. 100,658
Int. Cl. F16c *21/00*
U.S. Cl. 308—3.8 **9 Claims**



A suspension assembly for an extensible support device includes pairs of cooperating channel elements which are of identical construction. Each channel element is symmetrical about a vertical centerline and includes alternate mounting means adjacent both ends for the selective attachment of an anti-friction supporting element. In use, pairs of these channels are mounted in inverted relationships with a supporting element attached to each channel at opposed ends thereof.

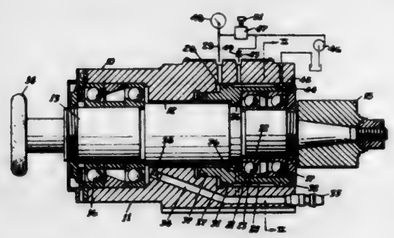
3,664,717
TAKEUP APPARATUS
Buford Pendergrass, Wichita, and Quintin A. Applequist, Salina, Kans., and Alan H. Snyder, Jr., Dallas, Tex., assignors to Roberts Industries, Inc., Salina, Kans.
Filed July 15, 1970, Ser. No. 55,032
Int. Cl. F16c *35/02*; F16h *7/08*
U.S. Cl. 308—15 **14 Claims**

A takeup apparatus for adjustably supporting a bearing mounted pulley, sheave, sprocket, and the like for varying tension in a belt, chain, or similar flexible drive member. A bearing for supporting a shaft is mounted in a housing for longitudinal movement along a track in a frame. The bearing housing is connected with a piston rod of a hydraulic cylinder provided with a grease fitting and a bleed port. Grease is injected into the cylinder through the grease fitting by a grease gun to force the piston outwardly for moving the bearing to adjust belt tension. The tension may be relieved by manipulating a needle valve controlling escape of grease from the cylinder through the bleed port to allow the piston to move into the cylinder relaxing the belt tension. Alternate forms of the device include a double acting piston which may be forced in either direction for controlled relaxing or increasing belt tension. Another form includes hydraulic cylinder



units mounted at opposite ends of the frame and connected with opposite ends of the bearing housing whereby the housing is forced in either direction by manipulation of the proper hydraulic cylinder. A further form of the apparatus includes a single acting cylinder with a spring return used for moving the bearing housing back toward the hydraulic cylinder for relaxing belt tension.

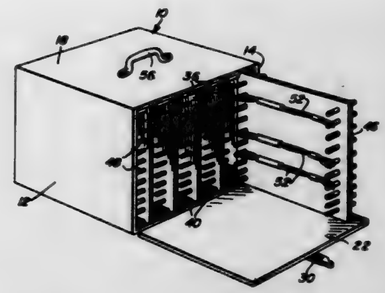
3,664,718
TOOLHEAD
Herbert R. Uhtenwoldt, Worcester, Mass., assignor to The Heald Machine Company, Worcester, Mass.
Filed Sept. 21, 1970, Ser. No. 74,001
Int. Cl. F16c *23/06*
U.S. Cl. 308—189 A **5 Claims**



This invention relates to a toolhead and, more specifically, to apparatus for mounting a spindle in anti-friction bearings and subjecting the bearings to a preload force.

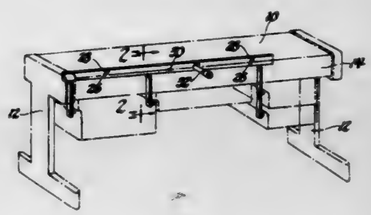
3,664,719
EMBROIDERY THREAD BOX
Edward J. Berg, 1005 Woodbury Drive, Newport, Minn. 55055
Filed Apr. 17, 1970, Ser. No. 29,454
Int. Cl. A47b *63/00*; A47f *3/06, 7/00*
U.S. Cl. 312—185 **1 Claim**

A housing including an open side with a plurality of generally planar members disposed within the housing and in spaced side by side parallel relation at generally right angles relative to the open side of the housing. The planar members are supported from the housing for individual edgewise extension and retraction relative to and through the open side of the housing. At least one side



of each of the planar members includes sets of spaced laterally outwardly projecting supports for removably supporting the opposite ends of a plurality of skeins therefrom.

3,664,720
DRAWER LOCKING SYSTEM
Werner E. Thomas, Elmira, Ontario, Canada, assignor to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada
Filed Sept. 14, 1970, Ser. No. 72,054
Int. Cl. E05b *65/46*
U.S. Cl. 312—219 **9 Claims**

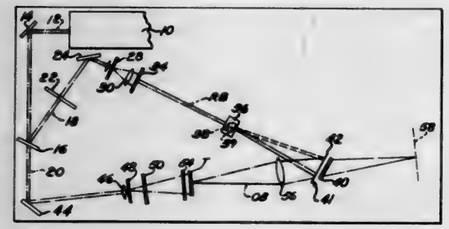


A locking system for desk drawers has a horizontal lock bar beneath the top and overlying drawers at the left, center and right of the desk. The lock bar is movable on inclined cam surfaces by a rotary lockable actuator. Each drawer has a vertically slidable detent biased upwardly and shiftable downwardly by the vertical component of the inclined motion of the lockbar.

3,664,721
DATA STORAGE AND RETRIEVAL METHOD AND APPARATUS
Howard N. Roberts, Ann Arbor, Mich., assignor to Radiation Incorporated, Palm Bay, Fla.
Filed Sept. 9, 1970, Ser. No. 70,855
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **6 Claims**

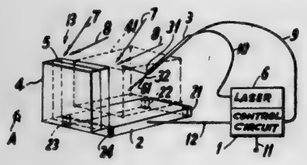
Holographic data storage and retrieval system in which holograms of data are made by deflecting a reference beam to different positions on a recording medium to sequentially interfere with object beams for different data with the objects of the object beams being imaged by a lens at an output plane beyond the recording medium. The area of the recording medium exposed to the object and ref-

erence beams is controlled to limit the area on the recording medium exposed to the object beam for each hologram in each array. A recording reference beam is of the same size as the limited area of recording. The recording



is made in the Fourier or near Fourier transform plane. On readout, the beam which is used as a reference beam on recording is used as the readout beam and is deflected to select the data to be read out. A real image of the data is formed at the output plane on the side of the hologram received from the light source.

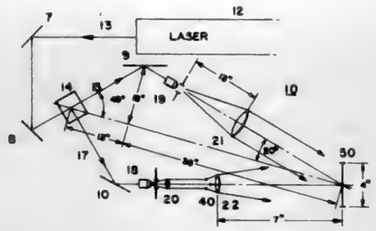
3,664,722
THREE-DIMENSIONAL POSITION INDICATOR AND DETECTOR DEVICE
Kazuo Kiji, Nobuo Nishida, and Mitsuhito Sakaguchi, Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Minato-ku, Tokyo, Japan
Filed Sept. 22, 1970, Ser. No. 74,299
Claims priority, application Japan, Sept. 25, 1969, 44/75,804
Int. Cl. G02b 27/22
U.S. Cl. 350—3.5 **4 Claims**



A three-dimensional indicator and detector includes a movable indicator and a device for generating digital signals corresponding of the indicator position. An image of a three-dimensional coordinate system is formed on a plate, and the locus of movement of the indicator in that system can be viewed through the hologram plate on a real-time basis.

3,664,723
MEANS FOR HOLOGRAPHICALLY RECORDING A THREE-DIMENSIONAL MICROSCOPIC SAMPLE
Louis S. Toth, Worthington, and Stuart A. Collins, Jr., Columbus, Ohio, assignors to The Ohio State University, Columbus, Ohio
Filed June 27, 1969, Ser. No. 837,208
Int. Cl. G02b 27/22, 21/06
U.S. Cl. 350—3.5 **11 Claims**

A three-dimensional microscopic sample is recorded holographically consisting of a simultaneous record of every plane in the volume using a high numerical aperture but not necessarily perfect or abberation free lens. The volume sample is reconstructed using the same lens and is viewed using an ordinary microscope giving a virtually abberation-free reconstructed image of the volume. High magnification is possible because the fine



structure information contained in the high spatial frequencies of the light scattered from the sample is recorded and reproduced.

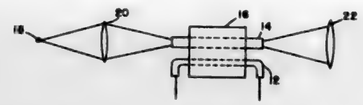
3,664,724
OPTICAL SYSTEM FOR STEREOSCOPIC MICROSCOPES
Walter Klein, Wissmar, Germany, assignor to E. Leitz GmbH, Wetzlar, Germany
Filed Feb. 24, 1970, Ser. No. 13,464
Claims priority, application Germany, Mar. 1, 1969, P 19 10 550.1
Int. Cl. G02b 21/00
U.S. Cl. 350—54 **1 Claim**



In the optical system for stereoscopic microscopes a negative lens is provided in front of the well known prism elements or mirror elements between the objective and the ocular. By means of this additional negative lens a long object distance is achieved, i.e. a long distance between the object and the front lens of the microscope. The latter, however, can still be of relatively low overall height and compact design.

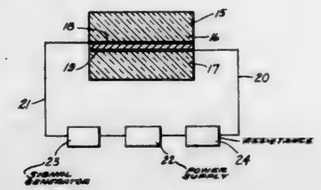
3,664,725
PHOTOCHROMIC GLASS
Charles C. Robinson, Sturbridge, and Elias Snitzer, Wellesley, Mass., assignors to American Optical Corporation, Southbridge, Mass.
Continuation-in-part of application Ser. No. 842,794, June 30, 1969, which is a continuation-in-part of application Ser. No. 490,918, Sept. 28, 1965. This application Oct. 30, 1970, Ser. No. 85,677
Int. Cl. G02f 1/28, 1/36
U.S. Cl. 350—160 P **12 Claims**

A device for controlling the transmission characteristics of a stream of light comprising a means for introducing a stream of light to be controlled, a rare earth doped host glass having rare earth ions which exhibit excited state absorption at a wavelength corresponding to the wavelength of the stream of light to be controlled



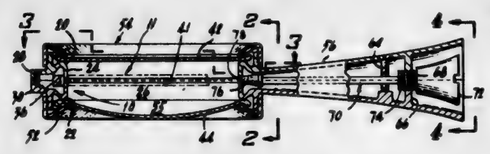
and a means for pumping the ions to an excited state for control of the stream of light by absorption as the light is transmitted through the device.

3,664,726
OPTICAL SHUTTER FOR LASER OR MASER MODULATION
Daniel C. Mattis, Scarsdale, N.Y., assignor to Yeshiva University, New York, N.Y.
Filed Oct. 21, 1969, Ser. No. 868,058
Int. Cl. G02f 1/36
U.S. Cl. 350—160 **1 Claim**



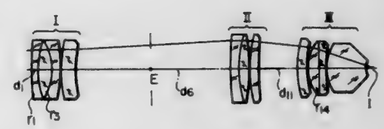
An optical shutter which is adapted to modulate a laser or maser or similar device is shown. The shutter includes a polyconducting device having a normally translucent member and a metallic oxide or metallic salt disposed thereupon. The metallic oxide or salt is adapted to undergo a Mott transition upon application of an impressed EMF by internal heating and is translucent below the Mott transition point but is reflective above this point. A signal generation device is coupled to the metallic oxide or salt and the singal produced is designed to bring the metallic oxide or salt to opposite sides of the Mott transition point.

3,664,727
EDUCATIONAL LENS DEVICE FOR DEMONSTRATING OPTICAL PRINCIPLES
Charles A. O'Donnell, 308 Aquetong Road, New Hope, Pa. 18938
Filed Sept. 9, 1970, Ser. No. 70,657
Int. Cl. G02b 3/12
U.S. Cl. 350—179 **5 Claims**



An optical viewing device, designed for magnifying or reducing the image of objects viewed therethrough, includes a hollow body lens that assumes at the user's option any of a variety of concave or convex lens configurations. Between the lenses is a space that can be charged with either a liquid or a gaseous light-transmitting medium. The device thus becomes usable to particular advantage as an educational aid for demonstrating the phenomenon of magnification and other basic optical principles, in that the user, having selected a lens configuration, may then optionally select a sequence of ambient light-transmitting media separated by the spaced lenses, for example liquid-air-liquid, or air-liquid-air.

3,664,728
OBJECTIVE HAVING A HIGH RESOLVING POWER
Koichi Yuta, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Sept. 30, 1970, Ser. No. 76,682
Claims priority, application Japan, Oct. 1, 1969, 44/78,049; Oct. 2, 1969, 44/78,437, 44/78,438
Int. Cl. G02b 9/62, 9/64
U.S. Cl. 350—214 **9 Claims**



Objective having a high resolving power reaching Rayleigh limit, which comprises first to third parts beginning at the object side and spaced a distance from each other. The first part consists of a first and second lens groups of which the first lens group includes cemented three lens elements with its intermediate lens element being of a convex lens element while the second lens group is located closely adjacent to the first lens group. The second part consists of third and fourth lens groups at least one of which is constituted by cemented lens elements. The third part consists of fifth to seventh lens groups located closely adjacent to each other of which the sixth lens group is constituted by cemented lens elements while the seventh lens group is of a meniscus having a great thickness. The objective satisfies the following relationships:

$$1.2 > -r_3 > 0.8f$$
$$0.6f < r_{14} < 0.8f$$
$$0.4f < d_{11} < 0.8f$$
$$40f < |f_I|$$
$$1.2f < f_{II} < 3f$$

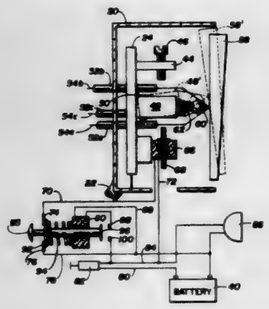
where:

f=the focal length of the entire system
f_I=the focal length of the first part
f_{II}=the focal length of the second part
r_3=the radius of curvature of the surface of lens element located at the third from the object side, wherein cemented surfaces are counted as being one surface
r_{14}=the radius of curvature of the surface of the lens element which is fourteenth from the object side, wherein cemented surfaces are counted as being one
d_{11}=the distance between the second and the third part.

3,664,729
AUTOMATICALLY ADJUSTABLE REAR VIEW MIRROR
Willis D. Moore, P.O. Box 392, Athens, Tex. 75751
Continuation-in-part of application Ser. No. 769,487, Oct. 22, 1968. This application Mar. 25, 1970, Ser. No. 22,612
Int. Cl. B60r 1/06; G02b 7/18
U.S. Cl. 350—281 **7 Claims**

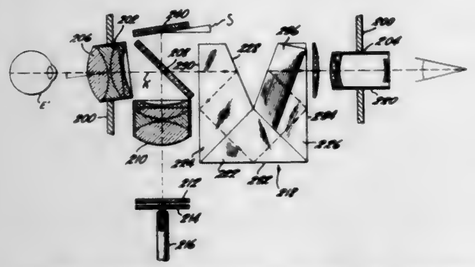
A vehicle rear view mirror assembly is disclosed which includes a mirror movable about a horizontal axis between a daytime operating position and a night anti-glare position. Structure which supports the mirror is movable

about a vertical axis between two extreme positions for varying the field of vision provided by the mirror. A solenoid moves the mirror about the horizontal axis in dependence upon the actuation of the vehicle headlights. Another solenoid moves the mirror about the vertical



axis in dependence upon the operation of the vehicle turn indicator. Other embodiments involve the use of structure for manually orienting the mirror from within the passenger compartment, and also involve relative movement between polarized transparent members for producing non-glare operation during night driving.

3,664,730
OPHTHALMOSCOPE
Hernando Cardona, 600 W. 115th St., New York, N.Y. 10025
Continuation-in-part of application Ser. No. 839,785, Jan. 21, 1969, which is a continuation-in-part of application Ser. No. 473,466, July 20, 1965. This application Oct. 15, 1970, Ser. No. 81,078
Int. Cl. A61b *3/12*; G02b *17/00, 5/04*
U.S. Cl. 351—6 **6 Claims**



An ophthalmoscope includes provision for correcting the image to provide an erect and unreversed image of the eye fundus which can be viewed along a direct line of sight. The correction of the image can be accomplished by the use of a roof prism. Provision is made for illuminating the fundus with light conducted to the case of the scope by a light-conducting cable.

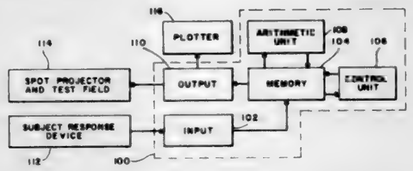
3,664,731
APPARATUS FOR DETERMINING EYE POINT-OF-REGARD
Henry R. Jex, Santa Monica, Calif., assignor to Systems Technology, Inc.
Filed Sept. 10, 1970, Ser. No. 71,054
Int. Cl. A61b *3/10*
U.S. Cl. 351—7 **19 Claims**

Apparatus for measuring the point-of-regard of the eye of an operator relative to a preselected local coordinate system. Sighting means is employed to either restrain or measure the eye point-of-regard relative to the orientation of the operator's head. Orientation of the operator's head is determined relative to a reference direction by means of a goniometer, one input end of which is adapted



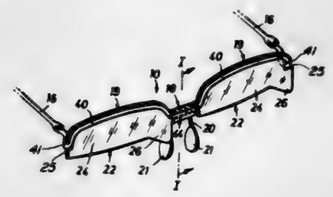
to be mounted relative to the operator's head. The other input end of the goniometer includes an extensible member adapted to be connected to a reference structure for providing the reference direction.

3,664,732
METHOD FOR EXAMINATION OF VISUAL FIELDS
John R. Lynn, 10001 Preston Road, Dallas, Tex. 75230
Filed Feb. 2, 1970, Ser. No. 7,601
Int. Cl. A61b *3/02, 3/10*
U.S. Cl. 351—39 **12 Claims**



A method for testing the visual field of a subject wherein stationary, momentary spots of light of predetermined stimulus value are presented at predetermined locations on a test field of constant brightness in a sequence not readily predictable by the subject. Information is obtained from the subject as to whether the subject perceived the stimulus as each spot was presented. Additional stationary, momentary spots of light are then presented at the predetermined locations in an unpredictable sequence with the additional spots being of predetermined stimulus values based upon the subject's responses to previous spots of light at the same locations. Additional stationary, momentary spots of light are presented until at each location either the limits of the apparatus are reached or a threshold level is determined.

3,664,733
ANTIDAZZLE SPECTACLES FOR MOTORISTS
Kurt-Ulrich Kalkowski, 3 Am Bleiberg, 5351 Kommern, Germany
Filed Feb. 17, 1971, Ser. No. 115,955
Int. Cl. G02c *7/10, 7/16*
U.S. Cl. 351—45 **7 Claims**



Antidazzle spectacles for use by motorists which includes a colored translucent strip of preferably flexible material which is fixedly attached to the spectacle rim

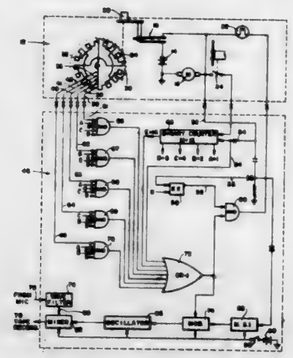
or can be held in clamping relation with the rim by a plurality of hooks attached to the strip and extending therefrom. The strip also includes a horizontal section, and at one end thereof a downwardly tapered section which extends away from the area of attachment of the strip with the rim. The strip absorbs the light beams of oncoming headlights so that the motorist's vision in the direction of the headlights is permitted while his vision in the immediate and intermediate vicinity remains unimpeded. The strip in its flexible form is preferably manufactured as a stamping.

3,664,734
COMPOSITE EYEGLASS FRAME
Andre Rivoire, Joinville, France, assignor to Lux-Optical, Paris, France
Filed Sept. 4, 1970, Ser. No. 69,665
Claims priority, application France, Sept. 11, 1969, 6930887; July 9, 1970, 7025518
Int. Cl. G02c *1/00*
U.S. Cl. 351—83 **9 Claims**



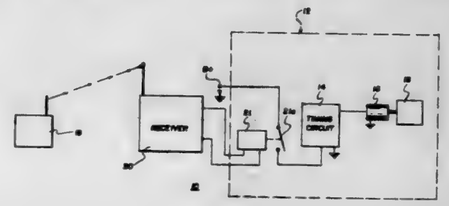
An eyeglass frame consists essentially of two juxtaposed layers, i.e. a plastic rear layer forming the interconnected eye rims and a metallic front layer extending over the bridge and at least the upper part of each eye rim. The metallic layer has lateral extensions forming hinged for the temples, the two layers being mechanically interconnected at these hingers and at the bridge.

3,664,735
DIGITAL ENCODING APPARATUS FOR THE SYNCHRONIZATION OF SEPARATE PICTURES AND SOUND RECORDS
Lenard M. Metzger, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 4, 1970, Ser. No. 34,195
Int. Cl. G03b *17/24, 21/52, 31/04*
U.S. Cl. 352—24 **11 Claims**



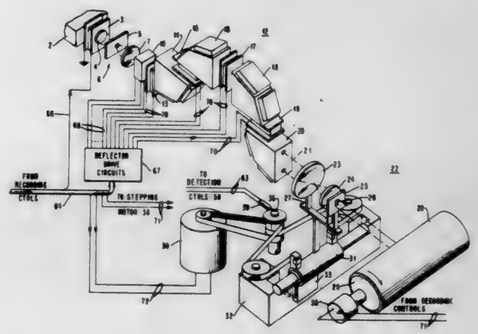
Apparatus usable with an ordinary magnetic tape recorder for preparing sound motion pictures includes a camera having means to code mark film, means to produce a sync pulse signal indicative of the camera speed, and a digital encoding device. An accessory device couples the camera and a tape recorder for applying matching scene identification codes to the tape sound track and to the film. A film speed code is also applied to the tape for synchronized playback.

3,664,736
SINGLE-FRAME FILM APPARATUS
Vernon H. Jungjohann and John D. Hagin, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 18, 1970, Ser. No. 38,086
Int. Cl. G03b *17/46, 21/38*
U.S. Cl. 352—84 **8 Claims**



Remote controlled apparatus for exposing film frames includes a camera having shutter and film pull-down mechanisms, a single-frame mechanism driven by a drive motor, and a timing circuit adapted to be placed into operation by a remotely produced signal which thereafter periodically energizes and de-energizes the drive motor. The single-frame mechanism provides for uniform exposure of successive film frames, regardless of drive motor speed. More particularly, the single-frame mechanism includes a first rotatable member which is directly driven by the motor and is adapted to wind a spring. The spring engages a latched second rotatable member which is released when the first member has wound the spring to where it has a predetermined stored energy. Thereafter, the spring rotates the second member which, in turn, drives the shutter during film exposure. After a film frame is exposed, there is a positive drive connection between first and second members which may come into play, thereby permitting the motor to directly drive the film pull-down mechanism.

3,664,737
PRINTING PLATE RECORDING BY DIRECT EXPOSURE
James Lipp, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 23, 1971, Ser. No. 127,094
Int. Cl. G03b *27/70*
U.S. Cl. 355—18 **12 Claims**

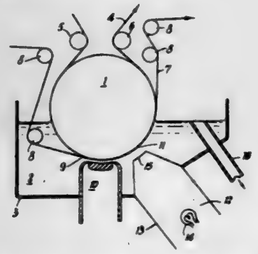


A laser beam in the actinic region of electromagnetic spectrum is used to provide direct exposure of printing plates. The plates have a coating of a photosensitive medium, preferably a diazo, which is sensitive to the actinic wavelength. The vertical deflection of the laser beam is controlled by digital light deflection apparatus

which provide a raster of discrete, essentially diffraction-limited spots of light along a single line.

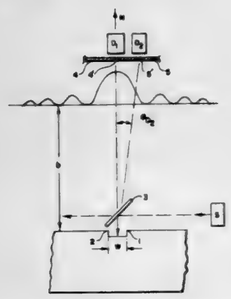
In the preferred embodiment, the particular beam trace on the photosensitive medium is determined by computer control of the digital light deflector; and horizontal displacement of the vertical lines transversely on the photosensitive medium is accomplished by light coupling means which reciprocates across the plane of the medium.

3,664,738
APPARATUS FOR CONTINUOUS CONTACT PRINTING
Ewen Cameron, Herongate, near Brentwood, England, assignor to Columbia Broadcasting System Inc., New York, N.Y.
Filed Jan. 9, 1970, Ser. No. 1,594
Claims priority, application Great Britain, Jan. 13, 1969, 1,941/69
Int. Cl. G03b 27/20
U.S. Cl. 355—87 **13 Claims**



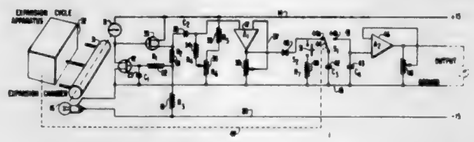
Apparatus and method for contact printing which comprises moving a transparency web and a web of photosensitive print material together in close contact and at a substantially uniform speed past an exposure position at which the print material is exposed to light passing through the transparency web, providing a liquid layer between the webs to establish optical contact between them, and applying fluid pressure to press the webs together, the fluid pressure being greatest at a position where the webs have been brought together via the liquid layer and before they have reached the exposure position.

3,664,739
METHOD AND DEVICE FOR MEASURING STRAIN AND OTHER CHANGES IN DIMENSION
Timothy R. Pryor, 5423 York Lane, Bethesda, Md. 20014
Filed Aug. 9, 1968, Ser. No. 751,615
Int. Cl. G02f 1/30
U.S. Cl. 356—32 **8 Claims**



The separation of two points, each located on a member and being separated by an aperture, is measured by directing waves, such as light waves, on the points to form a diffraction pattern of the single aperture type. A change in dimension of the member, or in the spacing between two adjacent members, causes the separation of the edges to change which, in turn, causes a change in the configuration of the pattern. By comparing the intensity of a given portion of the pattern with a portion of a pattern produced under known conditions, a change in the separation of the points can be determined from which measurement of dimension, strain, etc., can be determined.

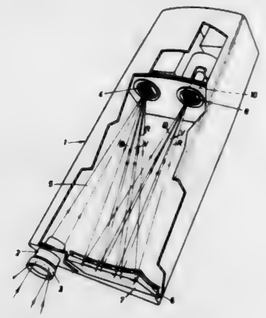
3,664,740
SELF ADJUSTING-SHORT PULSE DETECTING AND AMPLIFYING CIRCUIT
Theodore A. Rich, Scotia, N.Y., assignor to Environmental Technology Incorporated, Latham, N.Y.
Filed July 10, 1969, Ser. No. 840,775
Int. Cl. G01n 1/00, 15/02, 21/00
U.S. Cl. 356—37 **25 Claims**



A self-adjusting detecting and amplifying circuit is described for use with electrically operable detecting elements such as a cadmium sulphide photo conductor for sensing short term changes in a physical phenomenon such as a light pulse that goes from a first condition or level of intensity to a second different condition or level of intensity as distinguished from longer term changes in operating condition of the detecting element due to temperature effects, aging, dust or dirt in the optical path to the photo conductor, etc. A field effect transistor is connected in series circuit relationship with a photo conductor detecting element and the series circuit thus comprised is connected across a source of electrical energy. An output circuit is connected across the photo conductor and is responsive to both long and short term changes in operating condition of the detecting element. A feedback circuit comprising a resistor-capacitor network having a long RC time constant is coupled between the output circuit and the input to the field effect transistor for controlling its conductivity. The feedback signal is adjusted so as to control the conductivity of the field effect transistor in a manner to maintain constant voltage across the photo conductor detecting element. An output indicating means such as a meter is coupled across the output circuit through a coupling capacitor, pulsed, transient coupling transformer, or the like and is responsive substantially only to short term changes in signal level. The D.C. component of the signal including long term changes due to undesired temperature effects, aging, etc. is blocked by the coupling capacitor, coupling transformer, or the like. By this means, sensitivity of the circuit is maintained despite dust accumulation or other undesired light path modulating effects with only a relatively simple inexpensive circuit.

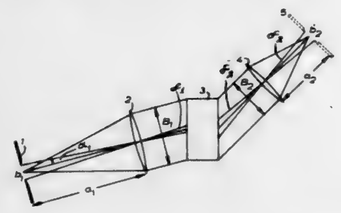
3,664,741
METHOD AND DEVICES FOR THE CHROMATIC ANALYSIS OF AN OBJECT
Maurice Bonnet, Paris, and Georges Courtes, Marseille, France, assignors to Etablissement Public: Agence Nationale de Valorisation de la Recherche "Anvar," Hauts-de-Seine, France
Filed Dec. 23, 1969, Ser. No. 887,488
Claims priority, application France, Dec. 27, 1968, 181,027
Int. Cl. G01j 3/20
U.S. Cl. 356—74 **9 Claims**

A method for the chromatic analysis of an object including focusing a beam of light from the object onto a concave diffraction grating where an image is formed, the beam is then directed to a masked spherical mirror having at least one aperture therein, which thereby selects at least one band of wavelengths which is reflected onto a receiving surface. A chromatic analysis device for television has three apertures in the mask corresponding to the primary colors and the image is reconstituted on



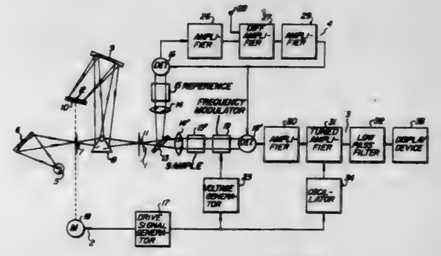
the screen of an electron beam tube. A plurality of lenses are disposed between the masked mirror and the screen for focusing the reconstituted image thereon. The device may be used for spectrophotometry wherein the focusing device employed is an apertured diaphragm with a spherical mirror. Throughout, the focusing device and the masked mirror are located on the Rowland circle of the diffraction grating.

3,664,742
MONOCHROMATOR SLIT SYSTEMS
Wolfgang Witte and Herbert Stenz, Uberlingen, Germany, assignors to Bodenseewerk Perkin-Elmer & Co. GmbH., Uberlingen (Bodensee), Germany
Filed May 6, 1970, Ser. No. 35,138
Claims priority, application Germany, May 6, 1969, P 16 23 005.8
Int. Cl. G01j 3/04, 3/18
U.S. Cl. 356—80 **9 Claims**



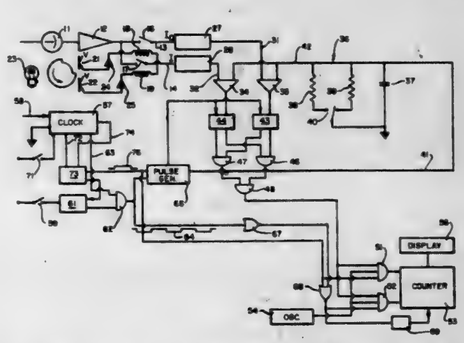
In monochromators a (collimated) incident radiation beam from the entrance slit falls on a dispersion means and leaves as monochromatic beams, having (in general) a different width. In non-symmetrical monochromators, the greatest radiant flux intensity at a given predetermined resolution is obtained when the ratio of the exit slit width to the entrance slit width is equal to: the incident beam width divided by the width of that monochromatic dispersed beam which will reach the exit slit, this fraction multiplied by the ratio of the effective image distance of the entrance slit image (formed at the exit slit plane) divided by the effective object distance of the entrance slit. A mechanical linking of the entrance and exit slits is disclosed for satisfying the above relationship for a single wavelength (near the middle of the wavelength range utilized). More complex but more perfectly corrected monochromator slit systems would maintain this slit width relationship at (a) all wavelengths over which the monochromator is used; and (b) for all slit widths desired to be used. An embodiment of a complete slit-controlling system provides changes in the relative widths of the entrance and exit slits to maintain the above desired relationship at all utilized wavelengths, even when the entrance slit width itself is "programmed" according to the wavelength of the monochromator.

3,664,743
SPECTROPHOTOMETER
Kimio Kanda, Mito-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 3, 1969, Ser. No. 873,328
Claims priority, application Japan, Nov. 4, 1968, 43/79,964
Int. Cl. G01j 3/42
U.S. Cl. 356—83 **8 Claims**



A spectrophotometer in which a light to be directed to a detector is scanned and at the same time it is modulated in frequency corresponding to the wavelength of the light to be scanned, thus an angular frequency of an electric signal taken out from said detector corresponding to the modulation is made to be selected.

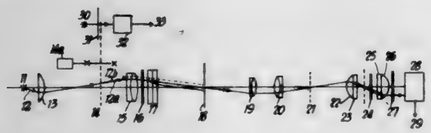
3,664,744
LOG RATIO CIRCUIT FOR DOUBLE BEAM SPECTROPHOTOMETERS
Max D. Liston, Irvine, Calif., assignor to Smith Kline Instruments, Inc., Palo Alto, Calif.
Filed Sept. 2, 1969, Ser. No. 854,647
Int. Cl. G01j 3/42, 1/10; G01n 21/20
U.S. Cl. 356—88 **2 Claims**



A ratio meter for giving the log of the ratio of two voltages. An RC circuit is charged and allowed to exponentially discharge. Comparator means receive the two

voltages and the voltage of the RC circuit and provide output signals when each of the two voltages is equal to the voltage of the RC circuit. The time lapse between said two signals corresponds to the log of the ratio of the two voltages.

3,664,745
INTERFEROMETER
Francis Hughes Smith, York, England, assignor to Vickers Limited, London, England
Filed Apr. 23, 1970, Ser. No. 31,246
Claims priority, application Great Britain, Apr. 23, 1969, 20,848/69
Int. Cl. G01b 9/02; G02b 21/06
U.S. Cl. 356—113 **32 Claims**



In an interferometer having a first beam-splitter for dividing an incident beam of light into a plurality of beams of coherent light and a second beam-splitter for recombining two of the said beams into a single composite beam, one of the beam-splitters comprises a radial diffraction grating arranged for continuous rotation.

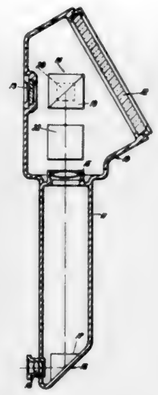
3,664,746
HEAD POSITIONING DEVICE
Robert A. McKnight, Binghamton, N.Y., assignor to The Singer Company, New York, N.Y.
Filed Aug. 19, 1970, Ser. No. 64,949
Int. Cl. G01b 11/26
U.S. Cl. 356—138 **8 Claims**



An eye positioning device which makes use of the spectral dispersion properties of a diffraction grating. The grating is placed in a position where a predetermined color of the spectrum will intersect a proper eye position and has a mask of the same color placed over it with a small opening so that an observer with his eye properly positioned will see one solid color over the surface of the device.

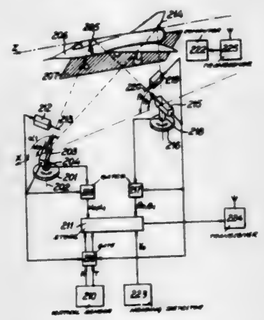
3,664,747
SIGHT-TAKING PERISCOPE
David S. Ritchie, Anniesland, Glasgow, Scotland, assignor to Barr and Stroud Limited, Glasgow, Scotland
Filed Feb. 4, 1966, Ser. No. 525,804
Claims priority, application Great Britain, Feb. 13, 1965, 6,328/65
Int. Cl. G01b 1/14
U.S. Cl. 356—140 **9 Claims**

A sight-taking periscope which has a head including a viewing window and a pair of sight-taking prisms mounted on a common horizontal axis and independently rotatable thereabout, an angular scale of altitude rotatable with one of the prisms and a scale reading optical system rotatable



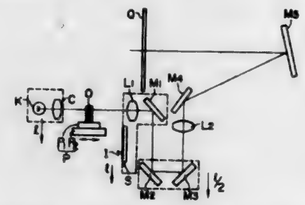
with the other priam to permit measurement of the angle between the lines of sight of the prisms.

3,664,748
DEVICE FOR AUTOMATICALLY SETTING THE INITIAL HEADING ABOARD CRAFT UTILIZING GYROSCOPIC NAVIGATION SYSTEM
Maurice Beza, Croissy, France, assignor to Société d'Etudes et de Realisations Electroniques, Asnieres, Hauts-de-Seine, France
Filed Jan. 22, 1970, Ser. No. 4,953
Claims priority, application France, Jan. 31, 1969, 6902012, 6902013; Mar. 13, 1969, 6907054; Mar. 24, 1969, 6908535; Apr. 10, 1969, 6910997
Int. Cl. G01b 11/26
U.S. Cl. 356—152 **22 Claims**



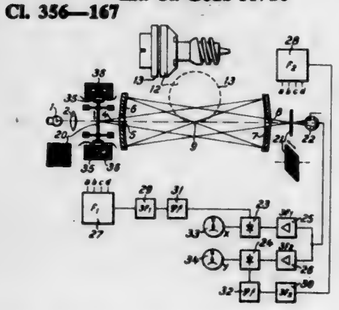
A device for rapidly ascertaining with great accuracy, by triangulation, the orientation of a stationary movable object in relation to a reference direction and more particularly for ascertaining the heading of an aircraft, characterized by the fact that it includes ground-based means for detecting two markers fixed to the aircraft and defining the longitudinal axis or flight axis thereof, means associated to these detection means and determining the angles at which the aircraft markers are seen by said detection means, a store for registering said angles and computer means which upon acquiring these angle values after interrogating said store solve an equation for determining the aircraft heading.

3,664,749
CONTOUR PROJECTOR HAVING AN OPTICAL SYSTEM WHICH MOVES IN A VERTICAL DIRECTION TO DETERMINE THE VERTICAL DIMENSIONS OF A SPECIMEN
Toshifumi Imai, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Apr. 17, 1970, Ser. No. 29,526
Claims priority, application Japan, May 9, 1969, 44/35,616
Int. Cl. G02b 9/08
U.S. Cl. 356—164 **5 Claims**



In a conventional contour projector, the accuracy of measurement, particularly for the vertical dimension of an object has been difficult to maintain. This invention provides an improved method for the aforementioned measurement. In this invention, neither the stage nor the whole optical system of the contour projector are moved vertically for the object. On the contrary, measurement of the vertical dimension about the object is carried out by the vertical movement of a part of the whole optical system, that is, the illumination system, projection system, reflecting system, and scale, etc. are moved, in unison, about the object. Therefore the object to be measured is held stationary, and the movement of a light weight moving part assures a higher order of mechanical accuracy. Optical error which is caused by mechanical play is completely eliminated by the selection of suitable construction.

3,664,750
OPTICAL APPARATUS FOR MEASUREMENT OF A SPATIAL FUNCTION
Fromund Hock, Wetzlar, Germany, assignor to Ernst Leitz G.m.b.H., Wetzlar, Germany
Filed June 29, 1970, Ser. No. 50,425
Claims priority, application Germany, July 3, 1969, P 19 33 719.0
Int. Cl. G01b 11/26
U.S. Cl. 356—167 **14 Claims**



Optical apparatus for measurement of a spatial function, e.g. the position of workpieces wherein the measurement is carried out by the following steps:

(a) Determining the distribution of the interference function in the measuring field;

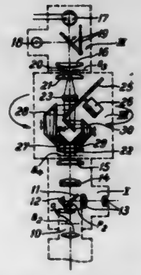
(b) Fixing a time position correlation for the periodic measuring scan;

(c) Conducting periodic scanning cycles in the scanning field, determining the signal components caused by the scanning and defining the properties of the frequency suppression filter connected after the signal scanning apparatus, wherein the filter suppresses the Fourier components of the output signal of the scanning apparatus containing the information regarding the interference field;

(d) Connecting the filter defined by step (c) after the scanning device; and

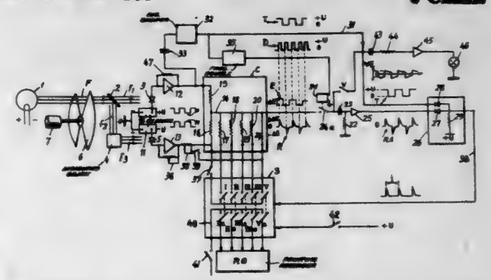
(e) Conducting the periodic measuring scan proper and evaluating the filtered signals obtained thereby.

3,664,751
ACCESSORY FOR MICROSCOPES FOR USE AS A TWO-BEAM PHOTOMETER
Karl Heinz Haas, Wetzlar, Germany, assignor to Ernst Leitz G.m.b.H., Wetzlar, Germany
Filed Mar. 23, 1970, Ser. No. 21,721
Claims priority, application Germany, Mar. 27, 1969, P 19 15 680.0
Int. Cl. G01j 1/42; G02b 21/06
U.S. Cl. 356—219 **10 Claims**



An accessory for microscopes comprises a diaphragm and a light source at one side thereof for illuminating the same. A beam splitter is provided at the other side of the diaphragm for dividing a light beam from the microscope eyepiece into a measuring light beam and an observation light beam. Means are provided between the beam splitter and the diaphragm for forming an image of the diaphragm alternately via each of two optical paths in a plane conjugate with the diaphragm and coincident with the focal plane for a light beam from the microscope eyepiece. With the beam splitter are optical means associated for imaging the diaphragm aperture in the focal plane of the observation light beam.

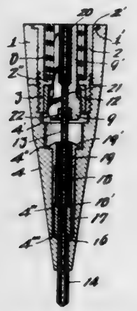
3,664,752
PHOTOELECTRIC MEASURING DEVICES
Max R. L. Hermieu, Paris, France, assignor to Machines Automatiques Modernes, Paris, France
Filed Dec. 9, 1969, Ser. No. 883,376
Claims priority, application France, Dec. 27, 1968, 181,696
Int. Cl. G01j 1/42, 5/52; G01n 21/22
U.S. Cl. 356—206 **6 Claims**



Photoelectric measuring device comprising means for transmitting a light beam and two photoelectric cells,

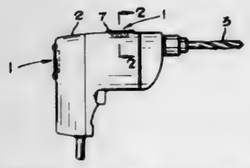
one constituting a reference photocell and the other a measuring photocell, means for modulating said light beam, said cells delivering modulated signals of opposed polarities to a comparator connected to a resistance-capacity circuit for detecting the resultant modulated voltage, and co-acting with an AND circuit actuating a selector for controlling said comparator, whereby the measurement results from the cancellation or the phase reversal of the modulated signals.

3,664,753
PUSHBUTTON TYPE MECHANICAL PENCIL
Tatsuzo Minagawa, 637 Tabata-cho, Kitaku, Tokyo, Japan
Filed July 10, 1970, Ser. No. 53,791
Claims priority, application Japan, July 18, 1969, 44/68,304; Aug. 14, 1969, 44/77,602
Int. Cl. B43k *21/16, 21/20*
U.S. Cl. 401—65 7 Claims



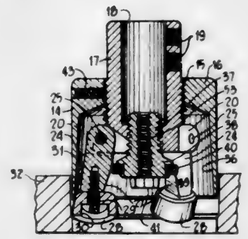
A pushbutton type mechanical pencil comprising an outer holder main body, an inner cylindrical holder member stationarily disposed within said outer main body, a tip member connected to said inner cylindrical holder member at the lower end of the latter, a lead guide tube slidably received within said tip member, an elastic member disposed around said lead guide tube for holding a lead in slight frictional engagement with said lead guide tube, a depressible lead pusher member received in said outer holder main body at the top thereof, a chuck operatively connected to said pusher member and adapted to grip said lead and lead guide tube, and a clutch received in said inner holder member for gripping and releasing said chuck, said chuck having a lead passage and an axially aligned recess which is adapted to grip the upper portion of said lead guide tube.

3,664,754
HAND DRILL ALIGNMENT DEVICES AND METHODS OF MAKING AND USING THE SAME
Donald Kelbel, 5469 Ruskin, St. Louis, Mo. 63115
Filed Nov. 3, 1969, Ser. No. 873,374
Int. Cl. B23b *49/00*; G01c *9/28*
U.S. Cl. 408—16 3 Claims



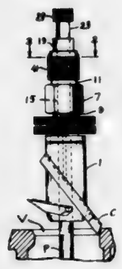
The present invention relates to bubble type alignment devices for use in upon and with hand drills comprising bubble type level chambers appropriately shaped and operably mounted to a conventional hand drill allowing a first such level which is aligned parallel to the drill bit and a second such level which is aligned perpendicular to the first.

3,664,755
FINISHING BORING HEAD
Leroy J. Carns, Castro Valley, Calif., assignor to The Singer Company, New York, N.Y.
Filed Dec. 2, 1970, Ser. No. 94,306
Int. Cl. B23b *29/034*
U.S. Cl. 408—159 10 Claims



A cutting head for reaming circular apertures to close tolerances. A cluster of three equiangularly spaced truncated conical cutters are mounted for adjustment within a cylindrical supporting head. The cluster is adjustable axially of the head to control the inside diameter of the apertures and each cutter of the cluster is adjustable by rotation thereof to expose a new cutting edge as required.

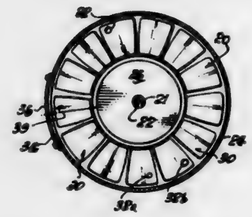
3,664,756
TOOL DEPTH CONTROL ADJUSTMENT
Joe S. Wells, deceased, late of Colorado Springs, Colo., by Mary Lou Wells, executrix, 1120 Clinton Way, Colorado Springs, Colo. 80907
Filed Dec. 24, 1969, Ser. No. 887,974
Int. Cl. B23b *39/14*
U.S. Cl. 408—202 1 Claim



Axial adjustment means for a tool, particularly for controlling the depth of a cutting tool having a cylindrical bore for rotatable mounting on a pilot, comprising an outwardly threaded surface on the tool adjacent one end thereof, the end portion of the tool bore being outwardly annularly tapered, a cylindrical sleeve slidably received in the bore, a compressible ferrule surrounding said sleeve and having one end portion nested in the tapered end portion of the bore, an internally threaded collar having an inwardly tapered end portion, the collar being screwed on the outwardly threaded end portion of the tool around the ferrule to releasably compress the ferrule in frictional locking engagement with the sleeve and a bolt threadably passing through the sleeve

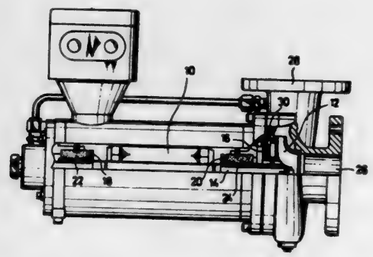
with its inner end engageable with the end of the pilot whereby initial approximate adjustments are made rapidly by sliding the tool axially of the sleeve and locking the sleeve by means of the collar and fine adjustments are made thereafter by rotation of the adjusting bolt.

3,664,757
STALL CONTROL FOR VANE AXIAL COMPRESSORS
Robert E. Salisbury, Whittier, and John W. Erickson, Huntington Beach, Calif., assignors to Preco, Inc., Los Angeles, Calif.
Original application July 18, 1969, Ser. No. 842,983, now Patent No. 3,597,111, dated Aug. 3, 1971. Divided and this application Apr. 7, 1971, Ser. No. 132,149
Int. Cl. F04d *5/00*
U.S. Cl. 415—53 3 Claims



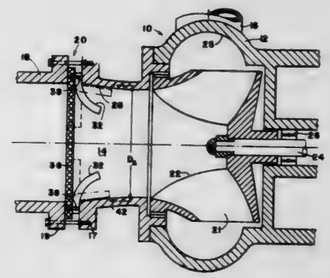
Improved stability with respect to aerodynamic stalling in an axial flow gas compressor is obtained by aperturing one or more blades, the apertured blades typically forming a plurality of blade groups alternating with groups of unapertured blades.

3,664,758
AXIAL THRUST BALANCING MECHANISM FOR MOTOR DRIVEN PUMP
Ryuichi Sato, Tokyo, Japan, assignor to Nikkiso Co., Ltd., Tokyo, Japan
Filed Dec. 15, 1970, Ser. No. 98,281
Claims priority, application Japan, Aug. 6, 1970, 45/68,527
Int. Cl. F04d *29/66, 13/02*
U.S. Cl. 415—104 8 Claims



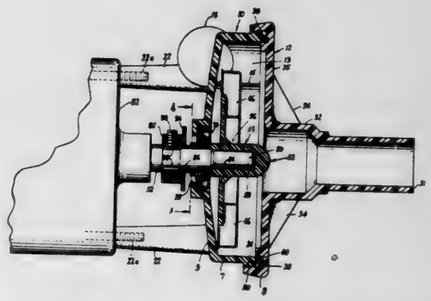
An axial thrust balancing mechanism for motor pump wherein two thrust bearings of the material which permit a certain degree of abrasion are symmetrically arranged and secured to an interior of a pump casing so as to encompass each end of motor rotor shaft through two symmetrically arranged thrust washers mounted on the motor rotor shaft between the motor rotor and the thrust bearing with a certain clearance. An auxiliary thrust bearing of the material which permits a certain degree of abrasion is releasably fixed to one side wall of the end plate forming a variable orifice provided before and/or behind the impeller.

3,664,759
SELF-ADJUSTING BACKFLOW PREVENTOR FOR CENTRIFUGAL PUMPS
Hans J. Biheller, Riveredge, N.J., assignor to Worthington Corporation, Harrison, N.J.
Filed Sept. 16, 1970, Ser. No. 72,650
Int. Cl. F04d *1/00, 15/00, 29/00*
U.S. Cl. 415—121 5 Claims



A pump is disclosed which includes a casing having an inlet, an outlet and a pumping chamber disposed therebetween. An impeller is rotatably disposed in said pumping chamber, and self-adjusting backflow prevention means is disposed adjacent said inlet for automatically varying the effective diameter of said inlet in response to variations in backflow.

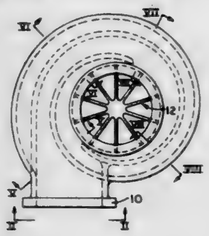
3,664,760
CENTRIFUGAL PUMP
Norbert L. Reiner, Wallingford, Conn., assignor to Coleco Industries, Inc., Hartford, Conn.
Filed Sept. 2, 1970, Ser. No. 68,911
Int. Cl. F04d *1/00, 29/02, 13/02*
U.S. Cl. 415—170 A 4 Claims



A centifugal pump has a synthetic plastic impeller with an elongated portion cooperatively dimensioned and configurated to engage and cover the shaft of a motor driving the pump and which physically and electrically isolates the fluid being pumped from the motor. The housing of the pump has a pump chamber with an aperture therein through which the hub extends. Sealing means is provided about the aperture, which includes a radial lip seal and cylindrical metallic sleeve with an interior elastomeric coating press fit onto the hub to insure positive engage-

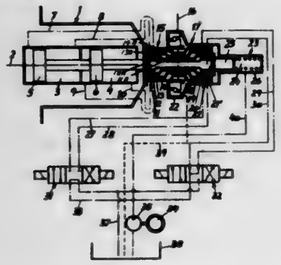
ment therebetween despite varying temperatures and the inherent difference in thermal coefficients of expansion of the two materials. A radially extending disc-shaped slinger is fixed on the elongated hub outboard of the impeller and the radial seal.

3,664,761
TURBINE HOUSING WITH TWO INLET PASSAGES
Virgil A. Zastrow, Edelstein, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Dec. 19, 1969, Ser. No. 886,564
Int. Cl. F01d 1/00; F01k 23/14
U.S. Cl. 415—205 6 Claims



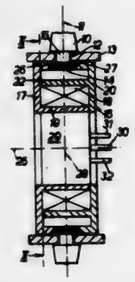
A turbine housing with two passages surrounding the turbine rotor of an engine turbocharger with each passage disposed to receive exhaust gases from two different groups of engine cylinders. Each passage is a volute which discharges gas throughout substantially 360° of the rotor circumference and the passages are indexed to cause their discharge openings to be out of phase with each other to reduce imbalance and vibration of the rotor.

3,664,762
APPARATUS FOR SUPPLYING PRESSURIZED FLUID TO A ROTATING DEVICE
Friedrich Lachnit, Hamburg, Germany, assignor to Deutsche Babcock & Wilcox Aktiengesellschaft, Oberhausen, Germany
Filed July 20, 1970, Ser. No. 56,376
Claims priority, application Germany, July 30, 1969, P 19 38 596.7
Int. Cl. F01d 25/00; F04d 27/00
U.S. Cl. 416—156 6 Claims



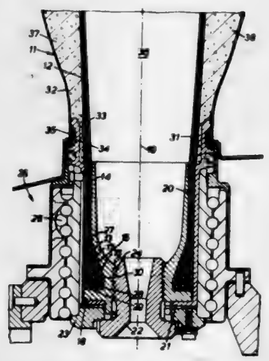
An apparatus for supplying pressurized control fluid from a non-rotating member to a rotating device is described. The rotating device is provided with axially concentrically arranged fluid carrying channels separated by annular walls which terminate at an axial end of the device. The non-rotating member is provided with axially concentric channels separated by annular walls which terminate at an axial end in abutment with the walls in the rotating device. An axial pressurized device is employed to maintain the non-rotating and rotating walls in axial abutment to form high quality seals capable of carrying fluid pressures measured in hundreds of atmospheres.

3,664,763
VARIABLE-PITCH BLADED ROTORS
John Alfred Chilman, Painswick, England, assignor to Dowty Rotol Limited, Gloucester, England
Filed Nov. 3, 1969, Ser. No. 873,464
Claims priority, application Great Britain, Nov. 15, 1968, 54,283/68
Int. Cl. B64c 11/38
U.S. Cl. 416—157 1 Claim



Pitch-change mechanism for the blades of a variable-pitch bladed rotor comprise a fluid-operated vane-type actuator for mounting coaxially of the rotor and for rotation therewith. The actuator has a multiplicity of chambers formed by a first multi-vaned actuator part and a second multi-vaned actuator part. The two actuator parts are angularly movable in opposite directions about the rotation axis to drive the blades at substantially diametrically opposed points of the blades to vary their pitch angle.

3,664,764
DEVICES OF FIBROUS-REINFORCED PLASTICS MATERIAL
Stuart Duncan Davies, Roy Fred John McCarthy, and Richard James Watts, Cheltenham, England, assignors to Dowty Rotol Limited, Gloucester, England
Filed June 25, 1970, Ser. No. 49,742
Claims priority, application Great Britain, July 18, 1969, 36,422/69
Int. Cl. F01d 5/30
U.S. Cl. 416—224 8 Claims

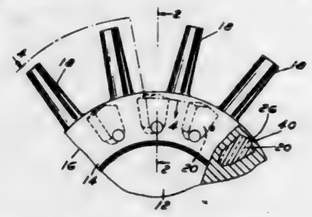


A device, for example a blade for an aircraft propeller, has an end portion and a portion adjacent thereto both of fibrous-reinforced plastics material. The end portion is enlarged by wedge members which intervene between groups of fibers of the material and which are so shaped that the fibres pass smoothly along curved paths from the end portion to the said portion adjacent thereto.

3,664,765
NiCrCo ALLOYS TURBINE BLADE WITH CHROMIUM DIFFUSION LAYER
Tsuyoshi Ishimatsu, Tokyo, Takashi Ito, Masamitsu Yano, and Hajime Takeda, Chiba, and Kentaro Nagano, Yokohama, Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan
No Drawing. Continuation of application Ser. No. 634,900, May 1, 1967. This application Mar. 9, 1970, Ser. No. 17,014
Claims priority, application Japan, May 4, 1966, 41/28,059; Feb. 24, 1967, 42/11,406
Int. Cl. F01d 5/14
U.S. Cl. 416—241 1 Claim

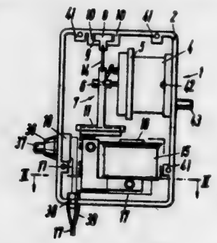
An alloy comprised mainly of chromium, nickel and cobalt and excellent in corrosion- and heat resistance, particularly, an alloy having the high corrosion resistance to a high temperature combustion gas containing sulfur oxides and alkali compounds and suitable for a blade for a gas turbine. The said alloy is provided with a chromium diffusion layer on its surface by a chromizing treatment.

3,664,766
TURBINE WHEEL
Christian J. Rakuske, Roseville, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed June 1, 1970, Ser. No. 42,361
Int. Cl. F01d 5/02
U.S. Cl. 416—244 13 Claims



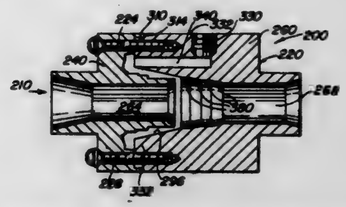
A rotor wheel for a gas turbine engine including a disc body having an axially enlarged rim defining the periphery of the body. A plurality of circumferentially spaced blades are carried by the rim and extend radially therefrom. A plurality of circumferentially spaced cores constructed of a light weight high melting point material, for example, ceramic, are positioned in this rim and each of these cores is located circumferentially between a pair of adjacent blades.

3,664,767
PUMPING APPARATUS
Erwin Kolfertz, Bebelallee 9, Solingen-Merscheid, Germany
Filed Sept. 3, 1970, Ser. No. 69,388
Claims priority, application Germany, Dec. 5, 1969, G 69 47 175.6; May 12, 1970, P 20 23 516.9
Int. Cl. F04b 49/06, 35/04, 17/04; H02k 33/00, 35/00
U.S. Cl. 417—45 7 Claims



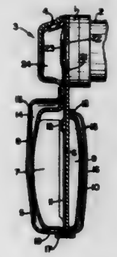
Pumping apparatus incorporating a diaphragm pump driven by an A.C. oscillating armature motor. The electromagnetic coil of the motor is mounted on a plate which is slideable to allow adjustment of the air gap between the coil and the armature to provide adjustment in the pumping rate.

3,664,768
FLUID TRANSFORMER
William T. Mays, Indian River County (283 6th Ave. SW., Vero Beach, Fla. 32960), and John C. Mays, Citrus County, Fla. (Box 476, Homosassa Springs, Fla. 32646)
Filed Mar. 10, 1970, Ser. No. 18,212
Int. Cl. F04f 5/46
U.S. Cl. 417—197 12 Claims



A jet pump or fluid transformer having a housing of generally straight-through tubular form and including a suction end portion and a fluid discharge end portion, and fluid jet input means communicating with the interior of the housing at a position intermediate opposed ends thereof to deliver and to discharge impelling fluid under pressure into the housing, the housing being characterized in that it carries on an inside wall thereof downstream of said fluid jet input means a plurality of radially inwardly displaced annular bands, rings, flanges, or facets spaced linearly along the housing, the rings as viewed in cross section extending in planes generally normal to a longitudinal axis of the housing and defining fluid flow abutment or entrainment elements effective to orient flow patterns and physical distribution of fluid molecules impinging thereagainst, thereby to enhance the fluid wall boundary flow rate and to provide impoved overall pumping efficiency.

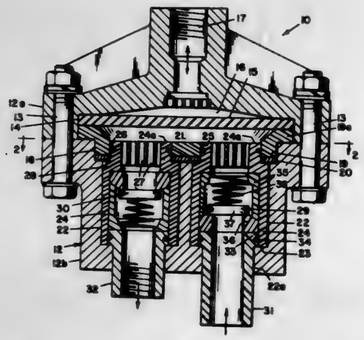
3,664,769
HERMETICALLY ENCLOSED SMALL REFRIGERATING MACHINE
Jorgen Dahlman Knudsen, Gjesing, Esbjerg, Bendt Wegge Romer, Augustenborg, and Knud Vagn Valbjorn, Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Filed Aug. 4, 1969, Ser. No. 32,469
(Filed under Rule 47(a) and 35 U.S.C. 116)
Claims priority, application Germany, Mar. 16, 1968, P 16 01 860.3
Int. Cl. F01n 7/14; F04b 39/12
U.S. Cl. 417—312 2 Claims



The invention relates to a noise reducing assembly for a refrigeration unit of the hermetically sealed type. The

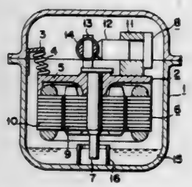
assembly includes walls forming a heat insulation chamber surrounding the noise reducing chamber with a substantially statically contained gas in said heat insulation chamber.

3,664,770
DIAPHRAGM PUMPS
Harry E. Palmer, Calgary, Alberta, Canada, assignor to Golden Arrow Manufacturing Limited, Calgary, Alberta, Canada
Filed Feb. 18, 1970, Ser. No. 12,237
Int. Cl. F04b *17/00, 43/06*
U.S. Cl. 417—383 **2 Claims**



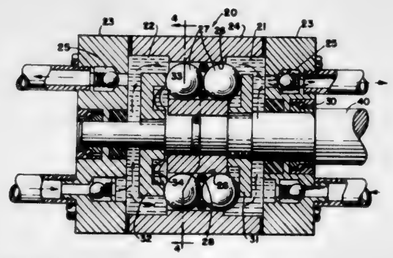
A metallic housing contains a diaphragm and a backing plate of plastic material, the plate having an annular flange in abutment with the diaphragm so as to form a pumping chamber. Inlet and outlet valves are contained in plastic sleeves in the housing, the sleeves communicating with the pumping chamber and being sealingly fitted in openings in the backing plate. Thus, abrasive or corrosive liquid pumped through the valves and chamber is prevented by the plastic components from contacting the metallic housing.

3,664,771
HERMETICALLY SEALED ELECTRIC COMPRESSOR
Akira Suzuki, Sagamihara, and Keisuke Ida, Fuji, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Feb. 3, 1971, Ser. No. 113,037
Claims priority, application Japan, Feb. 20, 1970, 45/16,239
Int. Cl. F04b *17/00, 35/04*
U.S. Cl. 417—410 **4 Claims**



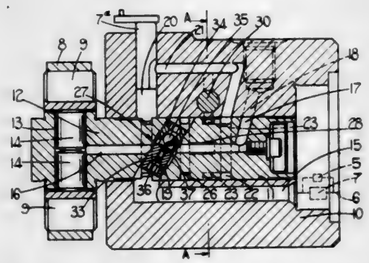
A hermetically sealed compressor comprising a compressor body elastically supported in a sealing case and a protector so disposed as to enclose the lower end of the revolving shaft of an electric motor constituting an element of said body and provided with at least one repulsing means wherein, when the revolving shaft rotates along the inner wall of the protector upon the heavy shaking of the compressor body, and the lower end of the shaft is forced back to the original position of the protector by the repulsing means, thereby preventing said rotation from being carried to excess.

3,664,772
FLUID PUMP
Viktor Mitrushi Panariti, 111 Imperial Heights Drive, Ormond Beach, Fla. 32074
Filed Sept. 4, 1970, Ser. No. 69,590
Int. Cl. F04b *1/12, 19/00, 23/04*
U.S. Cl. 417—486 **3 Claims**



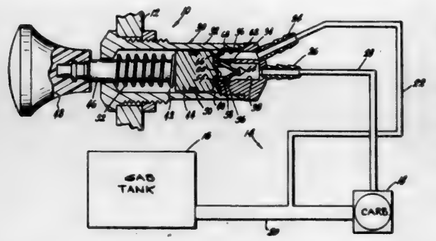
A fluid pump mounted on a rotating shaft capable of pumping two different fluids independently having multiple axially reciprocating, radially spaced ball pistons, driven in harmonic motion by rotating reaction cams providing multiple strokes per revolution.

3,664,773
LIQUID FUEL INJECTION PUMPING APPARATUS
Moshe Drori, East Twickenham, England, assignor to C.A.V. Limited, Birmingham, England
Filed Sept. 4, 1970, Ser. No. 69,615
Claims priority, application Great Britain, Oct. 1, 1969, 48,152/69
Int. Cl. F04b *7/02, 39/08*
U.S. Cl. 417—507 **5 Claims**



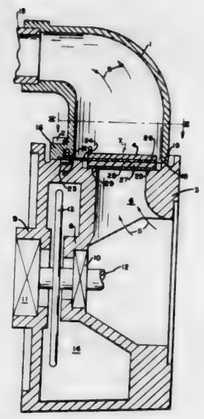
A fuel pump for supplying fuel to an internal combustion engine and including an injection pump, which delivers fuel to the engine during the injection strokes thereof, and to which fuel is delivered during the filling strokes thereof by way of a non-return valve from a source of fuel under pressure, the non-return valve including a valve element which is displaced from its seat to permit fuel to flow to the injection pump and a piston member which is urged towards the valve element by fuel under pressure from the source. The piston acts to close the valve element quickly as the flow of fuel towards the injection pump ceases.

3,664,774
PRIMER PUMP
Willis E. Tupper and John R. Hanson, Dexter, Mich., assignors to Dexter Automatic Products Co., Inc., Dexter, Mich.
Filed May 5, 1970, Ser. No. 34,691
Int. Cl. F04b *21/02, 39/10*
U.S. Cl. 417—560 **4 Claims**



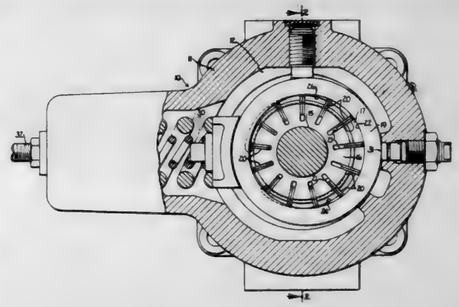
A fuel primer pump especially adapted for use in connection with internal combustion engines for vehicles such as snowmobiles and the like. The primer pump includes a unitary resilient check valve element for restricting the fuel through the pump to one direction of flow only, and the valve element and the pump plunger are arranged so that a pressure drop at the discharge end of the pump induced by operating conditions of the internal combustion engine will be ineffective to induce undesired flow of fuel through the pump to flood the engine.

3,664,775
CHECK VALVE
Carl E. Stigberg, Schenectady, N.Y., assignor to Environment/One Corporation, Latham, N.Y.
Continuation-in-part of application Ser. No. 867,793, Oct. 20, 1969. This application Jan. 5, 1970, Ser. No. 573
Int. Cl. F04b *21/02;* **F16k** *15/00*
U.S. Cl. 417—566 **15 Claims**



A pump assembly employing a one-way flapper valve directly between the cast head of a pump and the cast flow directing elbow for external connection, which elbow is bolted to the head. The flapper valve employs a polypropylene sheet having an enlarged mounting portion secured in a recess to the elbow and clamped between the elbow recess and the head where the elbow is bolted to the head. A reduced thickness hinge portion allows universal movement of the valve sealing portion of the sheet with respect to the mounting portion, which sealing portion has brass weights laminated to its opposite sides and a rubber sheet laminated to the other side of one of the brass weights for engaging a valve seat machined around the periphery of the head discharge port. Particularly for corrosive heads a sealing resilient ring is bonded in an annular groove in the head around the head discharge port for sealing engagement with the adjacent flapper brass weight, which structure replaces the rubber sheet. Mating machined surfaces on the head and elbow, as well as a chordal portion of the otherwise circular elbow provide a secure clamping of the polypropylene sheet so that its hinged portion will always return the valve to its normal sealing position whenever pressure falls below a predetermined level, which action is assisted by the weights.

3,664,776
VARIABLE VOLUME VANE PUMP
Albert D. Mills, Minneapolis, and Walter F. Ruhland, Shakopee, Minn., assignors to Continental Machines, Inc., Savage, Minn.
Filed Aug. 17, 1970, Ser. No. 64,196
Int. Cl. F01c *19/08, 21/16;* **F04c** *15/00*
U.S. Cl. 418—16 **8 Claims**

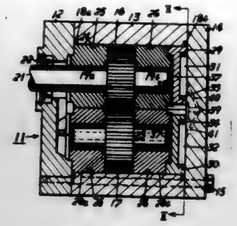


In a sliding vane pump having end plates a rotor with its vanes and a movable cam ring which eccentrically surrounds the rotor during pumping. One of the end plates is hydraulically urged toward the other by fluid at pump outlet pressure exerted on its outer side at a zone thereof axially opposite the pump outlet zone. The area on which such fluid exerts inward force is crescent shaped, defined by two seal rings, one encircling the rotor shaft, the other larger and encircling the smaller one.

3,664,777
HIGH PRESSURE GEAR PUMP
Yasuo Aoki, Yokohama-shi, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho (Komatsu Ltd.), Tokyo, Japan
Filed Dec. 19, 1969, Ser. No. 886,647
Claims priority, application Japan, Dec. 26, 1968, 43/113,798
Int. Cl. F01c *19/08;* **F03c** *3/00;* **F04c** *27/00*
U.S. Cl. 418—131 **7 Claims**

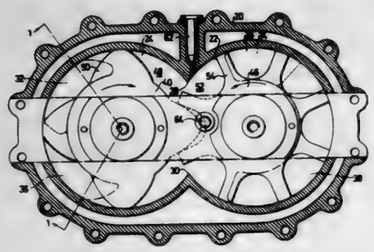
A high pressure gear pump provided with a back pressure loading mechanism characterized in that the back pressure is eccentrically subjected to a pair of bushes facing a driving gear and a driven gear, respectively. A pair of axially movable pressures plates are inserted

between the bushes and the inner wall of the casing and formed with a pair of high pressure chambers arranged eccentrically towards the high pressure side.



A high pressure fluid is admitted into the pair of high pressure chambers, whereby the pump is prevented from seizure.

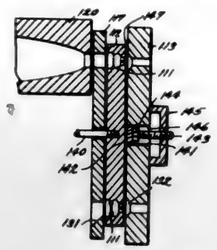
3,664,778
ROTARY INTERNAL COMBUSTION ENGINE AND SEALING MEANS THEREFOR
Hans Robert Nilsson, Ektorp, Sweden, assignor to Svenska Rotor Maskiner Aktiebolag, Nacka, Sweden
Original application June 5, 1968, Ser. No. 734,587, now Patent No. 3,491,730, dated Jan. 27, 1970. Divided and this application Nov. 12, 1969, Ser. No. 875,863
Claims priority, application Great Britain, June 7, 1967, 26,302/67
The portion of the term of the patent subsequent to Jan. 27, 1987, has been disclaimed
Int. Cl. F01c 19/00, 1/08; F04c 27/00
U.S. Cl. 418—117 5 Claims



Rotary internal combustion engine comprising two intermeshing grooved rotors mounted in a stationary housing, providing continuously sealed inlet sluice chambers, operation chambers, for compression, combustion and expansion, and outlet sluice chambers, having a set of sealing elements for positive sealing of each chamber.

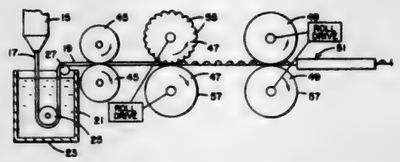
3,664,779
APPARATUS FOR PRODUCING SHAPES WITH CONTROLLED THREE DIMENSIONS
Robert W. La Warre, Lima, Ohio, assignor to Beatrice Foods Co., Chicago, Ill.
Filed Apr. 1, 1969, Ser. No. 812,093
Int. Cl. B29d 27/00
U.S. Cl. 425—4 7 Claims

There is provided a process for producing expanded shaped products by feeding an expandable mass at elevated temperatures and pressures into a die having minor openings in the die opposite the major openings of the die, the latter of which being adjacent a feeding device such as an extruder. After stabilization of the expanded mass in the die, the shaped product is discharged from the die by exit through the major opening, the major opening having been moved away from the feeding device. The method and die of the invention are capable of producing



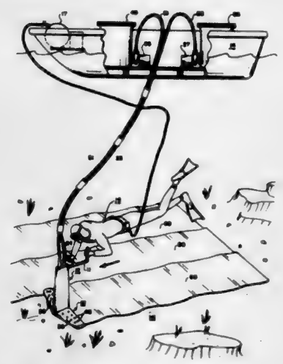
shaped products which may be controlled in configuration in three dimensions.

3,664,780
APPARATUS FOR MAKING ORIENTED WEBS
Theodore H. Fairbanks, Liverpool, Robert F. Gillespie, Havertown, and Dorsey C. Nelson, Springfield, Pa., assignors to FMC Corporation, Philadelphia, Pa.
Original application Dec. 17, 1968, Ser. No. 784,382, now Patent No. 3,574,809. Divided and this application Aug. 5, 1970, Ser. No. 61,187
Int. Cl. B29d 7/00
U.S. Cl. 425—66 4 Claims



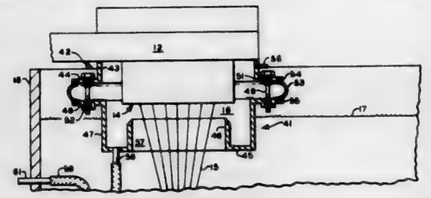
Apparatus for making an unbroken polymeric web or film having projecting unoriented sections surrounded by a predetermined pattern of uniaxially and biaxially oriented regions.

3,664,781
SILT STABILIZATION DEVICE
Michael U. Widman, Columbus, Ohio, assignor to The Battelle Development Corporation, Columbus, Ohio
Filed Nov. 24, 1969, Ser. No. 879,339
Int. Cl. B29f 3/04; E02 3/12
U.S. Cl. 425—68 10 Claims



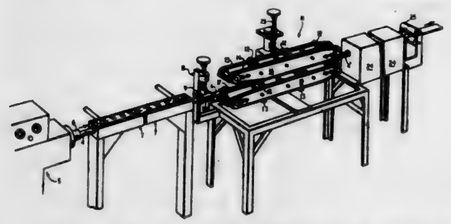
The silt on the bottom of a body of water is stabilized by extruding a ribbon of a gelable material onto the silt covered bottom and simultaneously extruding one or more ribbons or streams of a gelling agent onto one or both surfaces of the ribbon of gelable material before the gelable material has dispersed or dissolved, thus providing a gelled flexible and conforming ribbon or blanket covering the bottom. A preferred apparatus for co-depositing such ribbons consists of a depending arm provided with an elongated or slit-shaped jet which is in communication with a pressurized source of a gelable material and which is positioned to extrude the gelable material in ribbon form onto the bottom. One or more slit-shaped jets in communication with a pressurized source of gelling agent is mounted to the depending arm and positioned to extrude gelling agent onto one or more surfaces of the ribbon of gelable material at the instant of its extrusion to effect its coagulation.

3,664,782
ADJUSTABLE AIR GAP IN LIQUID QUENCHING OF MELT-SPUN FILAMENTS
John B. Nevin, Guayama, Puerto Rico, assignor to Phillips Petroleum Company
Filed Dec. 16, 1970, Ser. No. 98,626
Int. Cl. D01d 3/00
U.S. Cl. 425—71 10 Claims



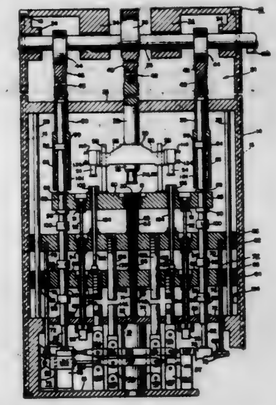
In a system for liquid quenching melt-spun filaments in a quench tank below the spinneret, a weir device is adjustably attached directly to the spin block so that the vertical distance between the spinning face and the upper surface of the quenching liquid is determined by the adjustment of the mounting means for the weir device, regardless of minor variations in the vertical spacing between the spinneret and the quench tank.

3,664,783
APPARATUS FOR THE PRODUCTION OF TUBING
Dudley Stuart Murray, 592 Old Northern Road, Dural, New South Wales 2158, Australia
Filed Aug. 28, 1969, Ser. No. 853,662
Claims priority, application Australia, Aug. 30, 1968, 42,767/68
Int. Cl. B29d 23/04
U.S. Cl. 425—71 8 Claims



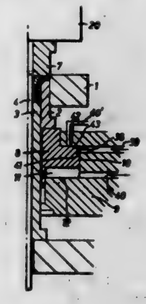
Apparatus for maintaining a difference in internal pressure levels between adjacent portions of the path of an advancing flexible tube. The apparatus includes a plurality of clamping means which successively engage with the tube and move with it as it passes from one portion of its path to the next. At least one of the clamping means is in engagement with the tube at any instant. The clamping means may comprise opposed pressure pads on endless conveyors moving alongside the tube.

3,664,784
COMPACTING PRESS
Joseph F. Sibley, Philadelphia, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.
Filed Jan. 19, 1970, Ser. No. 3,884
Int. Cl. B30b 11/02
U.S. Cl. 425—78 10 Claims



A compacting press of the downacting type with a breech lock type of compression stop in the core rod, and wherein a toggle is employed to release die platens for downward motion after compression of the formed part. Provision is made to strip the dies from the formed part during ejection by applying a positive, downwardly acting force against the die table and also to prevent restriking of the formed part.

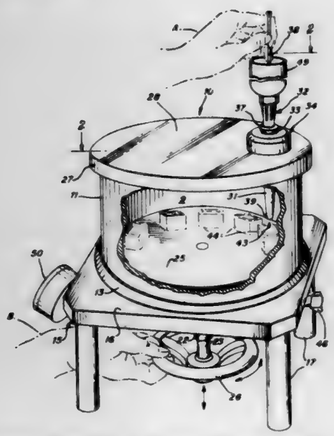
3,664,785
PRESSES FOR PRODUCTION OF COMPLEX COMPONENTS
Alec Frank Marshall, Solihull, and Hugh Gordon Taylor, Birmingham, England, assignors to The Birmingham Small Arms Company Limited, Birmingham, England
Filed Dec. 9, 1969, Ser. No. 883,032
Claims priority, application Great Britain, Dec. 13, 1968, 59,300/68
Int. Cl. B29c 3/00
U.S. Cl. 425—78 12 Claims



A tool for a high energy rate machine for the production of compacts of metal powders of two or more sections of different thickness in line of pressure comprises

an upper punch fixed to a reciprocal machine ram, a die having a bore defining the periphery of the compact to be produced, a fixed lower punch and a movable flange punch disposed within the bore and forming together a lower closure for the bore, a flange punch piston fixed to the flange punch having upwardly and downwardly facing surfaces, means for supplying fluid pressure to the downwardly facing surface to hold the flange punch in an upper position prior to compaction of powder contained within the die, and means for supplying fluid pressure to the upwardly facing surface to move the flange punch piston downwardly during compaction of the powder by the upper punch.

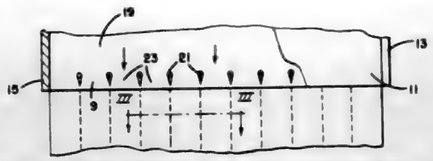
3,664,786
APPARATUS FOR ENCAPSULATION UNDER VACUUM
Arthur J. Devine, 1310 Industrial Ave., Escondido, Calif. 92025
Filed Apr. 15, 1970, Ser. No. 28,718
Int. Cl. B29c *3/02*
U.S. Cl. 425—99 **12 Claims**



A vacuum chamber is formed by means of a side wall portion and base and cover portions which are fitted to the side wall portion in vacuum tight relationship. The cover portion is transparent to permit viewing of the contents of the chamber and has an access opening in which a dispenser device is supported. A turntable is supported in the base portion, this turntable being manually rotatable from outside of the chamber. With articles to be encapsulated or impregnated placed in the chamber on the turntable, the chamber is evacuated and encapsulating material dispensed thereon from the dispenser device. The turntable is rotatable and the dispenser device manipulable to facilitate application of the encapsulating material to the articles.

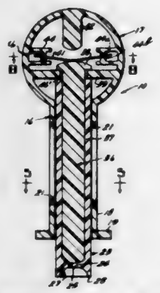
3,664,787
APPARATUS FOR MAKING SCORED FILM
Theodore H. Fairbanks, Liverpool, Pa., assignor to FMC Corporation, Philadelphia, Pa.
Continuation-in-part of application Ser. No. 689,478, Dec. 11, 1967. This application Jan. 6, 1970, Ser. No. 889
Int. Cl. B29d *7/00*
U.S. Cl. 425—109 **5 Claims**

Apparatus for making a scored film which includes an extrusion nozzle for providing a streamlined flow of film-forming material and a series of spaced flow-obstructing members, which are of uniform cross-section throughout their lengths, positioned within the nozzle and inwardly of the orifice thereof for dividing the streamlined flow of film-forming material into a plurality of substreams. The locations of the flow-obstructing members relative to the nozzle extrusion orifice is such that the



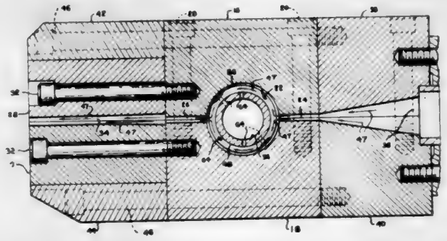
substreams of film-forming material contact and are only partially blended with each other as the film-forming material issues from the nozzle orifice.

3,664,788
DEVICE FOR DEPOSITING DOTS OF MOLDING COMPOUND
Allen A. Greenberg, Springfield Township, Hamilton County, Ohio (9149 Peachblossom Court, Cincinnati, Ohio 45231)
Filed Nov. 23, 1970, Ser. No. 91,841
Int. Cl. B29f *1/00*
U.S. Cl. 425—169 **7 Claims**



A device for depositing dots of molding compound on an absorbent sheet. A tubular die member slides inside a guide portion of a hollow body. A plunger telescopes in a main chamber of the die member. A leaf spring mounted in the body engages the head of the plunger. The spring exerts force on the plunger. The spring yields with an audible click when the body is urged with more than sufficient force to extrude molding compound.

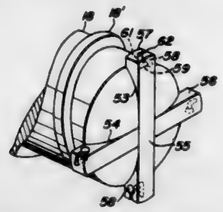
3,664,789
ROTARY EXTRUSION DIE
Lloyd W. Gibney, Funkstown, Md., assignor to American Optical Corporation, Southbridge, Mass.
Continuation of abandoned application Ser. No. 809,527, Mar. 24, 1969. This application May 12, 1971, Ser. No. 142,804
Int. Cl. B29f *3/12*
U.S. Cl. 425—131 **6 Claims**



A die for extruding variegated plastic sheet stock wherein an inlay of preselected color extends through the thickness of the extrusion in a continuously repetitive

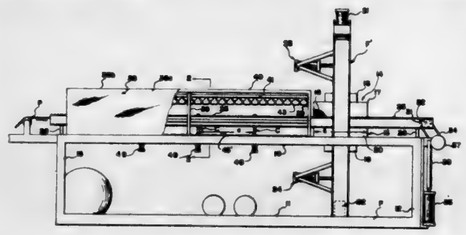
pattern of predetermined configuration with provision for altering the pattern without interruption of the flow of the extrusion. The die receives a main supply of heat-softened plastic of a pre-selected base color which is interspersed with a differently colored heat-softened plastic material directed laterally into the die cavity through a rotary distribution tube in controlled amounts and locations across the main supply.

3,664,790
PLASTIC EXTRUSION APPARATUS
Irvin Hollander, Dayton, Ohio, assignor to Tli Dee Products Co., Dayton, Ohio
Filed Dec. 5, 1969, Ser. No. 882,462
Int. Cl. B29f *3/02*
U.S. Cl. 425—131 **9 Claims**



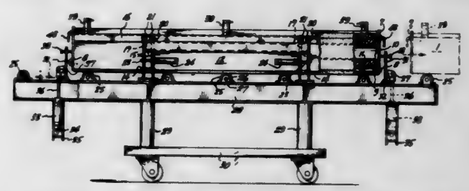
Plastics extrusion apparatus in which injector means add to a flowing stream of base material, ahead of the extrusion die, a supplemental plastic material in a controlled fluidized form. Bladed rotor means operate to direct that portion of the added material concentrate at circumferentially spaced locations on the periphery of the base flow. On relative advance there is produced in the base material a decorative surface streaking of the added material. The design thereof is dictated by the nature and rate of injection of added material and the rotor control of the base flow.

3,664,791
APPARATUS FOR CONTROLLING THE SAGGING OF A THERMOPLASTIC SYNTHETIC PLASTIC WEB BEING FED THROUGH A THERMOFORMING MACHINE
Gaylord W. Brown, Beaverton, Mich., assignor to Koehring Company, Milwaukee, Wis.
Filed Jan. 5, 1970, Ser. No. 699
Int. Cl. B29c *17/00*
U.S. Cl. 425—156 **7 Claims**



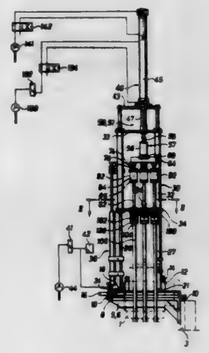
A system for preventing the undue sagging of a plastic sheet proceeding through heating apparatus to a forming mold station wherein the web is advanced in a longitudinal pathway past heaters for raising the web to a forming temperature prior to moving it to the forming mold station, and transversely extending, cooled clamp frames for gripping the web at longitudinally spaced intervals are provided and function to inhibit the sagging of the web which would otherwise occur by gripping the web and maintaining comparatively rigid longitudinally spaced apart strips in the web upstream of the mold station, during the time the mold mechanism is closed, to form articles in the plastic web.

3,664,792
CONCRETE PLANK MOLDING MACHINE
Roland C. Draughon, 2922 S. Adams 98401; Paul D. Jensen, 1011 68th Ave. E. 98424; and Donald F. Jensen, 1005 Fife Heights Drive NE. 98422, all of Tacoma, Wash.
Filed May 7, 1969, Ser. No. 822,586
Int. Cl. B28b *7/02*
U.S. Cl. 425—186 **9 Claims**



A concrete plank mold including a bottom with a flexible groove-forming strip and sides tiltable relative to the bottom can be moved into and out of a molding machine on rollers. Plates swingable by fluid-pressure jacks at opposite sides of the mold are securable by latch jacks to the mold sides. Tapered mold end plates are held against the ends of the mold sides to confine the material in the mold during swinging of the mold sides to settle the concrete mix. A concrete mix supply hopper overlying the mold has an adjustable-volume metering chamber for dispensing measured charges of concrete mix into the mold.

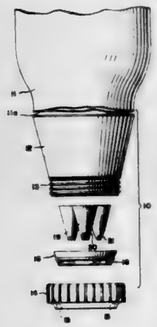
3,664,793
MANDREL FOR A DEVICE FOR THE PRODUCTION AND FILLING OF A CONTAINER OF THERMOPLASTIC SYNTHETIC MATERIAL
Gerhard Hansen, D7013 Oeffingen, Kreis Waiblingen, Hofener Strasse 47, Oeffingen, Germany
Filed Nov. 25, 1969, Ser. No. 879,720
Claims priority, application Germany, Dec. 6, 1968, P 18 13 047.7
Int. Cl. B29c *5/06*; B65f *1/02*
U.S. Cl. 425—186 **19 Claims**



A mandrel for a device for the shaping of a container from a tube section of thermoplastic synthetic material is provided. The mandrel has co-axial pipes forming respectively a filling channel and a gas channel, and are mutually displaceable axially and have at their lower end a valve. The two pipes may be raised and lowered by means of raising and lowering devices independently from one another. A shaft, likewise operable by means

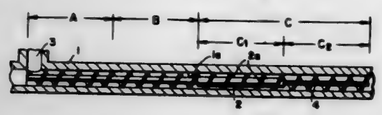
of a raising and lowering device and passing through the pipes, carries a valve member. The raising and lowering device for the outer one of the pipes engages on a displacement carriage carrying this pipe. These carriage raising and lowering devices, for the inner pipe and the shaft, are arranged in series. The length of the displacement carriage corresponds to the sum of the travel of the raising and lowering devices for the inner pipe and for the shaft. The displacement carriage is formed of two guide members and two cross-members displaceable on guide columns.

3,664,794
MULTIPLE LINE DECORATING DEVICE
Norman M. Wilton, Chicago, Ill., assignor to Wilton Enterprises, Inc., Chicago, Ill.
Filed Mar. 13, 1970, Ser. No. 19,314
Int. Cl. A47g *19/18*
U.S. Cl. 425—192 7 Claims



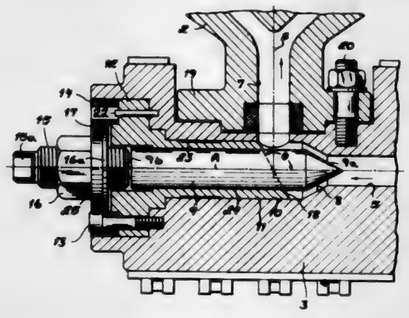
A decorating device for creating multiple borders with the application of a single pressure. The invention provides an insert containing a multiple number of circular openings in which pastry tubes of selected design are dropped. The loaded insert is locked into a coupling device, which, in turn, is attached to an icing container. This construction allows an operator to create any number of different multiple border designs using a single insert.

3,664,795
SCREW EXTRUDERS WITH DUAL SECTION EJECTION ZONE
Heinz Schippers and Friedhelm Hensen, Remscheid-Lennep, Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany
Filed July 1, 1969, Ser. No. 838,077
Claims priority, application Germany, July 2, 1968, P 17 79 055.5
Int. Cl. B29f *3/02*
U.S. Cl. 425—208 7 Claims



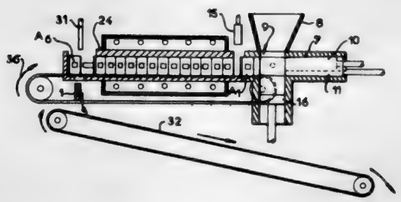
Screw extruders for extrusion of high viscosity thermoplastic melts embodying a dual section ejection zone wherein the downstream section has up to eight times the length of the upstream section and also a greater thread depth of the screw portion therein.

3,664,796
MANIFOLD ARRANGEMENT FOR AN EXTRUSION ASSEMBLY
Fritz Reifenhauser, Troisdorf, and Josef Klein, Siegiar, Germany, assignors to Reifenhauser KG, Troisdorf, Germany
Filed Aug. 11, 1969, Ser. No. 848,868
Claims priority, application Germany, Aug. 8, 1968, G 67 51 903
Int. Cl. B29f *3/06*
U.S. Cl. 425—208 3 Claims



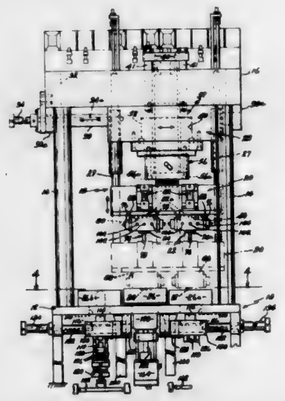
A manifold having a housing connects the plasticizing screw of an extrusion apparatus to several extrusion heads. The worm chamber opens into a primary passage in the housing from which a plurality of secondary passages lead at right angles to the separate molds. At each right-angle junction between primary and secondary passages there is provided a valve in the form of a needle-valve rod cooperating with a valve seat formed at the junction and in line with the primary passage. This valve member is actuatable from outside the housing by screw action to move it toward the seat and adjust or terminate the flow in the secondary passage.

3,664,797
APPARATUS FOR MOLDING ARTICLES FROM A PASTE-LIKE MATERIAL
Pierre Sorbier, Rue de Brancas, Pernes-les-Fontaines, France
Filed Jan. 28, 1969, Ser. No. 794,631
Claims priority, application France, Jan. 29, 1968, 49,590; July 29, 1968, 50,254
Int. Cl. B29c *3/04, 7/00*
U.S. Cl. 425—214 15 Claims



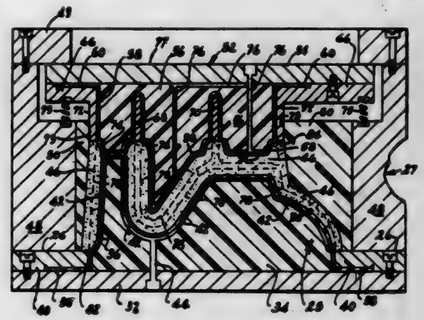
A moulding tunnel having a composite piston movable therein is closed at one end by means of a separable mould inset. The moulding material is supplied into the tunnel between the composite piston and the mould inset by a suitable hopper and a plurality of transversely operable pistons are movable into the tunnel from the sides and bottom thereof. Upon a two-stage movement of the composite piston and the transversely movable pistons the mouldable material is forced into the mould insert to form an article. The mould insert and the article are then ejected from the mould tunnel and conveyed through a curing tunnel in contiguous relationship to a plurality of other mould inserts having moulded articles therein. At the end of the curing tunnel, the mould inserts are separated and the moulded article ejected. The mould inserts are then conveyed back to the tunnel for insertion into the end of the tunnel for a new moulding operation.

3,664,798
PARISON-TYPE BOTTLE BLOWING MACHINE
Ernest P. Mosio, 12700 Lake Ave., Lakewood, Ohio 44107
Filed Feb. 26, 1970, Ser. No. 14,310
Int. Cl. B29d *23/03*
U.S. Cl. 425—326 18 Claims



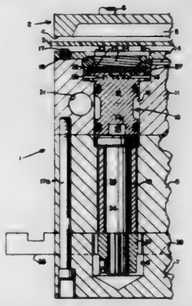
A compact blow-molding machine and a novel method for producing hollow articles of plastic or the like such as, for instance, plastic bottles having a configured or threaded neck section and a substantially smooth surfaced, generally vertically oriented body section. The machine comprises at least one generally laterally disposed blow mold, with the molds being adapted to receive vertically movable core rod means for forming a parison in the parison mold and then indexing the parison and moving the latter vertically into the blow mold for vertically blowing the article in the blow mold. The molds comprise a movable or expandable neck mold portion for forming the configured neck section of the molded article, and a body mold portion for forming the body section of the molded article. The body mold portion of the blow mold also includes a movable end wall defining the bottom of the body section of the molded article and after blowing or formation of the article is accomplished, the end wall of the body mold portion is moved out of interfering relation and the neck mold portion is opened or expanded, to permit ejection of the molded article vertically out of the blow mold. Chute means may be provided movable into coaction with the open-ended blow mold after movement of the end wall out of interfering relation, for directing the molded article to any desired location. Injection of the hot plastic material into the parison mold is accomplished vertically to form the aforementioned parison. The end result is a highly compact blow molding machine requiring a minimum of floor space.

3,664,799
POWDER COMPACTING PRESS
Claude Rollin Wallick, Jr., William Edward Blodgett, and Donald Keith Lazor, Louisville, Ky., assignors to American Standard Inc., New York, N.Y.
Filed Nov. 4, 1969, Ser. No. 873,890
Int. Cl. B28b *3/02*
U.S. Cl. 425—389 2 Claims



An isostatic powder press for compressing ceramic powders together to form a toilet bowl section, said press including one or more deformable membranes subjectable to fluid pressure to uniformly compress the powders to a substantially constant density throughout.

3,664,800
MOLDING OF THREADED CAPS
Frederick O. Miller, Saginaw, Mich., assignor to Miller Mold Company, Saginaw, Mich.
Filed June 25, 1969, Ser. No. 836,255
Int. Cl. B29c *17/04*; B29h *3/044*
U.S. Cl. 425—391 7 Claims

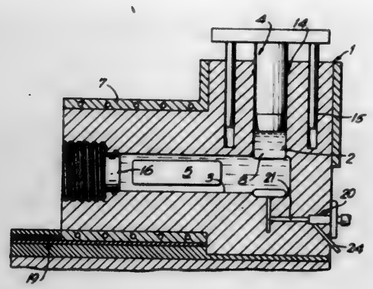


A mold for forming a molded plastic cap having a skirt provided with a helically threaded portion and axially ribbed gripping portion characterized in that the mold has a cavity provided with a helically threaded side wall and an axially grooved annulus rotatably accommodated in the cavity.

3,664,801
APPARATUS FOR DEVELOPING HIGH FLUID PRESSURE
Jean Martrier, Bourges, France, assignor to Etat Francais
Filed May 18, 1970, Ser. No. 38,348
Claims priority, application France, May 23, 1969, 6916845
Int. Cl. B30b *5/02, 11/32*
U.S. Cl. 425—405 9 Claims

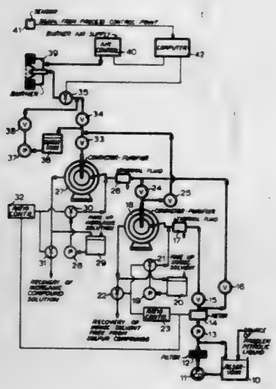
A pressure developing apparatus comprises a casing having first and second intercommunicating chambers extending at right angles to one another and filled with a

liquid. One chamber contains a slidable piston therein adapted for being externally acted on to pressurize the liquid in the chambers, and the other chamber contains



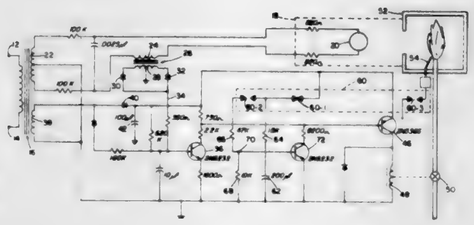
the material to be pressurized. The piston has a liquid inlet and a bore leading to the first chamber, and the inlet is closable by a valve which is subjected to the pressure of the liquid.

3,664,802
ON-SITE PURIFICATION OF PROBLEM PETROLIC LIQUID FUELS
Eric P. Garwood, 128 Naperville Road, Clarendon Hills, Ill. 60514
Filed Mar. 11, 1971, Ser. No. 123,146
Int. Cl. F23k *5/00*
U.S. Cl. 431—3 **17 Claims**



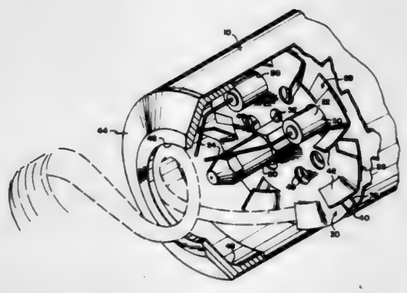
Sour crudes and residual oils, often high in deleterious ash content and of a type obtained relatively inexpensively from abroad, are usable for burning to generate heat, as for steam generation, while complying with updated air pollution regulations upon treating and purifying the crude or residual oil at or adjacent the site of the burner system at a rate substantially coincident with the rate of consumption by the burner system, usually with a surge tank in series to smooth out fluctuations in burner operation or to accommodate brief shutdowns of the treatment and purification equipment. The apparatus of the invention consists of the combination, with a burner system, of a reservoir for the crude or residual oil, means for conveying such petrolic liquid to respective contactor-purifiers for removing either sulfur compounds, or ash content, or both, and, with or without a surge tank, means for conveying the purified oil to the burner system. In a preferred embodiment the apparatus is automated in a completely integrated form.

3,664,803
COMBUSTION CONTROL SYSTEM
Phillip J. Cade, Winchester, Mass., assignor to Electronics Corporation of America, Cambridge, Mass.
Filed Aug. 3, 1970, Ser. No. 60,230
Int. Cl. F23n *5/20*
U.S. Cl. 431—69 **8 Claims**



A combustion control system includes a fuel control, a flame relay, an igniter and a flame sensor for sensing the presence of flame in the combustion chamber. The control circuitry is arranged to permit flow of fuel into the combustion chamber in response to a request for ignition and a resistive capacitive timing circuit permits the flow of fuel into the combustion chamber for a predetermined time and then terminates the flow of fuel unless the flame sensor indicates that flame is present before the end of the predetermined time interval.

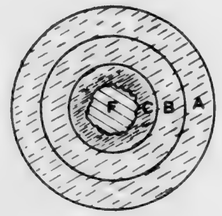
3,664,804
OIL BURNER
Norman E. Flournoy, John A. Morrison, and Julian H. Dancy, Richmond, and Raymond Trippet, Highland Springs, Va., assignors to Texaco Inc., New York, N.Y.
Filed Dec. 7, 1970, Ser. No. 95,672
Int. Cl. F23m *9/08*
U.S. Cl. 431—183 **4 Claims**



A gun type oil burner having a restriction plate in the barrel with adjustable orifices provided with struck-out radially extending deflecting vanes to effect a spiral spinning action of the air stream upstream of the burner tip, said burner tip involving a frustoconical collar to constrict and choke the spirally flowing air.

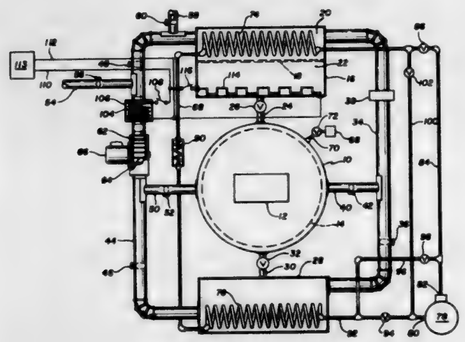
CHEMICAL

3,664,805
COMPOSITION FOR SCOURING NATURAL SILK AND TEXTILE FIBRES
Raymond Machon, Allee des Muriers, St.-Just-sur-Loire; Jean Flechet, Bd. de la Loire, Maison Jugo, St.-Just-sur-Loire; and Etienne Hugo, 21 Rue Gambetta, St.-Just-sur-Loire, all of Loire, France
Filed Jan. 15, 1970, Ser. No. 796
Claims priority, application France, Aug. 1, 1969, 6926402
Int. Cl. D01c *3/02*; D06l *1/14*
U.S. Cl. 8—138 **4 Claims**



A composition for scouring textile fibres, chiefly natural silk, more particularly for simultaneously scouring and dyeing the silk, the components of the composition being mainly about 50 parts by weight of sodium oleate, about 35 parts of an alkaline product and about 15 parts of sodium hexametaphosphate.

3,664,806
DRY CLEANING OF TEXTILE FIBERS AND OTHER GARMENT MATERIALS WITH CHLOROFLUORO HYDROCARBONS HAVING RELATIVELY HIGH FREEZING POINTS
Irving Victor, Minneapolis, Minn., assignor to Research Development Co., Minneapolis, Minn.
Filed Sept. 13, 1963, Ser. No. 308,772
Int. Cl. D06l *1/02, 1/10*; C123g *5/02*
U.S. Cl. 8—142 **11 Claims**



Process and composition for cleaning textiles and other garment materials with a chloro-fluorohydrocarbon solvent having a relatively high freezing point which produces a high quality of cleaning without injury to the textiles, and in which the solvent can be recovered through condensation and solidification at easily attainable temperatures.

3,664,807
USE OF PHOSPHONIUM COMPOUNDS AS CORROSION INHIBITORS
Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, Wilmington, Del.
No Drawing. Original application Sept. 26, 1966, Ser. No. 581,771, now Patent No. 3,531,514, dated Sept. 29, 1970. Divided and this application Apr. 22, 1970, Ser. No. 30,957
Int. Cl. C23f *11/04, 11/16*
U.S. Cl. 21—2.5 **10 Claims**

The process of inhibiting corrosion of metals, most particularly iron, steel and ferrous alloys, which is characterized by the use of a phosphonium compound. These are illustrated by monophosphoniums such as

(1)

$$R_{3+1}\overset{\oplus}{P}(CH_2CH_2CN)_{1+1}\cdot X^{\ominus}$$

(2)

$$R_{3+1}\overset{\oplus}{P}CH_2CH_2\overset{O}{\overset{\|}{C}}OM_{1+1}\cdot X^{\ominus}$$

(3)

$$R_{3+1}\overset{\oplus}{P}(CH_2COOM)_{1+1}\cdot X^{\ominus}$$

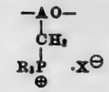
(4)

$$R_1\overset{\oplus}{P}-A-\overset{\oplus}{P}R_1\cdot 2\overset{\ominus}{X}$$

(5)

$$R_1\overset{\oplus}{P}-B\overset{O}{\overset{\|}{C}}-O-A-O-\overset{O}{\overset{\|}{C}}B-PR_1\cdot 2X^{\ominus}$$

(6) Polymeric phosphoniums such as those containing the unit



and copolymers thereof.

In the above formulae R is a hydrocarbon or a substituted hydrocarbon group such as alkyl, aryl, cycloalkyl, etc., AO is an oxirane derived unit, A is alkylene, alkylene(O alkylene)$_n$-, xylylene, etc., B is alkylene and M is hydrogen, a salt moiety, an alcohol moiety, etc. and X is an anion.

3,664,808
PRODUCTION OF DICOBALTOUS OXYCHROMATE AND PERCOBALTOUS OXYCHROMATE
Kenneth E. Weber, Los Angeles, Geraldine H. Hoch, Chatsworth, and John L. Wanamaker, Burbank, Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.
No Drawing. Filed Mar. 30, 1970, Ser. No. 24,024
Int. Cl. C01g *37/14*
U.S. Cl. 23—56 **4 Claims**

The disclosure pertains to the preparation of dicobaltous oxychromate and percobaltous oxychromates by the precipitation of these compounds from a reaction mixture containing chromic acid and cobaltous hydroxide in water. When the pH of such a mixture is maintained within the range of from about 4 to about 7, the dicobaltous oxychromate is produced; at a higher pH the percobaltous oxychromates are produced. These compounds are valuable as corrosion inhibitors.

3,664,809
RECOVERY OF ALUMINA FROM ALUMINOSILICATES
Maksymilian Burk, Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed May 4, 1970, Ser. No. 34,063
Int. Cl. C01f 7/04
U.S. Cl. 23—141 3 Claims

Alumina, H_2S and potash are recovered from aluminosilicates such as kaolin clay by reducing and then calcining a mixture of clay and polyhalite to yield a sinter of calcium and/or magnesium silicates and potassium aluminate and H_2S in the gas phase. The potassium aluminate is leached out of the sinter with potassium hydroxide and/or potassium carbonate solution and reacted with CO_2 to yield an aluminum hydroxide precipitate and a potassium carbonate solution.

3,664,810
PROCESS FOR OZONIZING UNSATURATED COMPOUNDS TO FORM ALKALI EARTH METAL PEROXIDE, ALIPHATIC ALDEHYDES AND ALIPHATIC KETONES
Anatoly Tikhonovich Menyailo, Scherbakovskaya 35, kv. 101; Mikhail Valerievich Pospelov, Komsomolsky prospekt 26, kv. 38; and Olga Romanovna Kaliko, Ulitsa Pivchenko 5, kv. 33, all of Moscow, U.S.S.R.; Inna Evgenievna Pokrovskaya, Moskovskaya obl., Vakzalnayaul. 7, kv. 37, Kaliningrad, U.S.S.R.; Valentine Vsevolodovna Fedorova, Ulitsa Rybalko 16, korp. 1, kv. 59; Albina Georgievna Shilnikova, Mytnaya ul. 23, korp 3, kv. 163; and Antonina Karpovna Yakovleva, Ul. Akademika Pavlova 56, kv. 81, all of Moscow, U.S.S.R.; and Tamara Georgievna Narozhenko, Moskovskaya obl., ul. Belinskogo 8, Kaliningrad, U.S.S.R.
No Drawing. Filed Sept. 3, 1968, Ser. No. 757,124
Int. Cl. C01b 15/04; C07c 47/00, 49/00
U.S. Cl. 23—187 7 Claims

Unsaturated hydrocarbons such as normal olefines, isoölefines, aralkylenes and cyclic olefines are converted to the corresponding carbonyl compounds, i.e., aldehydes or ketones, by reaction with ozone and an alkaline earth metal hydroxide in an aqueous or aqueous-organic medium, accompanied by the simultaneous formation of the alkaline earth peroxide.

3,664,811
PREPARATION OF ALUMINUM HYDRIDE BY HYDROGENATION OF ALUMINUM IN PRESENCE OF A DIALKYL ALUMINUM HYDRIDE
James A. Scruggs, West Haven, Conn., assignor to the United States of America as represented by the Secretary of the Army
No Drawing. Filed Dec. 23, 1968, Ser. No. 786,487
Int. Cl. C01b 6/00
U.S. Cl. 23—204 4 Claims

A novel process for synthesizing aluminum hydride which employs aluminum and a dialkyl aluminum hydride reacted with molecular hydrogen at pressures between 800–2200 p.s.i.a.

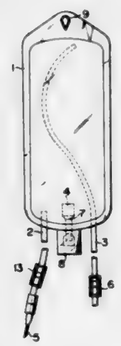
3,664,812
PURIFICATION OF HYDROGEN PEROXIDE
Ernest B. Hoyt, Syracuse, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Mar. 16, 1970, Ser. No. 20,041
Int. Cl. C01b 15/02; C07c 49/68
U.S. Cl. 23—207 9 Claims

A method for purifying aqueous acidic solutions of hydrogen peroxide prepared by an organic anthraquinone process which comprises the addition to said solution of an oxide or hydroxide of magnesium, calcium, or barium either as a solid or as an aqueous solution in an amount to raise the pH of the solution to about 6 to 8.5 to effect precipitation of the impurities and recovering an essentially pure, stable hydrogen peroxide solution.

3,664,813
METHOD FOR MAKING GRAPHITE WHISKERS
Edward F. Hollander, Jr., Broomall, Pa., assignor to John P. Glass, trading as Cava Industries, Essington, Pa.
Filed July 17, 1969, Ser. No. 842,560
Int. Cl. C01b 31/04, 31/07
U.S. Cl. 23—209.1 9 Claims

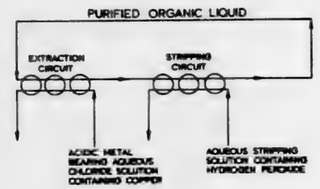
An oven for making whiskers from a vapor comprising a housing containing a chilled base plate, a first and second support post extending upwardly from the base plate, an upper and lower support plate mounted on the posts, a hollow heating element mounted between the support plates, and a stage within the heating element for supporting a substrate on which whiskers are grown. The substrate is covered with rhodium, and may be made of a material selected from the group consisting of stainless steel, beryllium oxide, alumina, copper, cobalt, and nickel. The method includes placing a substrate in a whisker deposition zone of whisker vapor, and depositing and growing whiskers on the substrate. The method also includes cooling the bottom of the whisker deposition zone to form convection currents of vapor passing upwardly through the zone, and feeding the vapor downwardly into the whisker deposition zone to clash with the upwardly flowing vapor convection currents and form a turbulence in the whisker deposition zone. A rotatable drum positioned below a nucleating zone in the oven and having a pocket that receives the substrate. A rack gear operated by a motor with a clutch moves the substrate from the nucleating zone to the drum pocket, and a motor gear system rotates the drum to wind the whiskers in the form of a roving onto the drum so that courses of a succeeding layer of roving lie between courses of the next preceeding layer having courses running in the same direction.

3,664,814
BLOOD CLEANER DEVICE
Norio Koremura, Tokyo, Japan, assignor to Jintan Terumo Co., Ltd., Tokyo, Japan
Filed Dec. 30, 1969, Ser. No. 889,245
Claims priority, application Japan, July 8, 1969, 44/53,666
Int. Cl. A61m 5/00
U.S. Cl. 23—258.5 6 Claims



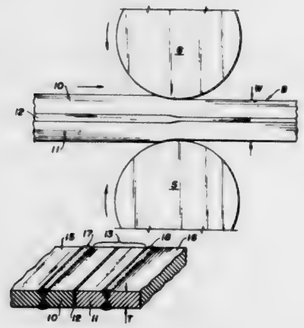
A blood cleaner device comprises a flat bag-shaped container of flexible transparent sheet material, and liquid tubes inserted into the container at one end thereof, said liquid tubes including at least one inlet tube for introducing blood into the container, a blood cleaning agent and a physiological salt solution, a blood take-out tube, and an outlet tube for discharging the blood cleaning agent. An open end of the outlet tube within the container is located near the end opposite to that of the container from which said liquid tubes are inserted therein, or near the upper end of the container when it is in an operative position, whereby the blood cleaning agent, after cleaning operation, is discharged from the container through the outlet tube by siphon action.

3,664,815
PURIFICATION OF ORGANIC SOLVENTS CONTAINING METALS BY PEROXIDE WASH
Elvind Wigstol, Kristiansand-S, Norway, assignor to Falconbridge Nickel Mines Limited, Toronto, Ontario, Canada
Filed Dec. 12, 1969, Ser. No. 884,406
Int. Cl. B01d 11/04; C01g 3/04
U.S. Cl. 23—312 R 7 Claims



A method for the removal of residual metals, such as copper, from fouled organic solvents, such as amines, which are used in solvent extraction processes, in which the metal-containing amine is contacted with an aqueous stripping solution containing dilute concentrations of a soluble peroxide.

3,664,816
STEEL-TO-ALUMINUM TRANSITION PIECE
Walter D. Finnegan, Spokane, Wash., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Original application Oct. 25, 1966, Ser. No. 589,304, now Patent No. 3,495,319. Divided and this application June 16, 1969, Ser. No. 833,608
Int. Cl. B23p 3/06
U.S. Cl. 29—196.2 4 Claims

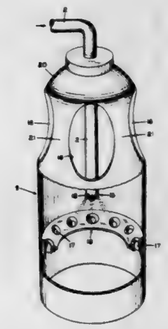


A transition insert piece suitable for the fusion welding of aluminum to steel comprising a steel element and a strong aluminum alloy element pressure bonded together through a highly deformable aluminum bonding layer.

3,664,817
METHOD IN THE MANUFACTURE OF SO-CALLED PAPER WAX MATCHES AND APPARATUS FOR CARRYING OUT SAID METHOD
Hans Peter Struve, Lauenburg (Elbe), Germany, assignor to Aktiebolaget Siefvert & Fornander, Kalmar, Sweden
Filed Apr. 16, 1969, Ser. No. 816,708
Claims priority, application Sweden, Apr. 19, 1968, 5,246/68
Int. Cl. C06f 3/02, 3/00
U.S. Cl. 44—47 14 Claims

A paper strip, which is initially wound up into a supply roll and of which paper wax matches are to be made by drawing the paper strip through at least one impregnating bath and through a number of dies by means of which the impregnated paper is formed into a thread, is humidified on its way from the supply roll to the impregnating bath.

3,664,818
INJECTOR
John B. Kramer, Houston, Tex., assignor to Allied Chemical Corporation, New York, N.Y.
Filed June 26, 1970, Ser. No. 50,267
Int. Cl. F02m 21/04
U.S. Cl. 48—180 R 2 Claims



Injector design for maximum air entrainment in the course of inter-mixture thereof with fuel to be conducted to the air intake system.

3,664,819
RESIN BONDED METAL-COATED DIAMOND OR CUBIC BORON NITRIDE ABRASIVE TOOLS CONTAINING AN INORGANIC CRYSTALLINE FILLER AND GRAPHITE
Richard H. Sioui, Holden, and Harvey M. Cohen, Randolph, Mass., assignors to Norton Company, Worcester, Mass.
Filed Nov. 14, 1969, Ser. No. 876,655
Int. Cl. B24b 1/00; C08g 51/12
U.S. Cl. 51—295 10 Claims

Organic bonded diamond or cubic boron nitride abrasive tools, showing particular utility in the dry grinding of metal-carbides, and tool steels, respectively, are produced by incorporating graphite, of fine particle size, and a reinforcing filler in the bond, and by employing metal-clad abrasive grits in the amount of 7 to 40%, by volume, of the abrading portion of the tool. The graphite is preferably of a flaky shape having an average diameter of

less than 300 microns, and is present in the bond in the amount of from 5 to 40 volume percent, with the total



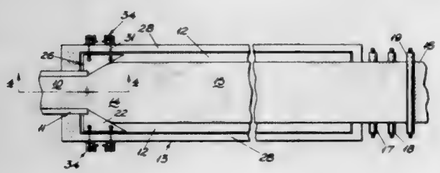
filler content being from 15 to 70%; the remaining filler being, preferably, silicon carbide.

3,664,820

MOVABLE RESTRICTOR TILES IN FLOAT GLASS APPARATUS AND METHOD OF REGULATING GLASS RIBBON

Edwin C. Montgomery, Modesto, Calif., assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Dec. 16, 1969, Ser. No. 885,430
Int. Cl. C03f
U.S. Cl. 65—99 A **8 Claims**



Controlling the directional flow of the initial buoyant body of molten glass received on the bath of a float glass apparatus to assist in guiding the ribbon down the bath. The restrictor tiles are made adjustable both pivotally and laterally. One end of each of two spaced, horizontal rods is pivotally attached to each restrictor tile. Each rod connects through an opening in the tank sidewall to an independent, conventional means capable of advancing and retracting same, thereby allowing independent adjustment thereof.

3,664,821

SLIMICIDAL COMPOSITION AND ITS USE

Bernard F. Shema, Glenside, Robert H. Brink, Jr., Doylestown, and Paul Swered, Philadelphia, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

No Drawing. Filed Jan. 2, 1970, Ser. No. 466
Int. Cl. A01n 9/00, 9/28
U.S. Cl. 71—67 **12 Claims**

The present invention relates to certain processes and compositions useful for inhibiting the growth of slime in water employed for industrial purposes, particularly water employed in the manufacture of pulp and paper, water employed in cooling water systems, as well as other industrial waters. The novel processes and compositions of the present invention are processes or mixtures which show unexpected synergistic activity against microorganisms, including bacteria, fungi and algae, which produce slimes in aqueous systems or bodies which are objectionable from either an operational or aesthetic point of view. Specifically, the invention is directed to the use of compositions comprising a combination of bis-(trichloromethyl) sulfone with a mixture of 2-nitro-2-ethyl-1,3-dimorpholino propane, and N(2-nitrobutyl) morpholine.

3,664,822

DIALKENYL ESTERS OF ARYLOXYACETYL PHOSPHONIC ACIDS AS HERBICIDES

Delta W. Gier, Laurinburg, N.C., assignor to Baychem Corporation, New York, N.Y.

No Drawing. Division of application Ser. No. 675,356, Oct. 16, 1967, now Patent No. 3,562,361, dated Feb. 9, 1971, which is a continuation-in-part of applications Ser. No. 412,263, Nov. 18, 1964, now Patent No. 3,382,060, and Ser. No. 449,640, Apr. 20, 1965, now Patent No. 3,378,610. This application Feb. 24, 1970, Ser. No. 17,000
The portion of the term of the patent subsequent to May 7, 1985, has been disclaimed
Int. Cl. A01n 9/36
U.S. Cl. 71—86 **8 Claims**

Compounds of the formula



where R is alkyl, phenyl, alkylphenyl, chloroalkyl, cyanoalkyl, allyl or methallyl and R' is mono, di or trihalophenyl, phenyl, alkyl, phenyl, ring halo methyl phenyl, alkoxyphenyl are prepared by (1) reacting a compound having the formula $(RO)_3P$ with a compound having the formula,



or (2) by reacting a compound having the formula

The products are useful as desiccants and as herbicides. The alkyl compounds are particularly effective as selective herbicides for broadleaf plants.

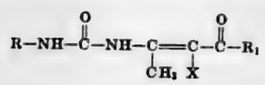
3,664,823

HERBICIDAL 3-(SUBSTITUTED UREIDO) CROTONAMIDES AND CROTONATES

Harvey M. Loux, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 775,568, Sept. 30, 1968, which is a continuation-in-part of application Ser. No. 678,548, Oct. 27, 1967, which in turn is a continuation-in-part of application Ser. No. 533,223, Mar. 10, 1966. This application Dec. 4, 1969, Ser. No. 882,343
Int. Cl. A01n 9/20
U.S. Cl. 71—111 **2 Claims**

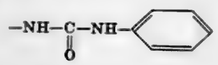
This invention relates to herbicidal methods, compounds and compositions utilizing as an essential ingredient a compound of the following formula:



wherein

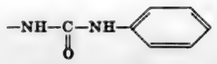
R is alkyl, phenyl, o-fluorophenyl, cycloalkyl, or cycloalkylmethyl;

R_1 is $—OR_2$ or



R_2 is alkyl, cyclohexyl, phenyl, substituted phenyl, benzyl or substituted benzyl;

X is methyl or halogen, with the limitation that when R_1 is



R is restricted to phenyl or o-fluorophenyl.

Typical of the compounds of this invention is 2-bromo-N - (phenylcarbamoyl) - 3 - (3 - phenylureido)crotonamide which is useful as an herbicide.

3,664,824

AGGLOMERATED METAL SHOT

Frederick W. Meadus and Ira E. Puddington, Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

No Drawing. Filed Dec. 26, 1968, Ser. No. 787,278
Claims priority, application Canada, Feb. 6, 1968, 11,770
Int. Cl. B22f 9/00
U.S. Cl. 75—.5 R **2 Claims**

Agglomerated metal shot preparation by adding metal powder and aqueous fluid to a non-aqueous liquid phase, agitating to agglomerate powder and aqueous fluid, and impacting and ricocheting the agglomerates until strong pellets are formed (by cold-welding or aqueous adhesive) e.g. giving bird shot which may be water-decomposable.

3,664,825

METHOD FOR MANUFACTURING ZIRCONIUM ALLOYS AND ALLOYS MANUFACTURED ACCORDING TO THE METHOD

Mats Soren Bergqvist, Olof Krister Kallstrom, Per Goran Olof Lagerberg, and Nils Axel Gunnar Okvist, Sandviken, Sweden, assignors to Sandvikens Jernverks Aktiebolag, Sandviken, Sweden

No Drawing. Filed Feb. 9, 1970, Ser. No. 10,042
Claims priority, application Sweden, Feb. 21, 1969, 2,402/69
Int. Cl. C22c 15/00
U.S. Cl. 75—10 **9 Claims**

In making a zirconium alloy of the known type, which, besides zirconium and an insignificant amount of impurities, essentially contains only 0.2–2.5 wt. percent tin and in total 0.1–3.0 wt. percent of one or more of the elements iron, chromium, nickel and niobium and which at higher temperatures have β-phase structure and at lower temperatures have α-phase structure, the inventive object is to give the alloy such an α-phase structure that when the β-phase is transformed to α-phase, a raised ductility and improved surface properties are obtained. This object is met by including, amongst the components when the alloy is manufactured by melting, one or more metallic carbides the metallic carbide so added being in such an amount that the final carbon content of the alloy is 140–300 parts of weight per million parts of weight of the alloy.

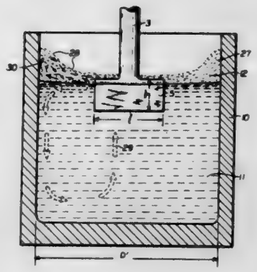
3,664,826

PROCESS FOR ACCELERATING METALLURGICAL REACTIONS

Friedrich Kraemer, Mulheim, Jorn Mandel and Siegfried Mayer, Gelsenkirchen, Klaus Rohrig, Essen, Hans-Peter Schulz, Hattingen, Hilmar Weidenmuller and Klaus Dieter Haverkamp, Gelsenkirchen, and Jürgen Motz, Ratingen, Germany, assignors to Rheinstahl Huttenwerke, Essen, Germany

Filed Mar. 17, 1969, Ser. No. 843,868
Claims priority, application Germany, Mar. 23, 1968, P 17 58 038.0, P 17 58 039.1, P 17 58 040.4, P 17 58 041.5
Int. Cl. C21c 7/02
U.S. Cl. 75—50 **14 Claims**

Apparatus including means for adjusting vertically the level of a mechanical stirring member with respect to the vertical level of a melt, e.g. the vertical level of the interface between the top surface of an iron melt and slagging or the like ingredients floating on such iron melt surface especially in a circular upright ladle with a discharge aperture, and method of using such stirring member, e.g. to enhance or accelerate contact and reaction between such melt and floating ingredients, to carry out metallurgical reactions, as well as tough cast iron containing spherical graphite producible thereby.



3,664,827

METHOD FOR REFINING MOLTEN IRON OR MOLTEN IRON ALLOYS

Ryo Ando and Tsutomu Fukushima, Kanagawa-ken, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1969, Ser. No. 818,283
Claims priority, application Japan, Apr. 24, 1968, 43/27,062
Int. Cl. C21c 7/00, 7/04
U.S. Cl. 75—51 **3 Claims**

Method for refining molten iron or molten iron alloys which comprises steps of adding a reactant and stirring the upper layer portion of said molten metal while blowing oxygen thereonto, and substantial inertia of movement and natural convection caused by pouring said molten metal into the ladle being utilized to enforce stirring effect in the ladle.

3,664,828

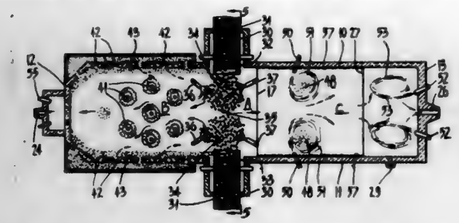
REVERBERATORY SMELTING OF COPPER CONCENTRATES

Howard Knox Worner, North Balwyn, Victoria, Australia, assignor to Conzinc Riotinto of Australia Limited, Melbourne, Victoria, Australia

Original application Nov. 18, 1966, Ser. No. 595,510, now Patent No. 3,527,449, dated Sept. 8, 1970. Divided and this application Feb. 17, 1969, Ser. No. 817,213
Claims priority, application Australia, Nov. 22, 1965, 66,820/65
Int. Cl. C22b 15/00, 15/14
U.S. Cl. 75—73 **15 Claims**

The invention concerns a method for continuously smelting and converting copper concentrates including providing at remote ends of the furnace copper and slag outlets, forming in the furnace a smelting zone, a converting zone and a slag separation zone with the converting zone being between the smelting zone and the copper outlet and the slag separation zone being between the smelting zone and the slag outlet, feeding concentrates into the smelting zone, forming a restricted passage in the smelting zone between the converting zone and the slag separation zone, jetting oxidising gas into the molten material in the smelting zone, causing matte formed in the smelting zone to flow into the converting zone, jetting oxidising gas into the molten material in the converting zone to convert matte to copper, causing slag

formed in the converting zone to flow through the restricted passage into the slag separation zone countercurrent to the flow of matte, separating matte from slag



in the slug separation zone and returning the matte to he converting zone, withdrawing copper from the copper outlet and withdrawing slag from the slag outlet.

3,664,829

METHOD AND COLLECTOR FOR EXTRACTING METALS FROM AN AQUEOUS SOLUTION

Dale M. Matthews, Mountain View, Alaska (Drawer 8869, Mountain View Station, Anchorage, Alaska 99504)

Continuation-in-part of application Ser. No. 658,502, Aug. 4, 1967. This application Jan. 7, 1970, Ser. No. 1,202

Int. Cl. C22b *11/04, 15/12*

U.S. Cl. 75—108 **5 Claims**

Metals belonging to a group of metals having an affinity for phosphorus are extracted from an aqueous solution by exposing phosphorus to said solution, said metals collecting on the phosphorus and later being separated therefrom. To provide a large contact area the phosphorus is melted onto a nonreactive matrix, and to prevent pollution of the aqueous solution by the phosphorus the matrix is enclosed in an envelope of non-reactive filter material.

3,664,830

HIGH TENSILE STEEL HAVING HIGH NOTCH TOUGHNESS

Akira Kambayashi and Shun-ichi Shimada, Kawasaki, and Takashi Ehara, Tokyo, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Kawasaki-shi, Japan

No Drawing. Filed June 15, 1970, Ser. No. 46,475

Claims priority, application Japan, June 21, 1969, 44/48,794

Int. Cl. C22c *37/10, 39/14*

U.S. Cl. 75—124 **2 Claims**

A high tensile steel comprising 0.12–0.21% of carbon, 0.70–1.00% of manganese, 0.20–0.35% of silicon, 0.40–0.65% of chromium, 0.15–0.25% of molybenum, 0.03–0.08% of vanadium, 0.01–0.03% of titanium, 0.0005–0.005% of boron, 0.020–0.060% of aluminum, 0.008–0.020% of nitrogen and the balance being iron and impurities, treated by hardening and tempering to provide the steel with a yield point of more than 70 kg./mm.^{2}, a tensile strength of more than 80 kg./mm.^{2} and an excellent notch toughness and weldability.

3,664,831

LEAD ALLOYS HAVING IMPROVED CORROSION RESISTANCE

Hubert Graefen, Lampertheim, and Dieter Kuron, Mannheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed Mar. 17, 1970, Ser. No. 20,179

Claims priority, application Germany, Mar. 20, 1969, P 19 14 210.0

Int. Cl. C22c *11/00*

U.S. Cl. 75—166 **5 Claims**

Lead alloys distinguished by improved corrosion resistance, particularly against sulfuric acid, and improved creep resistance. Suitable alloys of this kind are lead alloys containing—besides components for reducing grain size, assisting the formation of protective layers and increasing creep resistance, such as copper, nickel, tellurium and tin—at least 0.05% of palladium based on the total weight of the alloy.

3,664,832

LEAD ALLOY

Neil E. Paton, Cambridge, Mass., assignor to Ionics, Incorporated, Watertown, Mass.

No Drawing. Filed July 25, 1969, Ser. No. 845,073

Int. Cl. C22c *11/00*

U.S. Cl. 75—166 D **2 Claims**

A lead alloy anode with improved resistance to corrosion is provided for sulfate electrolysis which anode consists essentially by weight of not more than 5% thallium, not more than 1.8% tin, up to 0.2% cobalt and the remainder lead and incidental impurities. Further improvement result if the cast alloy anode is "hot worked" by rolling the anode to less than one-quarter its original cast thickness while maintaining the temperature between 200°–300° C.

3,664,833

METHOD OF TRANSFERRING AN ELECTROSTATIC IMAGE TO A DIELECTRIC SHEET

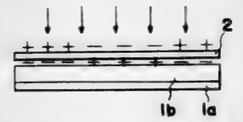
Susumu Tanaka, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed June 10, 1970, Ser. No. 45,124

Claims priority, application Japan, June 16, 1969, 44/47,491

Int. Cl. G03g *13/00, 13/15*

U.S. Cl. 96—1 **7 Claims**



An electrostatic image is transferred from a photoconductive layer onto a dielectric sheet of 10μ to 200μ thickness by applying an AC corona discharge to the dielectric sheet and projecting a uniform light onto the dielectric sheet from an incandescent light source. The image on the dielectric sheet is developed with toner and the dielectric sheet is stripped from the photosensitive material.

3,664,834

MIGRATION IMAGING METHOD EMPLOYING ADHESIVE TRANSFER MEMBER

Alan B. Amidon, Penfield, and Joseph G. Sankus, Fairport, N.Y., Nicholas L. Petruzzella, Columbus, Ohio, and Joan R. Ewing, Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Dec. 23, 1968, Ser. No. 786,867

Int. Cl. G03g *13/16*

U.S. Cl. 96—1.4 **20 Claims**

An imaging member comprising a supporting substrate and an overlayer on said substrate comprising a soluble, electrically insulating binder layer containing particles dispersed in said soluble binder is processed to substantially completely remove said soluble binder and form an image and a background pattern of particles on said substrate, which is then contacted with a transfer member which is then stripped away whereby the image or the background pattern of migrate particles is selectively released to said transfer member.

3,664,835

PHOTOGRAPHIC PRODUCT, COMPOSITION AND PROCESS COMPRISING AN ANHYDRO DIHYDRO AMINO REDUCTONE DEVELOPING AGENT

Mary J. Youngquist, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 2, 1969, Ser. No. 863,363

Int. Cl. G03c *1/42, 5/30, 5/54*

U.S. Cl. 96—3 **21 Claims**

Photographic developing agents which are anhydro dihydro reductone silver halide developing agents such as anhydro dihydro amino reductone silver halide developing agents provide reduced stain without loss of desired sensitometric properties at reduced concentrations in a diffusion transfer system. These can be used in combination with other photographic developing agents such as aminomethyl hydroquinone developing agents, cinnamic acid developing agents, lactone developing agents or developing agent precursors, and the like. They are specially useful in a black and white silver halide diffusion transfer process.

3,664,836

TANNING PROCESS FOR FORMING A PHOTOGRAPHIC RELIEF IMAGE

Laura K. Case, Winchester, Mass., assignor to Itek Corporation, Lexington, Mass.

No Drawing. Filed May 19, 1969, Ser. No. 825,994

Int. Cl. G03c *5/00*

U.S. Cl. 96—35 **17 Claims**

A process is disclosed for forming a photographic relief image from a copy medium which has a base coated with a gelatin binder which contains a photoconductor. The photoconductor is of the type which becomes reversibly activated upon being struck by light or other activating radiation and is capable of causing the reduction of reducible ions in its activated state. The copy medium is first exposed to an image pattern of activating radiation such as visible light to reversibly activate the photoconductor at the image-struck area. The exposed areas are subsequently contacted with image-forming materials which contain reducible ions such as silver ions to form a germ image. After the germ image has been formed the hardenable binder is contacted with a tanning developer which hardens the binder at the image-struck areas. Remaining portions of the unhardened binder are washed away which leaves a relief image formed from hardened gelatin at the image-struck area.

The photographic relief image formed by the process of this invention is useful as a photographic transparency, diazo master, dye transfer matrix, lithographic plate, etc.

3,664,837

PRODUCTION OF A LINE PATTERN ON A GLASS PLATE

Charles C. Stanley, Canoga Park, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jan. 16, 1970, Ser. No. 3,435

Int. Cl. G03c *5/00, 11/00*

U.S. Cl. 96—38.3 **4 Claims**

Microelectronic circuits are produced by evaporating a photosensitive compound such as a silver halide onto a chip which is then exposed to radiation such as light, or an electron beam whose motion may be controlled by a computer or similar device. The chip is then developed leaving behind the metallic conductive circuit, and the undeveloped portion is removed preferably by heating.

3,664,838

TREATMENT OF AND DEVELOPING COMPOSITION FOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Hiroyuki Amano and Kazno Shirasu, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Apr. 16, 1970, Ser. No. 29,250

Claims priority, application Japan, Apr. 16, 1969, 44/29,577

Int. Cl. G03c *7/00, 5/30*

U.S. Cl. 96—56 **7 Claims**

Photographic light sensitive developing compositions containing inositolpolyphosphoric acid or an alkali metal salt of inositolpolyphosphoric acid to prevent staining and aerial fog are disclosed.

3,664,839

MULTIPLE SCINTILLATOR LAYERS ON PHOTOGRAPHIC ELEMENTS

Evan Thomas Jones, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Sept. 16, 1969, Ser. No. 858,501

Int. Cl. G03c *1/92*

U.S. Cl. 96—82 **9 Claims**

Photographic elements containing multiple scintillator layers, wherein one of the layers is a fine-particle-size scintillator layer and at least one other scintillator is a coarse-particle size layer comprising particle sizes of about 0.5 to about 2.0 microns, are found to be very useful in electron-beam recording and playback. The coarse-particle-size layer facilitates easy alignment of the electron beam and is generally removed after the recording operation. The fine-grain layer is retained intact with the image record for read-out of the recorded information.

3,664,840

DIAZOTYPE PHOTOPRINTING MATERIAL

Tadashi Saito, Kawasaki-shi, Masaru Shimada, Yokohama-shi, and Kiyoshi Sakai, Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

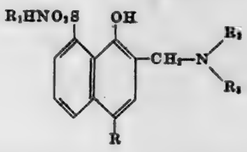
No Drawing. Filed Apr. 1, 1969, Ser. No. 812,428

Claims priority, application Japan, Apr. 17, 1968, 43/25,763

Int. Cl. G03c *1/58, 1/54*

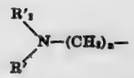
U.S. Cl. 96—91 **15 Claims**

A diazotype photoprinting material containing a coupler compound having the following general formula.



(1)

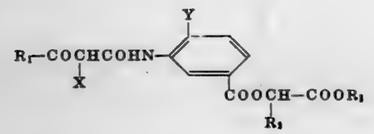
wherein R is a lower alkyl radical of from 1 to 4 carbon atoms, R_1 is hydrogen, lower alkyl-, aralkyl radical or



wherein R'_3 and R'_3 are each lower alkyl radicals, and n is integer of from 1 to 3, and R_2 and R_3 are same or different lower alkyl- or alkylene radicals and may be linked together with carbon, oxygen, sulfur or nitrogen atom to form a heterocyclic ring.

3,664,841
LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC EMULSION CONTAINING YELLOW-FORMING COUPLER
Masakuni Iwama, Isaburo Inoue, Yutaka Takei, Kenro Sakamoto, and Takaya Endo, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
No Drawing. Filed Nov. 28, 1969, Ser. No. 880,954
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 **8 Claims**

A compound of the general formula



wherein R_1, R_2, R_3, X and Y as defined in the claims is found to be useful as a yellow coupler in a light-sensitive silver halide emulsion. The compound when used as said yellow coupler is characterized in that it can yield a yellow dye image with good stability against moisture and light attack.

3,664,842
THERMOGRAPHIC COPY SHEET CONTAINING GUANIDINE COMPOUNDS
Albert W. Leclair, Hudson, N.H., assignor to Nashua Corporation, Nashua, N.H.
No Drawing. Filed Apr. 13, 1970, Ser. No. 28,067
Int. Cl. G03c *1/02*
U.S. Cl. 96—114.1 **4 Claims**

A thermographic copy system utilizing certain U.V. inactivatable reducing agents may be rendered inactivatable by visible light by a dye sensitizer in combination with certain guanidine-based compounds which augment the sensitizing effect.

3,664,843
SCREEN COMBINATION
Leendert Antonius Fontijn, Delft, Netherlands, assignor to Nederlandse Centrale Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek, The Hague, Netherlands
Filed June 9, 1970, Ser. No. 44,732
Claims priority, application Netherlands, June 19, 1969, 6909437
Int. Cl. G03f *5/00*; G03c *5/06, 5/04*
U.S. Cl. 96—116 **7 Claims**

The head lines of the screens used in printing a picture are preferably slant and at different angles in relation to the head lines of that picture.

Every screen dot of such a screen is obtained at the device described by exposure of a photo-sensitive layer, which is provided on to an etchable substrate, with the aid of an electron beam.

In the process a head line of the picture moves according to its own lengthwise direction in a plane perpendicular to the optical axis of the electron gun.

By rendering the electron beam for manufacturing specific dots of the screen a declination perpendicular to the said head line and/or in the direction of the said head line of the picture a screen is created with its two head lines slant in relation to the head lines of the picture.

3,664,844
EDIBLE COLLAGEN FILM
Albert T. Miller, Somerville, N.J., assignor to Devro, Inc.
No Drawing. Filed Feb. 10, 1970, Ser. No. 10,305
Int. Cl. A23j *1/10*; A22c *13/00*
U.S. Cl. 99—18 **23 Claims**

Edible collagen continuous films, which are strong and have good wet strength, which are especially useful when used to hold and cover wet meat emulsions to make meat bar snack products, are prepared by forming and drying a sheet of acid-swollen hide corium-derived collagen treated with fungal proteases derived from *Aspergillus oryzae* and *Aspergillus flavus-oryzae*, which also contains a plasticizer and preferably further contains a solubilized soy protein and/or an edible cellulose, and then preferably treating the dried film with gaseous ammonia when greatly enhanced wet strength is desired.

3,664,845
MOLECULAR FRACTIONATION BY PULSED CENTRIFUGATION
Herman H. Friedman, Bayside, N.Y., assignor to General Foods Corporation, White Plains, N.Y.
No Drawing. Filed Nov. 25, 1970, Ser. No. 92,909
Int. Cl. B01d *15/08*
U.S. Cl. 99—57 **5 Claims**

A means for the rapid, efficient fractionation of water soluble substances by means of passage through a molecular fractionating gel has been developed which employs a pulsed centrifugation technique. This development is a useful food processing operation to quickly and efficiently separate valuable food components such as flavors and proteins from aqueous solutions such as coffee extract and whey.

3,664,846
PROCESS FOR PREPARING INSTANT GRITS
Roy G. Hyldon, Crystal Lake, Ill., assignor to The Quaker Oats Company, Chicago, Ill.
No Drawing. Filed Jan. 14, 1970, Ser. No. 2,939
Int. Cl. A23l *1/10*
U.S. Cl. 99—83 **4 Claims**

Emulsifier free instant-type corn grits food product are prepared by: (A) admixing corn grits, water, and polysaccharide gum; (B) heating the mixture in a first heating step; (C) heating the above heated mixture in a second heating step which consists of a critical temperature range; (D) drying the mixture by forming the heated mixture in a thin sheet on a drum drier with the forming being conducted within a critical time period from the last heating step; and (E) comminuting the cooked, dried sheet.

3,664,847
PROCESS FOR PREPARING INSTANT CORN GRITS
Roy G. Hyldon, Crystal Lake, Ill., assignor to The Quaker Oats Company, Chicago, Ill.
No Drawing. Filed Jan. 14, 1970, Ser. No. 2,940
Int. Cl. A23l *1/10*
U.S. Cl. 99—83 **4 Claims**

Instant corn grits are prepared by a process comprising the steps: (A) admixing corn grits, critical amounts of water, and critical amounts of polysaccharide gum; (B) rapidly heating the mixture to a critical temperature for a critical time period; (C) immediately drying the heated mixture in the form of a thin sheet on a drum drier; and (D) collecting and comminuting the cooked dried sheet.

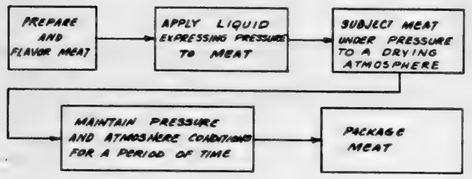
3,664,848
PROCESS OF PRODUCING A SOY-CONTAINING READY-TO-EAT BREAKFAST CEREAL
William T. Bedenk, Springfield Township, Hamilton County, and Edward R. Purves, Forest Park, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed June 29, 1970, Ser. No. 50,923
Int. Cl. A23l *1/10*
U.S. Cl. 99—83 **10 Claims**

Production of high protein soy-containing breakfast cereals by intimately mixing a soy protein source, proteolytic enzyme and gelatinized cereal grain, thereafter processing this mixture into a ready-to-eat breakfast cereal having a protein content of greater than 20%. Water, extracted from the gelatinized cereal grain together with the proteolytic enzyme, causes a partial hydrolysis of the soy protein thereby making it more palatable.

3,664,849
PRODUCTION OF MEAT SNACK PRODUCT AND PRODUCT
Robert F. Autry, Neshanic Station, N.J., assignor to Devro, Inc.
No Drawing. Filed Feb. 10, 1970, Ser. No. 10,304
Int. Cl. A22c *18/00*; A23l *1/00*
U.S. Cl. 99—107 **11 Claims**

Snack type products such as dried sausage meats or other dried foods are produced in the shape of relatively flat bars similar to candy bars by processes adaptable to high speed production methods which involve continuously extruding wet emulsions of the edible food component over a moving belt which supports an edible collagen film having good wet burst strength, and then covering the emulsion with an upper layer of the edible collagen film and applying pressure thereto to form a laminate which is then dried to a moisture content of 20 percent or less, cut to size, and overwrapped; the laminate form allowing the easy handling of the meat emulsion as a continual blanket.

3,664,850
PROCESS FOR PRESERVING MEATS
William E. Kentor, 228 Maple Ave., Highland Park, Ill. 60035
Filed Dec. 3, 1969, Ser. No. 881,694
Int. Cl. A23b *1/00, 1/02, 1/04*
U.S. Cl. 99—157 **1 Claim**



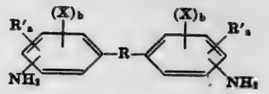
A process for preserving fresh comminuted and/or whole meats which comprises pre-treating the meats with an appropriate flavoring or condiment mixture, applying positive liquid-expressing pressure to the pre-treated meats to force moisture therefrom and subjecting the meats while under liquid-expressing pressure to a drying atmosphere in motion relative to said meat and under low humidity and high temperature conditions for a period of time sufficient (i.e. about 18 hours per pound of pre-treated meat, depending upon the exposed surface area thereof) to rapidly remove moisture to a maximum of about 50% by weight of the finished meats and thereby impart shelf stability to the meats under ambient air conditions without need of refrigeration. The dried meats are then sliced and packaged as desired.

3,664,851
COMPOSITIONS OF MATTER
Willem Hendrik Feenstra and Johann Georg Keppler, Vlaardingen, Netherlands, assignors to Lever Brothers Company, New York, N.Y.
No Drawing. Filed Oct. 13, 1969, Ser. No. 865,990
Claims priority, application Luxembourg, Oct. 14, 1968, 57,084/68
Int. Cl. A23d *5/04*
U.S. Cl. 99—163 **5 Claims**

Improved fatty acid products of enhanced flavour characteristics have incorporated autoxidation flavour counteractants of the formula RCH:CHCH:CHZ where R is an alkyl group containing up to 9 carbon atoms and Z is an organoleptically acceptable polar group. The fatty acid products include edible fats and oils particularly tallow and soybean oil, and their products such as margarine. The counteractants may be free or combined fatty acids or aldehydes, which are effective in minute amounts, and they may be incorporated at least in part by precursors added to convert to the counteractant in the fatty acid product during storage.

3,664,852
ELECTROLESS COPPER PLATING SOLUTION AND PROCESS
Kenneth J. Hacias, Detroit, Mich., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.
No Drawing. Filed Dec. 30, 1969, Ser. No. 889,309
Int. Cl. C23c *3/00*
U.S. Cl. 106—1 **13 Claims**

A plating solution suitable for the electroless deposition of copper on ferrous metal surfaces which comprises an aqueous acidic solution containing copper ions; chloride, bromide, or iodide ions; a polyalkylene glycol; and a dianiline compound of the structure:



wherein R is an alkyl group containing from about 1 to 6 carbon atoms in a straight or branched chain; R′ is an alkyl group containing from about 1 to 4 carbon atoms in a straight or branched chain; X is halogen; and a is a number from 0 to 2; b is 0 or 1. This solution is particularly useful in forming an electroless copper coating on steel wire prior to subjecting it to a wire drawing operation.

3,664,853
IMPREGNATED FIRED REFRACTORY SHAPE AND METHOD OF PRODUCING SAME
Regis J. Leonard, Catasauqua, and Gene C. Ulmer, Bethlehem, Pa., assignors to Bethlehem Steel Corporation
Filed Mar. 6, 1970, Ser. No. 17,091
Int. Cl. C04b *35/04, 35/52*
U.S. Cl. 106—58 **25 Claims**

A high-fired basic refractory shape having an apparent porosity of about 10% to about 20%, the open pores

of which contain a skeletal-like structure of a material compatible with the host material of the shape. Fine-grain carbon is uniformly distributed on the skeletal-like structure, the walls of the pores and uniformly throughout the shape. A major portion of the open pores have an effective pore diameter of about 7 microns to about 0.5 micron. The shape has increased resistance to penetration and erosion by slags present in steelmaking furnaces and has hot crushing strength equivalent to or better than prepared conventional shapes.

A conventional high-fired basic refractory shape is impregnated with a solution of a substance capable of being treated to form a material compatible with the host material of the shape. The impregnated and treated material forms a skeletal-like structure in the open pores of the shape. The shape is impregnated a second time with a carbonaceous material which upon pyrolysis yields a fine-grained carbon which is uniformly distributed throughout the shape and upon the skeletal-like formation and the walls of the open pores in the shape.

3,664,854

QUICK SETTING AND QUICK HARDENING CEMENT AND METHOD FOR PRODUCING THE SAME

Hiroshi Kokuta, Chigasaki, Japan, assignor of a fractional part interest to Ajinomoto Co., Inc., Tokyo, Japan

Filed Feb. 16, 1970, Ser. No. 11,518
Claims priority, application Japan, Feb. 17, 1969, 44/11,008
Int. Cl. C04b *7/32*
U.S. Cl. 106—90 **7 Claims**

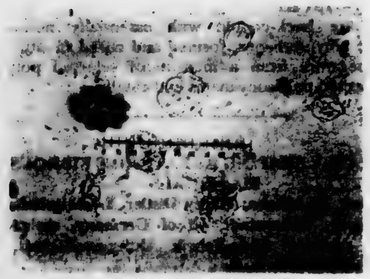
A quick setting and quick hardening cement and a method for producing the cement is disclosed. The cement contains aluminous cement, lime or lime containing material, portland cement, and a ketocarboxylic acid or its salt as a chelating agent. The chelating agent froms a complex selectively with Ca ion in the alkaline state and after a certain period, the complex will decompose or decrease. Therefore, the time to begin setting can be controlled to 1–90 minutes and sufficient hardening takes place in a short time.

3,664,855

SIZE FOR FIBERS AND GLASS FIBERS COATED THEREWITH

Albert R. Morrison, Newark, and Harold L. Haynes, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation

Continuation-in-part of application Ser. No. 696,156, Jan. 8, 1968, now abandoned. This application Dec. 16, 1969, Ser. No. 885,599
Int. Cl. C09j *3/06*
U.S. Cl. 106—212 **23 Claims**



A size for lubricating fibers, including glass fibers, which is a water dispersion of a solid unctuous material, as for example a solid wax, fat, or gelled or otherwise solidified oil, and a starch ether of a cyclic hydrocarbon, as for example a starch ether of an aryl compound, an aralkyl compound, an alkaryl compound, a cycloalkyl compound and a cycloalkenyl compound, or homologues thereof. The wax may be an animal, vegetable, mineral, or synthetic wax which is unctuous and insoluble in water. The oil: can be gelled by adding any gelling agent, and preferably a thixotropic gelling agent to the oil. The starch ethers or, as the case may be, are only partially cooked so that unburst starch granules are retained, and this dispersion is intimately mixed with the unctuous solid emulsified particles. Other ingredients such as cationic lubricants, coloring matter, bactericides, waxes having particular characteristics, etc. can be added to provide their separate functions. The combination of the above defined partially burst starch granules of etherified starch, and the emulsified particles of the solid unctuous material have very low migration from coated glass fibers, and when dried, provide low tensions when pulled over guide surfaces.

3,664,856

PAVING ASPHALT COMPOSITIONS

Charles C. Evans, Concord, and Harry J. Sommer, Lafayette, both of Calif., assignors to Shell Oil Company, New York, N.Y.

Filed July 27, 1970, Ser. No. 58,690
Int. Cl. C08h *13/00*, *17/22*; C08l *1/46*
U.S. Cl. 106—278 **8 Claims**

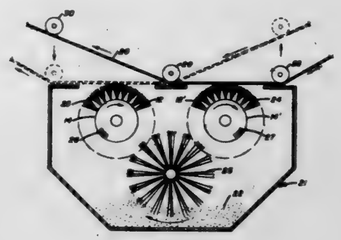
Asphalt compositions suitable for mixing with aggregate at high temperatures are produced by incorporating into an asphalt cement a minor amount, i.e., from 0.01 to 1.5 percent by weight, of a low-boiling hydrocarbon fraction. The resulting asphalt compositions have substantially improved compaction properties and are highly durable.

3,664,857

XEROGRAPHIC DEVELOPMENT APPARATUS AND PROCESS

Howard A. Miller, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 6, 1970, Ser. No. 9,225
Int. Cl. G03g *13/08*, *15/08*
U.S. Cl. 117—17.5 **10 Claims**



Electroscopic toner material is applied to electrostatic charge patterns with at least one metallized fur brush having individual flexible filaments coated with a thin layer of an electrically conductive metal. The apparatus contains two metallized fur brushes, one having a low electrical conductivity and one having a high conductivity.

3,664,858

HEAT-SENSITIVE COPY-SHEET

William A. Huffman, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 18, 1970, Ser. No. 12,427
Int. Cl. B41m *5/18*
U.S. Cl. 117—36.8 **14 Claims**

Heat-sensitive copy-sheet coatings comprise highly methanol-soluble amine adducts of organic acidic materials. The sheets may be clear and transparent, becoming light-diffusing on heating. In a preferred form they contain amine-reactive color progenitors and become colored on heating. The presence of a mutual solvent does not cause the color-forming reaction to take place, and the reactants may therefore be coated together in a single application.

3,664,859

PULSED METHOD FOR IMPREGNATION OF GRAPHITE

Ronald L. Beatty, Oak Ridge, and Dale V. Kiplinger, Concord, both of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 4, 1969, Ser. No. 804,265
Int. Cl. C01b *31/00*
U.S. Cl. 117—46 CG **1 Claim**

An improved method for preparing carbon-impregnated graphite bodies is provided comprising pulsing the graphite bodies between a vacuum atmosphere and a pressurized hydrocarbon atmosphere at elevated temperatures. The resulting graphite bodies, which are impregnated with pyrolytic carbon deposits, have helium permeabilities of less than 1×10^{-11} cm²/sec.

3,664,860
ELECTROLESSLY NICKEL PLATING ON A NON-METALLIC BASIS MATERIAL

Nobuyuki Kamiya, Yokohama-shi; Kiyotaka Funada, Chigasaki-shi; Takashi Shinohara, Yokohama-shi, and Hiroko Imai, Tokyo, all of Japan, assignors to Nihon Kagaku Kizai Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1969, Ser. No. 883,311
Claims priority, application Japan, Dec. 6, 1968, 43/89357
Int. Cl. C23c *3/02*
U.S. Cl. 117—47 A 6 Claims

A process for depositing nickel on a non-metallic basis material from a chemical nickel plating bath containing a hypophosphite as a reducing agent to form a nickel coating on the basis material, the coating being indispensable for the practice of the subsequent electroplating, characterized in that the bath contains, as a second reducing agent, a member selected from the group consisting of l-ascorbic acid, its salts, and any substances which will produce l-ascorbic acid when incorporated in the bath as one of the components thereof, thereby to eliminate the sensitizing pre-treatment required for the conventional processes for chemically plating a non-metallic basis material with nickel.

3,664,861
COATING PROCESS

Seizo Okamura, Kyoto-fu; Koji Odan, Kanagawa-ken, and Tsutomu Maruyama, Kanagawa, all of Japan, assignors to Kansai Paint Company Limited, Amagasaki-shi, Hyogo-ken, Japan

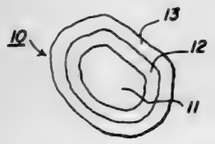
Filed Feb. 26, 1969, Ser. No. 802,658
Claims priority, application Japan, Mar. 1, 1968, 43/12874
Int. Cl. B44d *1/50*
U.S. Cl. 117—93.31 8 Claims

A process for coating articles which comprises the steps of causing a reaction between a methacrylic acid ester having hydroxyl groups and an isocyanate compound having at least two isocyanate groups in its molecule to obtain a partially urethanated compound, causing a reaction between said partially urethanated compound and a polyester having a hydroxyl group to produce an unsaturated polyester composition, applying said unsaturated polyester composition to articles to be coated, and irradiating ionizing radiation on the films of said unsaturated polyester composition formed on said articles, thereby obtaining hard but not brittle coatings on said articles.

3,664,862
ELECTRON ENERGY SENSITIVE PHOSPHORS FOR MULTI-COLOR CATHODE RAY TUBES

Jack D. Kingsley, and Jerome S. Prener, both of Schenectady, N.Y., assignors to General Electric Company

Filed July 22, 1969, Ser. No. 843,401
Int. Cl. C09k *1/12*; B44d *5/00*
U.S. Cl. 117—100 B 5 Claims



A method is disclosed for making multi-component phosphor structures whose emission color depends on the energy of the electrons used to excite them. The method comprises the mixing of two or more component phosphors, each component phosphor having particles with non-luminescent interior core regions and non-luminescent exterior surface regions separated by a luminescent region, the region dimensions and emission color of each component being distinct. These structures are formed by diffusing activating and/or coactivating impurities partially into the particles, or by growth of activated material on the outside of non-luminescent material, and by the subsequent diffusion of luminescence killing impurities partially into the luminescent region.

3,664,863
CARPETS HAVING A BACK-COATING OF IN SITU-FORMED POLYURETHANE

Willem Dijkhuizen, Zuid-Laren, and Pieter Johannes Adrianus Beersma, Haren, both of Netherlands, assignors to Scholten Research N.V., Foxhol, Netherlands

Filed May 19, 1969, Ser. No. 825,959
Claims priority, application Great Britain, May 25, 1968, 25,096/68
Int. Cl. B44d *1/09*; D04h *1/58*
U.S. Cl. 117—161 KP 11 Claims

Carpets are back-coated with essentially non-cellular elastomeric polyurethanes, formed and cured in situ at ambient temperature from a mixture of selected polyether-polyols, selected polyisocyanates and catalyst.

3,664,864
DURABLY SHAPING KERATINOUS FIBROUS MATERIALS

Rudi Widder, Eppelheim; Harry Distler, Ludwigshafen, and Erwin Haug, Gruenstadt, all of Germany, assignors to Badische Anilin-& Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed July 28, 1969, Ser. No. 845,508
Claims priority, application Germany, July 27, 1968, P 17 69 865.6
Int. Cl. B44d *1/48*; D06n *13/36*
U.S. Cl. 117—119.8 12 Claims

Durable shaping of keratinous fibrous materials by impregnation with solutions or dispersions of compounds which in the betaine form have the formula $R^1R^2R^3N$ —CHR^4—CHR^5—O-SO_3 wherein R^1 is an unsubstituted or substituted hydrocarbon radical, R^2 and R^3 each denotes a hydrogen atom or a lower alkyl radical, and R^4 and R^5 each denotes a hydrogen atom or an unsubstituted or substituted hydrocarbon radical and heating with steam at 100° to 150° C while shaping; fibrous materials thus treated.

3,664,865
GRAPHITE IMPREGNATED WITH BISMUTH-NICKEL ALLOY

Franco Lanza, Varese, and Giuseppe Marengo, Angera, both of Italy, assignors to European Atomic Energy Community (Euratom), Kirchberg, Luxembourg

Filed Dec. 1, 1969, Ser. No. 881,337
Claims priority, application Netherlands, Dec. 13, 1968, 6817923
Int. Cl. C23c *1/10*
U.S. Cl. 117—160 R 5 Claims

Metal-impregnated graphite is characterized in that the metal consists of an alloy of bismuth and nickel.

3,664,866
COMPOSITE, METHOD FOR GROWTH OF IIB—VIA COMPOUNDS ON SUBSTRATES, AND PROCESS FOR MAKING COMPOSITION FOR THE COMPOUNDS

Harold M. Manasevit, Anaheim, Calif., assignor to North American Rockwell Corporation

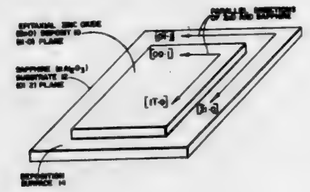
Filed Apr. 8, 1970, Ser. No. 26,574
Int. Cl. B44d *1/18*
U.S. Cl. 117—201 14 Claims

A composite comprises a substrate of monocrystalline structure which is either a hexagonal, cubic, rhombohedral or orthorhombic, and a monocrystalline layer on the substrate of a JQ compound formulation wherein J is at least one element selected from the group consisting of cadmium, zinc and mercury, and wherein Q is at least one element selected from the group consisting of sulfur, tellurium, selenium and/or oxygen. An alkyl or hydride type dopant may be used to provide a homogeneously doped layer. Processes for making the layer composition and for making the composite are described.

3,664,867
COMPOSITE STRUCTURE OF ZINC OXIDE DEPOSITED EPITAXIALLY ON SAPPHIRE

Guido Galli, Saratoga, and Jesse E. Coker, Orange, both of Calif., assignors to North American Rockwell Corporation

Filed Nov. 24, 1969, Ser. No. 879,470
Int. Cl. B44d *1/02*, *1/18*
U.S. Cl. 117—201 12 Claims



Composite heteroepitaxial structures of single crystal zinc oxide epitaxially deposited in a layer on a single crystal substrate of alpha-aluminum oxide (sapphire) and process for producing desired orientations of the zinc oxide single crystal layer corresponding to the orientation of the sapphire substrate surface.

3,664,868
GOLD METALLIZING OF REFRACTORY METALS ON CERAMIC SUBSTRATES

M. Paul Davis, Hixson, and Paul R. Theobald, Chattanooga, both of Tenn., assignors to American Lava Corporation, Chattanooga, Tenn.

Filed Mar. 16, 1970, Ser. No. 20,112
Int. Cl. H05k *3/10*
U.S. Cl. 117—212 5 Claims

Substrates having patterns of refractory metals, such as tungsten, molybdenum or molybdenum-manganese, are clad with gold which is congruent to the refractory metal pattern by screen-printing a gold ink essentially free from other inorganic constituents over the refractory metal pattern and then firing to a temperature above the melting point of gold. Exactly congruent gold layers having a smooth fire-polished surface are thus obtained. The method is equally applicable to terminals which are readily accessible to barrel plating and to terminals which are inaccessible to normal barrel plating procedures.

3,664,869
TYPEWRITER RIBBONS HAVING CORRECTION COATING AND METHOD OF MAKING

Sergio Sala; Ambrogio Cuneo, both of Via Durini, 7, Milan, Italy, and Wolfgang Dablach, Groos Strasse, 11 Eltville am Rhine, Germany

Filed Jan. 23, 1969, Ser. No. 793,276
Claims priority, application Italy, Jan. 24, 1968, 11935 A/68
Int. Cl. B41m *5/10*
U.S. Cl. 117—2 TC 21 Claims

The invention provides typewriting ribbons which comprise on a single, homogeneous support consisting of a synthetic polymer film a writing, inked part and a part suitable for correcting typing mistakes coated with a white, hiding composition. The support, preferably made of a polyester resin or of polypropylene, is preferably coated with a thin layer essentially consisting of a vinylidenic polymer. The hiding composition for correction contains essentially 75–98 percent b.w. of a pigment which is titanium bioxide having an oil index of between 30 and 60, 0.5–10 percent b.w. of a binder which is a rubber-like resin having a molecular weight over 2,000 and soluble in organic solvents, little percentages of a wetting agent.

3,664,870
REMOVAL AND SEPARATION OF METALLIC OXIDE SCALE

Alfred W. Oberhofer, Alsip; Donald R. Anderson, Oswego, and Charles C. Payne, Chicago, all of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Filed Oct. 29, 1969, Ser. No. 872,411
Int. Cl. C23g *1/02*, *1/36*
U.S. Cl. 134—3 5 Claims

A method of removing metallic oxide scale from the cooling system of a nuclear reactor is disclosed. By forming complexes of the metals using ammoniated citric acid, the scale can be removed. By selectively adsorbing these complexes on ion exchange resins the scale can be separated.

3,664,871
COATING REMOVAL METHOD

Eugene M. Fauber, Hammond, Ind., assignor to Atlantic Richfield Company, New York, N.Y.

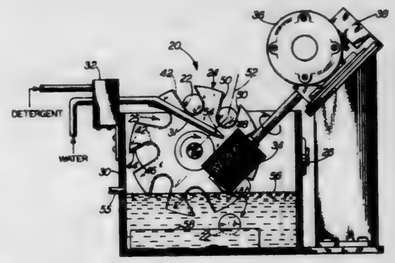
Filed Mar. 30, 1970, Ser. No. 23,978
Int. Cl. B08b *3/08*, *3/10*
U.S. Cl. 134—6 10 Claims

A method of removing solid surface materials from a solid substrate which comprises applying to the surface materials, preferably as a mixture, water and a relatively volatile, heavier-than-water, water-immiscible solvent for the surface material, preferably in a volumetric ratio of about one part water per part solvent. Water forms an overlying layer above the solvent such that the solvent softens the surface material and there is little solvent loss by vaporization. Subsequently the surface material can be removed by conventional means from a foundation or solid substrate left fit for resurfacing. A preferred solvent is carbon tetrachloride.

3,664,872
METHOD FOR SCRUBBING THIN, FRAGILE SLICES OF MATERIAL

Gerard A. Frank, Allentown; Karl F. Kipp, Nazareth, and Donald R. Oswald, Schnecksville, all of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y., by said Frank and said Kipp and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J., by said Oswald

Filed Sept. 18, 1970, Ser. No. 73,473
Int. Cl. B08b *7/00*
U.S. Cl. 134—6 5 Claims



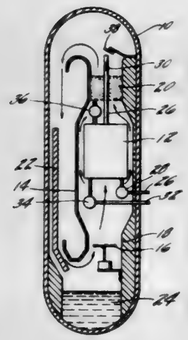
Simultaneously, both sides of a thin, fragile slice of brittle material, such as single-crystal silicon, are scrubbed. The slices are loaded, one at a time, into a rotatable disc having

pockets formed in the periphery thereof. The disc conveys the slices between two opposed counter-rotatable brushes within a detergent spray. After passing the rotatable brushes, the slices drop from the disc and float through the detergent bath to a container positioned below the disc.

3,664,873
SELF-REGULATING ENCAPSULATED FUEL CELL SYSTEM

Richard F. Buswell, Glastonbury; Peter G. Nicholas, South Windsor, and William J. Olsson, Glastonbury, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Apr. 21, 1969, Ser. No. 817,698
Int. Cl. H01m 27/14
U.S. Cl. 136—86 C 6 Claims



A hydrogen and oxygen fuel cell powerplant is disclosed wherein the fuel cell is encapsulated within a sealed pressure tank for undersea applications. The system is self-regulating to compensate for variations in the venting and leaking of reactant gases. Hydrogen gas in the capsule is reacted or burned, and the resulting water vapor is condensed and collected in a tank at the bottom of the capsule. A simple method of controlling the reactant purge flow has been devised to include essentially a pressure regulator in the oxygen purge line and an orifice in the hydrogen purge line.

3,664,874
TUNGSTEN CONTACTS ON SILICON SUBSTRATES

Joseph Epstein, Baltimore, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

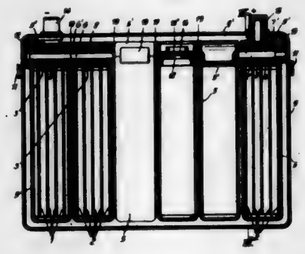
Filed Dec. 31, 1969, Ser. No. 889,422
Int. Cl. H01l 15/02
U.S. Cl. 136—89 10 Claims

Disclosed are a process whereby tungsten contact electrodes are formed on doped silicon substrates, such as integrated circuit chips and solar cells, and the resultant products. The method comprises depositing elemental tungsten on contact areas of doped silicon semiconductor devices, and thereafter processing the silicon devices to induce a chemical reaction between the tungsten and the silicon. The resulting tungsten contact electrodes thereby include a transition region at the interface of the tungsten electrode and silicon device comprising tungsten-silicon compounds which are physically and chemically bonded to, and form an integral part of, both the tungsten electrode material and the silicon semiconductor material. A lead is bonded directly to the tungsten electrode.

3,664,875
STORAGE BATTERY

Armin Graf, Lettenstrasse 32, 9500 Wil, Switzerland

Filed Dec. 23, 1969, Ser. No. 887,656
Claims priority, application Switzerland, Aug. 29, 1969, 13,299/69
Int. Cl. H01m 5/00, 1/06
U.S. Cl. 136—134 R 7 Claims

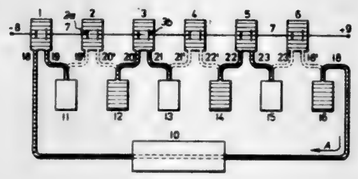


A storage battery, which due to its special lay-out makes it possible to arrange the cells connected in series or in parallel. A package of cells is mounted in a unitized manner upon connecting elements that are provided with polar bridges which simultaneously serve as holding devices for the electrodes. An extremely compact assembly is possible as the length of the storage batteries is shortened, a fact that is of importance in smaller motor cars, where the room available is scarce. In comparison to conventional storage batteries the weight is lower, the leaden bridges are shorter, so that less material are needed, by which the electrical resistance is also reduced.

3,664,876
BATTERY

Heinz Carl, Masenwinkel, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany

Filed May 20, 1970, Ser. No. 38,920
Claims priority, application Germany, May 21, 1969, P 19 25 861.8
Int. Cl. H01m 45/00
U.S. Cl. 136—160 4 Claims

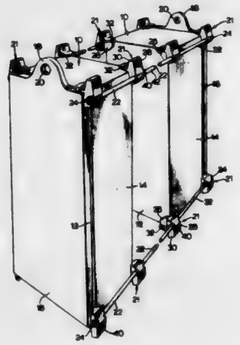


The cells of an electrochemical battery are connected electrically in series and interconnected serially for the circulation of electrolyte from cell to cell. Check valves of electrically insulating material are provided for breaking the electrolyte paths between the individual cells. In the method, the electrolyte is circulated first through every other cell while the path of electrolyte into and out of intermediate cells is broken. Then electrolyte is circulated through the intermediate cells while the electrolyte paths into and out of the "every other" cells are broken.

3,664,877
BATTERY OF CELLS AND MEANS OF ASSEMBLY

Frank Donald Shaw, c/o 143 Bermondsey Rd., Toronto 16, Ontario, Canada

Filed May 28, 1970, Ser. No. 41,240
Int. Cl. H01m 1/04
U.S. Cl. 136—171 8 Claims



An assembly of cells is formed of insulating spacers, one between each adjacent pair of cells, each spacer having a portion bearing against side walls of a pair of adjacent cells and additional portions bearing respectively against the adjacent corners of the side and front walls; each spacer has a channel outward of the cells which channel is parallel to the front walls thereof and the line of spacers are held together in compression by a threaded tie-rod and cooperating end plates.

3,664,878
PRESSURE RELIEF VENT VALVE FOR A FLUID TIGHT SEALED CONTAINER ESPECIALLY AN ALKALINE GALVANIC CELL

Helmut K. Amthor, Rocky River, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Aug. 27, 1969, Ser. No. 853,279
Int. Cl. H01m 1/06
U.S. Cl. 136—178 19 Claims

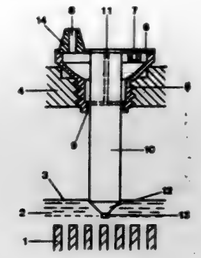
A pressure relief vent valve for a fluid-tight sealed container and especially a sealed alkaline galvanic cell, the pressure relief vent valve comprising a resilient deformable ball of an elastomeric material which is positioned to overlie a vent orifice provided within the container and a retainer means for maintaining the ball in place over the vent orifice and in contact with a valve seat provided around the peripheral edge portions of the vent orifice and for compressing and deforming the ball into a flattened configuration forming a normally fluid-tight seal between the ball and the valve seat.

3,664,879
VENT PLUG FOR A FILLING OPENING OF A CELL OF AN ELECTRIC STORAGE BATTERY

Bertil Leonart Olsson, Hallstorpsvagen 6, 212 32 Malmo, Sweden

Filed Aug. 24, 1970, Ser. No. 66,495
Claims priority, application Sweden, Sept. 12, 1969, 12,556/69
Int. Cl. H01m 7/00, 45/06
U.S. Cl. 136—182 1 Claim

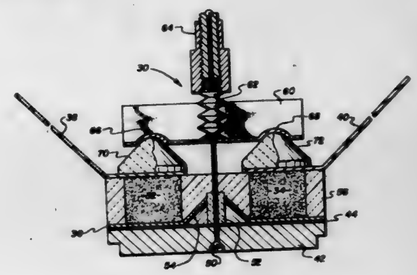
A vent plug for an automobile type battery is provided with both a means to add electrolyte without removing the plug and a light transmitting rod that is immersed in the electrolyte to show the proper level without removing the vent plug as the filling progresses.



3,664,880
MECHANICAL MOUNTING FOR A THERMOELECTRIC COUPLE

Norman C. Miller, Woodland Hills, Calif., assignor to North American Rockwell Corporation

Filed Apr. 14, 1969, Ser. No. 815,789
Int. Cl. H01v 1/02
U.S. Cl. 136—205 6 Claims

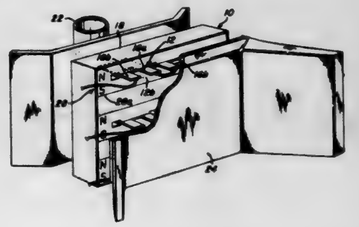


An improved mechanical mounting that places the thermoelectric elements of a thermoelectric couple under compressive loading to ensure good electric and thermal contact.

3,664,881
THERMOMAGNETIC DEVICE

Wesley Love, 2472 Observatory Road, Cincinnati, Ohio

Filed Aug. 26, 1969, Ser. No. 853,079
Int. Cl. H01v 3/00
U.S. Cl. 136—205 12 Claims



A thermomagnetic device for generating voltage from heat comprising at least one thin bifurcated ribbon of a thermoelectrically active neutral element or alloy material, the bifurcation therein being positioned substantially centrally on

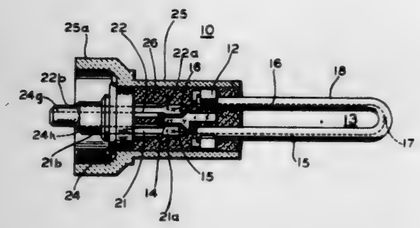
the ribbon, magnet means having a field which is at substantially right angles to the ribbon at the bifurcation, heat and cold source means adapted to form relatively warm and cold portions on the ribbon at the nonbifurcated and bifurcated ends thereof, respectively, and terminal means associated with the bifurcated end of the ribbon.

3,664,882

IMMERSION TEMPERATURE RESPONSIVE DEVICE

Richard James Hance, Philadelphia, Pa., assignor to Leeds & Northrup Company, Philadelphia, Pa.

Filed Sept. 24, 1969, Ser. No. 860,518
Int. Cl. H01v 1/02
U.S. Cl. 136—234 1 Claim



An expendable plug-in immersion temperature responsive assembly. This assembly has a body structure including an enlarged hollow body portion which provides a heat shield for the plug-in contact structure and which produces a buoyant force serving to indicate when the heat sensing portion is immersed to a proper depth in a bath of molt material.

3,664,883

PRE-PASSIVATION-ANODIC INHIBITOR-COLOR METHOD FOR DETECTING CRACKS IN METAL BODIES

Michael F. Henry, Schenectady, N.Y., assignor to General Electric Company

Filed Dec. 31, 1969, Ser. No. 889,693
Int. Cl. C23f 9/00; G01n 31/22
U.S. Cl. 148—6.2 12 Claims

A non-destructive color method for detecting cracks in a metal body by selective corrosion of the surface portion within the cracks which includes pre-passivation of the surface being tested to substantially reduce background indications. Specifically, a passivating electrolyte solution containing an anodic inhibitor is applied to the surface of the metal body to be tested and removed therefrom after a period of time sufficient to passivate its open surface portion but insufficient to significantly passivate the surface portion contained within cracks therein. A color-forming electrolyte indicating solution is then applied to the thus-passivated surface area. The color-forming electrolyte indicating solution contains halide ions, a color-forming indicator and an anodic inhibitor and is formulated so that it does not corrode the open surface portion of the metal body but is sufficiently reactive to corrode the surface portion within cracks therein resulting in the formation of metallic ions. The color-forming indicator is of the type which reacts with the thus formed metal ions to form a distinctive colored compound at the crack locations.

3,664,884

METHOD OF COLORING METALS BY THE APPLICATION OF HEAT

Lee D. Underwood, Salt Lake City, Utah, assignor to Concept Research Corporation, Salt Lake City, Utah

Filed Mar. 11, 1968, Ser. No. 711,846
Int. Cl. C23f 7/02
U.S. Cl. 148—6.3 7 Claims

A metallic composition, such as titanium or stainless steel, is heated to a pre-determined temperature under a shielding atmosphere. The heated metal is then allowed to cool in the presence of a cooling atmosphere of pre-determined composition, notably air. As a result, the surface of the metal acquires a stable, decorative color. The shade of the color is determined by the temperature of the metal when it is exposed to the cooling atmosphere. This temperature is indicated indirectly by the characteristic color of the metal being treated at particular temperatures. The tone of the color is determined by the compositions of the shielding and cooling atmospheres. Glaze is imparted to the colored surface by heating the surface of the metal during treatment to above its melting point prior to adjusting the temperature of the metal to its treatment temperature.

3,664,885

METHOD FOR PROTECTION OF EVAPORATOR HEATING ELEMENTS FROM CORROSION

Frida Abramovna Orlova, Leninsky prospekt, 41, kv. 334, Moscow; Georgy Vasilievich Seleznev, ulitsa Mayakovskogo, 10, kv. 10, and Petr Veniaminovich Bonjuk, prospekt 40 let Oktyabrya, 2, kv. 5, both of Dzerzhinsk, all of U.S.S.R.

Filed May 7, 1970, Ser. No. 35,564
Int. Cl. C23f 11/06
U.S. Cl. 148—6.14 4 Claims

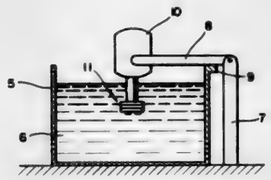
The corrosion of heating elements in evaporators for alkaline media is substantially prevented by using chromium steel containing preferably 25–28 percent chromium as the metal for the heating elements in the presence of 0.05 to 1g/1 of sodium chlorate.

3,664,886

METHOD FOR RUNNING IN METAL COMPONENTS

Kristian Stausholm Pedersen, Nordborg, Denmark, assignor to Danfoss A/S,, Nordborg, Denmark

Filed Feb. 2, 1970, Ser. No. 7,967
Claims priority, application Germany, Feb. 28, 1969, P 19 10 146.3
Int. Cl. C23f 7/08
U.S. Cl. 148—6.15 R 1 Claim



The invention relates to a method for running in metal components which move over, or mesh with each other, and to apparatus for performing the method. Parts are manufactured with normal tolerances and then are run together in a bath of material such as manganese phosphate. The phosphate material adheres to the parts as a solid coating which fills in low surface portions on the parts and is rubbed away, along with some metal, from the higher surface portions of the parts.

3,664,887

PROCESS FOR INCREASING CORROSION RESISTANCE OF CONVERSION COATED METAL

Thomas Clifford Atkins, Pottstown, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Apr. 14, 1969, Ser. No. 816,036
Int. Cl. C23f 17/00
U.S. Cl. 148—6.16 2 Claims

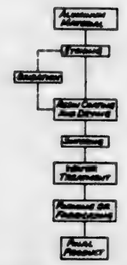
The corrosion resistance of conversion coated metal is increased by a process which comprises the steps of applying a phosphate conversion coating, rinsing with water, applying a chromate rinse, drying the metal surface, rinsing with deionized water, and drying.

3,664,888

METHOD OF RESIN COATING A METAL AND RESIN-COATED METAL PRODUCT THEREOF

Toshisaburo Oga, Kobe, and Ken Okazaki, Amagasaki, both of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Original application Oct. 4, 1966, Ser. No. 584,223, now Patent No. 3,563,785, dated Feb. 16, 1971. Divided and this application Feb. 24, 1970, Ser. No. 13,451
Claims priority, application Japan, Oct. 9, 1965, 40/61681; Nov. 27, 1965, 40/72577; 40/72578; Sept. 17, 1966, 41/61596; Sept. 22, 1966, 41/62764
Int. Cl. B44d 1/092
U.S. Cl. 148—6.27 10 Claims



The method of coating an aluminum or aluminum alloy surface with a resin wherein the surface is anodically etched in a halide solution to provide minute surface irregularities and cavities to adequately anchor the resin to be applied. The etched surface may be oxidized to provide greater anchorage and may also be heat treated with hot water or steam either prior or subsequent to resin coating to further enhance the resin bondage and service life.

3,664,889

TERNARY, QUATERNARY AND MORE COMPLEX ALLOYS OF BE-AL

William H. McCarthy, Los Altos; Raymond W. Fenn, Jr., Los Altos Hills, and Donald D. Crooks, San Jose, all of Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed May 26, 1969, Ser. No. 827,752
Int. Cl. C22f 1/04
U.S. Cl. 148—11.5 R 24 Claims

An alloy having extraordinarily high modulus to density and tensile strength to density ratios along with good workability and elongation properties is made from a beryllium-aluminum alloy powder having a complexity index between 1 and 5, as defined in U. S. Pat. No. 3,337,334. Magnesium or zinc or copper or one or more of several metals is blended with or deposited on the Be-Al powder; then the blend is consolidated without melting it and then worked, diffused, and heat-treated, all below the eutectic temperature. The result is that the magnesium or other component (or components) of the alloy is dissolved substantially only into the aluminum-rich phase while leaving the complexity index unchanged. Hence, the properties are superior to alloys having the same Be-Al composition with or without other ingredients, especially those in which the magnesium or other metal is melted into the Be-Al composition.



3,664,890

METHOD OF PRODUCING A DEEP DRAWN COMPOSITE ARTICLE

Joseph Winter, New Haven, Conn., assignor to Olin Corporation

Filed Feb. 20, 1970, Ser. No. 13,165
Int. Cl. C22f 1/04; B32b 15/20
U.S. Cl. 148—11.5 A 7 Claims

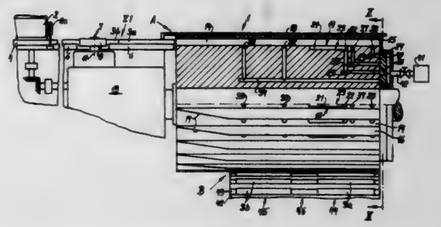
A method of producing a deep drawn article wherein earing is eliminated or substantially lessened comprising integrally bonding a first metallic component having characteristic 45° earing propensity after deep drawing to a second metallic component having characteristic 90° earing propensity after deep drawing, and deep drawing, and the article produced thereby.

3,664,891

APPARATUS FOR ASSEMBLING ROWS OF ROD-SHAPED ARTICLES

Bernhard Schubert, Hamburg; Alfred Schubert, Neuboernsen, and Herbert Berlin, Hamburg, all of Germany, assignors to Hauni-Werke Korber & Co., KG., Hamburg, Germany

Filed Mar. 11, 1970, Ser. No. 18,555
Claims priority, application Germany, Mar. 13, 1971, P 19 12 652.4
Int. Cl. B65g 46/26
U.S. Cl. 198—31 AA 23 Claims



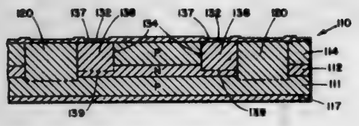
Apparatus for converting a single file of cigarette rod sections or like articles into two rows of parallel articles which move sideways comprises a pair of accelerating cams which engage alternate articles of the file and propel them, together with the preceding articles, into successive flutes of a continuously moving row forming drum. The latter is provided

with pneumatic braking means which arrests the pairs of articles in their flutes and with one or two pneumatic displacing units which move the front articles lengthwise away from the rear articles and/or vice versa so that the articles form two rows whose articles are transferred into successive flutes of a receiving drum.

3,664,892
PERMANENT MAGNET MATERIAL POWDERS HAVING SUPERIOR MAGNETIC CHARACTERISTICS
Joseph J. Becker, Schenectady, N.Y., assignor to General Electric Company
Original application Jan. 31, 1968, Ser. No. 701,840, now Patent No. 3,558,372. Divided and this application Sept. 17, 1970, Ser. No. 73,195
Int. Cl. H01f 1/06
U.S. Cl. 148—31.57 8 Claims

The coercive force of a cobalt-rare earth intermetallic compound is greatly enhanced by chemically treating the compound in finely divided form so as to smooth the surfaces of the individual particles.

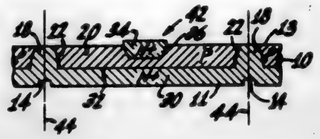
3,664,893
FABRICATION OF FOUR-LAYER SWITCH WITH CONTROLLED BREAKOVER VOLTAGE
Orville Phillip France, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Continuation of application Ser. No. 405,993, Oct. 23, 1964, now abandoned. This application Dec. 9, 1968, Ser. No. 785,026
Int. Cl. H01l 7/36, 3/00, 11/14
U.S. Cl. 148—175 1 Claim



In a four layer switching device, either as a discrete device or as an integrated circuit which may be part of a memory device, a method is disclosed for reliably and consistently controlling the breakover voltage of the control junction during manufacture by diffusing an impurity into the surface of a layer of the opposite conductivity type semiconductor material to form such junction and continuing such diffusing until a solid state solubility concentration of said impurity in the material of said layer, at a predetermined temperature, is reached at the surface of such layer.

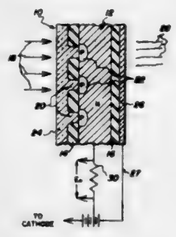
3,664,894
METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES HAVING HIGH PLANAR JUNCTION BREAKDOWN VOLTAGE
Willem Gerard Einthoven, Belle Meade, N.J., and Howard Kenneth Donnell, Hollcong, Pa., assignors to RCA Corporation
Filed Feb. 24, 1970, Ser. No. 13,605
Int. Cl. H01l 7/44
U.S. Cl. 148—186 4 Claims

A body of semiconductor material having first and second opposed faces, and containing a region of N type conductivity and a region of P type conductivity separated by a P-N junction. The N type region contains a central portion extending inward from one face partially through the body toward the second face, and a peripheral portion extending completely through the body with its resistivity increasing toward the second face relative to the remainder of the N type region adjacent the P-N junction. The peripheral portion encloses the P type region and extends the P-N junction



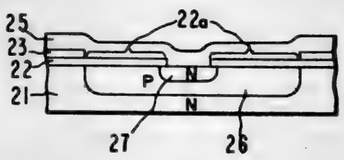
to the second face where it has the least chance for voltage breakdown.

3,664,895
METHOD OF FORMING A CAMERA TUBE DIODE ARRAY TARGET BY MASKING AND DIFFUSION
Donald L. Schaefer, and Ronald H. Wilson, both of Schenectady, N.Y., assignors to General Electric Company
Filed June 13, 1969, Ser. No. 833,111
Int. Cl. H01l 7/44
U.S. Cl. 148—187 6 Claims



Silicon diode array vidicon targets characterized by a silicon oxide insulator disposed between P-type conductivity regions forming discrete diodes within an N-type conductivity wafer have been made substantially immune to burn-in by the utilization of a 0,1 to 3 micron thick electrically conducting glass layer to leak charge formed on the insulator to the adjacent P-type conductivity regions of the target. Preferably the electronically conducting glass is an alkaline earth metal borate glass containing an oxide of a metal, e.g., iron, vanadium, cobalt, etc., providing ions of both a higher valence state and a lower valence state within the glass to permit regulation of the resistivity of the glass layer during fabrication of the bulk glass. To inhibit crazing of the glass layer while providing superior contact between the glass and the surface of the target, the glass layer is R.F. sputter deposited atop the target employing a sputtering atmosphere, e.g., argon, nitrogen, oxygen, selected to provide the desired resistivity in the deposited glass layer.

3,664,896
DEPOSITED SILICON DIFFUSION SOURCES
David M. Duncan, 403 Roosevelt Way, San Francisco, Calif.
Filed July 28, 1969, Ser. No. 845,373
Int. Cl. H01l 7/44
U.S. Cl. 148—187 3 Claims



Non-single crystal semiconductor material formed on a semiconductor substrate and separated from all but a portion

of the substrate by an intervening insulation layer contains at least one dopant and preferably two dopants of opposite conductivity type. Heating the substrate, together with the overlying insulation and non-single crystal semiconductor layers, drives the dopants contained in the non-single crystal semiconductor material into the underlying semiconductor substrate in such a manner as to form diodes or transistors.

3,664,897
SLURRY EXPLOSIVE COMPRISING AMMONIUM NITRATE AND ALUMINUM POWDER
Yoshikazu Wakazono, Zushi-shi; Terushige Ogawa, Yokohama-shi, and Yoshiyasu Otsuka, Niihama-shi, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Higashiki, Osaka
Filed Oct. 24, 1969, Ser. No. 869,324
Claims priority, application Japan, Oct. 31, 1968, 43/79809
Int. Cl. C06b 1/04
U.S. Cl. 149—38 12 Claims

A slurry explosive containing, as the main ingredients, (1) 40 to 80 percent by weight of ammonium nitrate or a mixture of ammonium nitrate and an alkali metal nitrate or a mixture of ammonium nitrate and an alkaline earth metal nitrate or a mixture of ammonium nitrate, an alkali metal nitrate and an alkaline earth metal nitrate, (2) 5 to 20 percent by weight of aluminum powder consisting of aluminum powder (a) which is manufactured by the ball milling method or the stamping method, and the particle size of which is 30 mesh (JIS sieve) or below; and aluminum powder (b) having no leafing property which is manufactured by the atomizing method or the graining method, the particle size of which is 30 mesh (JIS sieve) or below, the mixing ratio by weight of aluminum powder (a) and aluminum powder (b) being 50 to 20: 50 to 80, and (3) 5 to 25 percent by weight of water.

3,664,898
PYROTECHNIC COMPOSITION
Francis R. Taylor, Mt. Arlington; Patricia J. Leader, Rockaway, and Raymond P. Westerdahl, Denville, all of N.J., assignors to The United States of America as represented by the Secretary of the Army
Filed Aug. 4, 1969, Ser. No. 847,389
Int. Cl. C06b 15/00
U.S. Cl. 149—41 31 Claims

The addition of transition metals or oxides or salts thereof, to pyrotechnic compositions containing conventional fuels and oxidizers, to greatly improve the luminous efficiency, average luminous output and propagative burning characteristics of such pyrotechnic compositions. The elements and compounds which are added also reduce the burning rate and lower the ignition temperature of such pyrotechnic compositions.

3,664,899
REMOVAL OF ORGANIC POLYMERIC FILMS FROM A SUBSTRATE
Archibald N. Wright, Schenectady, and Richard C. Merrill, Glens Falls, both of N.Y., assignors to General Electric Company
Continuation-in-part of application Ser. No. 731,090, May 29, 1968. This application Dec. 29, 1969, Ser. No. 888,380
Int. Cl. B29c 17/08; C23b 3/04
U.S. Cl. 156—8 11 Claims

A solvent free method for removing thin organic polymeric film from a substrate is provided utilizing ultraviolet light at wavelengths below 3,500 Angstroms. The method also can be employed to effect the direct configurational removal of



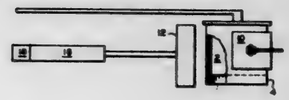
organic polymeric film from etchable substrates to provide for the fabrication of microelectronic circuits.

3,664,900
METHOD OF TREATING A LENGTH OF MATERIAL
Kenneth Cuckson, Derby, and Gerald W. Chapman, Ockbrook, both of England, assignors to Rolls-Royce Limited, Derbyshire, England
Filed May 1, 1969, Ser. No. 820,973
Int. Cl. C01b 31/07; B65h 81/00
U.S. Cl. 156—174 5 Claims



A method of treating a length of material comprising winding the material onto a plurality of flanged bobbins, disposing the bobbins coaxially end to end in a line, and passing the line of flanged bobbins into, through, and out of a treatment chamber, the treatment chamber having inlet and outlet conduits through which the bobbins pass and to which the flanges of bobbins are substantially sealed throughout their passage therethrough.

3,664,901
APPARATUS FOR SEALING PAPERBOARD CONTAINERS
Jerry W. Young, Kansas City, Mo., assignor to Phillips Petroleum Company
Filed May 28, 1970, Ser. No. 41,289
Int. Cl. B65b 65/02
U.S. Cl. 156—443 2 Claims

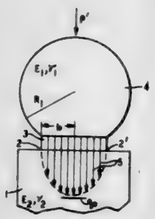


A method and apparatus for installing a paperboard blank on a downwardly hanging mandrel of a turret-type container forming machine.

3,664,902
NONUNIFORM PRESSURE BONDING METHOD

Emmanuel P. Papadakis, Acton, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 9, 1970, Ser. No. 1,711
Int. Cl. B30b 15/34; B32b 31/20
U.S. Cl. 156—580 7 Claims

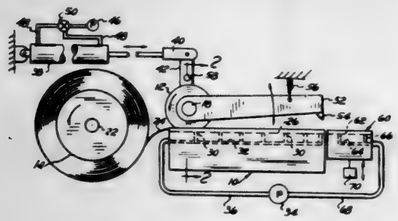


A method is described which utilizes an elastic body of curved surface area to bond large area slabs to substrates. The bonding agent is applied to the interface between the slab and substrate and enough pressure is applied to the complaint body to flatten it out over the entire area of the slab. A pressure gradient will result along the interface which will force the bonding agent to flow toward the edges of the slab. An extremely thin, highly uniform bond is therefore achieved.

3,664,903
SPLICING TAPE FEED MECHANISM

David D. McCorkle, Troy, Mich., assignor to Steredyne, Inc., Troy, Mich.

Filed Sept. 12, 1969, Ser. No. 857,345
Int. Cl. B31f 5/06; G03d 15/04
U.S. Cl. 156—506 3 Claims



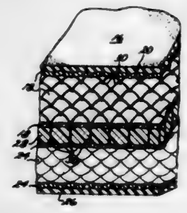
A device for feeding splicing tape from a roll and cutting it to length comprises a vacuum-assisted V-grooved guide slot along which the tape is pressed and driven by a similarly shaped drive roller. The groove produces a longitudinal crease in the tape which prevents the tape from rewinding. A cutter arm is actuated by the same power source as the drive roller to cut the tape to predetermined lengths during the intervals between the incremental tape advancement along the groove.

3,664,904
SELF-SEALING STRUCTURE FOR USE AS A FLUID BARRIER IN CONTAINERS

Richard L. Cook, Flagstaff, Ariz., assignor to Marshall Industries, San Marino, Calif.

Filed Mar. 4, 1970, Ser. No. 16,471
Int. Cl. B32b 3/06; B65d 37/00
U.S. Cl. 161—50 23 Claims

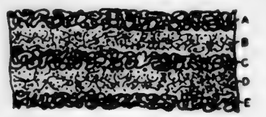
A self-sealing structure adapted for use in a container or the like as a fluid barrier. The structure comprises sealant material adapted to swell in the presence of certain fluids and is interposed between inner and outer layers, at least one of the layers being resiliently expansible to accommodate such swelling. Tension means extending between the layers limit the amount of expansion. In one embodiment the inner layer is pervious to the contained fluid, and the contained fluid is one which swells the sealant material. The swelled sealant material and the resilient layer or layers develop an internal pressure which tends to urge the sealant material toward any puncture of the structure. In another embodiment, the sealant material is caused to swell by exposure thereof to a swelling agent other than the contained fluid.



3,664,905
NON-WOVEN NEEDLED FIBROUS STRUCTURE

Wilhelm August Schuster, Frankfurt/Main, Germany, assignor to Filztuchverwaltungs-Gesellschaft mit, Frankfurt/Main, Germany

Continuation-in-part of application Ser. No. 512,407, Dec. 8, 1965, now abandoned. This application Aug. 27, 1969, Ser. No. 853,362
Claims priority, application Germany, Feb. 17, 1965, F 45271
Int. Cl. B32b 5/06, 5/12, 31/22
U.S. Cl. 161—59 8 Claims



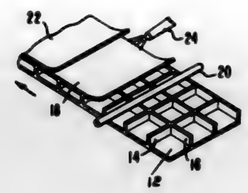
A method of making a web suitable for use as papermakers' felt including superposing a plurality of fibrous batts such that substantially parallel fibers in one batt extend in transverse direction to substantially parallel fibers in an adjacent batt, needling the superposed batts to form a laminated web, stretching the web to tension the fibers, applying a coating of adhesive to the surface of at least one side of the web, compressing the web, and subjecting the web to a jet of compressed air to break coherent films of the adhesive into globules leaving a portion of the adhesive adhered at points of contact and intersection of fibers on the surface of the web and driving the remaining globules into the web to adhere at points of contact of individual fibers near said surface.

3,664,906
STRUCTURAL PANEL OF RIBBED STRUCTURES OF THERMOPLASTIC RESIN

Martval J. Hartig, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 26, 1970, Ser. No. 10,697
Int. Cl. B32b 3/12
U.S. Cl. 161—68 3 Claims

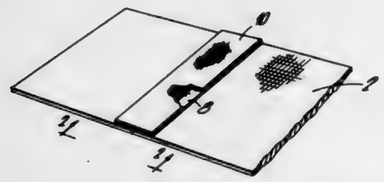
Molten thermoplastic resin, e.g., polyethylene, is forced into a pattern on the surface of a rotating roll to form a web of ribs usually integrally molded to a continuous film; this web is of low density and has a high strength-to-weight ratio so as to be used for structural purposes and packaging.



3,664,907
INDUSTRIAL CONVEYOR BELTS

Kenneth R. Price, Albany, N.Y., assignor to Huyck Corporation, Rensselaer, N.Y.

Filed Feb. 2, 1970, Ser. No. 7,661
Int. Cl. B32b 3/06, 3/10, 27/38
U.S. Cl. 161—89 14 Claims



This invention relates to bonds, and processes for making same, which are useful in the manufacture, joining, and repair of industrial conveyor belts, and endless cloth used in paper manufacturing machinery, and, more particularly, to a structurally integrated, yet pervious, laminated structure comprising a first layer intermediate and continuously bonded to second and third layers. The resultant porous laminate manufactured in accordance with the teachings of the present invention may be used in various applications related to industrial conveyor belts or papermakers clothing. For example, it may be employed to form a seam for or a patch in papermakers fabrics useful in the forming section of the typical fourdrinier papermaking machine.

3,664,908
METHOD OF MAKING MOLDED LAMINATE PACKING

Guy E. Horvath, Williamsville, N.Y., assignor to Hercules Packing Corporation, Alden, N.Y.

Filed June 25, 1969, Ser. No. 836,252
Int. Cl. B32b 3/10
U.S. Cl. 161—113 16 Claims



A molded laminate packing composed of a plurality of coated fabric layers having a uniform disposition or arrangement of such fabric layers so as to achieve improved physical properties for such packing and a method for preparing such packing.

3,664,909
NEEDLED RESIN FIBROUS ARTICLE

Richard H. Ackley, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 25, 1970, Ser. No. 22,534
Int. Cl. B32b 5/06, 5/26, 5/28
U.S. Cl. 161—141 11 Claims

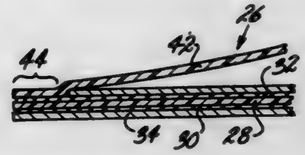


Fibrous mats comprised of unstranded filaments that are free to move relative to each other and fibrous mats comprised of fibrous strands that are free to move relative to each other, as well as combinations thereof, are impregnated with resin and subsequently molded into resinous products.

3,664,910
IDENTIFYING DEVICE FOR DOCUMENTS

Manuel E. Hollie, 27201 Orange Ave., Redlands, Calif.

Filed Mar. 30, 1970, Ser. No. 23,622
Int. Cl. B32b 3/02, 7/06
U.S. Cl. 161—147 1 Claim



A document identification and protection system in which a stamplike patch is adhesively attached to a document such as a check, credit purchase invoice, and the like at the time of making the purchase, or writing the check. After peeling away a protective backing from the patch, a fingerprint is impressed on the exposed tacky surface, and a transparent cover sheet is then laid down over the print and adhered to the tacky surface, to protect and preserve the print. If the document is later questioned, the fingerprint can be photographed through the transparent cover sheet.

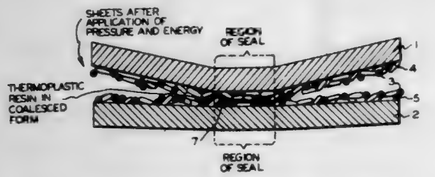
3,664,911
DIAPHRAGM FOR SOUND INSTRUMENT AND METHOD FOR PRODUCING SAME

Yoshikazu Takabayashi, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Dec. 23, 1969, Ser. No. 887,800
Claims priority, application Japan, Dec. 30, 1968, 43/96580
Int. Cl. B32b 5/16, 5/18, 5/26
U.S. Cl. 161—160 2 Claims

A diaphragm for sound instrument and method for producing same in which the diaphragm comprises an assembly of foamed granules of thermoplastic resin, binder layer surrounding the foamed granules and connecting them together to form an integral body of the diaphragm and a fibrous reinforcing material applied on at least one surface of said body and embedded in the binder to form a reinforcing layer.

3,664,912
SELF-BONDABLE PRINTING PAPER
Robert A. Olson, York New Salem, Pa., assignor to P. H. Glatfelter Company, Spring Grove, Pa.
Filed May 29, 1969, Ser. No. 828,974
Int. Cl. B32b 3/26, 27/08, 27/30
U.S. Cl. 161—161 20 Claims



The invention is directed to coated papers, which has been coated with a new and improved coating composition for imparting thereto (1) the printing properties of typical clay-coated printing papers and (2) heat sealing properties found in plastic films and plastic film-laminated papers. This paper comprises a white opaque paper substrate and an applied white opaque coating composition comprising an aqueous dispersion of 5–20 percent resinous binder, 15–75 percent opaque pigment such as inorganic pigment, and 20–65 percent discrete thermoplastic resin particles with a coalescing range of at least 140° F., and preferably 140°–400° F., in which the above-listed percentages of components are based on the dry weight of the total dry solids content of the coating composition.

3,664,913
INDICIA APPLYING ARTICLE AND METHOD
Ralph A. Ratcliff, 1300 Sunnyslope Ave., Belmont, Calif.
Filed May 31, 1968, Ser. No. 733,684
Int. Cl. C09j 1/00; C23f 1/02
U.S. Cl. 161—167 7 Claims



An articles and method for applying identifying or decorative indicia to a parent body, such as the metal surface of an industrial tool or the like. Indicia forming material, for removing a portion of the parent body or for building up such parent body in a predetermined pattern, is carried in a self-supporting unit which isolates the indicia forming material prior to use. Etching acid solutions thickened to a gel or paste-like consistency so as to be substantially self-supporting, or substances capable of bonding themselves to the parent body, are employed to react with the parent body to form the desired indicia thereon.

3,664,914
BIFILAR COMPOUND FILAMENTS OF POLYAMIDES
Harry Kubitzek; Karl-August Essig; Bela Von Falkai; Alfred Reichle, and Ferdinand Bodesheim, all of Dormagen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Jan. 26, 1967, Ser. No. 612,047
Claims priority, application Germany, Jan. 28, 1966, F 48283; Feb. 24, 1966, F 48511
Int. Cl. B29f 3/10; D02g 3/00
U.S. Cl. 161—173 5 Claims

Bicomponent filaments having a slight non-linear crimp are prepared by spinning a conjugated filament from polyaurolactam and a second linear, readily crystallizable homo- or co-polyamide, stretching the filament, and then subjecting it to a heat treatment.

3,664,915
SEALING MATERIAL
Wilbert L. Gore, Newark, Del., assignor to W. L. Gore & Associates, Inc.
Filed Oct. 3, 1969, Ser. No. 863,446
Int. Cl. B29d 7/24; B32b 27/02, 27/32
U.S. Cl. 161—164 9 Claims

Polymers of tetrafluoroethylene are converted into shaped articles which have a uniform cross-section along one axis, such as ribbons or sheets, which are then processed to produce a fibrillated expanded material. An expanded article or material of this invention is one which has been processed to produce a new article or material of the same uniformity and cross-section shape as the former, but having a lesser specific gravity than it possessed initially. The term "expanded" as defined herein means lesser specific gravity. In producing the articles of this invention, the fibrillar structures of the molecules within the article are expanded under conditions in which the article is stretched without causing significant decreases in the width or the thickness of the article. In so doing, the specific gravity of the resulting article is substantially and valuably decreased. Less of the material is needed in effecting formations of seals such as used in the formation of pipe joints. The resultant materials are advantageously less slippery and more self-cohesive than the initial material. Further, they are more readily handled and can be used with ease at low temperatures.

3,664,916
POLYAMIDE-BASED COMPOSITE FILAMENTS
Rene Grellier, Chavanoz (Isere), and Claude Guyot, Besancon (Doubs), both of France, assignors to Societa Rhodiaceta, Paris, France
Filed Nov. 19, 1969, Ser. No. 878,184
Claims priority, application France, Sept. 25, 1969, 6932801
Int. Cl. D02g 3/02
U.S. Cl. 161—173 7 Claims

A composite yarn comprising hexamethylene diamonium polyadipate or polyhexamethylene adipamide and a copolyamide prepared from hexamethylene diamonium adipate and a salt derived from a diacid containing six to 12 carbon atoms and a cycloalkane diamine has a latent crimp and is suitable for use in the manufacture of woven fabrics, knitted fabrics or carpets.

3,664,917
TWO-COMPONENT POLYAMIDE YARNS
Rene Grellier, Chavanoz, and Claude Guyot, Besancon, both of France, assignors to Societe Rhodiaceda, Paris, France
Filed Nov. 24, 1969, Ser. No. 879,594
Claims priority, application France, Oct. 20, 1969, 6935853; Nov. 25, 1968, 175207
Int. Cl. D02g 3/02
U.S. Cl. 161—173 7 Claims

A composite yarn comprising (a) hexamethylene polyadipamide and (b) a ternary copolyamide prepared from hexamethylenediammonium adipate, hexamethylenediammonium terephthalate and an additional salt derived from an aliphatic dicarboxylic acid containing six to 12 carbon atoms and a hexamethylenediamine or a cycloalkane diamine has a latent crimp which can be developed by heat and is particularly suitable for use in the manufacture of hosiery.

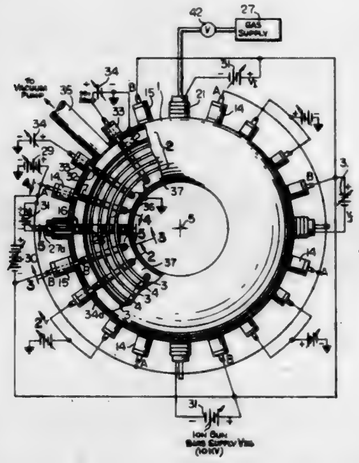
3,664,918
VAPOR PHASE PULPING OF WATER SATURATED LIGNOCELLULOSIC MATERIALS
David W. Clayton, Hudson, and Asahi Sakai, St. Laurent, Quebec, both of Canada, assignors to Pulp and Paper Research Institute of Canada, Pointe Claire, Quebec, Canada
Filed Dec. 9, 1969, Ser. No. 883,470
Int. Cl. D21c 3/26
U.S. Cl. 162—19 6 Claims

Impregnating a water-saturated lignocellulosic material with an alkaline cooking liquor at a temperature below about 110° C., removing excess cooling liquor from the impregnated material, and delignifying the impregnated material by rapidly heating with steam.

3,664,919
VAPOR PHASE POLYSULPHIDE LIQUID PULPING OF LIGNOCELLULOSIC MATERIALS
David W. Clayton, Hudson, Quebec, and Asahi Sakai, St.-Laurent, Quebec, both of Canada, assignors to Pulp and Paper Research Institute of Canada, Pointe Claire, Quebec, Canada
Filed Dec. 9, 1969, Ser. No. 883,475. The portion of the term of the patent subsequent to May 9, 1989, has been disclaimed.
Int. Cl. D21c 3/26
U.S. Cl. 162—19 9 Claims

Impregnating lignocellulosic material, previously saturated with water, in a first stage with an alkaline polysulphide cooking liquor, removing excess liquor, and then cooking the impregnated material in a second stage by rapidly heating with steam.

3,664,920
ELECTROSTATIC CONTAINMENT IN FUSION REACTORS
Robert L. Hirsch, Potomac, Md., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed June 21, 1968, Ser. No. 738,940
Int. Cl. G21b 1/00
U.S. Cl. 176—1 9 Claims

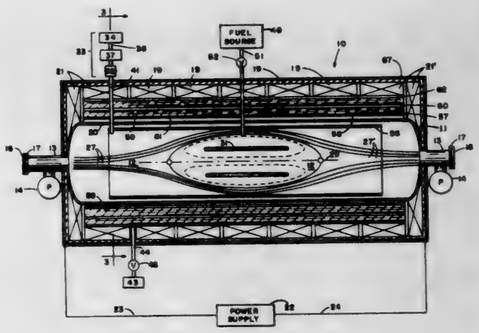


Apparatus is disclosed for producing controlled nuclear-fusion reactions. A generally circular cathode has concentrically positioned therein a generally circular anode having multiple openings for the free flow of electrons therethrough. The anode encloses a volume free of tangible structure. An electron-emissive electrode in the interelectrode space between the anode and cathode emits electrons which penetrate the anode and enter the central volume, establishing a negative space charge therein. Ions of a fusion reacting gas are injected at a location within the volume, at a potential less than that applied to the anode, and are focused toward a common cross-over point in the central portion thereof. The magnitude of the negative space charge as well as the energies of the ions introduced into the volume are so controlled that collisions of the ions at or near the cross-over point result in the fusing thereof.

Electrons introduced in the interelectrode space traverse the cathodic space, thereby making a number of trips through the anode.

In this invention, the anode structure is effectively shielded such that electron interception thereby with consequent high energy electron losses can be made to approach zero. This is accomplished by creating a magnetic field around the portions of the anode which define the openings, this field serving to shield the conducting portions thereof.

3,664,921
PROTON E-LAYER ASTRON FOR PRODUCING CONTROLLED FUSION REACTIONS
Nicholas C. Christofilos, Hayward, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Oct. 16, 1969, Ser. No. 868,287
Int. Cl. G21b 1/00
U.S. Cl. 176—4 11 Claims

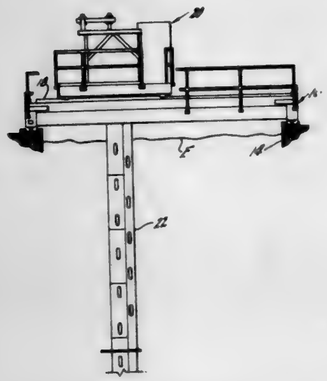


High energy charged particles (molecular ions) are injected and trapped in a linear axial magnetic mirror containment field to produce a cylindrical E-layer of relativistic ions, e.g., protons rotating about the axis of said field. The magnetic field of said E-layer interacts with the mirror field to produce a pattern of closed magnetic field lines defining a charged particle containment zone into which neutral fuel materials may be introduced to be ionized by interaction with the E-layer particles forming a high temperature gas or plasma therein.

3,664,922
IN-SERVICE INSPECTION OF REACTOR VESSEL WELDS
Gordon A. Diwinsky, Windsor, and Richard P. Kosky, East Granby, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.
Filed Dec. 18, 1969, Ser. No. 886,231
Int. Cl. G21c 19/00
U.S. Cl. 176—19 R 8 Claims

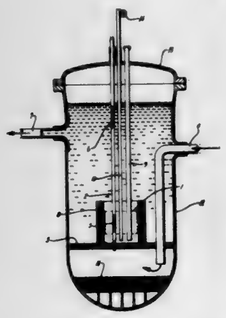
Method and apparatus for in-service inspection of nuclear reactor vessel welds. A support mechanism housing an inspection device is positioned within the reactor vessel after

the internals thereof are removed. The hoist mechanism for the refueling device is then used to manipulate the inspection device from its support mechanism to the weld areas to be inspected. The inspection device includes means for remote



visual and volumetric examination of the cladding and weld surfaces, respectively, as well as a displacement indicating means for determining the position of the inspection device with respect to the weld being inspected.

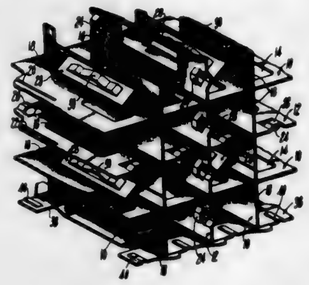
3,664,923
FAST NEUTRONIC REACTOR UTILIZING PLUTONIUM 240 FUEL
Thomas J. Connolly, 855 Lathrop Drive, Stanford, Calif.
Filed Sept. 11, 1968, Ser. No. 758,974
Int. Cl. G21c *1/02*
U.S. Cl. 176—40 2 Claims



A fast neutron fission chain reactor utilizes plutonium enriched in the isotope plutonium 240 as its principal fuel. A novel reactor concept employs a core comprising a critical mass of the subject isotope in combination with other isotopes, together with specially adapted control, safety, and related devices.

3,664,924
NUCLEAR REACTOR SPRING FERRULE SPACER GRID
Donald M. Krawiec, Thompsonville, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed June 24, 1968, Ser. No. 748,149
Int. Cl. G21c *3/34*
U.S. Cl. 176—78 14 Claims

A bimetallic spacer grid for nuclear reactors comprising a plurality of spacer elements and spring ferrules which are mated to form the grid assembly. The spacer elements are comprised of a material having a characteristic low neutron capture cross section and are formed with outwardly extending arches while the spring ferrules are formed from a material which has better stress relaxation qualities than the materi-



al employed for the spacer elements and which will thus not suffer a substantial decrease in resiliency due to prolonged exposure to intensive radiation. The spring ferrules and spacer element arches cooperate to support each fuel element at five points of contact.

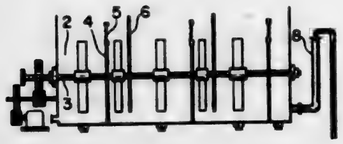
3,664,925
CLINICALLY ACTIVE BOVINE GROWTH HORMONE FRACTION
Martin Sonenberg, 345 East 68th St., New York, N.Y., and Nobuyuki Yamasaki, Faculty of Agriculture, Ehime University, Tarumi-cho, 118, Matsuyama City, Japan
Filed Feb. 20, 1970, Ser. No. 13,162
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 6 Claims

A clinically active component (TBGH-d) of a tryptic digest of bovine growth hormone (BGH) found to be homogeneous by disc electrophoresis and sedimentation equilibrium and having substantially the same molecular weight and amino acid composition as BGH was separated into two fractions, A-I and A-II, by dextran gel filtration in 50 percent acetic acid. The amino acid analysis of the A-I and A-II fractions accounted for all the amino acids in the TBGH-d. The biological activity of the A-II fraction was found to be about 10–30 percent of TBGH-d. This fraction, having a molecular weight of about 5,000 and an amino acid content or chain length of 38 amino acids, appears to exhibit human growth hormone-like activity. This fraction also appears to have wider applicability than simply being useful for the acceleration of somatic growth in humans. For example, this fraction would appear to have utility in promoting increased function and growth in an impaired liver and in effecting tissue regeneration, such as the promotion of healing of stress ulcers. It would also appear that this fraction has utility in the stimulation of protein synthesis to increase immunological competence and in wound and fracture healing. Also, it would appear that this fraction has utility in non-human applications, e.g., for increasing milk production, for increasing wool production and for accelerating animal growth.

3,664,926
CRYSTALLIZATION OF L-ASPARAGINASE
Roy W. Grabner, North Plainfield; Morris Zimmerrman, Edison; William L. Subjack, Rahway, and Daniel F. Veber, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Feb. 26, 1970, Ser. No. 14,650
Int. Cl. C07g *7/02*
U.S. Cl. 195—66 A 9 Claims

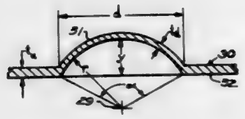
L-asparaginase is obtained in crystalline form from aqueous solutions thereof by the use of a water miscible, polar organic solvent and pH control.

3,664,927
APPARATUS FOR CONTINUOUS HYDROLYSIS OF RAFFINOSE
Junichi Shimizu, and Toshio Kaga, both of Tokyo, Japan, assignors to Hokkaido Sugar Company, Ltd., Tokyo, Japan
Filed Sept. 25, 1969, Ser. No. 860,876
Claims priority, application Japan, Oct. 7, 1968, 43/72676
Int. Cl. C12b *1/02*
U.S. Cl. 195—141 4 Claims



An apparatus comprising a U-shaped open reaction vessel which is separated into a plurality of chambers by boundary plates which are so constructed as to allow sugar syrup or juice to overflow through replaceable screen nets fitted at the upper parts of the boundary plates; and said chambers are equipped with an interfering plate and each chamber is equipped with stirrers between the interfering and boundary plates.

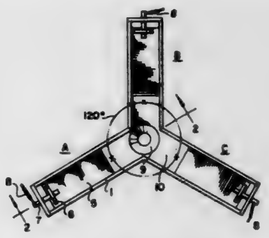
3,664,928
DIMPLED HEAT TRANSFER WALLS FOR DISTILLATION APPARATUS
Ernest Roth Roberts, Claremont, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.
Filed Dec. 15, 1969, Ser. No. 885,116
Int. Cl. B01d *3/08*; C02b *1/04*; B01d *3/28*, *1/22*, *3/00*, *1/00*
U.S. Cl. 202—236 13 Claims



According to the present disclosure, a heat transfer wall of a distillation apparatus is dimpled so that a plurality of dimples protrude from the evaporating surface of the heat transfer wall. The dimples are preferrably arranged so that tortuous flow paths are formed between the dimples.

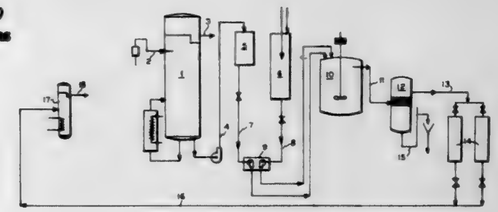
3,664,929
ELECTROTHERMALLY CONCENTRATING AN AQUEOUS ELECTROLYTE
Arnold George White, Trail, British Columbia; Thomas Edward Smith, Rossland, British Columbia; Lyall Campbell Work, Trinity Bay, Newfoundland, and Willard Wallace Miller, Rossland, British Columbia, all of Canada, assignors to Cominco Ltd., Montreal, Quebec, Canada
Filed Aug. 8, 1969, Ser. No. 848,486
Claims priority, application Canada, Aug. 9, 1968, 027,209
Int. Cl. C10b *3/00*
U.S. Cl. 203—10 6 Claims

There is described an electrothermal cell provided with a region of reduced cross-sectional area, measured at right angles to the current path between the electrodes, compared with the cross-sectional area of the cell in the region of the electrodes. Such a cell displays good characteristics during electrolysis. In particularly there is little vapor formation in



the region of the electrodes. A process of heating or concentration using the cell is also described.

3,664,930
PROCESS FOR THE REGENERATION OF ALKANOLAMINES BY DISTILLATION, ALKALI HYDROXIDE TREATMENT, HEAT, PHASE SEPARATION AND DISTILLATION
Fernand Pottiez, Ostende, and Raphael Verbeest, Roulers, both of Belgium, assignors to UCB, Societe Anonmy
Filed Mar. 11, 1969, Ser. No. 806,270
Claims priority, application Great Britain, Mar. 14, 1968, 12,506/68
Int. Cl. B01d *3/34*; C07c *91/04*
U.S. Cl. 203—37 12 Claims

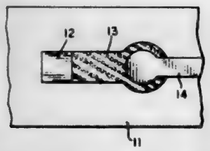


A process for the regeneration of dialkanolamines from their thermostable degradation products with impurities of gases, formed during the washing of said gases with dialkanolamine-containing washing liquors, which comprises adding to the concentrated distillation residues containing said degradation products a 15 to 25% aqueous sodium hydroxide solution or a 25 to 35% aqueous potassium hydroxide solution, either containing the stoichiometric quantity of 100% NaOH or KOH, heating to boiling for at least 15 minutes whereupon two phases are obtained, an aqueous and an organic, decanting the latter and distilling it to eliminate alkali and excess water and recycling the regenerated alkanolamine to the gases washing stage.

3,664,931
METHOD FOR FABRICATION OF THIN FILM CAPACITOR
Dieter Gerstenberg, 448 Benner Rd., Allentown, Pa.
Continuation of application Ser. No. 445,895, Apr. 6, 1965, now abandoned. This application July 27, 1970, Ser. No. 58,434
Int. Cl. C23f *17/00*; C23c *15/00*; C23b *9/00*
U.S. Cl. 204—38 A 5 Claims

Thin film capacitors including a dielectric layer obtained by anodizing a layer obtained by sputtering a film-forming

metal in a nitrogen or carbon containing ambient at partial pressures ranging from 10^{-3} to 10^{-5} torr. manifest marked



improvement with regard to initial leakage and life test failure as compared with conventional prior art capacitors.

3,664,932

OBJECTS OF ALUMINUM AND ALLOYS OF ALUMINUM HAVING COLORED COATINGS AND PROCESS

Jos Patrie, Grenoble, France, assignor to Cegedur GP, Paris, France

Filed Dec. 3, 1969, Ser. No. 881,846
Claims priority, application France, Dec. 6, 1968, 176899
Int. Cl. C23j 5/50
U.S. Cl. 204—35 N 18 Claims

The process for providing colored coatings on aluminum and alloys of aluminum in which the surface is first anodized to form a porous layer and colored particles of metal compound are deposited in the porous layer by alternating current electrolysis with the object mounted as an electrode in an electrolyte containing the salt of the metal, and then subjecting the deposited particles to dissolution by mounting the object as an anode for direct or rectified current electrolysis until a color of the desired value is secured.

3,664,933

PROCESS FOR ACID COPPER PLATING OF ZINC

Richard J. Clauss, Allen Park, Mich., assignor to Udylite Corporation, Warren, Mich.

Filed May 19, 1969, Ser. No. 834,909
Int. Cl. C23f 17/00; C23c 3/00
U.S. Cl. 204—38 S 6 Claims

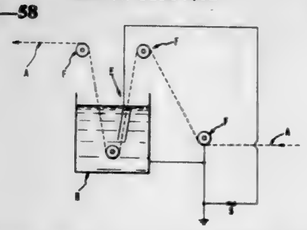
A process for the acid copper plating of zinc, particularly complex zinc parts having recessed areas, wherein a displacement copper deposit is formed on the zinc surface by treatment with an immersion copper plating bath and, thereafter, the thus-plated surface is electroplated with copper from an acid copper electroplating bath.

3,664,934

PROCESS FOR THE PREPARATION OF AN ALUMINUM SUPPORT FOR PRESENSITIZED PLANOGRAPHIC PRINTING PLATES

Siegfried Raether, Idstein/Taunus, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Continuation-in-part of application Ser. No. 753,493, Aug. 19, 1968, now abandoned, which is a division of application Ser. No. 535,927, Mar. 21, 1966, now Patent No. 3,481,798.
This application Aug. 24, 1970, Ser. No. 66,584
Claims priority, application Germany, Mar. 23, 1965, P 15 46 785.3
Int. Cl. C23b 9/02
U.S. Cl. 204—58 9 Claims



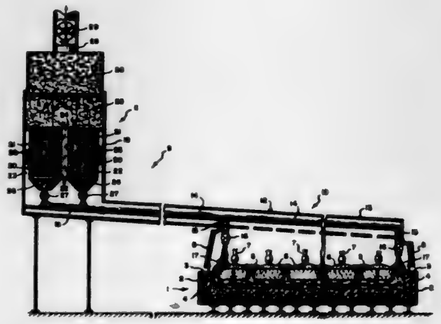
This invention relates to a process for the preparation of an improved bohmite coating on aluminum which comprises treating the aluminum with water at an effective elevated temperature while passing a galvanic electric current of low voltage from the aluminum as one electrode through the water.

3,664,935

EFFLUENT FILTERING PROCESS AND APPARATUS FOR ALUMINUM REDUCTION CELL

Arthur F. Johnson, 203 Creole Lane, Franklin Lakes, N.J.

Continuation-in-part of application Ser. No. 688,578, Dec. 6, 1967, now Patent No. 3,575,827, which is a continuation-in-part of application Ser. No. 614,294, Feb. 6, 1967, now Patent No. 3,470,075, which is a continuation-in-part of application Ser. No. 607,330, Jan. 4, 1967, now Patent No. 3,434,958, which is a continuation-in-part of application Ser. No. 550,653, May 17, 1966, now Patent No. 3,501,386, which is a continuation-in-part of application Ser. No. 528,503, Feb. 18, 1966, now Patent No. 3,434,957. This application Jan. 21, 1971, Ser. No. 108,333
Int. Cl. C22d 3/12, 3/02
U.S. Cl. 204—67 23 Claims



The process and apparatus for filtering effluent issuing from a metallurgical furnace by passing the effluent through a sorbent. The furnace may be an aluminum reduction cell with the sorbent being alumina which is being fed to the cell. With an aluminum reduction cell, the effluent is first fed through a bed of alumina which is kept in a fluidized state by the effluent passing therethrough. The effluent from the fluidized bed is then passed through a non-fluidized wall of alumina which further filters the effluent and captures the alumina dust escaping from the fluidized bed. During this filtering, the alumina in the non-fluidized wall with the effluent contained therein is fed to the fluidized bed of alumina. In turn, the alumina in the fluidized bed together with the effluent contained therein is fed back to the cell from which effluent originally issued.

3,664,936

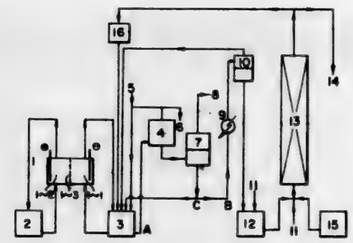
ELECTROLYTIC HYDRODIMERIZATION OF ACRYLONITRILE

Masasi Seko, Tokyo; Akira Yoshiyama, Nobeoka-shi; Yasunobu Takahashi, Nobeoka-shi; Shigetoshi Seta, Nobeoka-shi, and Koji Nakagawa, Nobeoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 8, 1970, Ser. No. 35,727
Claims priority, application Japan, May 8, 1969, 44/34806
Int. Cl. C07b 29/06; C07c 121/26
U.S. Cl. 204—73 A 12 Claims

A method of producing adiponitrile by electrolytic hydrodimerization of acrylonitrile which comprises conduct-

ing the electrplysis while purifying the catholyte by recover-



ing the conductive supporting salt in the waste catholyte by means of a cation exchange resin.

3,664,937

PHOTOSENSITIZING MOLDING AND COATING COMPOSITIONS WITH BENZOIN-SILYL-ESTERS

Karl Fuhr; Hugo Vernaleken; Hans-Georg Heine, all of Krefeld; Hans Rudolph, Krefeld-Bockum, and Hermann Schnell, Krefeld-Uerdingen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Original application Oct. 20, 1969, Ser. No. 867,938. Divided and this application May 27, 1971, Ser. No. 147,675
Claims priority, application Germany, Nov. 6, 1968 P 18 07 297.4
Int. Cl. C08d 1/00; C08f 1/16
U.S. Cl. 204—159.15 7 Claims

The invention relates to possibly α-substituted benzoin-silyl-esters which are useful photosensitizers for the photopolymerization of polymerizable compounds or compound mixtures including mixtures of unsaturated polyesters and copolymerizable monomeric compounds.

3,664,938

ELECTRICAL COALESCENCE OF POLYMER FINES

Edward J. Thomas, and Ralph E. Friedrich, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 5, 1970, Ser. No. 788
Int. Cl. B01d 21/00
U.S. Cl. 204—180 R 3 Claims

Polymer fines suspended in the organic phase recovered from the polymerization of a suspension of aqueous water-soluble monomer in an organic liquid are precipitated by deposition or agglomeration by the application of an electrical field. The process is particularly applicable to the purification for recycle of an organic medium such as xylene in the inverse suspension polymerization of acrylamide.

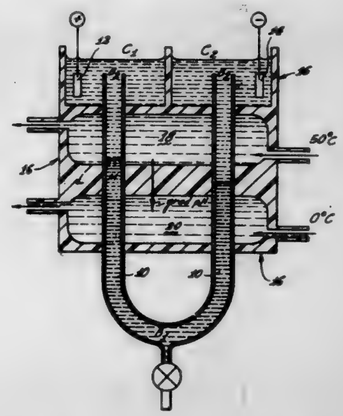
3,664,939

ISOELECTRIC FOCUSING AND FRACTIONATION AMPHOLYTES IN THERMALLY ENGENDERED PH GRADIENTS

Stephen J. Luner, Sherman Oaks, and Alexander Kolin, Bel Air, both of Calif., assignors to Regents of the University of California, Berkeley, Calif.

Filed Apr. 22, 1970, Ser. No. 30,712
Int. Cl. B01k 5/00; B01d 59/42
U.S. Cl. 204—180 R 19 Claims

A method is provided for converting extended volumes of mixtures of proteins, or other ampholytes, into an isoelectric spectrum, or sorting pattern, of sharp narrow ampholyte zones located at points of a pH gradient corresponding to the isoelectric pH value of the individual ampholytes. A temperature gradient is established in an electrophoretic buffer column, and the temperature gradient provides a stable pH gradient which can be easily controlled by variations of the



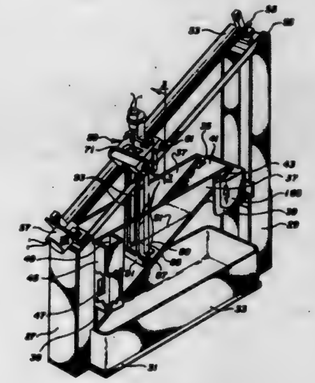
temperature limits, and which remains stable when an electric current is passed through the buffer column.

3,664,940

SUSPENSION DEWATERING METHOD

ene Greyson, and Howard H. Rogers, both of Woodland Hls, Calif., assignors to The United States of America as represented by the Secretary of the Interior

Filed Oct. 6, 1969, Ser. No. 870,443
Int. Cl. B01d 13/02; B01k 5/00
U.S. Cl. 204—180 R 5 Claims

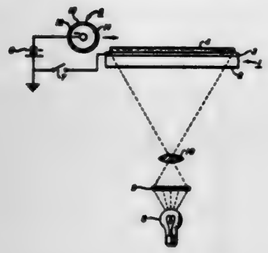


A method and device for removing water from normally difficult to filter suspensions, such as sludge wherein the suspension is disposed in a container having a negatively charged cathodic screen bottom surface and a moveable anode screen specially disposed within the suspension from the bottom cathode surface, together with means for controlling the electric potential between the anode and cathode, as well as the distance therebetween such that the water or other effluent can be removed through the cathode screen bottom surface leaving a cake of higher solids content. Additionally, means is provided for removing the cake formed between the cathode and anode from the suspension and continue the removal of water therefrom, while the cake is out of the suspension environment.

3,664,941
PHOTOELECTROPHORETIC REVERSAL IMAGING USING A SUSPENSION CONTAINING A VITAMIN PRECURSOR, β-CAROTENE

Raymond L. Jelfo, Sodus Point, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Continuation-in-part of application Ser. No. 642,005, May 29, 1967, now abandoned. This application Dec. 24, 1969, Ser. No. 887,879
Int. Cl. G03g *13/04*; B01k *5/00*
U.S. Cl. 204—181 4 Claims

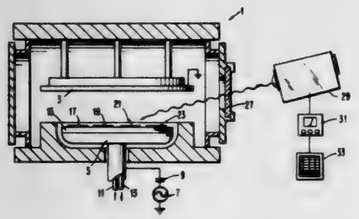


There is disclosed a photoelectrophoretic imaging system wherein the imaging suspension utilized contains a photomigratory pigment dispersed in an insulating carrier liquid. The imaging suspension contains a vitamin precursor, beta carotene, in conjunction with the other components of the vehicle. The suspension is interpositioned between at least two electrodes and subjected to a potential difference while substantially simultaneously being selectively exposed to a reproducible image by a source of electromagnetic radiation. As a result of the suspension of the present invention it is now possible by regulating the polarities of the electrodes in the system to produce both negative and positive images from a single sense input.

3,664,942
END POINT DETECTION METHOD AND APPARATUS FOR SPUTTER ETCHING

James Havas, and John S. Lechaton, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1970, Ser. No. 103,045
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 27 Claims

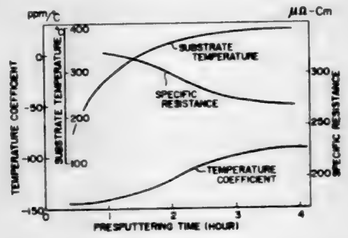


The end point in sputter-etching metal layers, for example, from substrates is determined by employing a silicon, quartz, or the like, monitor control wafer in the sputter-etching environment which wafer has been previously coated with said metal, for example, in the same run as that used to fabricate the workpiece substrate. Thus, the monitor control wafer exhibits the same thickness of metal, or the like, as the thickness of the metal layer to be selectively sputter-etched from the substrate. The temperature exhibited by the monitor control wafer during the sputter-etching material removal process in monitored by an infrared radiation thermometer, by way of a quartz window. When the layer of metal, or the like, has been removed from the monitor control wafer, the temperature, as sensed by the infrared radiation thermometer during sputter-etching, declines thereby indicating the end point in the removal process of the metal layer, or the like.

3,664,943
METHOD OF PRODUCING TANTALUM NITRIDE FILM RESISTORS

Shun Kumagai, and Toshiaki Koikeda, both of Tokyo, Japan, assignors to Oki Electric Industry Company Limited, Tokyo, Japan

Filed Nov. 4, 1969, Ser. No. 874,013
Claims priority, application Japan, June 25, 1969, 44/49700
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 3 Claims

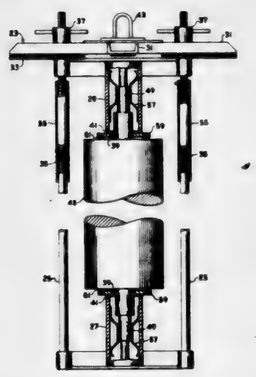


Hexagonal type tantalum nitride films are made by reactive sputtering with a sputtering current of more than 0.25 m.A./cm² at a sputtering voltage of more than 4.5 K.V. in a nitrogen gas atmosphere in which the mixed gas pressure of argon and nitrogen is 0.8×10^{-2} torr to 3×10^{-2} torr and the partial pressure of nitrogen gas is 5×10^{-4} torr to 10^{-3} torr, the substrate to receive the film being presputtered for a time of not more than one hour while being heated to a temperature of about 550°–770° C., which temperature is maintained during the main sputtering.

3,664,944
ELECTROPLATING APPARATUS

Edward Z. Buckley, Birmingham, Mich., assignor to Udylite Corporation, Warren, Mich.

Filed Oct. 29, 1969, Ser. No. 872,045
Int. Cl. C23b *5/68*
U.S. Cl. 204—212 10 Claims

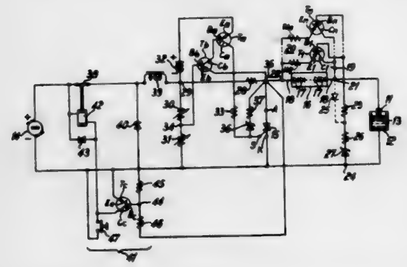


An apparatus for use in electroplating cylindrically shaped objects which comprises a reservoir for an electroplating solution, said reservoir having a bottom, side walls and a substantially open upper end opposite the bottom. A support member is provided which is adapted to hold a cylindrically shaped object to be electroplated within the reservoir in a substantially vertical position below the level of the electroplating solution in the reservoir. The support member has means by which it is removably supported by the reservoir at the upper end thereof and is electrically insulated therefrom. Means are provided for effecting rotation of the support member and the object to be electroplated within the reservoir around the vertical axis of the reservoir, the rotation effecting means being electrically insulated from the support member. The support member has oppositely disposed, adjustable engaging members which are adapted to engage the cylindrically shaped object to be electroplated and hold it in a substantially vertical position within the reservoir. The engaging members are in electrical contact with the object to be plated and are electrically connected to that portion of the support member which is supported by the reservoir. There are means for providing electrical insulation between the electrical plating solution in the reservoir and the outer surfaces of the support member in contact therewith and means for preventing plating of that portion of the object to be plated at and contiguous to the point of electrical contact with the engaging members. Anode means are disposed within the reservoir, at least partially below the level of the electroplating solution and positioned between the reservoir side walls and the cylindrically shaped object to be electroplated which is held in the support member.

3,664,945
ARRANGEMENT FOR THE ELECTROLYTIC REMOVAL OF METAL

Jurgen Junker, Munich, and Richard Schleupen, Grosslingersheim, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed June 16, 1970, Ser. No. 46,622
Claims priority, application Germany, June 18, 1969, P 19 30 765.4
Int. Cl. B01k *3/00*; B23p *1/00*
U.S. Cl. 204—228 16 Claims

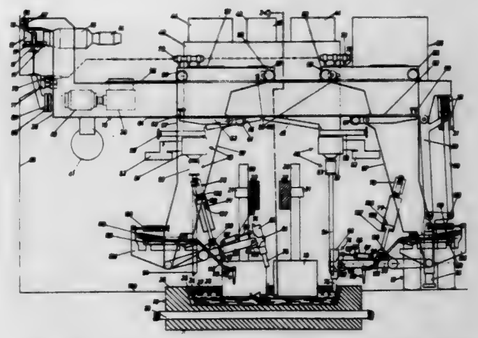


An arrangement for the electrolytic removal of metal from a metallic workpiece. An electrolyte in contact with the workpiece is held within a container to which negative potential is applied from a DC source. The workpiece has positive potential applied to it. The workpiece is connected in series with a reference circuit consisting of silicon diodes, and the anode-cathode path of a thyristor is connected in parallel with the series combination of the reference circuit, the workpiece, the electrolyte and the container therefor. Connected, furthermore, in parallel with the reference circuit, are the emitter-collector paths of a plurality of transistors with bases connected to the container at negative potential. The voltage drop across the reference circuit is made at least as large as the anode voltage required for switching the thyristor to the conducting state when the workpiece contacts the container maintained at negative potential.

3,664,946
CRUST BREAKER FOR ALUMINUM FUSION ELECTROLYSIS CELLS

Hans Schaper; Kurt Springer, both of Rheinfelden, Germany, and Edgar Kyburz, Richards Bay, Empangeni, Natal, South Africa, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Apr. 6, 1970, Ser. No. 25,750
Claims priority, application Switzerland, Oct. 24, 1969, 15877/69
Int. Cl. C22d *3/02*, *3/12*
U.S. Cl. 204—243 R 9 Claims

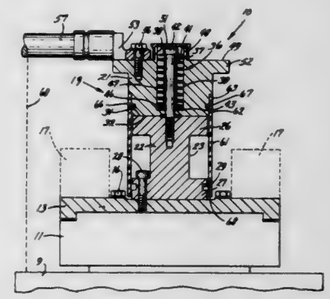


A slag crust breaker for aluminum fusion electrolysis cells is supported on a trolley carriage of a semi-portal crane, and comprises: a swingable, horizontally directed impact beam; pneumatic impact tool means hinged to the free end of the impact beam; an adjustable pneumatic driving device for driving the impact beam; a pneumatic control device for controlling the hold of the impact tool means in its vertical position; and a torsion device coupled to the impact tool means for deviating the tool about the axis of the impact beam when a predetermined lateral obstacle during the operation of the breaker occurs.

3,664,947
WORK HOLDER FOR ELECTROCHEMICAL ABRADING MACHINE

Miles M. Bass, Kalamazoo, Mich., assignor to Hammond Machinery Builders, Inc., Kalamazoo, Mich.

Filed Oct. 3, 1969, Ser. No. 863,616
Int. Cl. C23b *5/70*; B23p *1/00*
U.S. Cl. 204—297 R 8 Claims



A work holder, particularly for an electro-chemical grinding machine, including an electrically conductive plate secured to an indexable rotatable table and having a plurality of work-holding fixtures thereon. A post extends upwardly

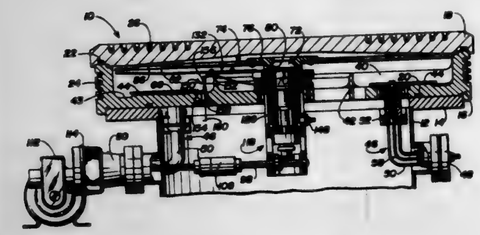
from the conductive plate for permitting electrical potential to be applied to the device at a location spaced above the work fixtures. The post includes an electrically conductive lower brush portion secured to the conductive plate and an electrically conductive upper brush portion in rotatable sliding contact with the lower brush portion. The upper brush portion is stationarily secured and fixedly connected to a current-conducting cable. A protective sleeve extends between and surrounds the upper and lower brush portions for preventing electrolyte from contacting the sliding contact surfaces therebetween.

3,664,948

SPUTTERING SYSTEM

Joseph Victor Graffeo, Jr., Dallas; Bertran W. Mason, Jr., Sherman, and Wells, Wallace Ogden, Garland, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 19, 1969, Ser. No. 878,062
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **9 Claims**



A sputtering system includes a pair of spaced electrodes, one formed from titanium and the other formed from platinum. Substrates are rotated over both electrodes by a turntable that is actuated by a reversible drive mechanism. A mask alternately blocks each electrode. The mask is coupled to the turntable drive mechanism by a slip clutch and is moved between the two blocking positions when the direction of rotation of the turntable is reversed. In the use of the system, the electrodes are actuated in sequence. The mask is positioned to block each electrode during the initial portion of its operation. This deposits the material of the electrodes on the mask until the electrodes are clean.

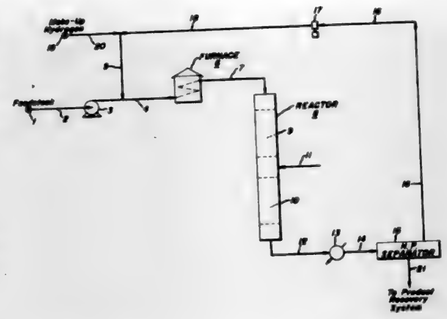
3,664,949

PLATINUM REFORMING WITH A MORDENITE CONTAINING SUPPORT USING TWO REACTORS

Richard D. Petersen, Valparaiso, Ind., and Allen, A. Kozinski, Madison, Wis., assignors to Standard Oil Company, Chicago, Ill.

Filed Nov. 10, 1969, Ser. No. 875,322
Int. Cl. C10g *35/08, 39/00*
U.S. Cl. 208—65 **23 Claims**

The process comprises contacting a petroleum hydrocarbon feedstock in a reactor system in the presence of hydrogen and under reforming conditions with a catalyst comprising a Group VIII metal, mordenite, and an adsorbent refractory inorganic oxide, such as catalytically active alumina. The reactor system is composed of a maximum number of two reactors. The preferred feedstock contains relatively high concentrations of aromatics and/or naphthenes. The above-described catalyst is the sole catalyst in said reactor system. The process employs a weight hourly space velocity



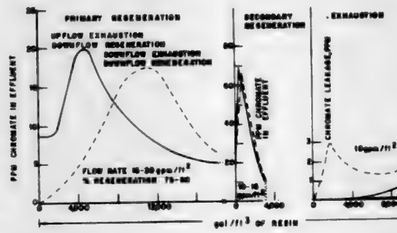
of at least 5. The process produces high yields of aromatics and gasolines having high octane numbers.

3,664,950

PROCESS FOR SELECTIVE REMOVAL AND RECOVERY OF CHROMATES FROM WATER

Anthony J. Saraceno, Chillicothe; Reed H. Walters, Waverly; Donald B. Jones, Chillicothe, and William E. Wiehle, Portsmouth, all of Ohio, assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed June 23, 1970, Ser. No. 49,102
Int. Cl. B01d *15/04*
U.S. Cl. 210—35 **10 Claims**



An improved anion-exchange process for the removal and recovery of trace quantities of chromates from water. The process utilizes a bed of basic anion-exchange resin and the combination of upflow exhaustion of the chromates from the water and downflow regeneration of the resin. Efficient recovery of chromates is accomplished while virtually eliminating chromate leakage during the initial portion of the exhaustion operation. Regeneration can be accomplished without the use of strong, expensive chemicals.

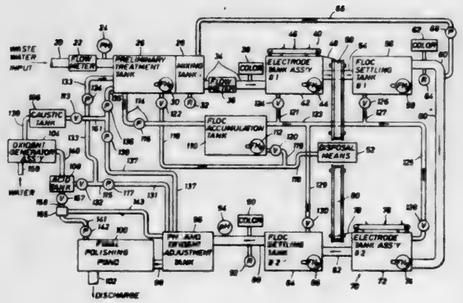
3,664,951

APPARATUS AND PROCESS TO TREAT WASTE WATER FOR POLLUTION CONTROL AND INDUSTRIAL REUSE

Louis B. Armstrong, Houston, Tex., assignor to Pollution Engineering International, Inc., Houston, Tex.

Filed July 22, 1970, Ser. No. 57,198
Int. Cl. C02b *1/36, 1/82*
U.S. Cl. 210—44 **58 Claims**

Apparatus and process for removing colloidal, oxygen demanding and odor causing organic materials, inorganic materials and other pollutants from waste water is provided. The initial pH and resistivity of the water is measured and adjusted to predetermined values. The color of the water is then measured and organic and inorganic materials are caused to precipitate from the water which is then subjected to a predetermined density of electrical current. The electrolysis coalesces colloidal materials which are removed mechanically and causes additional material precipitation, as



well as acting to kill bacteria, viruses and other organic matter. Additional inorganic matter precipitation is induced and the water has a final pH, color and resistivity adjustment. An oxidizing agent is added to further reduce oxygen demanding and odor causing organic material and act on bacteria and other organic matter remaining. The water is then reusable or may be discharged into streams or sewer facilities.

3,664,952

AQUEOUS TEXTILE SOFTENING COMPOSITION

Bobby Charles Mauke, Raleigh, N.C., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of application Ser. No. 627,672, Apr. 3, 1967, now abandoned. This application May 15, 1970, Ser. No. 37,875
Int. Cl. D06m *13/46*
U.S. Cl. 252—8.75 **5 Claims**

A cationic textile finish composition for imparting softness to fibers, yarns, and fabrics, a composition containing a quaternary ammonium compound formed from the reaction of a fatty alkanol amine ester and a quaternizing agent and a polyoxyethylated fatty compound; a method for imparting softness to textiles using such a composition in the products obtained.

3,664,953

CORROSION-INHIBITED SILICONE GREASE

John H. Wright, Elmora, N.Y., assignor to General Electric Company

Continuation-in-part of application Ser. No. 762,319, Sept. 16, 1968, now Patent No. 3,537,995. This application Apr. 6, 1970, Ser. No. 26,152. The portion of the term of the patent subsequent to Nov. 3, 1987, has been disclaimed.
Int. Cl. C10m *7/48*
U.S. Cl. 252—18 **5 Claims**

The addition of a metal chromate or dichromate to a silicone lubricating grease reduces galvanic corrosion during the lubrication of dissimilar metal surfaces which are separated by a lubricating film of the grease.

3,664,954

GROUP VI–B TRANSITION METAL-AMINO-PHOSPHORODITHIOATES IN LUBRICATING OIL

Vincent Chiola, Towanda, and Phyllis R. Dodds, Wysox, both of Pa., assignors to Sylvania Electric Products Inc.

Original application Sept. 5, 1968, Ser. No. 757,788, now Patent No. 3,598,848, dated Aug. 10, 1971. Divided and this application Apr. 1, 1970, Ser. No. 24,793
Int. Cl. C10m *1/48*
U.S. Cl. 252—32.7 E **4 Claims**

Group VI-B transition metal-amino-phosphorodithioates, which are the reaction products of amine salts of Group VI–B oxyacids and phosphorodithioic acids, are disclosed. A process for producing the beforementioned compounds is also disclosed that comprises contacting an acidic aqueous medium containing the Group VI–B metal source with a water-immiscible organic medium containing an alkyl amine and reacting said product with a phosphorodithioic acid and recovering the compounds of this invention. Lubricating compositions containing the compounds of this invention are also disclosed.

3,664,955

LUBRICATING OIL COMPOSITIONS OF IMPROVED THERMAL STABILITY

Jerome Panzer, Roselle Park, N.J., assignor to Esso Research and Engineering Company

Filed Dec. 31, 1969, Ser. No. 889,745
Int. Cl. C10m *1/38*
U.S. Cl. 252—47.5 **13 Claims**

Mineral lubricating oil compositions are prepared containing oil-soluble additives for sludge control, having improved high temperature oxidation stability and thus permitting longer periods of service before it becomes necessary to drain the used oil and replace it with fresh oil. The novel additive mixture is prepared by reacting elemental sulfur with long chain (C_{15+}) oil-soluble olefinically unsaturated monomeric or polymeric hydrocarbons, e.g. polyisobutylene, and using such sulfurized compounds in conjunction with conventional ashless dispersants with or without using additional ashless dispersants which have previously been reacted with elemental sulfur. Many of the hydrocarbons used as starting materials, in their unsulfurized state, have heretofore been used as viscosity index improvers in lubricating oil compositions.

3,664,956

GREASE COMPOSITIONS

Joseph F. Messina, Havertown, and Henry Glaser, Philadelphia, both of Pa., assignors to The United States of America as represented by the Secretary of the Army

Filed Sept. 26, 1969, Ser. No. 861,488
Int. Cl. C10m *7/50, 7/28*
U.S. Cl. 252—49.6 **6 Claims**

Stable grease compositions for use with equipment at extremely low temperatures, the greases consisting of about 69 to 78 weight percent polysiloxanes, the balance being tetrafluoroethylene polymer having a molecular weight of 10,000 — 50,000, a softening point of 321.1 percent, particle size less than 30 microns in diameter, and supplied as a 7.5 percent suspension in trichlorotrifluoroethane.

3,664,957

DEHYDROCONDENSED POLY(ORGANO) SILICONES

Leo J. McCabe, Glassboro, N.J., assignor to Mobil Oil Corporation

Filed Nov. 20, 1969, Ser. No. 878,575
Int. Cl. C10m *1/50*
U.S. Cl. 252—49.6 **6 Claims**

Dehydrocondensed poly(organo) silicones are produced by heating a poly(organo) silicone in the presence of an organic peroxide. The products per se, or in combination with other organic fluids, both mineral and synthetic, provide lubricating compositions evidencing good high temperature stability and antiwear properties.

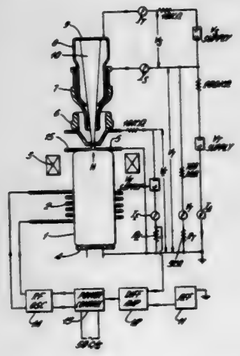
3,664,958
GREASE COMPOSITIONS
Joseph F. Messina, Havertown, and Henry Glaser, Philadelphia, both of Pa., assignors to The United States of America as represented by the Secretary of the Army
Filed Sept. 26, 1969, Ser. No. 861,487
Int. Cl. C10m 7/28, 7/24
U.S. Cl. 252—54.6 5 Claims

Stable grease compositions for use with equipment at extremely low temperatures, the greases consisting of about 68 to 73.8 weight percent trimethylolpropane esters of n-heptoic and n-nonanoic acids in any combination of 10 to 90 weight percent of either, the balance being tetrafluoroethylene polymer having a molecular weight of 10,000–50,000, a softening point of 321.1° C., a particle size less than 30 microns in diameter, and supplied as a 7.5 percent suspension in trichlorotrifluoroethane.

3,664,959
DIELECTRIC SOLUTION CONTAINING A POLYCARBONATE-POLYDIMETHYLSILOXANE BLOCK COPOLYMER ADDITIVE
George L. Gaines, Jr., Scotia, and Donald G. Le Grand, Burnt Hills, both of N.Y., assignors to General Electric Company
Filed July 7, 1969, Ser. No. 839,642
Int. Cl. H01b 3/24, 3/42, 3/46
U.S. Cl. 252—63.7 6 Claims

A dielectric solution with good wetting properties is disclosed as well as a dielectric material comprised of a polyolefin impregnated with the dielectric solution. The solution is comprised of a dielectric liquid and a block copolymer additive which is surface-active therein. The block copolymer is comprised of at least two polymerized comonomers, one of which is soluble in the dielectric liquid thereby distributing the block copolymer therein, and the second of which is sufficiently surface-active in the solution to produce a solution having a surface tension less than that of the dielectric liquid alone.

3,664,960
CONTROL CIRCUIT FOR NEUTRON GENERATOR TUBE
James David London Hedley Wood, Letchworth, England, assignor to National Research Development Corporation, London, England
Filed Jan. 24, 1969, Ser. No. 793,743
Claims priority, application Great Britain, Feb. 2, 1968, 5,556/68
Int. Cl. G21g 3/24
U.S. Cl. 250—84.5 5 Claims



In the supply circuit for an ion accelerator having an ion source and an ion extractor electrode, the supply circuit including an energizing supply for the ion source and a power supply for the extractor electrode, there is provided a negative feedback loop connected to cause the extractor electrode current to control the energizing supply output in a sense to maintain constant the extractor current. The described embodiment is a neutron generator tube having a plasma ion source energized by a radio-frequency supply.

3,664,961
ENZYME DETERGENT COMPOSITION CONTAINING COAGGLOMERATED PERBORATE BLEACHING AGENT
Russell Norris, Sycamore Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Mar. 31, 1970, Ser. No. 24,395
Int. Cl. C11d 7/56
U.S. Cl. 252—99 7 Claims

An enzyme granular detergent composition having improved enzyme stability which comprises at least one water soluble organic synthetic detergent, at least one water soluble detergency builder, an enzyme, and from about 0.005 to 50 percent by weight of a coagglomerated sodium perborate bleaching agent consisting essentially of sodium perborate, a water-soluble polymeric organic agglomerating agent which forms a tacky solution with water at 72 ° F., and a water-soluble granular coagglomerant.

3,664,962
STAIN REMOVER
Jerry D. Kelly, Route 1, Hwy. 26, Milton Junction, Wis., and Forrest E. Beck, 302 West Union St., Rockton, Ill.
Continuation-in-part of application Ser. No. 736,290, June 12, 1968, now abandoned. This application Jan. 11, 1971, Ser. No. 105,737
Int. Cl. C09d 9/00, 9/04; C11d 9/26
U.S. Cl. 252—125 5 Claims

The stain remover is a semisolid which includes benzyl alcohol entrained in a sodium stearate matrix. The semisolid is rubbed against stained surfaces and releases the benzyl alcohol onto the surfaces as the sodium stearate matrix is worn away by friction. The benzyl alcohol eradicates the stain by solvation. It is especially effective in removing ball pen ink and will remove this type of ink even from vinyl plastic.

3,664,963
ENCAPSULATION PROCESS
Joseph Z. Pasin, New York City, N.Y., assignor to Balchem Corporation, Slate Hill, N.Y.
Filed Oct. 22, 1969, Ser. No. 868,619
Int. Cl. B01j 13/02; B44d 1/02
U.S. Cl. 252—316 8 Claims

A process for encapsulating an active material in a shell composition in which the capsule composition is formed by dispersing an active material and a shell composition in a solvent for the shell composition. Capsules are prepared by spraying the capsule composition into a bath of an anhydrous lower molecular weight polyglycol. The spraying operation serves to form the capsule composition into particles containing the active material as a dispersed phase in a solution of the shell composition and the lower molecular weight polyglycol serves to remove the solvent from the shell composition solution.

3,664,964
ELUENT FOR RADIOISOTOPES
Thomas A. Haney, East Brunswick, and Gerald A. Bruno, Shrewsbury, both of N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.
Filed July 3, 1968, Ser. No. 742,128
Int. Cl. B01f 1/00; C22b 61/04
U.S. Cl. 252—364 4 Claims

This disclosure relates to an eluent which improves the yield of nuclear radioisotopes from ion exchange resins. The disclosure in essence concerns itself with the addition of an oxidizing agent to an isotonic saline solution, said oxidizing agent being present in a concentration of from about 0.001 percent to about 1.0 percent on a volume/volume ratio.

3,664,965
FORMALDEHYDE-GELATIN COMPOSITION FOR GAS PRESSURE TESTING WHICH FORMS A LONG LASTING FOAM
Nobuyoshi Hirota, and Yoshio Onoshima, both of Nagasaki-shi, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Continuation-in-part of application Ser. No. 455,007, May 11, 1965, now abandoned, and 712,375, Mar. 12, 1968, now abandoned. This application Jan. 28, 1970, Ser. No. 6,548
Claims priority, application Japan, May 19, 1964, 39/28033
Int. Cl. G01m 3/04
U.S. Cl. 252—408 9 Claims

Leak detecting agent for gas pressure testing consisting essentially of an aqueous solution of a coagulating agent present in an amount of 1.8–18 percent by weight of the solution and a foaming agent present in an effective amount to cause the formation of bubbles indicating the site of the leak, the solution also including an addition of an acid in an amount to adjust the pH range of the solution from 3–6, said range promoting hardening of a film formed from the solution upon elimination of water, and preservation of the bubbles in said film for many hours, thus enabling an observer to detect theleakage at a time convenient for inspection.

3,664,966
DEHYDROHALOGENATION CATALYST
Ronnie D. Gordon, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
Filed Feb. 9, 1970, Ser. No. 9,961
Int. Cl. C07c 21/00
U.S. Cl. 252—430 5 Claims

A dehydrohalogenation catalyst and process employing same in the manufacture of halogen unsaturated derivatives from saturated compounds is provided wherein the catalyst comprises from about 99.99 to 90 weight percent of an aqueous base wherein the base constituent is an alkali metal hydroxide or an alkaline earth metal hydroxide and from about 0.01 to about 10 weight percent of an organic quaternary salt compound having the general formula



where M is a pentavalent ion of an element selected from the group consisting of nitrogen, phosphorous, and arsenic, R_1, R_2, R_3, and R_4 are alkyl radicals containing from one to about 30 carbon atoms, and X is an anion derived from organic and inorganic acids which will disassociate from the cation portion of the organic quaternary salt in an aqueous environment.

3,664,967
PELLICULAR COLUMN PACKING FOR LIQUID CHROMATOGRAPHY
Rudolph H. Stehl, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Feb. 11, 1970, Ser. No. 10,617
Int. Cl. B01d 15/08
U.S. Cl. 252—431 R 7 Claims

A halogenated organo silica gel or halogenated organo alumina prepared by reacting an organo halosilane with a silica gel or alumina gel of high relative surface area, then reacting the so-produced product with a halogen.

3,664,968
CATALYST FOR PREPARING UNSATURATED ACIDS AND ALDEHYDES
Jamal S. Eden, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Original application Nov. 16, 1967, Ser. No. 683,476, now Patent No. 3,576,857, which is a continuation-in-part of application Ser. No. 483,858, Aug. 30, 1965, now abandoned. Divided and this application Aug. 3, 1970, Ser. No. 67,647
Int. Cl. B01j 11/82
U.S. Cl. 252—437 4 Claims

Unsaturated aldehydes and carboxylic acids as acrolein or methacrolein and acrylic acid or methacrylic acid are obtained by the reaction of propylene or isobutylene with oxygen at an elevated temperature in the presence of a catalyst containing a mixture of molybdenum oxide, tellurium oxide and an aluminum phosphate.

3,664,969
METHOD OF MAKING A THERMAL BED FOR GAS GENERATING
Theodore Hubbuch, Florence; James A. Murfree, Jr.; William A. Duncan, both of Huntsville; Billy J. Sandlin, Athens, and Henry A. Nappier, Lacey's Spring, all of Ala., assignors to The United States of America as represented by the Secretary of the Army
Original application July 5, 1967, Ser. No. 651,324. Divided and this application Nov. 12, 1968, Ser. No. 775,998
Int. Cl. B01j 11/82
U.S. Cl. 252—438 5 Claims

The loading of a gas generating bed such as activated charcoal with a fluid such as dinitrogen tetroxide by exposing the bed to an atmosphere of the fluid.

3,664,970
ETHYLENE OXIDE CATALYST
Dennis A. De Maio, Staten Island, N.Y., assignor to Halcon International, Inc.
Continuation-in-part of application Ser. No. 723,915, Apr. 24, 1968, now abandoned. This application Apr. 17, 1969, Ser. No. 817,169
Int. Cl. B01j 11/40
U.S. Cl. 252—454 4 Claims

The invention is directed to improvements in the production of ethylene oxide by the controlled, partial oxidation of ethylene in the presence of a silver supported catalyst.

New results and advantages including elimination of the need for halogenated inhibitors in the ethylene oxide process are attributable to the use of a silver impregnated catalyst comprising inert porous support particles wherein at least 90 percent of the pore diameters fall within a limited range and the average pore diameter falls within a narrow range.

The invention is also attended by supplemental benefits in the form of increased productivity and/or reduced operating temperature.

3,664,971
HYDROTHERMAL METHOD FOR MANUFACTURING A HYDROCARBON CONVERSION CATALYST CONTAINING AT LEAST ONE HYDROGENATING COMPONENT

Joseph Jaffe, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of application Ser. No. 763,922, Sept. 30, 1968. This application May 19, 1970, Ser. No. 38,887
Int. Cl. B01j 11/40; C01b 38/28
U.S. Cl. 252—455 R 3 Claims

Hydrothermal conversion method for manufacturing a hydrocarbon conversion catalyst useful in hydrogenative processes, said catalyst comprising a hydrogenating component and a novel synthetic layered crystalline clay-type aluminosilicate mineral, preferably in an intimate admixture with an amorphous cogel comprising silica and alumina, said method comprising subjecting to conditions of elevated temperature and pressure in a reaction zone a hydrogel or hydrogel slurry, said slurry comprising water, a component selected from fluorine and compounds of fluorine, and an amorphous cogel starting material comprising silica and alumina, until a substantial amount of said synthetic mineral is formed, preferably in an intimate admixture with a substantial amount of unreacted amorphous cogel comprising silica and alumina, incorporating in the reaction zone product a component comprising a hydrogenating metal, and drying and calcining the resulting composite to produce said catalyst.

3,664,972
HYDROTHERMAL METHOD FOR MANUFACTURING A CATALYTIC MATERIAL USEFUL IN PREPARING CATALYSTS FOR HYDROCARBON CONVERSION PROCESSES

Joseph Jaffe, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of application Ser. No. 763,922, Sept. 30, 1968. This application May 20, 1970, Ser. No. 39,174
Int. Cl. B01j 11/40; C01b 38/28
U.S. Cl. 252—455 R 4 Claims

Hydrothermal conversion method for manufacturing a catalytic material useful in preparing catalysts for hydrocarbon conversion processes, comprising coprecipitating silica and alumina in amorphous form as a hydrogel slurry in the presence of acetate ion, filtering and drying said slurry to produce a hydrogel material, washing said hydrogel material, and subjecting said washed hydrogel material to autoclave conditions of elevated temperature and pressure in a reaction zone until a substantial amount of a layered crystalline clay-type aluminosilicate mineral is formed, preferably in an intimate admixture with a substantial amount of unreacted amorphous cogel comprising silica and alumina, and if desired incorporating in the reaction zone product before or after drying thereof a component comprising a hydrogenating metal.

3,664,973
HYDROTHERMAL METHOD FOR MANUFACTURING A NOVEL CATALYTIC MATERIAL, CATALYSTS CONTAINING SAID MATERIAL, AND PROCESSES USING SAID CATALYSTS

Joseph Jaffe, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of application Ser. No. 763,922, Sept. 30, 1968. This application May 20, 1970, Ser. No. 39,518
Int. Cl. B01j 11/40; C01b 38/28
U.S. Cl. 252—455 R 17 Claims

(a) A synthetic layer-type, crystalline, clay-like mineral characterized by a particular formula and a particular d_{001} spacing; (b) the method of preparing a hydrocarbon conversion catalyst cracking component which comprises dehydrating said mineral; (c) the catalyst cracking component so prepared.

3,664,974
PHOSPHORUS CONTAINING POLYMERS

Margalit Cohen, and Kenneth E. MacPhee, both of Guelph, Ontario, Canada, assignors to Uniroyal, Ltd., Montreal, Quebec, Canada

Filed Feb. 19, 1970, Ser. No. 12,858
Int. Cl. C08g 33/16, 49/04
U.S. Cl. 260—2 P 14 Claims

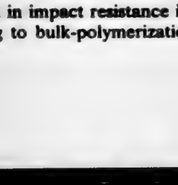
New compositions of matter which are reaction products of a phosphate ester containing active groups such as —OH, —NH_2 and —SH and sufficient phosphorus trihalide or phosphorus oxyhalide to produce a polymer which is used as a fire retardant in plastic compositions.

3,664,975
FLAME RESISTANT POLYURETHANE PREPARED BY ADDING AN ETHANE DIPHOSPHONATE INTO THE URETHANE-FORMING MIXTURE

Al F. Kerst, Littleton, Colo., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 13, 1970, Ser. No. 27,985
Int. Cl. C08g 22/16
U.S. Cl. 260—2.5 AJ 4 Claims

Fire resistant polyurethane compositions are prepared by adding to the urethane-forming reaction mixture a substituted ethane diphosphonate having the formula



wherein R_1 and R_2 are hereinafter defined, R_3 is hydrogen or an organic radical, and n is an integer having a value of 1 or 2.

3,664,976
POLYURETHANE FOAM WITH INTEGRAL SKIN

Robert G. Evans, Fergus, Ontario, and George R. P. Stifel, Kitchener, Ontario, both of Canada, assignors to Uniroyal Ltd., Montreal, Quebec, Canada

Filed Aug. 21, 1969, Ser. No. 852,106
Int. Cl. C08g 22/46
U.S. Cl. 260—2.5 BD 10 Claims

Flexible foam with a soft skin is made by a one-shot process involving overpacking a mold with a mixture, in critical proportions, of: (a) a methylenebis(phenyl isocyanate) having a functionality between 2 and 2.7; (b) an hydroxyl terminated polyoxypropylene ether triol immiscible with (a); (c) an hydroxy terminated polyester miscible with (a) but immiscible with (b); (d) a low molecular weight glycol; (e) a volatile liquid blowing agent; and (f) a catalyst. During the mixing, an emulsion is formed thus preventing separation of the ingredients (foam defects). Due to its discontinuity the emulsion gives controlled rupture of cell walls (open cell foam). No surface active agent is used to control cell structure.

3,664,977
BULK POLYMERIZED AROMATIC HYDROCARBON IN RUBBER AND POLYPHENYLENE ETHER

Atsuo Nakanishi, Kanagawa-ken; Shinichi Izawa, Tokyo, and Mikio Sato, Yokohama, all of Japan, assignors to Asahi Dow Limited, Tokyo, Japan

Filed Nov. 17, 1969, Ser. No. 877,499
Claims priority, application Japan, Nov. 20, 1968, 43/84449
Int. Cl. C08c 9/14; C08d 9/08
U.S. Cl. 260—4 AR 5 Claims

A resin improved in impact resistance is obtained by continuously subjecting to bulk-polymerization a mixture composed mainly of a vinyl aromatic compound and containing a rubbery substance; incorporating a mixture comprising an aromatic hydrocarbon and a polyphenylene ether into the system during a period from the stage immediately after the phase inversion of the rubbery substance to the stage where the total polymer concentration has become 40 percent, and further continuing the bulk-polymerization with thorough stirring until the polymerization is substantially completed.

The thus obtained resin has improved physical properties and gives a molded article excellent in appearance.

3,664,978
AGGLOMERATION OF FINE RUBBER PARTICLES

Carl A. Uraneck, and John E. Burleigh, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed June 22, 1970, Ser. No. 48,430
Int. Cl. C08c 9/08
U.S. Cl. 260—5 10 Claims

Latex is added to a suspension of solid particles comprising rubber in an aqueous medium to agglomerate the fine particles which are present.

3,664,979
POLYURETHANE ELASTOMER AND METHOD FOR PREPARATION OF SAME

Masahisa Tanemura, and Kazuo Itoi, both of Kurashiki City, Japan, assignors to Kuraray Co., Ltd., Kurashiki City, Japan

Filed Dec. 15, 1969, Ser. No. 885,281
Claims priority, application Japan, Dec. 16, 1968, 43/92525; Dec. 19, 1968, 43/93598; Mar. 15, 1969, 44/19748
U.S. Cl. 260—75 NK 12 Claims

Polyurethane elastomers having excellent resistance to hydrolysis and which are readily wet coagulated are prepared via the reaction of polymeric diols having molecular weights of about 800 to about 5,000, organic diisocyanates and chain extenders selected from the group consisting of aliphatic diols having two to four carbon atoms.

Said polymeric diols are polyester diols which are the reaction products of aliphatic dicarboxylic acids and mixed diols consisting of from 20 to 80 mol per cent of 2-ethyl hexane-1,3-diol and from 80 to 20 mol per cent of a diol selected from the group consisting of diethylene glycol, ethylene glycol, propylene glycol and butylene glycol; or a mixture of said polyester diol and at most 50 weight per cent based on the mixture of polyalkylene ether glycols, such as polypropylene glycol or polytetramethylene glycol.

3,664,980
POLYAMIDES OF POLYMERIC FAT ACIDS AND 1-AMINO-3-AMINOMETHYL-3,5,5-TRIMETHYL CYCLOHEXANE

Leonard R. Vertnik, Minneapolis, Minn., assignor to General Mills, Inc.

Continuation-in-part of application Ser. No. 671,604, Sept. 29, 1967, now abandoned. This application June 22, 1970, Ser. No. 48,559
Int. Cl. C08g 20/26
U.S. Cl. 260—18 N 15 Claims

There is disclosed polymeric fat acid polyamides of 1-amino-3-aminomethyl-3,5,5-trimethyl cyclohexane. Copolymerizing dibasic acids, amino acids or lactams or other diprimary diamines may also be employed. The polyamides are prepared under conventional amidification methods involving heating at 100°–300° C. for a time sufficient to effect amidification. The polymers find utility as adhesives (hot melt), self-supporting films and are particularly useful in the shoe industry for box toe printing applications.

3,664,981
POLYPHASE COMPOSITIONS AND PROCESS FOR THEIR PREPARATION

Bert H. Mahlman, West Chester, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 670,412, Sept. 25, 1967, abandoned.
Filed June 26, 1970, Ser. No. 50,299
Int. Cl. C09j 3/26
U.S. Cl. 260—27 4 Claims

Polyphase compositions having, as a continuous phase a propylene polymer and as a second phase a rosin or rosin derivative, are prepared by dispersing a propylene polymer of substantially all sub-micron particle size in the second phase and fusing the polymer under controlled conditions which assure the formation of the propylene polymer into a continuous phase.

3,664,982
REACTION PRODUCT OF HYDROLYZED SILOXANE AND AN IMINE POLYMER AND GLASS STRANDS COATED THEREWITH

Jerome A. Preston, Granville, and Carlton J. Davis, Sr., Newark, both of Ohio, assignors to Owens-Corning Fiberglas Corporation

Continuation of application Ser. No. 610,487, Jan. 20, 1967, now abandoned. This application Dec. 24, 1969, Ser. No. 884,781
Int. Cl. C08g 47/10
U.S. Cl. 260—29.4 9 Claims

An improved bonding material comprising a hydrolyzed siloxane and a polyimine which is dispersible in the siloxane. The coating material is preferably applied to glass fibers at forming from an aqueous solution, and the coated fibers are preferably used to strengthen a matrix resin which is fused with the coating material so that diffusion of the polyimine into the matrix resin takes place. Composites of the coated glass fibers with matrix resins that are reactive with amine hydrogen have great strength.

3,664,983
2-ACETOXY-4-OXA-ALKANESULFONATES, SYNTHETIC LATICES AND METHOD OF PREPARING SAME

Ted J. Logan, Colerain Twp., Hamilton, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Original application Mar. 20, 1969, Ser. No. 809,048, now abandoned. Divided and this application Feb. 2, 1971, Ser. No. 112,052
Int. Cl. C08d 7/18; C07c 143/02
U.S. Cl. 260—29.7 SQ 8 Claims

Compounds useful as surfactant compounds, 2-acetoxy-4-oxa-alkanesulfonates, are disclosed. The compounds, their method of preparation and use as detergents and emulsifiers are described. The compounds are particularly suited as emulsion polymerization surfactants in the emulsion polymerization of synthetic latices from vinylic monomers. The resulting latices are characterized by being low-foaming or non-foaming and find application in the preparation of adhesives foams, polishes, coatings and the like.

3,664,984
CATIONIC DYEABLE POLYESTER MODIFIED WITH ALKOXY BENZENE SULFONIC ACIDS

James E. Duddey, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 2, 1969, Ser. No. 863,342
Int. Cl. C08g 17/14, 17/16
U.S. Cl. 260—22 D 17 Claims

Polyesters are rendered more acceptable to basic dyes by adding to the polyester either during or after polycondensation certain metal, ammonium, or amine salts of alkoxy benzene sulfonic acids.

3,664,985

PREPARATION OF SILICON-FLUORIDE SILICONES

A. D. Britt, Falls Church, Va., and William B. Moniz, Clinton, Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed July 27, 1970, Ser. No. 58,737
Int. Cl. C08f 11/04
U.S. Cl. 260—46.5 R 3 Claims

A method is disclosed of selectively displacing hydride with fluoride at chain silicon positions in organopolysiloxane compounds. Also, 3-fluoroheptamethyltrisiloxane and the polymeric fluoro derivatives of liquid silicone hydrides are disclosed which have high thermal stability properties and are useful as high temperature-resistant release coatings.

3,664,986

1,2,5-THIADIAZOLE POLYMERS

Robert Neal MacDonald, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 14, 1969, Ser. No. 866,401
Int. Cl. C08g 20/20
U.S. Cl. 260—78 R 8 Claims

Described and claimed are polymers containing 1,2,5-thiadiazole rings in the polymer chain and their preparations. The polymers are capable of being made into films, fibers, coatings and molded objects.

3,664,987

FUNCTIONAL SURFACE COATING COMPOSITIONS FOR CELLULOSIC MATERIAL

Ronald C. Moyer, Sellersville, and Melville W. Uffner, Media, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 15, 1969, Ser. No. 885,314
Int. Cl. C08d 3/04, 5/00
U.S. Cl. 260—29.6 H 3 Claims

Functional surface coating compositions, prepared by blending a mixture of a fluorine containing phosphate material and a non-fluorine containing material in aqueous medium, impart solvent, grease and oil resistance to cellulosic materials.

3,664,988

POLYMERIZATION OF ETHYLENE WITH 3-METHYL-3-BUTEN-1-OL

Hans-Georg Trieschmann, Hambach; Helmut Pfannmueller, Limburgerhof; Hans Gropper, Ludwigshafen; Volker Gierth, Ludwigshafen, and Gilbert Beck, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine) Germany

Filed Dec. 5, 1969, Ser. No. 882,710
Claims priority, application Germany, Dec. 18, 1968, P 18 15 328.1
Int. Cl. C08f 15/00, 15/40
U.S. Cl. 260—80.75 4 Claims

A process for the production of ethylene copolymers containing hydroxyl groups which contain polymerized units of ethylene, an alkenol and if desired other monomers copolymerizable with ethylene, by copolymerization of a mixture of ethylene, alkenol and the other copolymerizable monomer(s), if any, at superatmospheric pressure and elevated temperature under the action of a free-radical polymerization initiator in the presence or absence of a polymerization regulator. 3-methyl-3-buten-1-ol is used as the alkenol. The process has the advantage that it is more easily carried out than comparable prior art methods and that it gives copolymers containing a relatively high proportion of polymerized units of alkenol.

3,664,989

METHODS FOR THE PREPARATION OF SYNTHETIC POLYMERS

Gennady Nikolaevich Petrov, Lesnoi prospekt, 61, kv. 85; Grigory Fedorovich Lisochkin, ulitsa Reshetnikova, 13, kv. 107; Valentin Parmenovich Shmagin, Kamchatskaya ulitsa, 4, kv. 39, and Olga Mikhailovna Shibanova, VO 15 Linia 8/40, kv. 21, all of Leningrad, U.S.S.R.

Continuation-in-part of application Ser. No. 575,552, Aug. 29, 1966, now abandoned. This application Oct. 27, 1969, Ser. No. 869,935
Int. Cl. C08d 3/04, 3/08
U.S. Cl. 260—82.1 11 Claims

A method for the homopolymerization of conjugated diene hydrocarbons or for the copolymerization of different dienes either with one another or with styrene-type monomers in order to prepare polymers or copolymers having a pre-set molecular weight, which comprises carrying out the homopolymerization or copolymerization of said hydrocarbons in the presence of an alkali metal catalyst, such as lithium, and a modifier obtained by reacting an alkali metal with a conjugated hydrocarbon and an organoaluminum compound, the alkali metal-to-aluminum molar ratio in said modifier being 1:1.

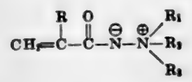
3,664,990

ACRYLIC AMINIMIDES AND POLYMERS THEREOF

Robert C. Slagel, Savage, Minn., assignor to Ashland Oil, Inc., Ashland, Ky.

Original application May 5, 1967, Ser. No. 636,273, now Patent No. 3,527,802, which is a continuation-in-part of application Ser. No. 514,705, Dec. 15, 1965, now abandoned. Divided and this application Mar. 20, 1970, Ser. No. 24,948
Int. Cl. C08f 3/00, 15/18, 15/22
U.S. Cl. 260—85.5 R 10 Claims

"Acrylic" aminmides are prepared from "acrylic" acids or derivatives thereof. The "acrylic" aminimides can be homopolymerized and copolymerized to result in functional group-containing polymeric products capable of thermosetting. The "acrylic" aminimides have the general formula:



wherein R is a hydrogen, lower alkyl (C_1–C_8), aryl, chlorine, fluorine, bromine, or cyano group and R_1, R_2, and R_3 are hydrocarbon radicals and R_1 and R_2 can be combined to form a heterocyclic ring with the nitrogen.

3,664,991

VINYL-SUBSTITUTED PYRIMIDINES AND PURINES AND POLYMERS THEREOF

Howard Kaye, College Station, Tex., assignor to Research Corporation, New York, N.Y.

Filed Dec. 2, 1969, Ser. No. 881,595
Int. Cl. C08f 7/12
U.S. Cl. 260—29.6 HN 7 Claims

Vinyl-substituted organic bases, particularly vinyl-substituted purines and vinyl-substituted pyrimidines and polymers thereof have been prepared. 1-vinyluracil was prepared by two methods. By one method 1,(2-chloroethyl) uracil was prepared by reacting bis (trimethylsilyl) uracil with 1,2-dichloroethane and then dehydrohalogenated. By the other method, B-ethoxy acryloyl chloride was converted into B-ethoxy acrylamide by treatment with ammonia. Vinylisocyanate was then heated with B-ethoxy acrylamide in a sealed tube to give N,B-ethoxy acryl-N-vinyl urea which was then cyclized to 1-vinyluracil. 9-vinyladenine was prepared directly by vinyl interchange of vinyl acetate with adenine. A superior vinyl interchange procedure was developed. This procedure involves first protecting the 6-amino group with a benzoyl group. Each of the monomers, i.e. 1-vinyluracil and 9-vinyladenine, were polymerized in an aqueous solution by free radical catalysis and the resulting polymers exhibited good thermal properties and were capable of being cast into films.

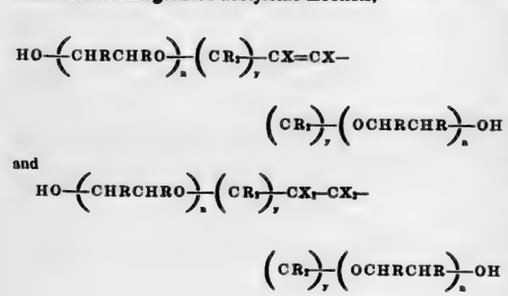
3,664,992

ACRYLIC ESTERS OF HALOGENATED ACETYLENIC DIOLS

Gaetano F. D'Alelio, 2011 East Cedar St., South Bend, Ind.

Filed Dec. 19, 1968, Ser. No. 785,337
Int. Cl. C08f 3/64, 3/66
U.S. Cl. 260—89.5 14 Claims

The esters disclosed herein comprise polymerizable acrylic esters of the halogenated acetylenic alcohols,



wherein R represents hydrogen preferably or a monovalent hydrocarbon containing one to 10 carbon atoms, X is a halogen selected from the class consisting of chlorine and bromine, *y* represents an integer having a value of 1 or 2, and one n represents zero and the other *n* represents an integer having a value of 0 to 3, preferably zero. These acrylic monomers are useful for the preparation of self-extinguishing homopolymers and copolymers; the diesters are also particularly useful as croslinking agents for other monomers and polymers.

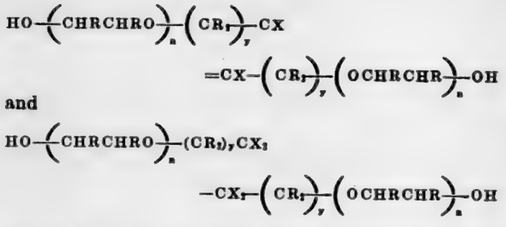
3,664,993

ACRYLIC ESTERS OF HALOGENATED ACETYLENIC DIOLS

Gaetano F. D'Alelio, 2011 East Cedar St., South Bend, Ind.

Filed Dec. 19, 1968, Ser. No. 785,338
Int. Cl. C08f 3/64, 3/66
U.S. Cl. 260—89.5 16 Claims

This invention relates to polymerizable acrylic esters of the halogenated acetylenic alcohols,



wherein R represents hydrogen and a monovalent hydrocarbon containing one to ten carbon atoms, X is a halogen selected from the class consisting of chlorine and bromine, *y* represents a numerical value of 1 or 2, and n represents a numerical value of 1 to 3. These acrylic monomers are useful for the preparation of self-extinguishing homopolymers and copolymers; the diesters are also particularly useful as crosslinking agents for other monomers and polymers.

3,664,994

PROCESS FOR SEPARATING HORSE GAMMA GLOBULIN FRACTIONS BY CHROMATOGRAPHY

Robert J. Perper, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed June 30, 1969, Ser. No. 837,416
Int. Cl. C07g 7/00
U.S. Cl. 260—112 B 3 Claims

Two gamma globulin fractions of differing chemical, immunological and biological characteristics are separated from an aqueous solution containing horse gamma globulin of anti-heterologous lymphocyte or lymphoblast origin by fractionation on an anion exchanger ether of cross-linked dextran.

3,664,995

REACTIVE TRIAZINE CONTAINING DIAZO DYESTUFFS

Herbert Francis Andrew, and Neville Jackson, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 22, 1969, Ser. No. 887,329
Claims priority, application Great Britain, Dec. 31, 1968, 61,961/68
Int. Cl. C09b 62/08
U.S. Cl. 260—146 T 6 Claims

Dyestuffs of the formula:



in which D_1 and D_2 are azo, anthraquinone or nitro dye radicals, R_1–R_6 are H or lower alkyl groups, A_1 and A_2 are radicals of the benzene or naphthalene series and T_1 is a chloro-s-triazine radical, are reactive dyestuffs for cellulose having good fastness to light and washing. They are especially notable for the high proportion which reacts with the fiber when applied from saline dyebaths.

3,664,996

MONO AZO DYESTUFFS CONTAINING A PYRIDYL GROUP

Alistair Howard Berrie, and Nigel Hughes, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

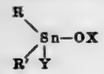
Filed June 23, 1969, Ser. No. 835,749
Claims priority, application Great Britain, June 27, 1968, 30,760/68
Int. Cl. C09b 29/36
U.S. Cl. 260—156 2 Claims

Water-insoluble monoazo dyestuffs of the formula :

wherein A is optionally substituted aryl, X is hydrogen, optionally substituted aryl or alkyl optionally substituted by hydroxy, alkoxy or acyloxy, and Y is -R, -OR or -NR^1R^2, R being optionally substituted alkyl or aryl, and R^1 and R^2 each independently being hydrogen or optionally substituted alkyl or aryl, and the use of the dyestuffs for coloring synthetic polyester textile materials.

3,664,997
ROOM TEMPERATURE CURING ORGANOPOLYSILOXANE ELASTOMERS
Rajendra Nath Chadha, and Kailash Chandra Pande, both of Farmingdale, N.Y., assignors to Stauffer-Wacker Silicone Corporation, Adrian, Mich.
Continuation-in-part of application Ser. No. 676,090, Oct. 18, 1967, now abandoned. This application Mar. 9, 1970, Ser. No. 17,983
Int. Cl. C08h 9/00
U.S. Cl. 260—18 S 8 Claims

The invention relates to curable room temperature organopolysiloxanes comprising an organopolysiloxane and an organotin compound of the formula



wherein X is a group represented by hydrogen or



in which R and R′ are hydrocarbon groups, Y and Y′ are groups represented by hydrocarbon, hydroxyl, halogen, OOCR″ or OR and R″ is a hydrocarbon group.

3,664,998
PROCESS FOR CONVERTING PERACYLATED CIS-GLYCOSY HALIDES TO PERACYLATED TRANS-GLYCOSYL HALIDES AND NOVEL COMPOUNDS
Brian Bannister, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Filed Nov. 3, 1969, Ser. No. 873,715
Int. Cl. C07c 47/18
U.S. Cl. 260—210 R 22 Claims

A peracylated cis-glycosyl halide is converted to the corresponding isothiouronium halide. The latter is decomposed to the corresponding mercaptan (β-anomer) which is concomitantly alkylated to the corresponding 1-thioglycoside. The latter is then converted to the trans-glycosyl halide by the reaction of halogen in an inert solvent. 6-Acylamino-6-deoxy-2,3,4-tri-0-acyl-α-D-galactopyranosyl bromide is in this way converted to the β-anomer.

The β-anomer is then converted to the 1-thio-α-glycoside by the thiourea process using a tertiary base dipolar aprotic solvent, the resulting 1-thio-α-glycoside deacylated, and the amino group reacylated to form antibacterially active 7,8-bisnorlincomycin or analog thereof.

3,664,999
METHOD FOR PRODUCTION OF CELLULOSE ION EXCHANGERS
Iosif Efimovich Khusid, Riga Latvliskoi; Ljudmila Ivanovna Bezgodova, and Mara Khugovna Ruben, both of Olaine Latvliskoi, all of U.S.S.R., assignors to Olainsky Zavod Khimreaktivov, Latvliskaya, S.S.R. Olaine, U.S.S.R.
Filed Apr. 22, 1968, Ser. No. 723,260
Claims priority, application U.S.S.R., Apr. 22, 1967, 1,150,438
Int. Cl. C08b 11/00
U.S. Cl. 260—231 A 5 Claims

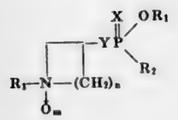
A method for the manufacture of cellulose ion exchangers, such as carboxymethylcellulose, diethylaminoethylcellulose, and ECTEOLA-cellulose, by treating moist disintegrated cellulose with sodium hydroxide solution, etherifying the thus-mercerized cellulose, at an elevated temperature, and thereafter washing the product and dehydrating same with an organic solvent.

3,665,000
TRICARBOXYSTARCH DERIVATIVES
William A. Hills, Trenton, and Gert P. Volpp, Princeton, both of N.J., assignors to FMC Corporation, New York, N.Y.
Filed Dec. 23, 1969, Ser. No. 887,759
Int. Cl. C13l 1/08
U.S. Cl. 260—233.3 R 3 Claims

Tricarboxyl derivatives of starch and a process for their preparation which comprises directly oxidizing dialdehydestarch with dinitrogen tetroxide. The tricarboxyl derivatives function as polyelectrolyte builder materials and serve to enhance the cleaning capacity of conventional detergent compounds.

3,665,001
AZINYL ORGANOPHOSPHORUS COMPOUNDS
Paul L. Valint, Jr., Woodbridge, N.J., assignor to Esso Research and Engineering Company
Filed June 11, 1970, Ser. No. 45,582
Int. Cl. C07f 9/08, 9/12, 9/16
U.S. Cl. 260—239 A 7 Claims

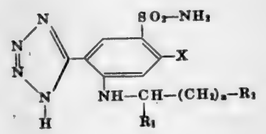
Azinyl organophosphorus compounds represented by the following structure:



wherein R_1 is C_1–C_4 alkyl, R_2 is selected from C_1–C_4 alkyl optionally substituted by chlorine, bromine or alkoxy, C_1–C_4 thioalkyl, C_6–C_{10} aryl, C_1–C_4 alkoxy, phenoxy and thiophenoxy optionally substituted with chlorine, bromine or C_1–C_3 alkyl; R_3 can be hydrogen, C_1–C_4 alkyl, phenyl optionally substituted with chlorine, bromine or C_1–C_3 alkyl, C_6–C_{12} aralkyl, and C_5–C_6 cycloalkyl, X and Y can be O or S, m can be O or 1 and n is an integer ranging from 1 to 3. These compounds have been discovered to possess pesticidal activity, more particularly insecticidal activity.

3,665,002
5-PHENYL-TETRAZOLE DERIVATIVES
Alfred Popelak, Mannheim; Ansgar Lerch, Kirrlach/Baden; Kurt Stach, Mannheim-Waldhof; Egon Reesch, Lampertheim, and Klaus Hardebeck, Ludwigshafen/Rhine, all of Germany, assignors to Boehringer Mannheim GmbH, Postfach, Germany
Filed Dec. 18, 1969, Ser. No. 886,369
Claims priority, application Germany, Dec. 20, 1968, P 19 15 922.3
Int. Cl. C07d 57/00; C07c 143/80
U.S. Cl. 260—239.9 7 Claims

Novel 5-phenyl-tetrazole derivatives of the general formula:



wherein X is a halogen atom, an azido group or a trifluoromethyl radical, R_1 is a hydrogen atom or a lower alkyl radical, R_2 is a phenyl, furyl or thienyl radical and n is 0, 1 or 2; and the pharmacologically compatible salts thereof, possess exceptional diuretic and saluretic properties.

3,665,003
CEPHALOSPORIN COMPOUNDS
James Kennedy, South Harrow; Alan Gibson Long, Greenford, and William G. E. Underwood, Stoke Poges, all of England, assignors to Glaxo Laboratories Limited, Greenford, England
Filed Aug. 13, 1968, Ser. No. 752,191
Claims priority, application Great Britain, Aug. 21, 1967, 38,493/67
Int. Cl. C07d 99/24
U.S. Cl. 260—243 C 12 Claims

7β-Acylamidoceph-3-em-4-carboxylic acids having an etherified 3-hydroxymethyl group, physiologically acceptable base or acid addition salts thereof and intermediates for the preparation of the acids and salts.

3,665,004
MANUFACTURE OF HEXAHYDROTRIAZINE STABILIZERS
Stanley Ashton, and Eric Samuel Nicholson, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England
Filed Apr. 17, 1970, Ser. No. 29,696
Claims priority, application Great Britain, Apr. 24, 1969, 21,057/69
Int. Cl. C07d 55/14
U.S. Cl. 260—248 NS 4 Claims

1,3,5-tris(alkylhydroxyphenylpropionyl)hexahydrotriazines stabilizers for polyolefines, are prepared by reacting alkyl phenols having a free p-position with 1,3,5-trisacryloylhexahydrotriazine in presence of an alkali metal catalyst in a polar solvent.

3,665,005
PROCESS FOR PREPARING 4-HYDROXY-6,7-SUBSTITUTED-3-CARBOALKOXYQUINOLINES
Nicholas D. Harris, Norwich, N.Y., assignor to Morton-Norwich Products, Inc.
Filed Dec. 22, 1969, Ser. No. 887,386
Int. Cl. C07d 33/48
U.S. Cl. 260—287 R 1 Claim

4-Hydroxy-6,7-substituted-3-carboalkoxyquinolines, useful as coccidiostats, are readily prepared by refluxing a dimethyl sulfoxide solution of the corresponding 4-chloro compound.

3,665,006
2-HYDROXYBENZO[b]QUINOLIZINES
John T. Suh, Mequon, and Richard A. Schnettler, Milwaukee, both of Wis., assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Feb. 10, 1970, Ser. No. 10,289
Int. Cl. C07d 39/12
U.S. Cl. 260—289 R 8 Claims

The compounds are 2-hydroxybenzo[b]quinolizines which are useful agents which affect the central nervous system and which can be used as tranquilizing agents to control aggressive antisocial behavior in animals. The compounds may also be used as intermediates in the preparation of pickling agents, mothproofing agents and wood preservatives. Representative of the compounds disclosed are 8,9-dimethoxy - 2 - 2,3,4,6,11,11a - hexahydro - 1H - benzol[b]-quinolizine and 8,9 - dimethoxy - 2 - hydroxy - 2 - (3′ - trifluoromethylphenyl) - 2,3,4,6,11,11a - hexahydro - 1H - benzo[b]quinolizine.

3,665,007
THIAZOLO [3,4-A] BENZIMIDAZOLES AND DERIVATIVES THEREOF
Rudiger D. Haugwitz, Highland Park, and Venkatachala Lakshmi Narayanan, North Brunswick, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.
Filed May 4, 1970, Ser. No. 34,552
Int. Cl. C07d 99/06
U.S. Cl. 260—306.7 7 Claims

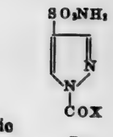
1-Imino-1H,3H-thiazolo[3,4-a]benzimidazoles and 1H,3H-thiazolo[3,4-a]benzimidazole-3-ones are provided which are useful as parasiticides and rodenticides.

3,665,008
5-PYRAZOLYLTHIOPROPIONIC ACID DERIVATIVES
Leo Ralph Swett, and James Daniel Ratajczyk, both of Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.
Original application Apr. 1, 1968, Ser. No. 717,913, now Patent No. 3,590,048, dated June 29, 1971. Divided and this application June 17, 1970, Ser. No. 65,744
Int. Cl. C07d 49/18
U.S. Cl. 260—310 R 4 Claims

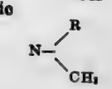
1,3-Disubstituted-5,6-dihydrothiopyrano[2,3-c] pyrazoles are synthesized from the new 3-[(1,3-disubstituted-5-pyrazolyl)thio]propionic acids described. The new fused-ring compounds have excellent anti-inflammatory activity; they relieve edemas and are also useful as antipyretics and analgesics.

3,665,009
1-CARBAMOLYPYRAZOLE-4-SULFONAMIDES
Clifford Lee Dickinson, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of application Ser. No. 764,948, Oct. 3, 1968, now abandoned. This application Aug. 18, 1969, Ser. No. 851,103
Int. Cl. C07d 49/02
U.S. Cl. 260—310 2 Claims

Described are 1-carbamoylpyrazole-4-sulfonamides of the formula



in which X is acyclic



(R being alkyl, etc.), e.g.,

1-(dimethylcarbamoly)pyrazole-4-sulfonamide. The compounds, prepared by direct interaction between pyrazole-4-sulfonamide and the appropriate carbamoyl chloride, are anti-inflammatory agents.

3,665,010
SUBSTITUTED PHENYLACETIC ACIDS AND ESTERS THEREOF
Rolf Denzel, Basel, Switzerland; Niels Clauson-Kaas, Farum, Denmark, and Franz Ostermayer, Riehen, Switzerland, assignors to Ciba-Geigy Corporation
Original application Oct. 30, 1967, Ser. No. 679,224, now Patent No. 3,579,535. Divided and this application Apr. 29, 1970, Ser. No. 43,650
Claims priority, application Switzerland, Oct. 31, 1966, 15,768/66; Jan. 31, 1967, 713/67; Aug. 7, 1967, 11,178/67
Int. Cl. C07d 27/26
U.S. Cl. 260—326.3 3 Claims

Substituted phenyl acetic acids, addition salts thereof with bases as well as esters thereof, which compounds exhibit use-

ful antiinflammatory (antiphlogistic), analgesic and antipyretic activity, and processes for the production of these compounds, as well as starting materials used in said processes; therapeutic compositions containing these compounds, and methods of treatment, particularly methods of inducing antiinflammatory, analgesic and antipyretic effects in mammals. Illustrative embodiments are 2-[p-(1-pyrryl)-phenyl]-butyric acid, [3-chloro-4-(1-pyrryl)-phenyl]-acetic acid and 2-[p-(1-pyrryl)-phenyl]-propionic acid methyl ester.

3,665,011
SUBSTITUTED PHENYLACETIC ACIDS AND ESTERS THEREOF

Rolf Denss, Basel, Switzerland; Niels Clauson-Kaas, Farum, Denmark, and Franz Ostermayer, Riehen, Switzerland, assignors to Ciba-Geigy Corporation

Original application Oct. 30, 1967, Ser. No. 679,224, now Patent No. 3,579,535. Divided and this application Apr. 29, 1970, Ser. No. 43,648

Claims priority, application Switzerland, Oct. 31, 1966, 15,768/66; Jan. 31, 1967, 713/67; Aug. 7, 1967, 11,178/67

Int. Cl. C07d 27/26

U.S. Cl. 260—326.3 2 Claims

Substituted phenyl acetic acids, addition salts thereof with bases as well as esters thereof, which compounds exhibit useful antiinflammatory (antiphlogistic), analgesic and antipyretic activity, and processes for the production of these compounds, as well as starting materials used in said processes; therapeutic compositions containing these compounds, and methods of treatment, particularly methods of inducing antiinflammatory, analgesic and antipyretic effects in mammals. Illustrative embodiments are 2-[p-(1-pyrryl)-phenyl]-butyric acid, [3-chloro-4-(1-pyrryl)-phenyl]-acetic acid and 2-[p-(1-pyrryl)-phenyl]-propionic acid methyl ester.

3,665,012
1-SUBSTITUTED-2-IMINOPYRROLIDINES, INTERMEDIATES THEREFOR AND PROCESSES FOR THE PREPARATION THEREOF

Hermann Bretschneider; Wilhelm Klotzer, and Rudolf Franzmair, all of Innsbruck, Austria, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Aug. 1, 1969, Ser. No. 846,916

Claims priority, application Switzerland, Aug. 7, 1968, 11,854/68

Int. Cl. C07d 27/04

U.S. Cl. 260—326.3 13 Claims

Novel 2-iminopyrrolidines substituted in the 1-position are prepared from 2-amino-Δ′-pyrrolines. The novel pyrrolidines are useful as anti-diabetic and hypoglycemic agents since they effect a lowering of the blood sugar content in warm blooded animals.

3,665,013
PRODUCTION OF COUMARIN DERIVATIVES BY A CONTINUOUS METHOD

Colin Fitzmaurice, Holmes Chapel, and Robert Minshull, Brereton, both of England, assignors to Fisons Pharmaceuticals Limited, Loughborough, England

Filed Dec. 22, 1967, Ser. No. 692,812

Claims priority, application Great Britain, Dec. 22, 1966, 57,534/66

Int. Cl. C07d 7/28

U.S. Cl. 260—343.2 R 13 Claims

The known Fries rearrangement reaction used for the preparation of 4-alkyl, aryl or aralkyl-7-hydroxy-8-acyl coumarins from corresponding 4-alkyl, aryl or aralkyl-7-acyloxy coumarins is effected in a continuous manner using apparatus in which a thin film of the molten reaction mixture is moved continuously over a heated surface. The customary Fries catalyst is preferably mixed with another thermally stable salt so that its melting point may be lowered.

3,665,014
2-SUBSTITUTED 4-PROPARGYLOXYMETHYL-2-ETHOXY-CARBONYL-γ-BUTYROLACTONES

Claude P. Fauran; Guy M. Raynaud, both of Paris; Bernard M. Pourrias, Meudon, and Colette A. Deuzon, Paris, all of France, assignors to Delande S.A.

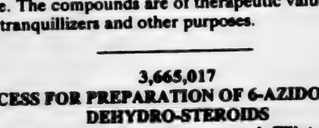
Filed Aug. 21, 1969, Ser. No. 852,086

Claims priority, application Great Britain, Sept. 17, 1968, 44,026/68

Int. Cl. C07d 5/06

U.S. Cl. 260—343.6 5 Claims

A compound of the formula



in which R is a saturated or unsaturated, straight or branched chain aliphatic hydrocarbon radical having one–10 carbon atoms or an aryl aliphatic radical, in which the aryl may be substituted by one or more halogen atoms, one or more alkoxy radicals or a trifluoromethyl radical. The compound is prepared by reacting, in the presence of sodium ethylate, (1) 4-propargyloxymethyl-2-ethoxycarbonyl-γ-butyrolactone with (2) XR, wherein R has the same meaning as above and X is halogen. The compounds possess respiratory stimulating, analgesic and hypotensive properties.

3,665,015
PROCESS FOR PREPARING 3-HYDROXY-2-METHYL-4-PYRONE

Itaru Takasu; Masaru Higuchi, and Hiroshi Hotta, all of Ohimachi, Japan, assignors to Daicel Ltd., Osaka, Japan

Filed Oct. 6, 1969, Ser. No. 864,166

Claims priority, application Japan, Oct. 12, 1968, 43/74342

Int. Cl. C07d 7/16

U.S. Cl. 260—345.9 6 Claims

3-hydroxy-2-methyl-4-pyrone (maltol) is prepared by (1) reacting β, δ-dioxocaproaldehyde dialkyl acetal with lead tetraacetate, (2) either (a) pyrolyzing the product of step (1), or (b) treating the same with an acid condensing agent, and (3) hydrolyzing the product of step (2) either simultaneously therewith or subsequently.

β, δ-dioxocaproaldehyde is prepared by reacting lower alkyl ββ-dialkoxypropionates with acetone under conditions suitable to effect the Claisen condensation reaction.

3,665,016
AMINOALKYLTHIO INDOLES

Jacques Bourdais, Paris, France, assignor to Centre National De La Recherche Scientifique, Paris, France

Filed Oct. 3, 1968, Ser. No. 764,933

Claims priority, application France, Oct. 5, 1967, 123429; Sept. 26, 1968, 167763

Int. Cl. C07d 51/70

U.S. Cl. 260—268 BC 15 Claims

A class of amino alkyl thioethers of 2-mercapto indole is described together with methods for their manufacture from indoline-2-thione starting materials, reacted with amine or aziridine. The compounds are of therapeutic value as pain relievers, tranquillizers and other purposes.

3,665,017
PROCESS FOR PREPARATION OF 6-AZIDO-4, 6-BIS-DEHYDRO-STEROIDS

George J. Teutsch, Nancy, France, and Elliot L. Shapiro, Cedar Grove, N.J., assignors to Schering Corporation, Bloomfield, N.J.

Filed July 24, 1970, Ser. No. 58,162

Int. Cl. C07c 173/00

U.S. Cl. 260—349 10 Claims

6-Azido-4,6-bis-dehydro-steroids are prepared by treating a 6β-azido-7α-acyloxy-4-dehydro-steroid which is saturated at C–1 and C–2, with a tetraalkylammonium halide in an aprotic solvent.

Preferred species include the preparation of 6-azido-4,6-pregnadienes of the corticoid and progesterone series by treatment of a 6β-azido-7α-acyloxy-4-pregene of the corticoid or progesterone series which is saturated at C–1 and at C–2 and wherein said 7α-acyloxy is a member selected from the group consisting of 7α-lower alkanoyloxy and 7α-hydrocarbonsulfonyloxy having up to seven carbon atoms with a tetraalkylammonium halide in an aprotic solvent.

6-Azido-6-dehydrocortisone acetate having enhanced anti-inflammatory activity is prepared by treating a member selected from the group consisting of 6β-azido-7αacetoxy-4-pregnene-17α,21-diol-3,11,20-trione 21-acetate and 6β-azido-7αmethanesulfonyloxy-4-pregnene-17α,21-diol-3,11,20-trione 21-acetate with tetramethylammonium-fluoride in acetonitrile.

3,665,018
NAPHTHACENE DERIVATIVES

Georges Jolles, Sceaux, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed July 14, 1969, Ser. No. 841,552

Claims priority, application France, July 15, 1968, 159237; June 2, 1969, 6918032

Int. Cl. C07c 87/10, 87/36

U.S. Cl. 260—365 11 Claims

New derivatives of 4-methoxy-5,12-dioxo-6,9,11-trihydroxy-9-acetyl-5,7,8,9,10,12-hexahydronaphthacene with a substituent —O—CO—R in the 7-position, wherein R represents cyclohexyl substituted by an aminomethyl group, or by at least one amino group, monoalkylamino group of which the alkyl radical contains one to five carbon atoms, dialkylamino group of which each alkyl radical contains one to five carbon atoms, or sulphomethylamino group, or R represents a said substituted-cyclohexyl group also substituted by at least one hydroxy group or alkanoyloxy group of which the alkanoyl radical contains one to five carbon atoms, or R represents a phenylalkyl group of which the alkyl radical contains one to four carbon atoms and is substituted by a bis(2-chlorethyl)amino group, or a piperidyl group, and non-toxic salts thereof, have useful properties against leukaemia L1210 in mice, combined with a low toxicity.

3,665,019
ANTHRAQUINONE DYESTUFFS

Josef Singer, Leverkusen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

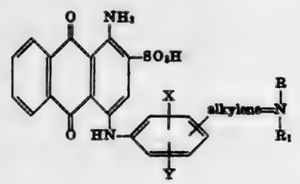
Continuation of application Ser. No. 607,885, Jan. 9, 1967, now abandoned. This application Feb. 24, 1970, Ser. No. 14,724

Claims priority, application Germany, Jan. 18, 1966, F 48195; Nov. 25, 1966, F 50764

Int. Cl. C09b 1/34

U.S. Cl. 260—374 4 Claims

Anthraquinone dyestuffs suitable for dyeing natural and synthetic polypeptide fibers, such as silk and polyamide fibers, are provided of the formula:



wherein X and Y are hydrogen, halogen, methyl, ethyl, methoxy, or ethoxy; R is hydrogen, methyl or ethyl; and R_1 is phenylsulfonyl or substituted phenylsulfonyl.

3,665,020
PROCESS FOR THE PREPARATION OF CRYSTALLINE VITAMIN D_3

Roman Marbet, Riehen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Feb. 18, 1970, Ser. No. 12,459

Claims priority, application Switzerland, Feb. 25, 1969, 2804/69

Int. Cl. C07c 171/10

U.S. Cl. 260—397.2 6 Claims

The invention comprises the preparation of crystalline vitamin D_3 from a vitamin D_3 resin by dissolving a vitamin D_3 resin in methyl formate and cooling the resultant solution.

3,665,021
9α-UNSUBSTITUTED-11β-CHLORO-L9 NOS-STEROIDS

Joseph Elks, London; Gordon Hanley Phillipps, Greenford, and Alan Tulley, Formby, all of England, assignors to Glaxo Laboratories Limited, Greenford, England

Continuation-in-part of application Ser. No. 701,064, Jan. 29, 1968, now abandoned. This application Aug. 1, 1969, Ser. No. 846,975

Int. Cl. C07c 169/32

U.S. Cl. 260—397.45 34 Claims

9α-Unsubstituted 11β-chloro-19-nor-steroids are provided as new compounds having hormonal activity and, in particular, progesterone-like or anabolic/androgenic activity.

3,665,022
DEGRADATION OF SIDE CHAIN IN SAPOGENINS

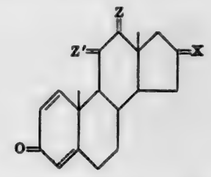
Eiji Kondo, Ikeda-shi, Osaka, and Takashi Mitsugi, Senboku-gun, Osaka, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Continuation-in-part of application Ser. No. 597,216, Nov. 28, 1966, now abandoned. This application Sept. 2, 1969, Ser. No. 854,769

Int. Cl. C07c 169/20

U.S. Cl. 260—397.3 18 Claims

Compounds of the formula



wherein X is oxo, lower alkylenedioxy, di(lower alkoxy), or



in which R′ is hydrogen or acyl; one of Z and Z′ is oxo or



in which R is hydrogen or acyl, and the other is



and the dotted line represents the presence or absence of a double bond are useful as intermediates for preparing a wide variety of androstranes and estranes, including testosterone, esterone, estradiol, etc., in per se known manner.

3,665,023
N-(4-NITROPHENYLSULFONYL)-N'-(CHLORO AND/OR NITRO SUBSTITUTED BENZOYL)UREAS

Angelo Speziale, Creve Coeur, and Lowell R. Smith, Chesterfield, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Original application June 17, 1968, Ser. No. 737,344, now Patent No. 3,547,618, dated Dec. 15, 1970. Divided and this application Mar. 27, 1970, Ser. No. 29,722
Int. Cl. C07c 143/78
U.S. Cl. 260—397.7 D 4 Claims

Compounds of the class N-(4-nitrophenylsulfonyl)-N'-(chloro and/or nitro substituted benzoyl) ureas which compounds are phytocidally active.

3,665,024
DIALKYLTIN BIS(SUBSTITUTED MERCAPTIDES)

Vincent Oakes, St. Helens, and Brian Rodney Iles, Liverpool, both of England, assignors to Pure Chemicals Limited, Liverpool, England

Filed Nov. 18, 1969, Ser. No. 877,857
Claims priority, application Great Britain, Nov. 22, 1968, 55,523/68
Int. Cl. C07f 7/22
U.S. Cl. 260—429.7 3 Claims

New organotin compounds, suitable for use as stabilizers for vinyl halide resins, are obtained by reacting a dialkyltin oxide, hydroxide, or dihalide with a monoester of a diol or an alkoxy or acyloxy alcohol with a mercapto-acid.

3,665,025
ORGANO(HALO) DISULFUR TIN DERIVATIVES AND THE PROCESS OF PREPARING THE SAME

Anatole Wowk, Edison, N.J., assignor to M & T Chemicals Inc., New York, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,850
Int. Cl. C07f 7/22
U.S. Cl. 260—429.7 18 Claims

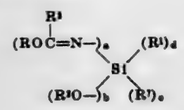
This invention comprises novel compounds exhibiting one direct carbon to tin bond, one direct halogen to tin bond and two direct sulfur to tin bonds, methods of preparing these novel compounds, and to polymers stabilized by these novel compounds against the deteriorative effects of heat and light.

3,665,026
IMIDATOSILANES

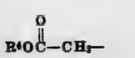
Milton L. Evans, Schenectady, N.Y., assignor to General Electric Company

Filed Mar. 14, 1969, Ser. No. 807,436
Int. Cl. C07f 7/02, 7/04
U.S. Cl. 260—448.8 R 16 Claims

Compound of the formula:



wherein R^1 and R^7 are each organic radicals of not more than 18 carbon atoms selected from the group consisting of hydrogen, hydrocarbyl, halohydrocarbyl and cyanoalkyl, R and R^3 are each organic radicals of not more than 18 carbon atoms selected from the group consisting of hydrocarbyl, halohydrocarbyl, nitrohydrocarbyl and alkoxyhydrocarbyl, R^2 is an organic radical of not more than 18 carbon atoms selected from the group consisting of hydrogen, hydrocarbyl, halohydrocarbyl, nitrohydrocarbyl, alkoxyhydrocarbyl, dialkylamino and



wherein R^4 is an organic radical selected from the group consisting of aliphatic hydrocarbyl, aliphatic halohydrocarbyl, aliphatic nitrohydrocarbyl, and



wherein R^5 and R^6 are each aliphatic hydrocarbyl, *a* is an integer of 1 to 4, inclusive, *b* is an integer of 0 to 3, inclusive, *d* and *e* are each integers of 0 to 1, and the sum of *a*, *b*, *d* and *e* is 4. The imidatosilanes are useful as chain extenders and as curing agents in one-package RTV compositions.

3,665,027
PROCESS FOR PREPARING GAMMA-AMINOPROPYLALKOXY-SILANES AND GAMMA-AMINOPROPYLALKYLALKOXYSILANES

Sigrid Reichel, Dresden, Germany, assignor to Institut fur Silikon- und Fluorkarbon-Chemie, Radebeul, Germany

Filed July 23, 1969, Ser. No. 844,189
Int. Cl. C07f 7/04, 7/02
U.S. Cl. 260—448.8 R 8 Claims

A process for preparing gamma-aminopropylalkoxysilanes and gamma-aminopropylalkylalkoxysilanes by an addition of allylamine to hydrogenalkoxysilanes or hydrogenalkylalkoxysilanes, which comprises boiling the components under reflux, in the presence of a catalyst known for addition reactions, until the temperature of the reaction mixture reaches a constant level above 110° C. The time required is from 30 to 40 hours. The peroxysilanes formed simultaneously with the gamma-aminopropylalkoxysilanes and gamma-aminorpopylalkylalkoxysilanes can be removed by vacuum distillation, as first runs. The residue is then a useful adhesion-promoting agent for glass fiber-reinforced synthetics. Other uses for the gamma-aminopropylalkoxysilanes and gamma-aminopropylalkylalkoxysilanes of this invention are: surface treating of textiles, leather, ceramics, glass; corrosion protection of metals, use as primers and adhesives and for modifying synthetics.

3,665,028
PROCESS FOR PREPARATION OF BORATE ESTERS

Joseph L. Russell, Ridgewood, N.J., assignor to Halcon International, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 593,646, Nov. 14, 1966, now abandoned. This application Mar. 6, 1968, Ser. No. 710,781
Int. Cl. C07f 5/04
U.S. Cl. 260—462 A 11 Claims

This invention relates to the oxidation of hydrocarbons in the presence of boron compounds. More specifically, the invention teaches a method of improving the selectivity of the reaction and the distribution of the oxidation products.

3,665,029
PRODUCTION OF O-AMINOBENZONITRILES

Helmut Goerth, Ludwigshafen, and Herbert Armbrust, Gruenstadt, both of Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed June 23, 1969, Ser. No. 835,744
Claims priority, application Germany, June 29, 1968, P 17 68 786.4
Int. Cl. C07c 121/78
U.S. Cl. 260—465 E 8 Claims

Production of o-aminobenzonitriles by thermal decomposition of isatin β-oximes in the presence of basic compounds. The new products are starting materials for the production of dyes and pesticides.

3,665,030
OXIDATION OF ALKYL AROMATICS

Pierre de Radzitzky d'Ostrowick, and Jacques D. V. Hanotier, both of Brussels, Belgium, assignors to Labofina, Soc. An., Brussels, Belgium

Filed Dec. 11, 1969, Ser. No. 884,336
Int. Cl. C07c 47/54, 63/02, 69/14
U.S. Cl. 260—488 CD 25 Claims

Process of liquid phase oxidation of the alpha carbon atom of alkylbenzenes by a manganic or cobaltic salt and an acid activator with or without an oxidation-resistant solvent either in an inert atmosphere to produce lower oxidation products of the alpha carbon atom such as alcohols or their esters; or, in the presence of molecular oxygen, to produce higher oxidation products such as aromatic aldehydes, ketones or carboxylic acids.

3,665,031
WATER-SOLUBLE PHENOLIC ANTIOXIDANTS

Hans Jakob Peterli; Ernst Keller, both of Baseland, and Kurt Schwarzenbach, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sept. 16, 1968, Ser. No. 762,374
Claims priority, application Switzerland, Sept. 20, 1967, 13164/67
Int. Cl. C07c 143/52
U.S. Cl. 260—507 R 14 Claims

Water-soluble compounds of the general formula

$$(A-Y-)_nZ(SO_3^-M^+)_m$$

wherein

A represents the radical of a sterically hindered phenol of the benzene series.

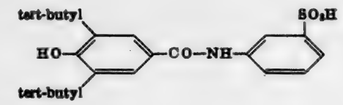
Y represents a bridge wherein the acyclic bridging member contains a carboxylic acid amide group as chain member,

Z represents an aliphatic radical or a carboxylic aromatic radical, containing at most two mono- or bi-cyclic nuclei,

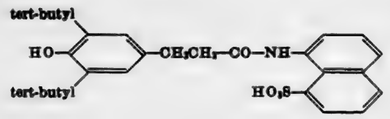
M^+ represents one equivalent of a cation solvatizable by water, and

m and *n* independently of each other represent 1 or 2, and their water soluble salts are disclosed as antioxidants useful for the stabilization of organic polymers containing basic groups against deterioration due to heat and/or oxygen. In contrast to known stabilizing agents, the novel compounds need not be incorporated into the polymerization or polycondensation process for producing the materials to be protected or into a melt of such materials but can be applied to the finished organic products in an after-treatment, for instance by drawing thereon from an aqueous bath.

Typical compounds of the invention are those of the formulas



and



3,665,032
RESOLUTION OF L-DOPA INTERMEDIATE

Homer A. Burch, and Thomas J. Schwan, both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Apr. 10, 1970, Ser. No. 27,438
Int. Cl. C07c 101/08
U.S. Cl. 260—519 1 Claim

A process is provided whereby DL-α-benzoylamino-4-hydroxy-3-methoxydihydrocinnamic acid is reacted with dehydroabietylamine to form the amine salt of Lα-benzoylamino-4-hydroxy-3-methoxydihydrocinnamic acid which upon treatment with hydrochloric acid and hydrobromic acid yields L-Dopa.

3,665,033
METHOD FOR COOLING THE REACTOR EFFLUENT FROM THE OXIDATION OF META-OR PARA-XYLENE

Stanley Ohlweger, Olympia Fields, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

Continuation-in-part of application Ser. No. 727,977, May 9, 1968, now abandoned. This application July 1, 1970, Ser. No. 51,516
Int. Cl. C07c 63/02
U.S. Cl. 260—524 R 8 Claims

A high temperature liquid stream containing dissolved solids which tend to deposit on heat exchange surfaces is combined and quenched with a low temperature recycle stream which is a portion of the feed stream to provide a mixture of intermediate temperature. Low temperature in the quench stream and removal of heat from the system are achieved by cooling the mixture of intermediate temperature at a relatively low temperature level and high mass velocity in a heat exchanger without substantial deposition of solids on exchange surfaces. The process is particularly effective in cooling the reactor effluent from the oxidation of meta- or para-xylene to isophthalic or terephthalic acid wherein the reactor effluent, comprising a saturated slurry of the acid product in an acetic acid medium, is at a temperature of at least about 200° F., and is combined with a quench stream of cooled product slurry. The amount and temperature of the quench stream are proportioned to give a composite stream of an intermediate temperature suitable for recycle to the oxidation reactor for temperature control and for product recovery by filtration. The quench stream is provided by diverting a non-supersaturated portion of the composite stream, in appropriate amount, through a heat exchanger operated at a relatively low temperature level and a linear velocity of about 5 to 15, and preferably 10 to 12, feet per second, to attain the appropriate temperature, of up to about 120° F., for quenching the feed stream.

3,665,034
PROCESS FOR THE PRODUCTION OF CARBOXYLIC ACIDS

Youji Komatsu; Takeshi Tamura; Kinya Kujii, and Masafumi Hatsutori, all of Chiba, Japan, assignors to Maruzen Oil Company Limited, Osaka, Japan

Filed Apr. 25, 1969, Ser. No. 819,458
Claims priority, application Japan, Apr. 25, 1968, 43/27872; July 20, 1968, 43/51473
Int. Cl. C07c 51/14
U.S. Cl. 260—533 A 22 Claims

A process for the production of a carboxylic acid at a high yield with reduced formation of by-products, which comprises reacting an olefin, a halogenated olefin, an alcohol, a halohydrin, an ester, an ether or a mercaptan with carbon monoxide using an acidic catalyst in the presence of a halogenated hydrocarbon and/or a carboxyl group-containing compound and diluting the resulting reaction mixture with water.

3,665,035
ACRYLIC COMPOSITION FOR WATER TREATMENT AND PROCESS FOR MAKING SAME

Herbert L. Rice; Arthur Clark, and Marvin O. Thacmar, all of Houston, Tex., assignors to Milchem Incorporated, Houston, Tex.

Filed Aug. 18, 1969, Ser. No. 851,085
Int. Cl. C07c 153/00
U.S. Cl. 260—537 S 10 Claims

This invention relates to an acrylic composition; a process for obtaining the acrylic composition; to the use of such com-

position to remove and/or inhibit scale formation in water treatment apparatuses, oil and gas wells, producing formations, and other scale containing or attracting surfaces. Said novel composition is formed from about 80 to 90 parts by weight acrylic acid, about 7 to 15 parts by weight thioglycolic acid, and about 1.5 to 5 parts by weight ammonium persulfate.

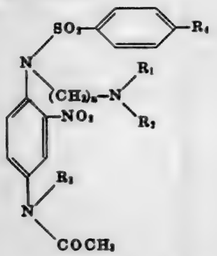
3,665,036

DYE FORMING NITROPARAPHENYLENEDIAMINE SULFONYL DERIVATIVES

Gregoire Kalopissis, Paris, and Andree Bugnat, Boulogne sur Seine, both of France, assignors to Societe anonyme dite: L'Oreal, Paris, France

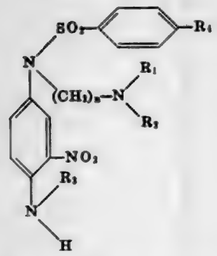
Continuation-in-part of application Ser. No. 568,118, July 27, 1966, now abandoned. This application Feb. 9, 1970, Ser. No. 10,040
Int. Cl. C07c *143/78*
Claims priority, application Luxembourg, July 30, 1965, 49,214; Jan. 27, 1966, 50,348; July 4, 1966, 51,474
U.S. Cl. 260—556 AR 5 Claims

Intermediate compounds which can be used to form hair dyes which have the formula:



(III)

and



(IV)

in which R_1 and R_2 are H, alkyl or hydroxyalkyl and may form a heterocyclic ring with the N atom, R_3 is H, alkyl or hydroxyalkyl, R_4 is H or CH_3 and n is 2–6.

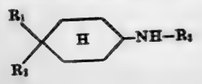
3,665,037

4-METHYLCYLOHEXYLHYDROXY AMINE

Masuo Murakami, Tokyo; Masaru Iwanami, Kanagawa-ken; Kazuo Kubo; Kenji Sano, both of Saitama-ken; Masahiro Kochiya, and Hideki Arima, both of Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed June 27, 1969, Ser. No. 837,330
Claims priority, application Japan, July 6, 1968, 43/46816; July 19, 1968, 43/50579
Int. Cl. C07c *83/02*
U.S. Cl. 260—563 R 1 Claim

Novel cyclohexylamine derivatives of the formula



wherein R_1 represents a lower alkyl group, R_2 represents a hydrogen atom or a lower alkyl group, and R_3 represents a hydrogen atom or a hydroxyl group, said R_3 being a hydrogen atom when the R_2 is a lower alkyl group and a hydroxyl group when the R_2 is a hydrogen atom. These derivatives are excellent as analgesics.

3,665,038

PROCESS FOR PREPARING CARBON-CARBON COUPLED DIMERS OF N-ARYLNAPHTHYLAMINES

Robert F. Bridger, Hopewell, N.J., assignor to Mobil Oil Corporation

Filed June 12, 1969, Ser. No. 832,859
Int. Cl. C07c *87/64*, *87/66*
U.S. Cl. 260—576 7 Claims

Carbon-carbon coupled dimers of N-arylnaphthylamines are prepared by thermally decomposing an N-nitroso-N-arylnaphthylamine. The aryl portion of such material may be phenyl, naphthyl or an alkyl-, alkoxy- or halogen-substituted member of these.

The compounds thus produced are useful as antioxidants for a variety of organic materials. These include polyurethane and polyolefin polymers as well as lubricating oils.

3,665,039

UNSATURATED ALDEHYDES

Rudolf Ruegg, Bottmingen, and Ulrich Schwieter, Reinach, Basel-Land, both of Switzerland, assignors to Hoffman-La Roche, Inc., Nutley, N.J.

Original application Nov. 12, 1963, Ser. No. 323,156, now Patent No. 3,466,335, dated Sept. 9, 1968. Divided and this application Mar. 19, 1969, Ser. No. 808,664
Int. Cl. C07c *47/20*
U.S. Cl. 260—602 2 Claims

Unsaturated aldehydes which are intermediates in the preparation of carotenoids.

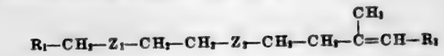
3,665,040

PESTICIDES

Rudolf Ruegg, Bottmingen, Switzerland, and Peter Schmialek, Berlin-Dahlem, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Original application Jan. 11, 1968, Ser. No. 696,987, now Patent No. 3,541,154, which is a division of application Ser. No. 301,968, Aug. 14, 1963, now Patent No. 3,429,970, which is a continuation-in-part of application Ser. No. 168,834, Jan. 25, 1962, now abandoned, and 196,521, May 21, 1962, now abandoned. Divided and this application May 19, 1970, Ser. No. 38,915
Claims priority, application Germany, Feb. 2, 1961, Sch 29159; Switzerland, May 24, 1961, 6019/61
Int. Cl. C07c *43/14*
U.S. Cl. 260—614 R 2 Claims

Isoprenoid compounds having the general formula



or a salt thereof, useful for hindering or impeding the metamorphosis and reproduction of arthropodes are disclosed. These compounds are exemplified by farnesyl methyl ether and farnesyl-n-butyl ether.

3,665,041

PERFLUORINATED POLYETHERS AND PROCESS FOR THEIR PREPARATION

Dario Sianesi, Milan, and Renzo Fontanelli, Rome, both of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Apr. 2, 1968, Ser. No. 718,223
Claims priority, application Italy, Apr. 4, 1967, 14508 A/67
Int. Cl. C07c *43/30*
U.S. Cl. 260—615 A 8 Claims

New polyether oligomers, homopolymers and copolymers consisting only of carbon, fluorine and oxygen atoms, having only perfluoralkyl terminal groups, and containing no peroxidic oxygen. Prepared by reacting polyether which contains reactive terminal groups and, optionally, peroxidic oxygen with fluorine gas under pressures between about 0.2 and 10 atmospheres and at temperatures between about 100° and 350° C.

3,665,042

PROCESS FOR 4-ALKYL-2,6-DINITROCHLOROBENZENES

Eddie V. P. Tao, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed May 22, 1970, Ser. No. 39,876
Int. Cl. C07c *79/12*
U.S. Cl. 260—646 3 Claims

4-Isopropyl-2,6-dinitrochlorobenzene and 4-tert-butyl-2,6-dinitrochlorobenzene are prepared in high yields via chlorination of the corresponding 2,6-dinitro phenols with thionyl chloride in the presence of dimethylformamide and a C_6-C_{10} alkyl hydrocarbon solvent. The 4-alkyl-2,6-dinitrochlorobenzenes obtained thereby are useful intermediates of the herbicidally active dinitroanilines.

3,665,043

FRACTIONATION OF C_{12} BICYCLIC AROMATIC HYDROCARBONS BY DI OR TRIANHYDRIDE COMPLEX FORMATION

Ronald I. Davis, Wilmington, Del., and Kenneth A. Scott, Swarthmore, Pa., assignors to Sun Oil Company, Philadelphia, Pa.

Filed May 1, 1970, Ser. No. 33,981
Int. Cl. C07c *7/00*
U.S. Cl. 260—674 N 11 Claims

Mixtures of C_{12} bicyclic aromatic hydrocarbons containing dimethylnaphthalenes are difficult to fractionate by conventional techniques such as distillation or crystallization. However, by contacting such mixtures with the dianhydride of 1,2,4,5-benzenetetracarboxylic acid, the dianhydride of 1,2,3,4-benzenetetracarboxylic acid or the trianhydride of 1,2,3,4,5,6,-benzenehexacarboxylic acid, a solid complex of certain hydrocarbons and the polyanhydride is formed. Separation of the solid complex and its subsequent decomposition results in a complexate that is substantially richer in those dimethylnaphthalenes which are preferentially complexed. Upon further processing these dimethylnaphthalenes have utility in the production of dyes.

3,665,044

FRACTIONATION OF C_{12} BICYCLIC AROMATIC HYDROCARBONS BY 2-CHLORO, 4-NITROBENZOIC ACID COMPLEX FORMATION

Kenneth A. Scott, Swarthmore, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Filed May 1, 1970, Ser. No. 33,951
Int. Cl. C07c *7/00*
U.S. Cl. 260—674 N 5 Claims

Mixtures of C_{12} bicyclic aromatic hydrocarbons containing dimethylnaphthalenes are difficult to fractionate by conventional techniques such as distillation or crystallization. However, by dissolving 2-chloro, 4-nitrobenzoic acid in such a mixture at an elevated temperature, followed by subsequent cooling, a solid complex of said acid and certain hydrocarbons is formed. Separation of the solid complex from the cooled mixture and its subsequent decomposition results in a product that is substantially richer in those dimethylnaphthalenes which have greater tendency to form such complexes. Upon further processing, these dimethylnaphthalenes have utility in the production of dyes.

3,665,045

FRACTIONATION OF EUTECTIC MIXTURES OF DIMETHYLNAPTHALENES BY DIANHYDRIDE COMPLEXATION

Ronald I. Davis, Wilmington, Del., and Kenneth A. Scott, Swarthmore, Pa., assignors to Sun Oil Company, Philadelphia, Pa.

Filed May 1, 1970, Ser. No. 33,980
Int. Cl. C07c *7/00*
U.S. Cl. 260—674 N 9 Claims

Binary eutectics of dimethylnapthalenes having each methyl group at a β position cannot be fractionated by crystallization and are difficult to fractionate by distillation. However, by dissolving the normally solid eutectic in an inert solvent and contacting the resulting solution with a dianhydride of 1,2,4,5,-benzenetetracarboxylic acid or a dianhydride of 1,2,3,4-benzenetetracarboxylic acid, a solid complex is formed. Separation of the solid complex and its subsequent decomposition results in a complexate that is substantially richer in a dimethylnapthalene which is preferentially complexed. Dimethylnaphthalenes are oxidized to naphthalenecarboxylic acids which are used in the production of dyes and pigments.

3,665,046

SEPARATION OF PARA-XYLENE FROM MIXTURES OF C_8 AROMATICS UTILIZING CRYSTALLINE ALUMINOSILICATE ADSORBENTS

Armand J. De Rosset, Clarendon Hills, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 13, 1969, Ser. No. 865,994
Int. Cl. C07c *7/12*
U.S. Cl. 260—674 SA 5 Claims

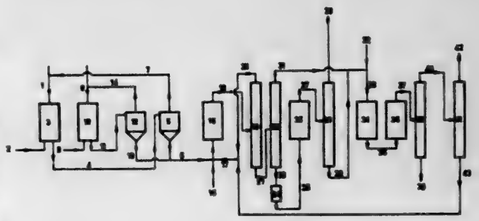
A process for the separation of an aromatic hydrocarbon from a mixture of aromatic isomers using a crystalline aluminosilicate adsorbent. A feed mixture comprising at least two aromatic-type hydrocarbons is passed through a bed of a faujasite structured adsorbent wherein one of the aromatics is preferentially adsorbed within the adsorbent. A subsequent desorption step is then used to desorb the selectively adsorbed feed component.

3,665,047

METHOD FOR THE SIMULTANEOUS PREPARATION OF A DIOLEFIN AND AN OLEFIN

Andre Glaion, Paris; Joseph-Edouard Weisang, Le Havre, and Jean Maurin, Montivilliers, all of France, assignors to Compagnie Francaise de Raffinage, Paris, France

Filed May 25, 1970, Ser. No. 40,278
Claims priority, application France, May 30, 1969, 17791
Int. Cl. C07c *1/00*, *1/20*
U.S. Cl. 260—681 11 Claims



A method of preparing a diolefin and an olefin or an alkenyl benzene hydrocarbon simultaneously from more highly saturated hydrocarbons, said latter respectively having the same carbon structure as the desired end product pair, wherein the more highly saturated hydrocarbon precursors are reacted with oxygen to form respective hydroperoxides,

the latter are reacted with an ethylenic hydrocarbon having the same carbon structure as the diolefin precursor to form an epoxide or glycol which are in turn dehydrated to the desired diolefin; the first hydroperoxide forms an alcohol which is dehydrated to reform the ethylenic hydrocarbon for recycling; the second hydroperoxide forms an alcohol which is dehydrated to the desired olefin or alkenylbenzene (depending upon the form of the precursor); and the ketone byproducts formed during the reaction of said hydroperoxides with said ethylenic hydrocarbon (these being the other principle byproducts in this process) are reduced to an alcohol and then dehydrated to said ethylenic hydrocarbon for recycling.

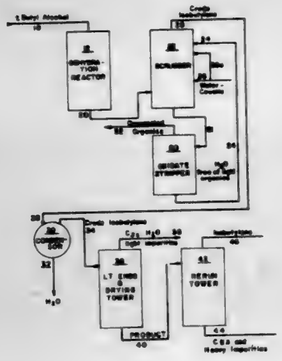
The foregoing process is particularly advantageous in the simultaneous production of isoprene and isobutylene from isopentane and isobutane or of isoprene and styrene from isopentane and ethyl benzene.

3,665,048

PROCESS TO PRODUCE HIGH PURITY ISOBUTYLENE

Henry R. Grane, and Isadore Edward Katz, both of Springfield, Pa., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Jan. 14, 1970, Ser. No. 2,773
Int. Cl. C07c 1/20
U.S. Cl. 260—682 10 Claims



Essentially pure isobutylene is obtained by the controlled dehydration of a feed stream containing tertiary butyl alcohol and only traces of butenes. Dehydration takes place over an aluminum oxide catalyst wherein the reaction zone is maintained between 400° and 800° F. and preferably between 97.5 and 99.5 percent of the alcohol is converted primarily to isobutylene and water. A process is included for separation of the isobutylene from the unreacted alcohol, the water, and other constituents of the reactor effluent making possible the production of 99.9 percent pure stream of isobutylene. Higher tertiary alcohols can be dehydrated by essentially the same process.

3,665,049

DEHYDROGENATING PROPANE OVER CHROMIA-ALUMINA CATALYST

Edward B. Cornelius, Swarthmore, Pa., and David W. Koester, Wilmington, Del., assignors to Air Products and Chemicals, Inc., Philadelphia, Pa.

Filed May 28, 1970, Ser. No. 41,549
Int. Cl. C07c 5/18
U.S. Cl. 260—683.3 4 Claims

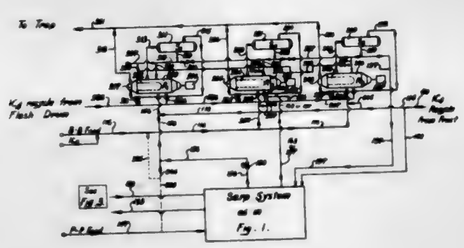
Triethyl aluminum is employed as reactant in a conversion to valuable products, forming an alumina by-product consisting predominantly of alumina alpha-monohydrate and a significant amount of amorphous alumina. Particles of this by-product are marketed as a technical grade of boehmite. A precursor mixture is prepared comprising calcined alumina powder, a larger amount of said technical grade of boehmite, and an aqueous solution containing ammonium dichromate. Said mixture is extruded, sliced into pellets, calcined in steam, and cooled to provide dehydrogenation catalyst consisting of about 20 percent chromia and 80 percent alumina. Propane at subatmospheric pressure is dehydrogenated at a high conversion per pass to provide an attractive yield of propene over said catalyst at 570°–680° C. at a space velocity of from about 0.2 to about 5 volumes of liquid propane per volume of catalyst per hour during a commercially acceptable catalyst life.

3,665,050

ALKYLATION OF DIALKYL SULFATE OBTAINED FROM AN OVERHEAD ABSORPTION PHASE

Louis J. McGovern, Prairie Village; Charles L. West, Shawnee Mission, and Orlando Webb, Prairie Village, all of Kans., assignors to Stratford Engineering Corporation, Kansas City, Mo.

Filed Apr. 21, 1969, Ser. No. 817,535
Int. Cl. C07c 3/54
U.S. Cl. 260—683.62 2 Claims



Combination process for the alkylation of isoparaffin with olefinic material in the presence of sulfuric acid alkylation catalyst wherein olefin hydrocarbon is reacted with used acid catalyst in an absorption zone producing a lighter overhead phase comprising unreacted hydrocarbon together with a portion of the dialkyl sulfate thus formed, and a heavier acid-alkyl sulfate phase comprising the remainder of the dialkyl sulfate. The dialkyl sulfate content of the heavier phase is extracted with isoparaffin being alkylated and the extract solution is passed to an alkylation reactor. The lighter phase from the absorption zone is reacted with isobutane in a different alkylation reactor, optionally in the presence of an additional quantity of the same type olefin reacted to form the dialkyl sulfate.

3,665,051

POLY(2,6-DIPHENYLPARAPHENYLENEOXIDE) FIBER-REINFORCED SILICONE MOLDING COMPOSITIONS

Jan Dunsink, Arnhem, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

Filed June 23, 1970, Ser. No. 49,172
Claims priority, application Netherlands, July 11, 1969, 6,910,674
Int. Cl. C08g 42/02, 47/10
U.S. Cl. 260—824 2 Claims

A fiber-reinforced silicone molding composition that comprises an admixture of a silicone polymer having a dielectric constant lower than 3.5 and fibers of poly(2,6-diphenylparaphenyleneoxide).

3,665,052

METHOD OF PREPARING A BLOCK COPOLYMER CONTAINING A POLY-ALPHA-METHYLSTYRENE BLOCK AND A POLYDIORGANOSILOXANE BLOCK

John C. Saam, and Frederick W. G. Fearon, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 25, 1970, Ser. No. 66,891
Int. Cl. C08g 47/10; C08f 33/08
U.S. Cl. 260—827 1 Claim

Block copolymers containing a poly-alpha-methylstyrene block and a polydiorganosiloxane block are prepared by polymerizing alpha-methylstyrene with a lithium initiator at about −70° C., a small amount of styrene is then added and polymerized onto the poly-alpha-methylstyrene before the temperature is raised to ambient temperature to polymerize polydiorganocyclosiloxanes and forming a block copolymer having the stated blocks. The block copolymers can vary from thermoplastic materials to elastomers.

3,665,053

PROCESS FOR PREPARING POLYMERS FROM ETHYLENICALLY UNSATURATED GLYCIDYL MONOMERS

Yukio Mizutani, and Seishiro Matsuoka, both of Tokuyama-shi, Japan, assignors to Tokuyama Soda Kaubushiki Kaisha, Tokuyama-shi, Japan

Filed Nov. 25, 1969, Ser. No. 879,697
Claims priority, application Japan, Nov. 25, 1968, 43/85602
Int. Cl. C08g 45/04, 39/10; C08f 37/18
U.S. Cl. 260—836 6 Claims

In the process for the preparation of finely divided high polymers of a cross-linked structure comprising polymerizing a monoethylenically unsaturated monomer and a diethylenically unsaturated monomer, in an organic solvent, an improvement characterized in that prior to the polymerization a linear polymer selected from the group consisting of hot n-heptane-soluble monoolefin polymers, polyalkylene oxides and vinyl chloride polymers is dissolved in said organic solvent.

3,665,054

DYEABLE POLYAMIDES CONTAINING POLYSTYRENE SULFONIC ACID

Harold George Burrows, and Philip Bierley Ingham, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 10, 1968, Ser. No. 728,319
Claims priority, application Great Britain, May 16, 1967, 22,723/67
Int. Cl. C08g 41/04
U.S. Cl. 260—857 UN 3 Claims

Synthetic linear polyamides which contain a small amount of an alkali metal salt of a polystyrene polysulphonic acid, and dyeing fibers of the said polyamides with Basic Dyestuffs.

3,665,055

POLYMERIZABLE UNSATURATED POLYESTER RESIN COMPOSITIONS AND ARTICLES MADE THEREFROM

John A. Hatton, Jr., 8030 Chanke St., Verona, Pa., and John S. McNally, 457 Glenview Dr., Lower Burrell, Pa.

Filed Oct. 22, 1969, Ser. No. 868,603
Int. Cl. C08f 43/02, 43/06
U.S. Cl. 260—862 16 Claims

Styrene-maleic anhydride copolymer is added to a polymerizable composition containing an unsaturated polyester resin and a vinyl monomeric material which is capable of reacting with the polyester resin to form a thermoset polymer. The composition can be molded into articles as it is polymerized. The articles have improved properties, including improved surface properties, due to the use of the styrene-maleic anhydride copolymer. Glass fibers, as well as other materials generally included in polymerizable polyester compositions can be used also. The composition can be used to prepare chemically thickened resin mats or prepregs which can be molded and cured into articles having improved properties, including improved surface and dimensional stability properties.

3,665,056

CYCLOHEXYLENE POLYESTER DYE RECEPTORS

James W. Cleary, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Aug. 3, 1970, Ser. No. 60,611
Int. Cl. C08g 39/10; D06p 3/00
U.S. Cl. 260—873 9 Claims

A process for dyeing polyolefins in which there is incorporated in the polyolefin a polyester formed as the reaction product of 1,4-cyclohexanediol and a paraffinic dicarboxylic acid.

3,665,057

METHOD OF PREPARING HIGH IMPACT RESISTANCE RESINS BY A BULK-SUSPENSION TWO STAGE PROCESS

Atsushi Tanaka, Tokyo; Hiroomi Kobayashi, Saitama; Teiso Kudo, Saitama, and Masatoshi Mikuno, Saitama, all of Japan, assignors to Daicel Ltd., Osaka, Japan

Filed Feb. 5, 1970, Ser. No. 9,067
Claims priority, application Japan, Feb. 8, 1969, 44/9580
Int. Cl. C08f 41/12
U.S. Cl. 260—876 R 9 Claims

A thermoplastic resin having a high impact resistance is made by subjecting a mixture or a solution of a first quantity of an elastomeric polymer in a monovinyl aromatic hydrocarbon monomer or a mixture of a monovinyl aromatic hydrocarbon monomer and a copolymerizable monovinyl monomer to a bulk-suspension two stage polymerization process. A second quantity of an elastomer consisting of an aqueous latex of butadiene rubber is added to the mixture or solution during the preliminary bulk polymerization step when the conversion of the monomer or monomer mixture to the polymer is about from 10 to 50 percent by weight.

3,665,058

MODIFIED POLYPHENYLENE OXIDE RESIN COMPOSITIONS

Hugh E. Snodgrass, Mishawaka, and Robert L. Lauchlan, Granger, both of Ind., assignors to Uniroyal, Inc., New York, N.Y.

Filed Apr. 20, 1970, Ser. No. 30,280
Int. Cl. C08f 29/12
U.S. Cl. 260—889 52 Claims

Blends of polyphenylene oxide resin with poly(ethylene-co-organic-acid-ester) resins provide thermoplastic compositions characterized by unique properties, particularly an unusually useful combination of high impact strength, high thermal stability, high tensile strength, and high elastic moduli. Such compositions are optionally modified through the inclusion of an alkenyl aromatic resin (e.g., polystyrene, etc.), to exhibit much improved melt processing characteristics in addition to high strength properties.

3,665,059
POLYPHASE PROPYLENE POLYMER-RUBBER COMPOSITIONS AND PROCESS FOR THEIR PREPARATION

Bert H. Mahlman, West Chester, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of application Ser. No. 670,412, Sept. 25, 1967, now abandoned. This application June 26, 1970, Ser. No. 50,301
Int. Cl. C08f 29/12
U.S. Cl. 260—897 A 7 Claims

Polyphase compositions having, as a continuous phase a propylene polymer and as a second phase a synthetic or natural rubber, are prepared by dispersing a propylene polymer of substantially all sub-micron particle size in the second phase and fusing the polymer under controlled conditions which assure the formation of the propylene polymer into a continuous phase.

3,665,060
RESIN BLEND CONTAINING ETHYLENE/VINYL CHLORIDE INTERPOLYMER

Joseph G. Bergomi, Jr.; Dale R. Dill, both of St. Louis, and Paul R. Graham, Ballwin, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

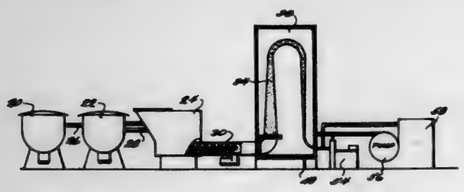
Filed Nov. 17, 1969, Ser. No. 877,486
Int. Cl. C08f 37/18
U.S. Cl. 260—897 C 9 Claims

Modified ethylene/vinyl chloride interpolymers useful as pigment binders of adhesives in pigment coating compositions for paper, paperboard and similar materials, said modified interpolymer being used alone or in combination with paper coating starch of protein material. The modified ethylene/vinyl chloride interpolymer comprises (1) an interpolymer of ethylene, vinyl chloride and optionally one other polar monomer and (2) a salt of an interpolymer of an alpha, beta-unsaturated polycarboxylic acid and a member selected from the group consisting of alpha olefins, alkyl vinyl ethers and vinyl alkanoates.

3,665,061
PROCESS FOR PRODUCING COLLAGEN SPONGES

David H. Eberly, Jr., Fairfield, Conn., assignor to United States Banknote Corporation, New York, N.Y.

Filed July 16, 1969, Ser. No. 842,251
Int. Cl. A24c 5/48; B29d 27/06; C08h 7/06
U.S. Cl. 264—49 9 Claims



A method for producing a spongy mass of compacted collagen particles having a large surface area to volume ratio and suitable for use in filtering materials such as tobacco smoke. To form the spongy mass, finely granulated collagen particles are mixed with snow, frozen carbon dioxide or similar material, and the mixture chopped and mixed at temperatures below the freezing point to cause entwining of the distal fibers and impart binding. The mixture is then compacted and forced through a forming tube having a gradually decreasing diameter and porous walls through which the supporting snow or carbon dioxide matrix is removed. A compacted tube or rod of collagen sponge suitable for filtering cigarette or tobacco smoke merges from the forming tube and can be cut or otherwise treated as desired.

3,665,062
PREPARATION OF CONJUGATED DIENE POLYMERS USING ATE-COMPOUND CATALYSTS

Akira Onishi; Ryota Fujio, and Minoru Kojima, all of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Sept. 8, 1969, Ser. No. 856,170
Claims priority, application Japan, Sept. 16, 1968, 43/66127
Int. Cl. C08f 1/74
U.S. Cl. 260—84.1 8 Claims

Conjugated diene polymers having a microstructure consisting of about 70% of trans-1,4-structure, about 20 percent of cis-1,4-structure and about 10 percent of 1,2- or 3,4-structure is prepared by polymerizing (1) at least one conjugated diene or (2) a mixture of a conjugated diene and a vinyl-substituted aromatic hydrocarbon by using an "Ate-compound" catalyst having the following general formula

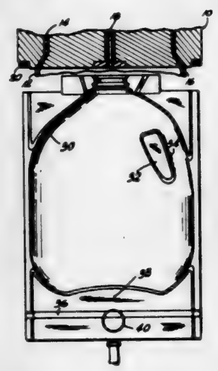
$$M^1M^2R^1R^2R^3R^4$$

wherein M^1 is calcium, strontium or barium, M^2 is zinc or cadmium, and R^1, R^2, R^3 and R^4 are aliphatic, cycloaliphatic or aromatic hydrocarbon radicals containing from one–ten carbon atoms.

3,665,063
METHOD FOR BLOW MOLDING HOLLOW ARTICLES IN MINIMUM CYCLE TIME

Samuel J. Rupert, and William E. Ziegler, both of Ann Arbor, Mich., assignors to Hoover Ball and Bearing Company, Saline, Mich.

Continuation of application Ser. No. 722,978, Apr. 22, 1968, now abandoned. This application Apr. 15, 1970, Ser. No. 28,211
Int. Cl. B29c 17/07
U.S. Cl. 264—89 3 Claims

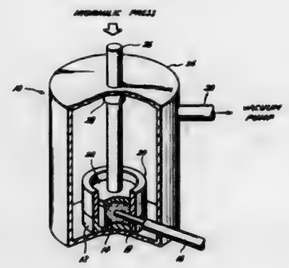


A method of making a hollow plastic article characterized by a low cycle time. A mold is cooled to a selected temperature below ambient, a tube of plastic material open at its leading end is extruded to a length greater than the length of the article to be formed, and the tubing is enclosed in the mold at a mold closing rate such that condensation has not formed in the mold. During the closing of the mold, the leading end of the tubing is closed and sealed to entrap air at atmospheric pressure and a sufficient portion of the leading end of the sealed tube is collapsed by the closing mold to reduce the internal volume of the tubing and partially expand the tubing due to the resulting increase of internal pressure. Air is then injected into the partially expanded tubing to inflate the tubing to final form in the closed mold and the mold is then opened and the finished article rejected in the minimum cycle time comensurate with the selected temperature to which the mold is cooled.

3,665,064
METHOD OF MAKING A PERSPIRATION RESISTANT BIOPOTENTIAL ELECTRODE

Benjamin Mosier, and Joe L. Day, both of Houston, Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Original application Jan. 5, 1967, Ser. No. 607,461, now Patent No. 3,490,440. Divided and this application May 9, 1969, Ser. No. 844,225
Int. Cl. A61b 5/04
U.S. Cl. 264—104 2 Claims

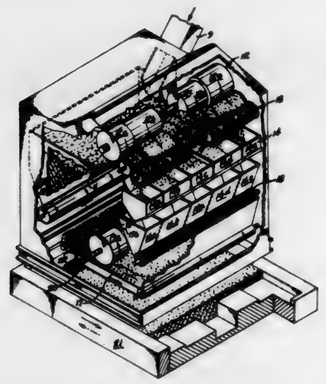


To a conventional biopotential electrode mixture is added 5–15 percent of a colloidal material which acts as a screen for undesirable ions resulting from perspiration. This colloidal ion screening material is selected from a group consisting of various gums, bentonite clay, and a magnesium aluminum silicate clay-like material. The mixture is pressed into shape around an electrode wire after being subjected to a partial vacuum.

3,665,065
METHOD FOR MOLDING ARTICLES OF UNEVEN THICKNESS

Herbert G. Hass, In den Klaeren 27; Edmund Munk, In den Klaeren 25, both of 7141 Oberstenfeld; Alfred Fink, Gerh.-Hauptmann-Str. 9, 7336 Uhingen, and Erich Klink, Mozartstrasse 11, 7331 Kaisersbach, all of Germany

Original application June 30, 1969, Ser. No. 837,649, which is a continuation-in-part of application Ser. No. 698,050, Jan. 15, 1968, now abandoned, Continuation of application Ser. No. 437,107, Mar. 4, 1965, now abandoned. Divided and this application Dec. 15, 1969, Ser. No. 889,801
Int. Cl. B29j 5/00
U.S. Cl. 264—113 5 Claims

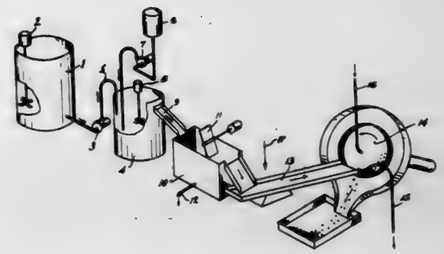


A method of preforming moldable compositions of fibrous materials and a binder in which the preform has portions along its width having different thicknesses corresponding to different thicknesses of the final molded product. Initially the composition is formed into a mat which has a thickness at least equal to the thickest portion of the preform, and then excess material is removed from across the width of the mat by scalping rolls to develop the contoured preform having different thicknesses. Each section of the mat having a different thickness is weighed separately to insure proper density of that section of the mat. Following the weighing step, the mat is again shaped into the contoured preform and placed into a mold for a subsequent heating and pressing operation.

3,665,066
BENEFICIATION OF COALS

Charles E. Capes; Allan E. McIlhinney, both of Ottawa, and Richard D. Coleman, Orleans, Ontario, all of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Nov. 28, 1972, Ser. No. 880,741
Int. Cl. B01j 2/14
U.S. Cl. 264—117 10 Claims



A process for producing a balled coal product from coal fines involves mixing a bridging liquid with coal fines and agitating the formed mixture in an aqueous medium to cause agglomeration of the coal particles. The coal particle agglomerates are then at least partially de-watered and fed to a balling device, together with a balling nuclei of coarse coal particles and binding oil to form a balled product in which each ball comprises at least one balling nucleus in association with coal particles derived from the agglomerates. The balled coal product is moved from the balling device when formed.

3,665,067
POLYTETRAFLUOROETHYLENE FABRICATION WITH HEXAFLUOROBENZENE

William Hopkin, Avonmouth, Bristol, England, assignor to Imperial Smelting Corporation (N.S.C.) Limited, London, England

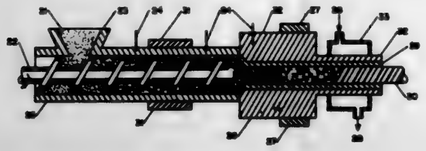
Continuation of Ser. No. 610,192, Jan. 18, 1967, abandoned. Filed July 24, 1970, Ser. No. 64,062
Int. Cl. B29f 3/00; C08f 45/30
U.S. Cl. 264—127 7 Claims

Polytetrafluoroethylene (ptfe) is fabricated into shaped products with the use of hexafluorobenzene as a plasticizer. The ptfe may be particulate, and may be fabricated by ram extrusion. From 8 to 16 percent by volume of the hexafluorobenzene is mixed with the ptfe and maintained in contact with it for long enough to be absorbed onto and just into the surface of the ptfe.

3,665,068
EXTRUSION OF EXTREMELY HIGH MOLECULAR WEIGHT POLYOLEFINS

Irl N. Duling, West Chester, and John C. Merges, Jr., Glen Mills, both of Pa., assignors to Sun Oil Company, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 745,884, July 18, 1968, now abandoned. This application Dec. 15, 1969, Ser. No. 884,879
Int. Cl. B29b 1/04; B29f 1/08; C08f 45/52
U.S. Cl. 264—211 8 Claims

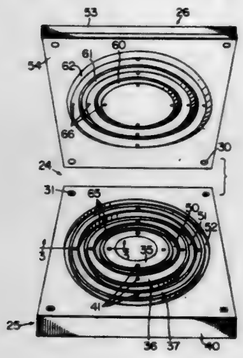


A polyethylene having a molecular weight in excess of 1,000,000 or a polypropylene having a molecular weight in excess of 400,000 can be easily extruded by this invention. A heterogeneous composite of either polyolefin and a carrier is established and supplied to an extruder comprising a transport screw having a surface providing frictional resistance to the movement of the composite no greater than that of polished steel and a die having a surface providing lower frictional resistance to the movement of the composite than polished steel. Within the die the heterogeneous composite is first shaped at a temperature below the melting point of the polyolefin and then is heated until the composite becomes homogeneous, after which the shape is cooled to solidify. The carrier can be a petroleum wax, certain liquid hydrocarbons, synthetic wax or mixtures thereof having certain attributes, defined herein, relative to the polyolefin.

3,665,069
METHOD OF MAKING POWER TRANSMISSION BELTS

Kenneth D. Richmond, Nixa, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Feb. 13, 1970, Ser. No. 11,158
Int. Cl. B29c 1/16
U.S. Cl. 264—219 9 Claims

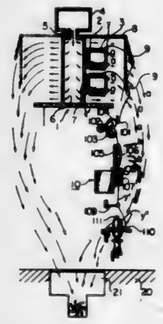


A plurality of individual power transmission belts are made in a simultaneous manner utilizing the method of this invention while making full use of standard injection molding equipment. The method employs an apparatus comprised of a lower structure and an upper structure suitably fastened together and having cooperating surface means which define a plurality of annular cavities with each cavity defining an associated belt. The cavities are supplied from a common sprue and the plurality of belts are formed by the simultaneous injection of elastomeric material into such cavities and then curing and cooling the material to define the transmission belts.

3,665,070
METHOD OF AIR-CONDITIONING UNDRAWN YARN PACKAGE IN DRAWING MACHINE

Takao Knodo, and Haruki Takizawa, both of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan

Filed May 22, 1970, Ser. No. 39,612
Claims priority, application Japan, May 26, 1969, 44/40768
Int. Cl. B29c 17/02, 25/00; F26b 13/10
U.S. Cl. 264—290 T 7 Claims



In a yarn drawing process of unwinding undrawn yarn from undrawn yarn packages placed on a creel stand located above a drawing machine, comprising introducing the undrawn yarn unwound to a hot drawing zone below for the hot drawing of the yarn and winding up the drawn yarn, the improvement comprising blowing the air conditioned to a predetermined temperature and humidity against the undrawn yarn packages from behind or above the packages and thereby preventing the hot air generated in the hot drawing zone from approaching the undrawn yarn packages placed on the creel stand and air conditioning the undrawn yarn packages.

3,665,071
DIAGNOSTIC TEST FOR SCHIZOPHRENIA

Charles D. Proctor, 3834 Dunbar Dr., Nashville, Tenn.

Filed July 15, 1968, Ser. No. 744,628
Int. Cl. G01n 33/16
U.S. Cl. 424—9 5 Claims

A test method is provided for determining whether a person is a schizophrenic, which comprises suitably treating a plurality of test animals, obtaining a sample of the person's blood, pre-mixing the blood, or preferably the plasma therefrom with 3,4-dimethoxyphenylethylamine, internally administering the mixture to the test animals, and maintaining the animals under aggregated or crowded conditions while observing their behavior for amphetamine-like reaction and lethality as an indication of the presence of schizophrenia in the blood sample donor.

3,665,072
METHOD OF IMPROVING THE COSMETIC PROPERTIES OF HAIR BY USING ALDEHYDE SOLUTION

Gregoire Kalopissis, Paris, and Jean-Louis Abegg, Perreux, both of France, assignors to L'Oreal, Paris, France

Continuation of application Ser. No. 565,393, July 15, 1966, now abandoned. This application May 13, 1970, Ser. No. 37,431
Claims priority, application Luxembourg, July 29, 1965, 49208
Int. Cl. A61k 7/06
U.S. Cl. 424—70 3 Claims

1. A process for improving the appearance, the feel, the combing and the physical and mechanical properties of human hair which comprises applying to the hair for a period of time between 15 to 60 minutes at a temperature between 15° and 60° C. an aqueous solution of 0.01 to 8 percent by weight of an aldehyde selected from the group consisting of glycolaldehyde, glyceric aldehyde, glutaric aldehyde, terephthalic aldehyde, orthophthalic aldehyde, starch dialdehyde, 2-hydroxymethyl-4-methoxy-3-oxa-pentanedial 4,6-diformyl-2,4,8-trihydroxymethyl-3,5,7-trioxanonanedial and 4,6,8,11-tetraformyl-2,4,13-trihydroxymethyl-3,5,7,10,12-penta oxa tetradecane dial.

3,665,073
PHARMACEUTICALS PREPARED FROM POLYCYCLIC BASES AND CATION EXCHANGE RESINS

Alan Marshall, Bollington, and Anne Wilson Macpherson, Macclesfield, both of England, assignors to Geigy Chemical Corporation, Ardsley

Filed Aug. 8, 1968, Ser. No. 751,047
Claims priority, application Great Britain, Aug. 12, 1967, 37,136/67
Int. Cl. A61k 27/00
U.S. Cl. 424—79 3 Claims

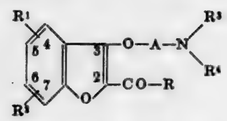
Pharmaceutical compositions suitable for oral administration are prepared from non-ionisable polycyclic bases, an ion-exchange resin containing carboxylic acid groups and a pharmaceutically acceptable carrier liquid. These compositions are used for producing an anti-depressant effect in mammals. A typical embodiment is a composition containing imipramine and Zeo-Karb 226.

3,665,074
CERTAIN BENZOFURAN DERIVATIVES USEFUL FOR RELIEF OF PAIN, INFLAMMATION, PYRESIS AND TUSSIVE IRRITATION

Arne Elof Brandstrom, Goteborg, and Stig Ake Ingemar Carlsson, Molnlycke, both of Sweden, assignors to Aktiebolaget Hassle, Goteborg, Sweden

Original application Apr. 10, 1968, Ser. No. 720,399, now Patent No. 3,485,835, which is a continuation-in-part of application Ser. No. 414,894, Nov. 30, 1964, now abandoned. Divided and this application May 20, 1969, Ser. No. 839,127
Int. Cl. A61k 27/00
U.S. Cl. 424—248 12 Claims

The specification discloses benzofuran derivatives characterized by the formula:



I

wherein R represents a lower alkyl group, a phenyl group or a lower alkyl, lower alkoxy, dioxy-lower-alkylene, fluorine, chlorine, bromine or trifluoromethyl substituted phenyl group or a lower alkoxy substituted styryl group, R^1 represents a hydrogen, fluorine, chlorine or bromine atom or a lower alkyl or lower alkoxy group, or together with R^2 represents a benzo group, R^2 represents a hydrogen, fluorine, chlorine or bromine atom or a lower alkyl or lower alkoxy group or provided R^1 is a hydrogen atom, a nitro, amino, hydroxy, lower acyloxy, lower alkoxybenzoyloxy, lower dialkylamino or lower acylamino group, A represents an alkylene group containing not more than four carbon atoms, R^3 represents a hydrogen atom or a lower alkyl group, R^4 represents a lower alkyl, β-phenylethyl or benzyl group or NR^3R^4 represents a pyrrolidino, piperidino, hexamethyleneimino, morpholino, lower dialkylmorpholino, piperazino, lower alkyl piperazino, benzylpiperazino or tetrahydropyridino group, in the form of the free base or of a pharmaceutically acceptable salt thereof.

3,665,075
THOZALINONE AS AN ANTI-PARKINSON AGENT

William David Gray, New City, N.Y., and Charles Edward Rauh, Emerson, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 7, 1970, Ser. No. 62,181
Int. Cl. A61k 27/00
U.S. Cl. 424—272 3 Claims

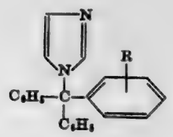
This disclosure describes a method of controlling the tremor and rigidity of Parkinson's disease or a drug-induced extrapyramidal disorder in a mammal which is afflicted with said disease or disorder which comprises administering thozalinone or anionic salts thereof to said mammal.

3,665,076
N-TRITYL-IMIDAZOLES AS PLANT FUNGICIDES

Karl Heinz Buchel, Wuppertal-Elberfeld; Erik Regel, Wuppertal-Cronenberg; Ferdinand Grewe, Burscheid; Hans Scheinpflug, and Helmut Kaspers, both of Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Original application Jan. 7, 1969, Ser. No. 789,601. Divided and this application Sept. 2, 1970, Ser. No. 69,107
Claims priority, application Germany, Jan. 29, 1968, P 16 70 976.5
Int. Cl. A01n 9/22
U.S. Cl. 424—273 7 Claims

Plant fungicidal compositions are produced which comprise an amount of a compound of the formula:



wherein R is alkoxy of one to three carbon atoms, sufficient to be effective for killing, combatting or controlling plant fungi, in combination with a solid or liquid diluent or carrier. Methods for killing, combatting or controlling fungal diseases in plants comprise applying to the fungi or to the plant to be protected an effective or toxic amount of the above compound.

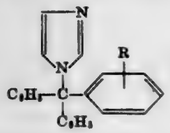
3,665,077

N-TRITYL-IMIDAZOLES AS PLANT FUNGICIDES

Karl-Heinz Buchel, Wuppertal-Elberfeld; Erik Regel, Wuppertal-Cronenberg; Ferdinand Grewe, Burscheid; Hans Scheinpflug, and Helmut Kaspers, both of Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 789,601, Jan. 7, 1969.
Filed Sept. 2, 1970, Ser. No. 69,108
Claims priority, application Germany, Jan. 29, 1968, P 16 70 976.5
Int. Cl. A01n 9/22
U.S. Cl. 424—273 6 Claims

Plant fungicidal compositions are produced which comprise an amount of a compound of the formula:



wherein R is alkylmercapto of one to three carbon atoms, sufficient to be effective for killing, combatting or controlling plant fungi, in combination with a solid or liquid diluent or carrier. Methods for killing, combatting or controlling fungal diseases in plants comprises applying to the fungi or to the plant to be protected an effective or toxic amount of the above compound.

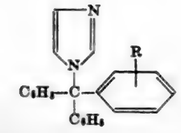
3,665,078

N-TRITYL-IMIDAZOLES AS PLANT FUNGICIDES

Karl-Heinz Buchel, Wuppertal-Elberfeld; Erik Regel, Wuppertal-Cronenberg; Ferdinand Grewe, Burscheid; Hans Scheinpflug, and Helmut Kaspers, both of Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Original application Jan. 7, 1969, Ser. No. 789,601. Divided and this application Sept. 2, 1970, Ser. No. 69,111
Claims priority, application Germany, Jan. 29, 1968, P 16 70 976.5
Int. Cl. A01n 9/22
U.S. Cl. 424—273 5 Claims

Plant fungicidal compositions are produced which comprise an amount of a compound of the formula:



wherein R is nitro, sufficient to be effective for killing, combatting or controlling plant fungi, in combination with a solid or liquid diluent or carrier. Methods for killing, combatting or controlling fungal diseases in plants comprise applying to the fungi or to the plant to be protected an effective or toxic amount of the above compound.

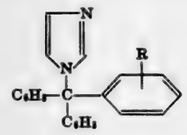
3,665,079

N-TRITYL-IMIDAZOLES AS PLANT FUNGICIDES

Karl-Heinz Buchel, Wuppertal-Elberfeld; Erik Regel, Wuppertal-Cronenberg; Ferdinand Grewe, Burscheid; Hans Scheinpflug, and Helmut Kaspers, both of Leverkusen; all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Original application Jan. 7, 1969, Ser. No. 789,601. Divided and this application Sept. 2, 1970, Ser. No. 69,112
Int. Cl. A01n 9/22
U.S. Cl. 424—273 7 Claims

Plant fungicidal compositions are produced which comprises an amount of a compound of the formula:



wherein R is alkyl of one or two carbon atoms substituted by one to five fluoro moieties, sufficient to be effective for killing, combating or controlling plant fungi, in combination with a solid or liquid diluent or carrier. Methods for killing, combatting or controlling fungal diseases in plants comprise applying to the fungi or to the plant to be protected an effective or toxic amount of the above compound.

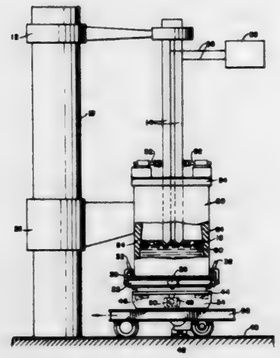
ELECTRICAL

3,665,080

REMELTING SYSTEM AND PROCESS UTILIZING VARYING VOLTAGE, CURRENT AND MELTING RATE

Boris Izrailevich Medovar, Boulevar Lesy Ukrainky 2, Apt. 8, Kiev 23; Jury Vadimorich Latash, Ul. Artema 55, Apt. 23, Kiev 59; Oleg Petrovich Bondarenko, Ul. Khreshchatic 15, Apt. 34, Kiev 1, and Alexsey Georgievich Bogachenko, Ul. Meljutenko 15/2, Apt. 141, Kiev 140, all of U.S.S.R.

Filed May 28, 1970, Ser. No. 41,168
Int. Cl. H05b 7/18
U.S. Cl. 13—9 32 Claims



A bifilar electroslag remelting system is provided with a means to vary the voltage applied to the electrodes. As a result the voltage, current, and melting rate can be varied as a function of time to optimize refining efficiency, to minimize formation of cracks and strata in the finished product refined ingot, and to provide the additional advantage of eliminating the necessity of varying the water rate in the cooling element of the remelting system.

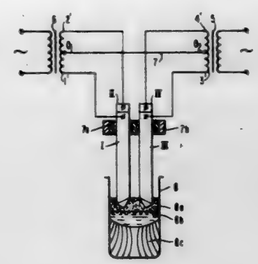
3,665,081

APPARATUS FOR ELECTROSLAG REMELTING OF CONSUMABLE ELECTRODES

Boris Evgenievich Paton, ulitsa Kotsjubinskogo 9, kv. 21; Vladimir Konstantinovich Lebedev, ulitsa Engelsa, 25, kv. 12; Boris Izrailevich Medovar, Bulvar Lesi Ukrainki, 2, kv. 8; Igor Vladimirovich Pentegov, Zadorozhny pereulok, 3, kv. 14; Jury Vadimovich Latash, Vozdukhoflotsky prospekt, 81, kv. 14; Oleg Petrovich Bondarenko, ulitsa Kreschatik, 15, kv. 34; Vitaly Mikhailovich Baglai, ulitsa Semashko, 10, kv. 54/3; Nikolai Vasilievich Podola, ulitsa Pushkinskaya, 8, kv. 12, and July Georgievich Emelyanenko, ulitsa Darvina, 5, kv. 5, all of Kiev, U.S.S.R.

Filed Apr. 8, 1970, Ser. No. 26,733
Claims priority, application U.S.S.R., June 16, 1969, 1,336,305
Int. Cl. H05b 3/60
U.S. Cl. 13—12 23 Claims

The invention relates to the field of electrometallurgy, and in particular to an apparatus for electroslag remelting. The apparatus is characterized in that it has a transformer power supply means, which can be three-phase or which can consist of several single-phase transformers, the secondary windings of which are provided with center tappings which are interconnected through busbar conductors so as to provide for an equality of the line speeds of melting the electrodes and for a uniform temperature field within the slag bath. The invention can be utilized in the process of producing unique hollow or



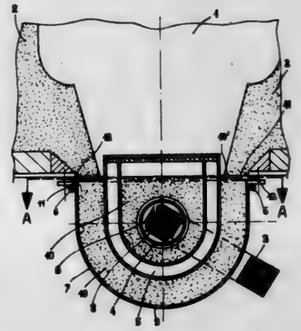
solid ingots and slabs of high-grade steels and alloys having a weight of 200 tons and higher.

3,665,082

INDUCTOR APPLICABLE TO ELECTRIC FURNACES FOR METAL CASTING

Giovanni Bolla, Viali G. da Cermenate 61, Milano, Italy

Filed June 17, 1970, Ser. No. 47,035
Int. Cl. H05b 5/00
U.S. Cl. 13—26 3 Claims



An inductor associated with an electric furnace for metal casting, and provided, where juxtaposed to the tank of the furnace, with a perimetric cavity sealed by refractory material in tamped condition, acting as a safety packing and filling all the inner room of the inductor body and building an embossed step in the jointing zone between inductor and tank.

3,665,083

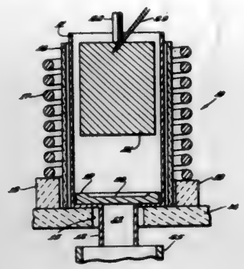
APPARATUS FOR MELTING TITANIUM

Clyde C. Clark, Euclid, Ohio, assignor to TRW Inc., Cleveland, Ohio

Original application Oct. 14, 1968, Ser. No. 767,168, now Patent No. 3,598,168. Divided and this application Mar. 10, 1971, Ser. No. 122,853
Int. Cl. F27d 3/15; H05b 5/00
U.S. Cl. 13—26 6 Claims

Apparatus for melting and casting a titanium alloy including an inductively heated furnace surrounding a refractory crucible, the titanium alloy to be melted being suspended as a slug in spaced relation to the walls of the crucible. A titanium alloy disc is positioned in the crucible at the discharge

outlet thereof so that when the temperature of the slug is brought to the melting point, the resulting molten metal



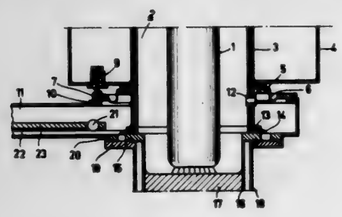
melts through the disc and is then directed immediately to a mold.

3,665,084

CONSUMABLE ELECTRODE VACUUM FURNACE

Klaus P. Sauletz, Monroeville, Pa.; Anton Wamser, Hanau Main, and Ernst F. Weingartner, Haller, both of Germany, assignors to Leybold-Heraeus GmbH & Co., Cologne-Bayental, Germany

Filed Sept. 29, 1969, Ser. No. 861,674
Int. Cl. F27d 7/06
U.S. Cl. 13—31 5 Claims



A lock chamber fixedly superimposed on the open top of the crucible in a consumable-electrode vacuum furnace, and an opening through the chamber permits the tank holding the electrode to be set directly on the crucible rim during normal furnace operation. A flange mounted on the tank by means of a pliable annular diaphragm seals the tank to the lock chamber while the tank moves. A valve plate in the chamber can be moved over the crucible top to seal the crucible while the tank with the electrode in the same is lifted, the tank is thereafter lowered upon the valve plate to hold in sealing engagement with the crucible top, and air can enter the lock chamber thereafter through the tank without impairing the vacuum in the crucible.

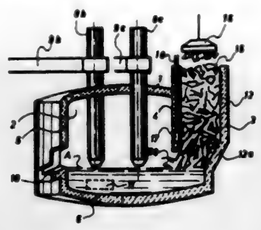
3,665,085

ELECTRIC ARC FURNACE FOR CONTINUOUSLY MELTING SCRAP IRON

Jacques Dumont-Fillon, and Charles Roederer, both of Metz (Moselle), France, assignors to Institut De Recherches De La Siderurgie Francaise, St. Germain en Laye, France

Filed July 25, 1969, Ser. No. 844,787
Claims priority, application France, July 31, 1968, 161243
Int. Cl. H05b 7/18; C21c 5/52
U.S. Cl. 13—9 10 Claims

A method for continuously melting metallic products, especially scrap iron, in an electric arc furnace and a furnace for carrying out the method, in which the products to be molten are fed into the furnace hearth through a compartment which communicates at its lower end with a lower portion of the hearth and which is separated by a refractory wall from the upper hearth portion so that the products while being fed



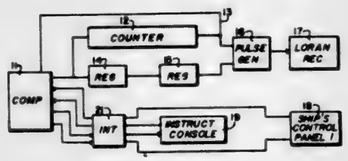
are protected from the heat produced by the electric arcs and fusion of the products during feeding thereof is prevented.

3,665,086

LORAN TRAINER

Edward F. Magee, Crofton, and Stephen G. Haube, Laurel, both of Md., assignors to The Singer Company, New York, N.Y.

Filed Aug. 20, 1969, Ser. No. 851,574
Int. Cl. G01s 1/24; G09b 9/00
U.S. Cl. 35—10.2 8 Claims



A trainer for teaching the principles of Loran and the operation of Loran receivers, which trainer comprises a general-purpose digital computer driving an interface which generates the appropriate Loran signals to simultaneously represent several pairs of Loran transmitters, and Loran receivers which are stimulated by the output from the interface. In addition, a "ship control" is provided by which the trainee can control the speed and direction of the simulated ship and watch the resultant changes affect the Loran reception, and an instructor's console containing equipment which allows an instructor to set up the initial conditions of a problem. The computer is programed to perform navigation computations based upon information applied to it from the instructor's console and the ship control to modify the effects of the simulated ship movement upon the Loran signals which are generated. Several receivers may be stimulated in parallel with the primary receiver.

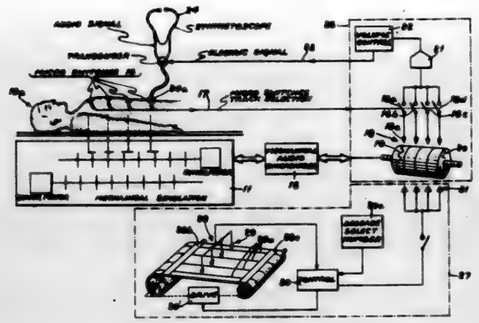
3,665,087

MANIKIN AUDIO SYSTEM

Michael C. Poylo, New York, N.Y., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Nov. 25, 1970, Ser. No. 92,788
Int. Cl. G09b 23/30
U.S. Cl. 35—17 11 Claims

The manikin audio system described is an audio simulation system in which it is not necessary to have the audio signals emanating directly from a physical area under auscultation, but in which the proper sound is acoustically coupled to the ears of a listener when a particular region of the manikin is explored. The audio simulation system comprises a synthetoscope having a transducer and a contact portion which activates one of a plurality of responsive means within the manikin. Each of the responsive means selects an associated one of a plurality of stored signals and couples the



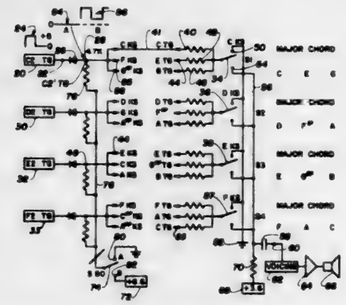
selected signal to a transducer located within the synthetoscope to provide a high quality audio signal.

3,665,088

KEYER CIRCUIT FOR AN ELECTRONIC MUSICAL INSTRUMENT WHEREIN A SINGLE SWITCH MAY ACTUATE A SINGLE NOTE OR A CHORD

John R. Brand, Northridge, and Ernest A. Smith, Santa Monica, both of Calif., assignors to Warwick Electronics Inc., Chicago, Ill.

Filed Nov. 27, 1970, Ser. No. 93,328
Int. Cl. G10h 1/00
U.S. Cl. 84—1.01 5 Claims



A chord circuit is provided in which, upon positioning of a tab switch, the actuation of a given key will cause the sounding of a predetermined chord. Such chord circuits may be provided for a number of different chords, so that depending upon the tab switch which is operated, the actuation of the C key, for example, may cause the sounding, selectively, of C major chord, C minor chord, C diminished chord, and so forth. In the present circuit this is done without requiring the ganging of switch poles, so that the same single-pole key switch which is conventionally used to sound a given tone, also sounds the various preselected chords.

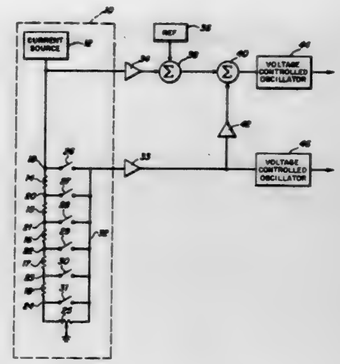
3,665,089

MUSIC SYNTHESIZER KEYBOARD

Richard E. Stearns, Sharon, Mass., assignor to Tonus, Inc., Newton, Mass.

Filed Dec. 17, 1970, Ser. No. 99,193
Int. Cl. G10h 1/00
U.S. Cl. 84—1.01 6 Claims

The invention concerns a musical keyboard for providing a two-voiced output from a music synthesizer. The system includes a voltage divider which provides a plurality of values of potential and a plurality of switches each connected to a divider tap at a unique one of the potential values. The simultaneous closure of a plurality of switches applies the selected



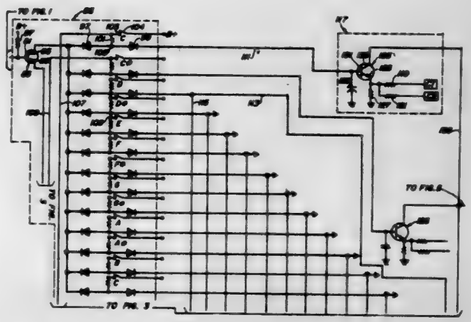
voltage to a pair of voltage-controlled oscillators so as to provide a two-voiced output determined by the two selected voltages having the greatest and least absolute amplitude values.

3,665,090

DEVICE FOR AUTOMATICALLY PRODUCING TONE PATTERNS BASED ON A TONIC NOTE

William Wangard, Maywood, and David W. Fleeton, Chicago, both of Ill., assignors to Walter E. Heller & Company, Chicago, Ill.

Filed May 11, 1970, Ser. No. 36,263
Int. Cl. G10f 1/00
U.S. Cl. 84—1.03 17 Claims

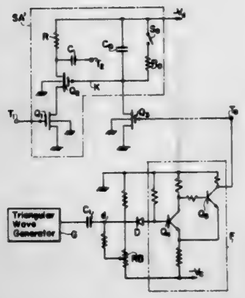


Electronically produced pulses are conveyed in predetermined patterns to a plurality of pedal gate circuits. Each of the pedal gate circuits includes a plurality of individual pedal gates equal to the number of semitones in a musical octave. Pedals operated by an instrumentalist are connected to one pedal gate in each of the pedal gate circuits. Audio gates are actuated by pulses from the pedal gates to pass tone generator signals to an output audio circuit. The pedal gates associated with a given pedal are each connected to different audio gates, the audio gates passing tone generator signals that produce tones related to one another in that they have as a tonic note that note represented by the pedal operated by the instrumentalist.

3,665,091
CONTROL CIRCUIT FOR SUSTAIN KEYER CIRCUIT IN ELECTRONIC MUSICAL INSTRUMENT

Katsuhiko Hirano, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Apr. 9, 1970, Ser. No. 27,028
Claims priority, application Japan, Apr. 14, 1969, 44/28925
Int. Cl. G10h 1/02
U.S. Cl. 84—1.26 5 Claims

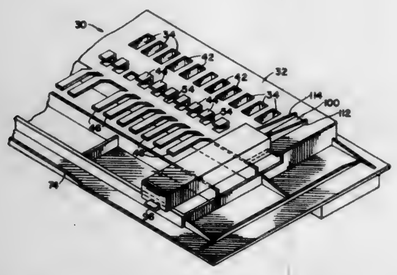


An electronic musical instrument has electronic keyers each including a time constant circuit containing a capacitor to give a sustain envelope to a switched tone signal. The improvement comprises: a switching element connected to the electronic keyer, said switching element being a field effect transistor and having a control electrode and another grounded electrode; and means connected to said control electrode for generating a relatively high frequency rectangular wave whose duty factor is variable, wherein by continuously varying the duty factor of the output signal derived from said rectangular wave generating means to control the control electrode of said switching element, a desired sustain time as well as the optimum auditory decay envelope characteristic are obtained.

3,665,092
MECHANICALLY BALANCED KEYBOARD AND REED CHAMBER ASSEMBLY FOR MUSICAL INSTRUMENTS

Udo G. Heiman, West Orange, N.J., assignor to Proll Products Co., Newark, N.J.

Filed Sept. 18, 1970, Ser. No. 73,332
Int. Cl. G10b 1/08; G10c 3/12
U.S. Cl. 84—351 17 Claims



An air-operated musical instrument utilizing a unique keyboard and reed chamber assembly fabricated from relatively few, readily molded plastic components. The keyboard and reed chamber assembly are designed so that the keyboard, when secured to the reed chamber, is in mechanical balance or in equilibrium, therewith. Each key in the keyboard includes a forwardly extending finger pad, a rearwardly extending key stop, an intermediate pivot bar, a locking notch and an alignment notch. The reed chamber assembly includes a reed plate having a plurality of tuned reeds, a like plurality of resonance chambers having a port at the upper end of each chamber, a plurality of pivot posts, and a plurality of forwardly extending anchored springs. Each key is individually joined to the reed chamber assembly by snapping the pivot bar into locking engagement with a pivot post. The key stop then seals the port of the resonance chamber to block the passage of air therethrough. Depression of the finger pad of the selected key causes the key to pivot about the pivot bar and permits the passage of air through the selected resonance chamber, thus producing a musical tone.

3,665,093
PAGE TURNER FOR SHEET MUSIC AND THE LIKE

Joseph H. Machanez, 12216 Aster Rd., Philadelphia, Pa.

Filed Sept. 3, 1970, Ser. No. 69,213
Int. Cl. G10g 7/00
U.S. Cl. 84—487 3 Claims



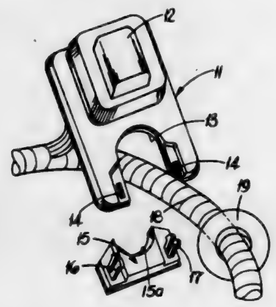
This invention consists of a rectangular board having a longitudinally disposed upturned lower edge to prevent the sheet of music or the like that is placed on the board from sliding off. Two diametrically opposed spring clips on the board hold the music in place. An electric motor is located on the upper right hand corner of the board, the motor being provided with a pulley that has an endless cord encompassing the same, the cord also encompasses a free-turning pulley that is located on the opposite side of the board. A wire track is suitably mounted parallel to the just-mentioned cord. The purpose of the wire track is to provide a means of guiding a swivel fastener which is connected to the cord and also to a spring clip, the spring clip being secured to the sheet of music or page that is to be turned. A foot-operated switch, that is connected to an electric motor, completes the construction of this invention which is preferably mounted on a vertically disposed stand.

3,665,094
FUSE BOXES FOR ROAD VEHICLES

Benjamin William Matthews, Small Heath, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Nov. 10, 1970, Ser. No. 88,367
Claims priority, application Great Britain, Nov. 21, 1969, 57,036/69
Int. Cl. H02g 3/22
U.S. Cl. 174—65 R 3 Claims

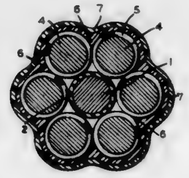
A fuse box comprises a synthetic resin body supporting fuse holders adapted to receive and make electrical connection to leads forming part of a cable harness, a groove being formed in the periphery of the body. The fuse box further includes a bridging member, co-operating latch means of the bridging member and the body adjacent said groove serving to releasably retain the bridging member on the body. The arrangement is such that in use the cable harness is accommodated in the groove and when engaged with the body the bridging member bridges the groove to provide a substantially circular aperture in the body. The harness passes through a grommet and the grommet engages in the aperture in the body to retain the harness in position relative to the body.



3,665,095
HIGH-STRENGTH NON-EXTENSIBLE CONDUCTIVE WIRE

Pierre Seguin, Chavanoz, France, assignor to Moulinage et Retorderie de Chavanoz, Chavanoz, France

Filed Oct. 6, 1970, Ser. No. 78,392
Claims priority, application France, Oct. 9, 1969, 6934485
Int. Cl. H01b 7/18
U.S. Cl. 174—107 10 Claims

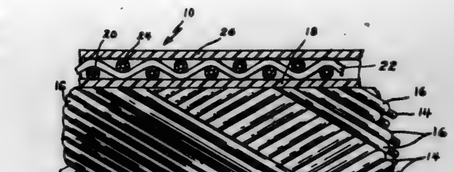


A flexible, sealed, non-inflammable, low-weight, non-extensible conductive wire having great tensile and bending strength and resistance to friction comprising a core material composed of a very good conductor of electricity, this core material being electrically insulated; a sheath comprising a bundle of metallic wires that are either conductive or may be made conductive, this sheath having high strength; and a protective envelope compriaing at least one coating layer. This high-strength, low-weight, non-extensible conductive wire is particularly well adapted for use in the remote control of rockets or in other applications where resistance to high temperature and high stress is necessary.

3,665,096
FLEXIBLE CABLE SHIELDING

Peter J. Madle, Torrance, Calif., assignor to The United States of America as represented by the Secretary of the Air Force

Filed May 4, 1971, Ser. No. 140,175
Int. Cl. H01b 7/18
U.S. Cl. 174—107 8 Claims

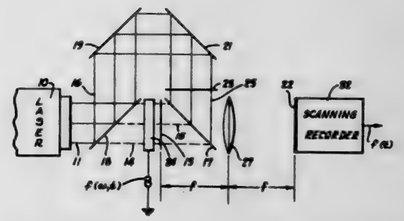


In a shielded multiple-conductor cable, a shield comprising parallel, longitudinal, convoluted wires symmetrically disposed around the conductor bundle, where the convoluted shield shape is maintained by means of inner and outer tie wraps.

3,665,097
OPTICAL DATA PROCESSING SYSTEM

Albert Macovski, Palo Alto, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed July 25, 1969, Ser. No. 844,807
Int. Cl. H04n 5/30
U.S. Cl. 178—6 12 Claims

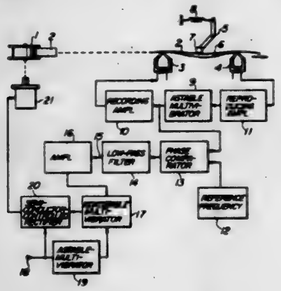


An optical data processing system compares the content of transparencies (as, for example, in correlating, convolving, and matched filtering) by combining the light transmitted by a first transparency with light transmitted by a second transparency and cyclically offsetting in time the relative phase between the light beams with a modulator. The resultant interference pattern contains light information which includes cross-correlation and auto-correlation terms with the desired cross-correlation terms placed on a temporal frequency carrier so that they are electrically separable. The interference pattern is temporally scanned in a plane essentially perpendicular to its axis (as by an image dissector) to generate a complex electrical waveform having frequencies containing information relative to both cross-correlation terms and auto-correlation terms. Since the cross-correlation terms are on a temporal frequency carrier, they are separated by a filter. A transparency may also be simultaneously compared to a plurality of other transparencies by cyclically temporally offsetting each of the reference light beams a different amount with a plurality of modulators. The desired cross-correlation terms with respect to each transparency are placed on a plurality of temporal frequency carriers which enables separation of desired terms from each other and from the undesired terms by filtering. In either case, the desired cross-correlation output from a filter may be utilized by a computer to provide the desired cross-correlation information. Alternatively, the desired cross-correlation information may be applied to cathode ray tube reproducers to form transparencies containing the desired information, and the transparencies thus formed utilized in a Fourier transform reconstruction apparatus to provide a visual display.

3,665,098
UNIT FOR CONTROLLING TENSION OF MAGNETIC TAPE

Osahiko Yano, Kadoma; Takahiro Nakamura, Neyagawa, and Toshiomi Yabu, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 7, 1970, Ser. No. 78,857
Claims priority, application Japan, Oct. 14, 1969, 44/82452
Int. Cl. G11b 15/43; H04n 5/78
U.S. Cl. 178—6.6 P 10 Claims

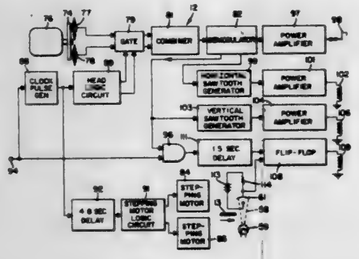


A unit for controlling the tension of a magnetic tape in which an output of a self-oscillator is recorded on and reproduced from a magnetic tape whose tension is to be controlled, and the phase difference between the reproduced signal and an outside reference signal is detected to control the rotational torque of a tape-feed reel in response to the detected phase difference, whereby the tension of the magnetic tape is kept constant.

3,665,099
MAINTAINING A SPACE BETWEEN SHEETS FROM AND ONTO WHICH DOCUMENT IMAGES ARE TRANSDUCED

Lawrence D. Emmons, Santa Clara, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Continuation of application Ser. No. 800,954, Feb. 20, 1969, now abandoned. This application Jan. 28, 1971, Ser. No. 110,614
Int. Cl. G03b 1/60; H04n 1/12, 1/28
U.S. Cl. 178—6.7 R 16 Claims

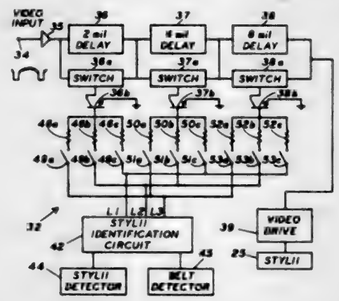


As a beam is deflected to transversely scan sheets as they are conveyed past the deflected beam for transferring image intelligence between a document image form on the sheet and a video signal form for processing by a video processing circuit, the beam is deflected in the direction of the travel of the conveyed sheets at a velocity relative to the velocity of travel of the sheets to produce complementary motion so that the entire sheet is scanned by the beam during a single frame video signal. The operations of the video processing circuit, sheet transport mechanism and beam deflection signal generator are time synchronized with the vertical synchronizing signal associated with the video signal such that each sheet is positioned at the location at which the first upstream line of the raster of scanned lines is produced when the deflections of the beam and transduction of the video intelligence signal is commenced.

3,665,100
AUTOMATIC COMPENSATION APPARATUS FOR THE MARKING POSITIONS OF EACH STYLUS OF A MULTISTYLII FACSIMILE RECORDER

Roger A. Pinkham, Lake Hiawatha, N.J., assignor to EG & G, Inc., Bedford, Mass.

Filed Dec. 7, 1970, Ser. No. 95,843
Int. Cl. G01d 15/06; H04n 1/14, 1/24
U.S. Cl. 178—6.6 R 10 Claims

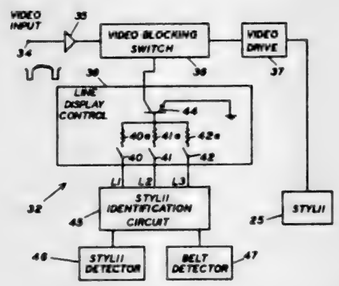


An automatic compensation apparatus is provided whereby the marking action of each stylus of a multistylii facsimile recorder may be compensated electrically for marking in proper alignment. Delay means is included switchable into the circuit responsive to control by a shift register pulsed by means rotatable with the stylii.

3,665,101
SWITCHING APPARATUS FOR EACH STYLUS OF A MULTISTYLII FACSIMILE RECORDER

Roger A. Pinkham, Lake Hiawatha, N.J., assignor to EG&G, Inc., Bedford, Mass.

Filed Dec. 7, 1970, Ser. No. 95,844
Int. Cl. G01d 15/06; H04n 1/14, 1/24
U.S. Cl. 178—6.6 R 10 Claims

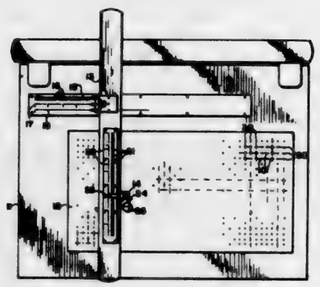


A switching apparatus is provided whereby the marking action of each stylus of a multistylii facsimile recorder may be observed separately from the marking action of the other stylii. Switching means makes it possible to block the marks of any one or all of the stylii so that in the event any stylus is making a mark out of alignment such stylus may be detected and adjustment made thereof.

3,665,102
X-Y COORDINATE LOCATOR

Vernon R. Townsend, Greenbelt, and Waldo M. Womeldorf, Hyattsville, both of Md., assignors to The Singer Company, New York, N.Y.

Filed Nov. 12, 1969, Ser. No. 876,009
Int. Cl. H04n 1/00
U.S. Cl. 178—18 3 Claims

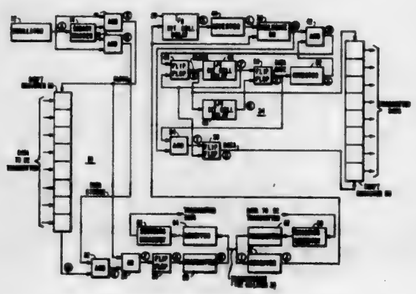


This device is a semiautomatic locator of any particular point on a surface by means of its X–Y coordinates. There are many situations where it is desirable to located a particular point on a large surface when only the X–Y coordinates of the point with respect to a datum are known. On a large surface, equipment of this type is necessary. This device comprises a support for the surface in question, two carriages, one movable along the X axis and the other along the Y axis, and electrical contacts on each carriage which cooperate with brushes on the carriages and are connected to registers to cause the registers to identify the X and the Y position of a pointer on the carriages at every instant. When the X–Y address of the point is registered, the pointer identifies that point on the surface.

3,665,103
SYNCHRONOUS FREQUENCY SHIFT DATA TRANSMISSION SYSTEM IN WHICH OPPOSITE BINARY CHARACTERIZATIONS ARE TRANSMITTED AS HALF CYCLES OF A FIRST CARRIER SIGNAL AND AS FULL CYCLES OF A SECOND CARRIER SIGNAL

Robert V. Watkins, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 16, 1969, Ser. No. 885,555
Int. Cl. H04l 27/12
U.S. Cl. 178—66 R 8 Claims

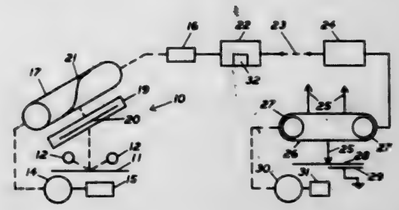


A data transmission system in which data to be transmitted is encoded using double frequency coding, the keying signal which defines the individual bit cells being in-phase with first and second carrier signals having frequencies equal to that of the keying signal frequency and twice that of the keying signal frequency. Opposite binary characterizations ("zeros" and "ones") are respectively transmitted as a half-cycle of the first carrier signal or a full cycle of the second carrier signal within the appropriate bit cells, the synchronous relationship between the keying and carrier signals providing for bit cells of equal size and self-clocking. Encoded data is processed at the transmitting and receiving ends of a transmission line by circuitry which is transformer coupled to the line at both ends to provide isolation and minimize common mode noise and ground shift problems, and which is impedance matched to the line to provide high noise immunity.

3,665,104
PHASING AND BACKSTROKE BLACK CONTROL CIRCUIT FOR FACSIMILE

Roger A. Pinkham, Lake Hiawatha, N.J., assignor to EG & G, Inc., Bedford, Mass.

Filed Dec. 7, 1970, Ser. No. 95,838
Int. Cl. H04n 1/02
U.S. Cl. 178—69.5 F 8 Claims

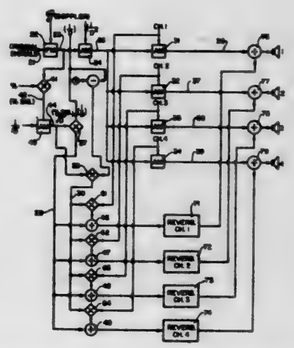


A facsimile marking circuit provides short phasing pulse marks on an unmarked background during the phasing operation, and provides an unmarked margin during the backstroke interval. The circuit includes a source of marking signals operative during the phasing period and blocking means for these marking signals in the absence of backstroke pulses. After the phasing period blocking means is effective during the presence of the backstroke pulses.

3,665,105
METHOD AND APPARATUS FOR SIMULATING LOCATION AND MOVEMENT OF SOUND

John M. Chowning, Stanford, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

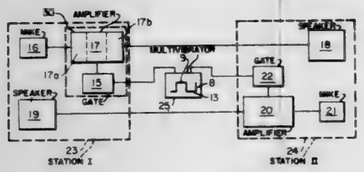
Filed Mar. 9, 1970, Ser. No. 17,747
Int. Cl. H04r 5/00; H03h 7/30
U.S. Cl. 179—1 G 12 Claims



A method and system for generating or processing music or sound signal information to provide, in addition to the

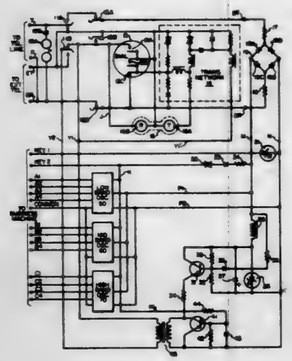
musical parameters of pitch, loudness, time, timbre, control over the apparent location and movement of the sound. The method and system controls the distribution of energy between loudspeakers to provide amplitude changes for the direct and reverberant signals and doppler shift to give the illusion of motion or arbitrary location in space of the sound produced by the loudspeakers.

3,665,106
INTERCOMMUNICATION SYSTEM
Ram Parshad, New Delhi, India, assignor to Research Corporation, New York, N.Y.
Filed Apr. 28, 1970, Ser. No. 32,529
Int. Cl. H04m 1/20
U.S. Cl. 179—1 FS **13 Claims**



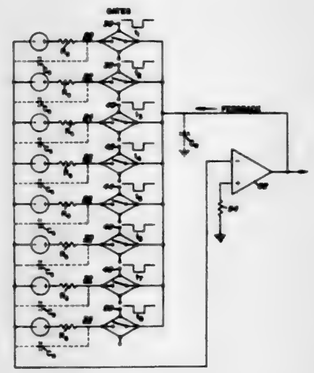
An intercommunication system is provided having loudspeakers at each sending and receiving end with means which will permit interrupting of the speaker without acoustic positive feed back in the system which normally would result in howling noises.

3,665,107
MONITORING CIRCUIT IN DATA SETS, WITH SIGNAL MUTING
Thomas J. Kopec, River Grove, and Richard A. Morstadt, Elmhurst, both of Ill., assignors to Automatic Electric Laboratories, Inc., Northlake, Ill.
Filed Nov. 13, 1970, Ser. No. 89,326
Int. Cl. H04m 11/06
U.S. Cl. 179—4 **8 Claims**



A circuit for use in a data set that permits the user to monitor acknowledgment tones or voice signals from a distant data receiving station, as well as permitting monitoring of tones representing data transmitted by the user's own station. Signal muting of both the data set telephone receiver and an extension telephone are provided to limit the tone levels, as well as isolation from the telephone line to reduce impedance mismatching.

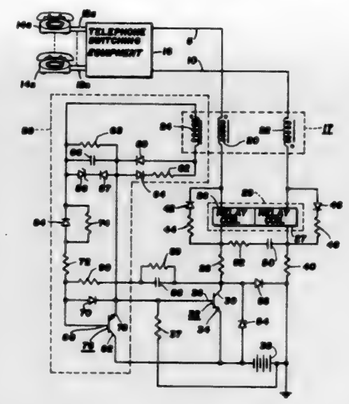
3,665,108
MULTIPLEXING SYSTEMS
John O. Bowers, Jr., Maitland, Fla., assignor to General Dynamics Corporation
Filed Oct. 20, 1969, Ser. No. 867,756
Int. Cl. H04j 3/02
U.S. Cl. 179—15 BL **10 Claims**



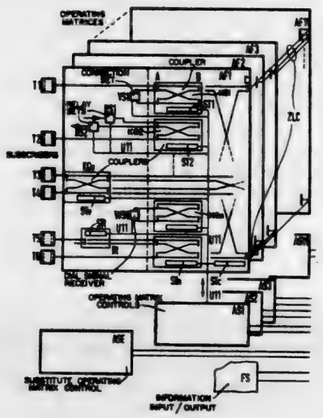
A multiplexing system having high speed sampling capability, even in cases of high source impedance which would ordinarily cause errors which are a function of the source resistance and capacitance, is described. The system includes a plurality of commutator switches or gates which are connected in series with the sources. An operational amplifier is provided having a feedback path connected between the output and inverting input of the amplifier and including the series connected switches and sources. The direct input of the amplifier is connected to ground or some other voltage which is approximately equal to the return potential of the source. The output of the amplifier therefore is equal to the sampled voltage and the amplifier compensates for the errors in the sampled voltage which would be produced by charging effects in the source impedance when insufficient time is not allotted for settling due, for example, to a high rate of sampling.

3,665,109
PULSING CIRCUIT INCLUDING A SERIES SWITCHING CIRCUIT
William E. Shaffer, Rochester, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.
Filed Sept. 23, 1969, Ser. No. 860,375
Int. Cl. H04g 1/36
U.S. Cl. 179—16 E **18 Claims**

A switching circuit is connected in series with a control device, such as a relay or a saturable reactor, and a direct current power source, across a pair of conductors adapted to be connected to a telephone line so that the circuit functions as a pulsing circuit. A control circuit monitors the current flow in the series circuit to render the switching circuit momentarily non-conductive to briefly disconnect the power source when the telephone line is open circuited.

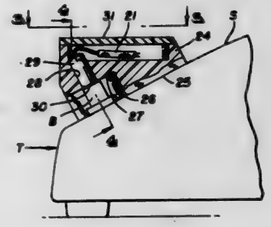


3,665,110
SWITCHING ARRANGEMENT FOR CENTRALLY CONTROLLED TELEPHONE EXCHANGE INSTALLATION
Peter Gerke, Grafelfing; Karl Rutkowski, Pullach; Helmuth Joachim Bock, Munich, and Helmut Palm, Dachau, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Oct. 18, 1968, Ser. No. 768,753
Claims priority, application Germany, Oct. 19, 1967, P 15 37 849.1
Int. Cl. H04q 3/56
U.S. Cl. 179—18 EA **6 Claims**



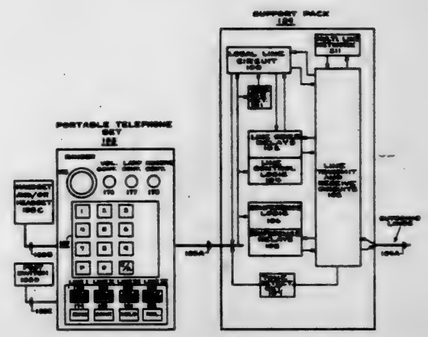
A switching arrangement for long distance telephone exchange installations with central apparatus having a central control means and individual apparatus, the latter being divided into different groups, each group having a plurality of differently functioning individual apparatus. Individual buffer storage and/or code conversion systems are assigned to each group and is connected thereto over a transmission line of a first type transmitting parallel coded information. Each group is connected over a joint transmission line of a second type having series coded information.

3,665,111
TELEPHONE USE MONITOR AND SIGNALLING APPARATUS
Warren J. Schleser, 483 Westmore Rd., Columbus, Ohio
Filed Aug. 13, 1970, Ser. No. 63,397
Int. Cl. H04m 1/22
U.S. Cl. 179—81 C **12 Claims**



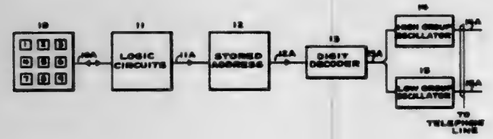
A monitor and signalling apparatus for a telephone set having illuminable line-selector buttons or indicator lights, or a switchboard equipped with indicator lights. The apparatus includes an electrical circuit and signalling mechanism independent of a telephone set and having photo-responsive cell for responding to illumination of a line-selector button for a specific line. Absence of illumination results in activation of the signalling mechanism thereby advising of that line's availability for use.

3,665,112
MULTI-LINE TELEPHONE SET WITH SWITCHING CAPABILITY
Richard K. Blake, Athens, and Haresh C. Jotwani, Morrow County, both of Ohio, assignors to North Electric Company, Galion, Ohio
Filed Aug. 25, 1969, Ser. No. 852,677
Int. Cl. H04m 1/00
U.S. Cl. 179—99 **26 Claims**



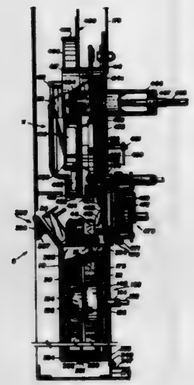
A four-wire multi-line telephone set for sending and receiving priority or non-priority calls which set includes a plurality of line termination circuits programmable by plug and socket connections for various modes of operation, whereby the lines connected to the set may be individually connected to a switching center either separately or in parallel with lines of other multi-line sets, or the lines may be individually connected directly to lines of other multi-line sets. A plurality of relays and associated logic circuits of the multi-line set establish separate transmit and receive paths for each line and conference connections between the lines connected to the set, or between lines of a plurality of multi-line sets.

3,665,113
TELEPHONE REPERTORY DIALER
Richard K. Blake, Athens; Robert J. deHilster, and Warren Wesley Porter, both of Gallon, all of Ohio, assignors to North Electric Company, Gallon, Ohio
Filed Aug. 25, 1969, Ser. No. 852,661
Int. Cl. H04m 1/45
U.S. Cl. 179—90 B 13 Claims



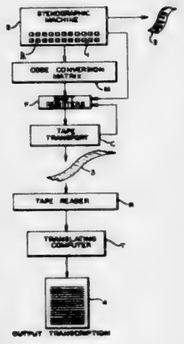
A solid state telephone repertory "dialer" including circuitry for generating pulses representative of the various digits in a selected directory number to be dialed, and directory number storage apparatus for routing the pulses over conductors representative of given digit values to circuitry which generates multifrequency digital signals representative of the digits of the selected directory number for use in setting up a communication path.

3,665,114
CARTRIDGE AND TAPE STRETCH PLACEMENT SYSTEM FOR VIDEO REPRODUCER AND/OR RECORDER
Richard A. Hathaway, Saratoga, Calif., assignor to Cartridge Television, Inc., New York, N.Y.
Filed June 26, 1970, Ser. No. 50,059
Int. Cl. G11b 5/52, 23/08
U.S. Cl. 179—100.2 Z 7 Claims



A tape transport apparatus of the type having a rotary head assembly and adapted for use with a tape cartridge. The apparatus includes a bucket for receiving a tape cartridge and for moving the same into an operative position adjacent to the rotary head assembly. Tape guides pull a stretch of the tape out of the cartridge and adjacent to the path of travel of the heads of the assembly. The bucket has means for releasing a reel brake in the cartridge. The apparatus includes means for opening a closure on the cartridge as the latter is moved by the bucket into its operative position.

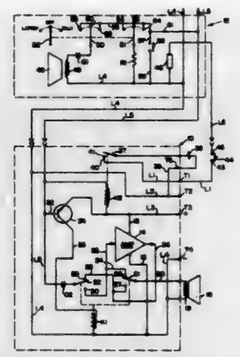
3,665,115
STENOGRAPHIC APPARATUS PROVIDING A MAGNETICALLY RECORDED DIGITALLY ENCODED RECORD
Richard K. Snook, Bridgeton, Mo., assignor to Digitetics Incorporated
Filed Feb. 18, 1970, Ser. No. 12,322
Int. Cl. H04l 23/00
U.S. Cl. 178—21 23 Claims



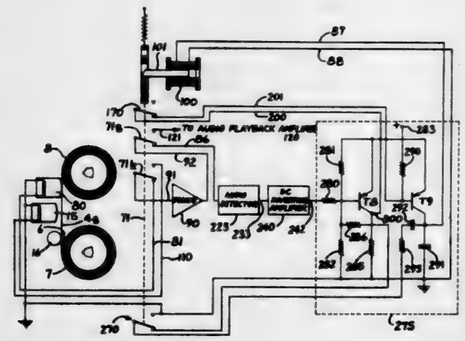
An apparatus for producing a magnetically recorded digitally encoded record when interfaced to a conventional key operated stenographic machine, responsive to the operation of such stenographic machine. The respective keys of the stenographic machine keyboard are interfaced to an electrical circuit of a recorder for producing a magnetic tape record. The recorder generally includes an input register and two internal buffer registers controlling information transfer rates between the keyboard and the magnetic tape unit. A clock oscillator permits transfer from the input register to the buffer registers and from the buffer registers to an output register. An input major cycle counter and an input minor cycle counter is associated with each of the buffer registers for accumulating the number of words in storage. As counts from the two cycle counters are accumulated, the input from a buffer register is transferred to the output register and written on the tape in pretimed relationship to movement of the tape. Thus, the apparatus provides a magnetically recorded record which is readable by digital computing equipment for automatically preparing a transcription of the record.

3,665,116
APARTMENT HOUSE INTERCOM SYSTEM
Allan Holstrom, Rochester, N.Y., assignor to Fasco Industries, Inc., Rochester, N.Y.
Filed Dec. 19, 1969, Ser. No. 886,467
Int. Cl. H04m 7/10
U.S. Cl. 179—37 2 Claims

With this system only two wires are needed to transmit audio signals between a speaker-microphone unit located at a central or foyer station, and any one of a plurality of such units located at apartments remote from the foyer station. A transistorized relay at the central station normally connects the foyer unit for transmission to the remote units, but is responsive to a manually operable switch at each remote station to connect a selected remote unit for transmission to the foyer speaker. The same two wires are used to transmit a door unlatching signal from any remote unit to a release mechanism at the foyer station. Also, a buzzer energizing signal may be transmitted from the foyer station over a single line selectively to one of two of the remote apartment stations.



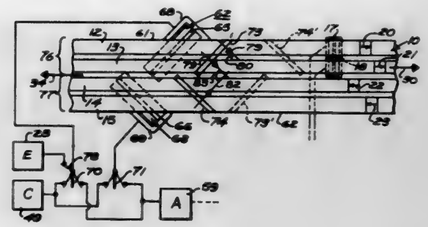
3,665,117
TAPE CARTRIDGE APPARATUS INCLUDING A SILENCE RESPONSIVE POSITIONING CONTROL
Theophiel Clement Josef Lodewijk Staar, Kraainem, Belgium, assignor to Staar, S.A., Brussels, Belgium
Filed June 12, 1969, Ser. No. 832,610
Claims priority, application Belgium, June 14, 1968, 716,590
Int. Cl. G11b 15/44, 23/04, 27/22
U.S. Cl. 179—100.1VC 13 Claims



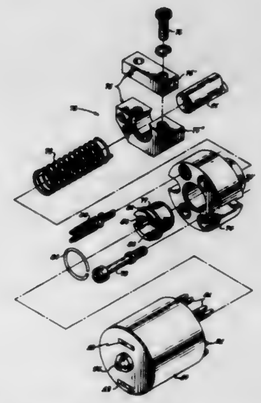
A control for fast forward run or rewind operation of tape transports which automatically causes the tape to resume its normal operating speed, responsive to the detection of a silence between recorded passages on the tape during the fast movement of the tape.

3,665,118
CONTROL SIGNAL RECORDING
Dexter P. Cooper, Jr., Pasadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.
Filed Apr. 7, 1969, Ser. No. 814,110
Int. Cl. G11b 5/48, 23/18, 23/36
U.S. Cl. 179—100.2 S 5 Claims

Improved methods and apparatus for magnetically recording control signals on magnetic recording tape to provide magnetic control signal records which extend over several recording channels at an angle thereto, or at an angle to another magnetic control signal record, or which are in the form of a chevron pattern, or which have the form of a series of magnetized regions aligned in a longitudinal direction of the tape; and improved control signal records provided by these methods.



3,665,119
MAGNETIC RECORDING DEVICE EMPLOYING NOVEL HEAD MOUNTING MECHANISM
Ansell W. Palmer, Hampton, and William C. Earl, Dover, both of N.H., assignors to Oktronics, Inc.
Filed June 23, 1969, Ser. No. 835,351
Int. Cl. G11b 5/54, 21/16, 25/04
U.S. Cl. 179—100.2 T 6 Claims

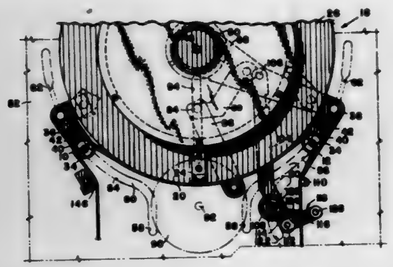


A magnetic recording device for ticket reading and interpreting and employing a novel read-record head mounting mechanism. The mechanism includes a clamping means which is rigidly secured to the rotatable shaft and a socket means connected to the clamping means for limited axial movement with respect to the clamping means. A biasing means between the clamping means and the socket means urges the socket away from the clamping means and thus away from the rotatable shaft.

3,665,120
TAPE GUIDE SYSTEM HAVING PICK-UP ELEMENTS WITH CONICAL ENGAGING SURFACES FOR TAPE COURSE CONVERSION
Thomas J. Larkin, San Jose, Calif., assignor to Cartridge Television, Inc., New York, N.Y.
Filed June 26, 1970, Ser. No. 50,056
Int. Cl. G11b 15/66, 23/04
U.S. Cl. 179—100.2 Z 5 Claims

Apparatus for guiding a magnetic tape from a tape cartridge toward and into an operative position adjacent to and extending along a portion of a rotary head assembly. The apparatus includes a pair of tape pick-up elements or guides adapted to support the opposed ends of the stretch of tape

extending along the rotary head assembly. Each guide has a surface and a length sufficient to permit the tape to be pulled straight out of the cartridge and then toward and into operative position at which the tape forms a helix angle with the



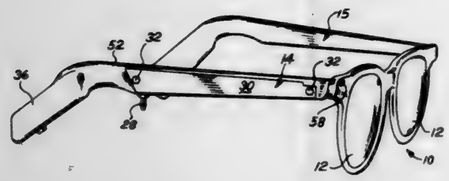
arcuate path of travel of one or more heads of the rotary head assembly. The guides can be adjustably positioned on the means which mount the same for movement into and out of their operative positions.

3,665,121

DIRECTIONAL RESPONSIVE HEARING AID

Erwin M. Weiss, Chicago, Ill., assignor to Beltone Electronics Corporation

Filed Nov. 17, 1969, Ser. No. 877,258
Int. Cl. G02c 11/06
U.S. Cl. 179—107 S 2 Claims



A spectacle mounted directional responsive hearing aid includes various hearing aid components carried in an earpiece of the spectacles. An elongated hollow sound conduit extends over a major portion of the longitudinal length of the earpiece, one end of the conduit communicating with a microphone enclosed in the earpiece and the other end of the conduit opening to the front of the spectacle lens carrying frame in a plane substantially tangent to the hearing aid user's forehead. The conduit is dimensioned to increase the frequency response of the hearing aid in a predetermined frequency range.

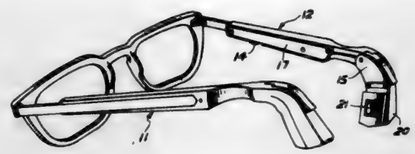
3,665,122

HEARING AID CONSTRUCTION UTILIZING A VENTED TRANSDUCER COMPARTMENT FOR REDUCING FEEDBACK

Erwin M. Weiss, Chicago, Ill., assignor to Beltone Electronics Corporation

Continuation-in-part of application Ser. No. 573,917, Aug. 22, 1966, now abandoned. This application Nov. 19, 1969, Ser. No. 878,194
Int. Cl. H04r 25/00; G02c 11/06
U.S. Cl. 179—107 BC 1 Claim

A hearing aid construction in which the rigid hearing aid case is divided into at least two closely spaced compartments with a microphone mounted in one compartment and a output transducer mounted in the second compartment and further comprising means for venting acoustical pressure waves within the second compartment to substantially reduce



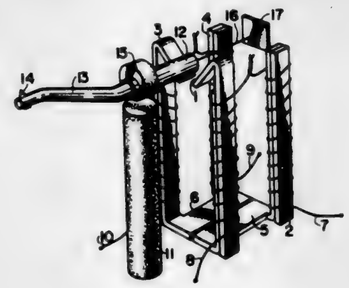
the acoustical coupling between the output transducer and the microphone positioned nearby within the rigid case.

3,665,123

CARTRIDGE FOR PICKUP

Kazuhiro Ikeda, Numazu, Japan, assignor to Messrs. Kabushiki Kaisha Mitachi Onkyo Seisakusho, Ohoka, Numazu-shi, Japan

Filed May 22, 1970, Ser. No. 39,613
Claims priority, application Japan, May 23, 1969, 44/47149; Apr. 18, 1970, 45/33191
Int. Cl. H04r 1/16, 9/12
U.S. Cl. 179—100.41K 8 Claims



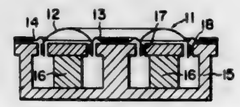
An electromagnetic pickup cartridge comprises a needle support mounted for vibration in accordance with sound tracks on a record engaged by a needle mounted on the support, and includes two pairs of pole pieces mounted in spaced parallel relation, with each pair including a first pole piece and a second pole piece interconnected by a respective magnetic coil holder. The two first pole pieces have pole faces at corresponding ends thereof in spaced relation with the support, and with the pole faces extending in perpendicular facing relation to each other. Respective coils embrace each pole piece, with the coil on each second pole piece being wound reversely relative to the coil on the associated first pole piece and connected in series therewith. Thereby, external magnetic fluxes are cancelled, with respect to each pair of pole pieces, so that high fidelity reproduction is provided in all channels of the record by the first pole pieces and the coils thereon in accordance with vibrations of the support relative to the pole faces. The support may comprise a paramagnetic metal tube in operative association with a fixedly position permanent magnet, or may comprise a tubular permanent magnet. Tension means are provided to preset the fulcrum of the support, and a mu-metal member is paced near the pole faces and the support to form a vertical compensation plate. From the physical standpoint, the pickup cartridge comprises a cartridge case mounting the pole pieces and a needle case mounting the needle support and readily assembled with the cartridge case.

3,665,124

LOUDSPEAKER HAVING ANNULAR DIAPHRAGM WITH DOUBLE VOICE COIL

Hiromi Sotome, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Dec. 23, 1969, Ser. No. 887,534
Claims priority, application Japan, Dec. 30, 1968, 43/96579
Int. Cl. H04r 9/06
U.S. Cl. 179—115.5DV 1 Claim



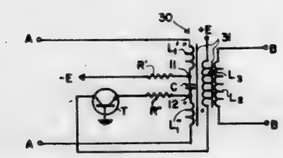
A loudspeaker compriaing an annular diaphragm including a vibrating portion having an arcuate shape in cross section, such as a shape of a fraction of a circle or an ellipse, and inner and outer peripheral support portions, voice coils attached to borders between said vibrating portion and said inner and outer support portions of the diaphragm and magnetic circuit means having concentric gaps for receiving said voice coils, respectively, to drive the diaphragm in phase with said voice coils.

3,665,125

REPEATER WITH BIAS-COMPENSATING MEANS

Giuseppe Valbonesi, Milan, Italy, assignor to Societa Italiana Telecommunicazioni Siemens S.p.A., Milan, Italy

Filed June 17, 1970, Ser. No. 46,993
Claims priority, application Italy, June 18, 1969, 18,319 A/69
Int. Cl. H04b 3/36; H03f 3/62
U.S. Cl. 179—170 R 9 Claims



A telephone repeater at the junction of two reactively interconnected line segments, one of them a DC circuit with a predominantly inductive termination including a split coil on a core, comprises a transistor with a base/emitter circuit connected across a resistor forming part of this termination and with a compensating inductance in series with its collector wound on the same core in opposing relationship with the coil.

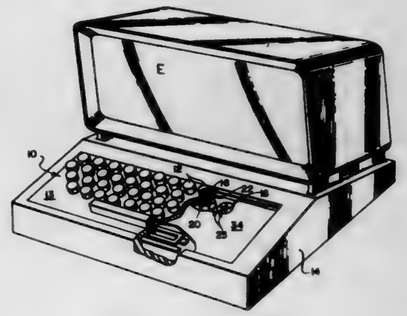
3,665,126

ELONGATED SWITCH BAR APPARATUS

William D. Gabor, Amherst, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Original application Oct. 10, 1966, Ser. No. 598,558, now Patent No. 3,588,875, dated June 28, 1971, which is a continuation of application Ser. No. 496,031, Oct. 14, 1965, now abandoned. Divided and this application July 1, 1970, Ser. No. 60,199
Int. Cl. H01h 9/26
U.S. Cl. 200—5 E 7 Claims

A keyboard encoder comprises a set of keys. Each key is in juxtaposition with one or more field-responsive elements associated with that key, the outputs of the field-responsive elements being conveyed to output terminals of the encoder. Actuation of a key alters the field to which the elements associated therewith respond. The number of elements associated with each key and the connections of these elements to the output terminals correspond to the output code for the character represented by the key. Consequently, the responses of the field-responsive elements to actuation of a key provide a directly encoded representation of the corresponding character at the output terminals. Also disclosed is an elongated switch bar in which contact is readily made even though the switch bar is depressed at either of the two ends thereof.

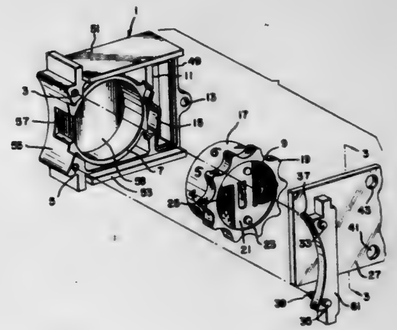


3,665,127

THUMBWHEEL SWITCH WITH FLOATINGLY POSITIONED ACTUATOR

Joseph Larue Lockard, and William Henry Rose, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 26, 1971, Ser. No. 119,279
Int. Cl. H01h 9/02, 19/58
U.S. Cl. 200—11 TW 8 Claims

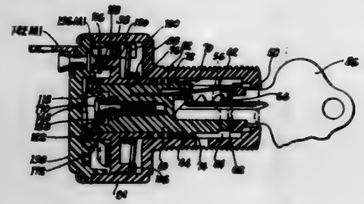


The disclosure relates to a thumbwheel switch wherein a brush with contact fingers is mounted on a contact wheel, the contact wheel being rotatable within a housing. A printed circuit board with discrete conductive sections is placed over the housing and contacts the contact fingers, the fingers abutting different predetermined ones of the conductive sections for each setting of the contact wheel to provide a coded output indicative of the positions of the contact wheel.

3,665,128
ELECTRICAL SWITCH HAVING ROTARY AND PUSH ACTIONS

William J. Schaad, Winnetka, and Fred N. Schmidt, Mukwonago, both of Wis., assignors to Indak Manufacturing Corp., Northbrook, Ill.

Filed Nov. 25, 1969, Ser. No. 879,690
Int. Cl. H01h 27/00
U.S. Cl. 200—44 8 Claims

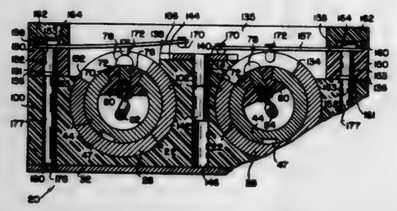


The disclosed electrical switch comprises a rotary carriage which carries a first contactor, engageable with contact points on the casing. An operating shaft is slidable through the carriage but is rotatable therewith. A second contactor is mounted on the shaft and has contact point elements engageable with contact sectors on the casing, when the shaft is pushed rearwardly. First springs are provided between the carriage and the first contactor. A second spring is disposed between the carriage and the shaft to bias the shaft forwardly. A third spring acts between the shaft and the second contactor so that it is yieldably mounted.

3,665,129
MULTI-CIRCUIT SWITCHING CONNECTOR

Jesse F. Lancaster, Great Falls, Va., assignor to Cooke Engineering Company, Alexandria, Va.

Filed June 23, 1964, Ser. No. 377,270
Int. Cl. H01r 19/50
U.S. Cl. 200—51.07 13 Claims

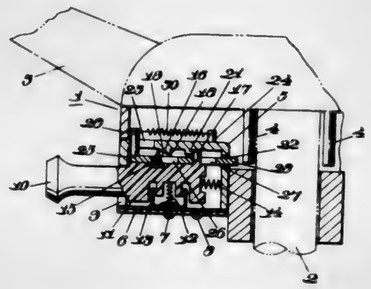


A multi-circuit switching connector of the plug and jack type for patching multi-circuit electrical systems to perform patched switching and coupling of source and load equipment. The switching connector includes a female jack having a pair of plug receiving barrels disposed in side-by-side spaced parallel relation and first and second sets of insulated contact elements disposed in fixed laterally opposed relation along the respective plug receiving barrels in rows parallel to the axes of the respective barrels for limited movement transversely of the barrel axes from a normal position establishing a through circuit between the opposed contacts; a pair of patching plugs each having a third set of mutually insulated contact elements disposed in longitudinally spaced relation axially of said plugs and arranged to respectively be engaged with the first and second set of contact elements; and coacting means on the respective plugs and the pair of plug receiving barrels orienting the plugs in predetermined angular relation for full entry into the barrels and rotation when fully inserted to patched engagement of the respective third sets of contact elements with the first and second sets of contact elements to selectively shift either or both of said first and second sets of contact elements from their normal positions to a shifted position to disrupt the through circuit and patch the circuits of the shifted contact elements through the associated patching plug.

3,665,130
HAZARD WARNING SWITCH FOR AUTOMOTIVE VEHICLES

Masaru Suzuki, Aichi, Japan, assignor to Kabushiki-Kaisha Tokai Rika Denki Seisakusho, Aichi-ken, Japan

Filed Oct. 28, 1970, Ser. No. 84,664
Int. Cl. H01h 3/16
U.S. Cl. 200—61.27 3 Claims

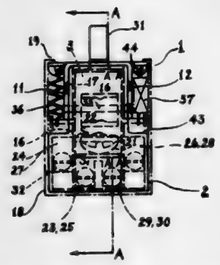


This switch is mounted adjacent a vehicle's steering shaft. It has a reciprocable actuating member resiliently biased away from the steering shaft, and a movable cancelling lever resiliently biased toward the shaft, but normally held in a retracted position by the actuating member. The actuating member can be pushed manually toward the shaft to an operative position where it closes a hazard warning circuit, and also allows the lever to advance to a position where it is engageable with cam means on the steering shaft. The actuating member can be released from its actuating position either manually or by engagement of the advanced lever with the cam means, when the steering shaft is rotated. Also, the actuating member can be moved to its actuating position regardless of the position of the cam means.

3,665,131
SNAP ACTION ELECTRIC SWITCH

Conan Henry Spaderna, 8 Edmund St., Longmeadow, Mass.

Filed Feb. 9, 1971, Ser. No. 113,957
Int. Cl. H01h 13/28
U.S. Cl. 200—67 B 10 Claims

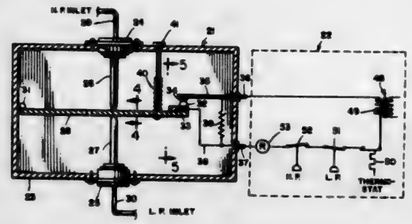


A snap action switch for alternating and direct current, improved by a solid support for the movable contact means in combination with a substantial distance between the stationary contacts. For longer life a robust spring mechanism is insulated against gas, arising from the arc.

3,665,132
PRESSURE-RESPONSIVE CONTROL DEVICE FOR ELECTRICAL CIRCUIT

Eugene Noel May, Aurora, Ill., assignor to J/B Industries, Inc., Aurora, Ill.

Filed Sept. 9, 1970, Ser. No. 70,716
Int. Cl. H01h 35/40
U.S. Cl. 200—83 D 9 Claims

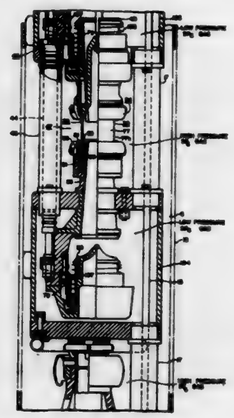


A control device is provided which is particularly suitable for use as a re-cycle control for air-conditioning and refrigeration systems. The device includes a pair of electrical contacts adapted to be connected in a series with the electrical control circuit of the system and a pair of pressure-responsive diaphragm pumps which open and close the contacts depending upon the relative pressures acting upon the diaphragms. An electrical resistance is connected across the contacts. When the pressure in one of the diaphragms exceeds the pressure in the other diaphragm by a predetermined amount, the contacts will be opened, although the electrical control circuit will be completed through the resistance. However, the resistance will decrease the current flow in the control circuit, and the current flow will not return to its original value until the differential between the pressures acting upon the diaphragms decreases to permit the electrical contacts to close, thereby effectively shorting the resistance out of the circuit.

3,665,133
DELAYED-ACTING BLAST VALVE OPERATOR CONSTRUCTION

Frank L. Reese, Pittsburgh, and Hayes O. Dakin, Jr., Irwin, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 30, 1968, Ser. No. 787,658
Int. Cl. H01h 33/54
U.S. Cl. 200—148 4 Claims



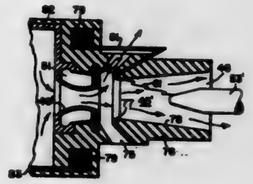
An arc-extinguishing unit is provided in a high-pressure gaseous environment having a pair of separable contacts, which when closed provide a primary blast valve, which prevents an exhausting flow of high-pressure gas through the interior of the contacts. Pneumatically connected with the interior of at least one of the separable contacts is a secondary blast valve, which is open in the closed-circuit position of the interrupting device. During the opening operation, upon separation of the separable contacts, the secondary blast valve begins to close, so that in the fully open-circuit position of the interrupter, the contacts will be separated, and the one or more secondary blast valves will be closed to prevent continued exhausting flow through the contacts from the high-pressure region externally of the contacts.

The one or more secondary blast valves are mechanically latched in their open position, and a blast-valve activator, moving with the moving contact structure, compresses spring means tending to close the secondary blast valve, and additionally releases the latches at a predetermined point of time in the opening operation to thereby permit a delayed closing action of the secondary blast valve.

3,665,134
CIRCUIT BREAKERS HAVING RADIAL MAGNETIC FIELD COIL INSERTED INTO SERIES CIRCUIT DURING THE OPENING OPERATION

William H. Fischer, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original application Sept. 1, 1966, Ser. No. 576,707, now Patent No. 3,551,625. Divided and this application Mar. 16, 1970, Ser. No. 19,629
Int. Cl. H01h 33/70
U.S. Cl. 200—148 A 5 Claims



A fluid-blast circuit interrupter of the piston type has a movable operating cylinder carrying an orifice and a movable contact. The movable orifice structure has a movable probe, which connects into the series electrical circuit a movable radial magnetic field coil, which causes a rotation of the established arc around a conducting ring incorporated into the orifice structure. The combination of the rotating arc and the gas blast through both a side vent and an axially disposed orifice effects quick extinction of the established rotating arc.

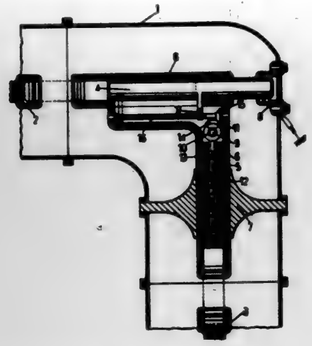
3,665,135
METAL CLAD ISOLATOR SWITCHES FOR HIGH TENSION AND DOUBLE INTERRUPTION

Rintje Boersma, Harmelen, and Gijsbert Waldemar Irik, Bilthoven, both of Netherlands, assignors to N. V. "COQ," Kanaalweg, Utrecht, Netherlands

Filed Aug. 7, 1970, Ser. No. 62,083
Claims priority, application Netherlands, Feb. 27, 1970, 7002803
Int. Cl. H01h 33/42, 31/32, 3/32
U.S. Cl. 200—163 12 Claims

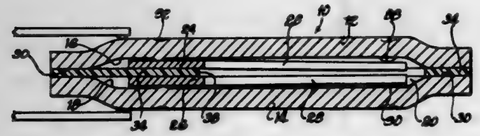
A metal clad isolator switch for high voltage and double interruption, comprising two permanently electrically interconnected mechanically coupled, axially movable switching rods directed in respect of each other at an angle which is smaller

than 180° and each cooperating with their one end portion with an individual one of two insulatedly mounted fixed con-



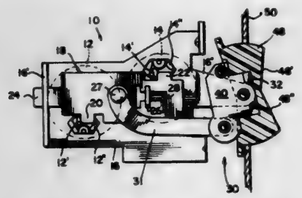
tacts and at least one of said switching rods cooperating with its other end portion with a third fixed contact.

3,665,136
REED SWITCH CONSTRUCTION
Martin Gaber, 2301 Greenwood, Wilmette, Ill.
Filed Mar. 16, 1971, Ser. No. 124,682
Int. Cl. H01h 1/66
U.S. Cl. 200—166 C 15 Claims



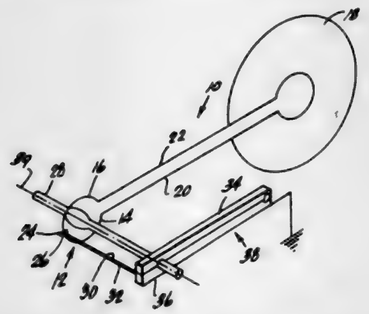
A reed switch construction comprising first and second enclosures formed of conductive material and defining opposing troughs located within surrounding walls. First and second contacts are located within these troughs, and an insulating film is interposed between the respective assemblies of enclosures and contacts. An opening is defined by the film, and engaging portions of the respective contacts are positioned in opposing relationship adjacent this opening whereby the contacts can be moved into engagement when subjected to the influence of a magnetic field. The structure described permits accurate spacing of the contacts since the spacing is controlled by the film thickness.

3,665,137
TWO SWITCH ACTUATOR MEANS
George O. Paerner, Frankfort, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.
Filed Nov. 4, 1970, Ser. No. 86,785
Int. Cl. H01h 3/04
U.S. Cl. 200—172 A 8 Claims



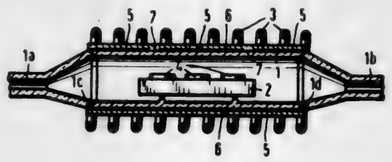
A pivotal actuator means having two pivot means is used to substantially simultaneously actuate two switches.

3,665,138
ANTI-ARC INDUCTION HEATING TOOL
Andrew F. Edge, Long Beach, and Masashi Hayase, Fountain Valley, both of Calif., assignors to McDonnell Douglas Corporation
Filed Feb. 22, 1971, Ser. No. 117,267
Int. Cl. B23k 13/02
U.S. Cl. 219—8.5 8 Claims



An induction heating tool for welding or brazing tubes and their associated couplings and connectors wherein a split single turn inductor forms a heating chamber when the jaws thereof are closed and locked. When the jaws are opened or in otherwise poor electrical contact the contact surfaces thereof are maintained in electrical communication to prevent arcing thereacross.

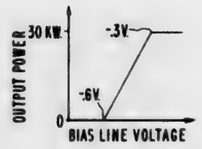
3,665,139
DEVICE FOR EPITACTIC PRECIPITATION OF SEMICONDUCTOR MATERIAL
Hermann Steggewentz, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed May 12, 1970, Ser. No. 36,599
Claims priority, application Germany, May 16, 1969, P 19 24 997.9
Int. Cl. H05b 9/00
U.S. Cl. 219—10.43 9 Claims



A device for epitactic precipitation of semi-conductor material on substrate bodies within a reactive vessel. The substrate bodies are normally heated through an induction coil outside the vessel. According to the invention a mirrored layer is placed at least around a portion of the wall of the reaction vessel. The mirrored layer reflects heat radiation from the substrate bodies back thereto.

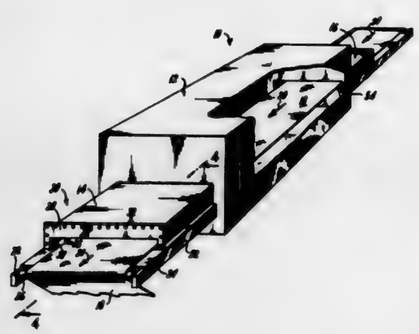
3,665,140
MICROWAVE CHAMBER HAVING ENERGY DENSITY CONTROL SYSTEM
Jerome R. White, San Carlos, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed Feb. 9, 1970, Ser. No. 9,769
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 7 Claims

A microwave treating chamber is disclosed which includes a monitor for determining the average energy density of the microwave field within the chamber and a feedback control system which responds to the monitor by maintaining the energy density within the chamber constant. The monitor includes a duct which extends a substantial distance through the chamber and through which water is passed at a constant rate. Thermistors in the duct on opposite sides of the



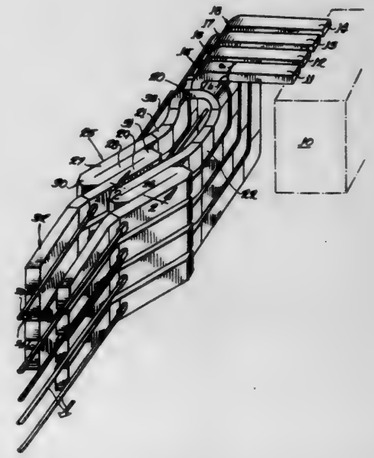
chamber measure the total thermal energy imparted to the water by the radiation within the chamber. This total energy gain provides a precise indication of the average energy density along the path of the duct of the microwave field. An electrical feedback loop from the monitor is included for controlling the intensity of the radiation fed to the chamber in order to maintain the energy density constant.

3,665,141
END TRAP FOR MICROWAVE OVEN
Robert F. Schiffmann, Brooklyn; Ernest W. Stein, and Harold B. Kaufman, Jr., both of New York, all of N.Y., assignors to DCA Food Industries, Inc., New York, N.Y.
Filed July 1, 1970, Ser. No. 51,531
Int. Cl. H05b 5/00
U.S. Cl. 219—10.55 14 Claims



An end trap for a microwave oven. An enclosure defining a relatively high tunnel is disposed around a port of the oven. A conveyor moves through the port of the oven, and through and over the bottom of the tunnel. Along each side of the tunnel is a bracket, a metallic baffle plate being placed across the two brackets adjacent to the oven port. At the forward end of the tunnel, a slab of energy absorbing material is placed across the two brackets, and an end plate is secured to the forward end of the tunnel. The baffle defines a tunnel whose height is less than one-half of the wavelength of the energy at which the oven is operated to attenuate the leakage of microwave energy from the oven. The slab of energy absorbing material is provided to absorb any energy which does escape through the tunnel defined by the baffle plate. To clean the tunnel, all that is required is to remove the end plate, and then the slabs of energy absorbing material and the baffle plate.

3,665,142
SYSTEM FOR APPLYING MICROWAVE ENERGY TO A LOSSY CYLINDRICAL OBJECT
Ray M. Johnson, Danville, Calif., assignor to Cryodry Corporation, San Ramon, Calif.
Filed July 6, 1970, Ser. No. 52,505
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 13 Claims

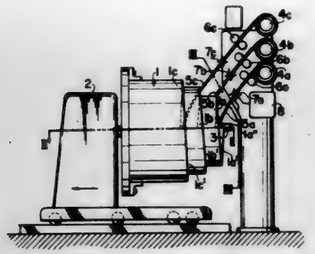


In a system for heating lossy dielectric cylindrical objects, for example in pre-cooking Vienna sausage, a wave guide of rectangular cross section is excited in the TE_{10} mode to generate an electric field extending perpendicularly between the broadwalls of the wave guide and having a maximum intensity in a plane midway between the sidewalls extending in the direction of power flow. The cylindrical object is then passed through the opposing broadwalls with the axis of the object extending generally in the plane of maximum field intensity, forming an acute angle of incidence in the range of 15° to 80° with the axis of the guide. The angle depends on the dielectric constant and loss factor of the object, and it is set to reduce reflection back to the microwave source yet increases heating of the object and provides a more uniform heating of its surface. In a preferred embodiment the wave guide is folded back upon itself to provide a meander system with the object making three passes through each wave guide applicator.

3,665,143
METHOD OF CONSTRUCTING SUBSTANTIALLY CIRCULAR CROSS-SECTION VESSEL BY WELDING
Akira Ujile, Kobe-shi, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 23, 1970, Ser. No. 5,311
Claims priority, application Japan, Jan. 31, 1969, 44/6624
Int. Cl. B23k 9/04
U.S. Cl. 219—76 5 Claims

A multi-layer, thick wall, substantially circular cross-section metal vessel includes a plurality of concentric tubular layers formed by the progressive deposition of molten weld metal mainly provided by electroslag welding process to form continuous helical strips with the axially adjacent convolutions of each helical strip being contiguous. The several helical strips are formed simultaneously, and each helical strip is solidified in contact with solidified metal. Each strip of mol-

ten metal forming a tubular layer of a relatively larger diameter is deposited progressively and progressively solidified

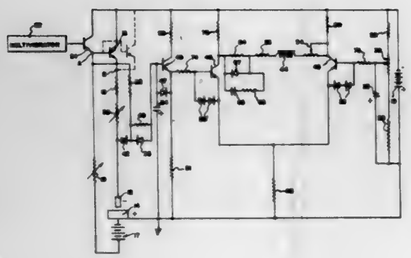


onto a tubular layer of smaller diameter with an axial offset corresponding to a predetermined pitch of a helix.

3,665,144
ELECTRICAL DISCHARGE MACHINING POWER SUPPLY WITH PROTECTIVE SYSTEM FOR OUTPUT SWITCH FAILURE

Kurt H. Seanowitz, Royal Oak, Mich., assignor to Elox, Inc., Davidson, N.C.

Continuation-in-part of application Ser. No. 874,574, Nov. 6, 1971, now Patent No. 3,548,142, which is a continuation-in-part of application Ser. No. 699,443, Jan. 22, 1968, now Patent No. 3,524,036. This application Sept. 24, 1970, Ser. No. 74,997
Int. Cl. B23p *1/08, 1/14*
U.S. Cl. 219—69 G 3 Claims



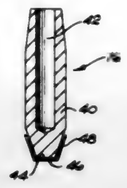
A protective system for an electrical discharge machining power supply circuit including a periodically operated electronic output switch or bank of output switches and a drive stage therefor. A network is connected between the output stage and the gap. Responsive to failure of one or more of the output switches and short circuiting of the gap, the remainder of output switches are biased off. Concomitantly, there is an interruption of down-feed signal in the servo control circuit causing a back-off of the servo system until the "failed" switch is replaced in the circuit.

3,665,145
RESISTANCE WELDING ELECTRODE

Harold J. Engel, 8127 Matilya Ave., Panorama City, Calif.

Filed Apr. 10, 1970, Ser. No. 27,398
Int. Cl. B23k *9/24*
U.S. Cl. 219—119 10 Claims

The useful life of a resistance welding copper electrode is significantly extended by plating on its tip a material having

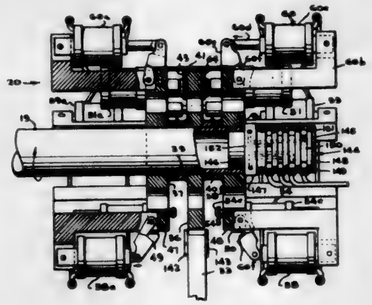


certain defined parameters and exemplified by nickel, beryllium, cobalt and iron.

3,665,146
APPARATUS FOR WELDING BRAKE SHOES

Thomas B. Morris, Montgomery; Fred Paul, Prattville, and Barney R. Powell, Montgomery, all of Ala., assignors to Standard Forge and Axle Company, Inc.,, Montgomery, Ala., by said Barney R. Powell

Filed Jan. 23, 1970, Ser. No. 5,199
Int. Cl. B23k *9/12*
U.S. Cl. 219—124 15 Claims



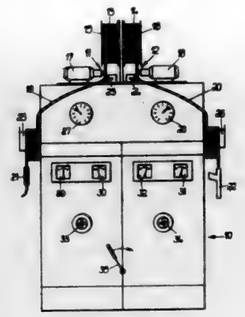
An apparatus for welding the table section of a brake shoe to a pair of rib sections thereof including a frame assembly, support means mounted on the frame assembly, the support means having means for detachably mounting the rib sections in spaced, parallel relation thereon, the support means having means for detachably mounting the table section on the rib sections, welding means mounted on the frame assembly, directed toward selected adjacent portions of the table and rib sections mounted on the support means, means for advancing the support means along a predetermined line of travel whereby the welding means is directed toward the selected portions of the table and rib sections, and means for energizing the welding means to weld the table and rib sections together.

3,665,147
DEVICE FOR ELECTRICAL PROTECTIVE GAS WELDING

Karl Schobel, Frankfurt am Main, and Werner Becker, Bornheimer, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Germany

Continuation-in-part of application Ser. No. 643,862, June 6, 1967. This application Mar. 18, 1970, Ser. No. 20,653
Int. Cl. B23k *9/10*
Claims priority, application Germany, June 10, 1966, M 69793
U.S. Cl. 219—131 R 2 Claims

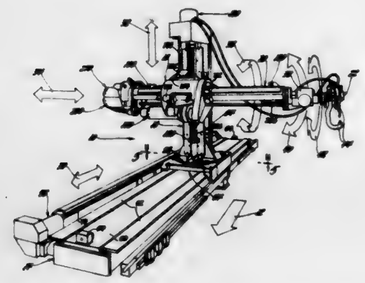
An electrical protective gas welding device for seam welding a plurality of layers together with different thickness wires mounts both the wire supply devices and the corresponding torches on the same electrical equipment housing for sequential operation thereof.



3,665,148
SIX-AXIS MANIPULATOR

Richard W. Yasenchak, Farmington; Raymond A. Schomer, Royal Oak, and Ernest V. Harper, Utica, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 7, 1971, Ser. No. 132,062
Int. Cl. B23k *9/12*
U.S. Cl. 219—125 4 Claims



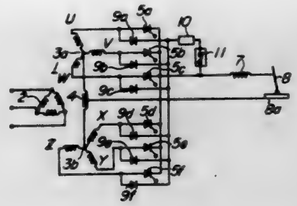
A six-axis manipulator for positioning a workhead with respect to articles moving on an assembly line is provided with multiple degrees of freedom including three mutually perpendicular rectilinear axes and three rotational axes. Electric servo motors and precision ball screw drives coordinately position the workhead about the rectilinear axes for achieving primary orientation of the workhead and a precision chain drive and a dual input, single output differential gear unit universally position the workhead about the rotational axes for achieving secondary orientation in a desired work processing relationship with the articles.

3,665,149
DIRECT-CURRENT ARC WELDER

Akira Sakabe, Urawa, and Kinji Sugimoto, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 9, 1970, Ser. No. 17,569
Claims priority, application Japan, Mar. 19, 1969, 44/20362
Int. Cl. B23k *9/10*
U.S. Cl. 219—131 R 2 Claims

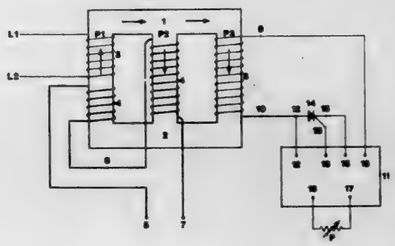
A direct-current arc welder comprising a transformer having its primary winding connected to an AC power source, controlled rectifier elements respectively connected between the secondary winding of said transformer and a welding circuit including an electrode and a workpiece and series circuits respectively consisting of non-controlled rectifier elements and a current-limiting element and each being connected across the anode and cathode of said each controlled rectifier element, whereby the DC power necessary to maintain an arc between the electrode and the workpiece is supplied to said welding circuit through said controlled rectifier elements, while the DC power required to regenerate the arc after extinction is supplied to said welding circuit through said series circuits consisting of said non-controlled rectifier elements and said current-limiting element.



3,665,150
ELECTRICAL WELDING MACHINE HAVING AMPERAGE CONTROL TRANSFORMER

Salvador Mejia, Mexico D. F., Mexico, assignor to Industrias Sigma, S.A. de C.V., Colonia Industrial Vallejo, Mexico, D.F., Mexico

Filed Sept. 18, 1970, Ser. No. 73,275
Claims priority, application Mexico, Nov. 21, 1969, 115,484
Int. Cl. B23k *9/10*; H01f *40/08*
U.S. Cl. 219—131 WR 4 Claims



An arc welding unit operable on single or multiple phase alternating current and including for each phase a basic control device including a three-legged magnetic core. A primary leg includes a portion of the secondary, or output, winding, the remainder of which is wound on a secondary leg of the core. Flux through the secondary leg is controlled by regulating the duty cycle of the saturation current through a control winding on the third leg of the core, and flux-induced emf in the secondary winding due to current flow through the control winding is essentially eliminated because the secondary is formed on both the primary and secondary legs.

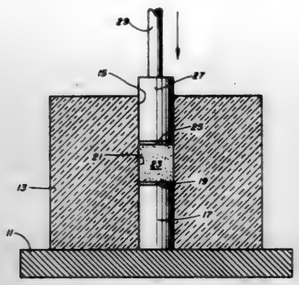
3,665,151
APPARATUS FOR PREVENTING CARBON DIFFUSION IN ELECTRIC DISCHARGE SINTERING

Thomas E. Piper, Los Altos, Calif., assignor to The United States of America as represented by the Secretary of the Navy

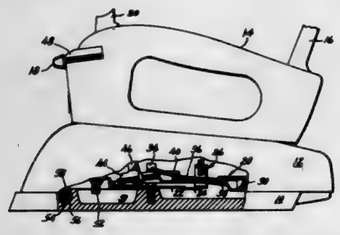
Filed July 24, 1969, Ser. No. 844,351
Int. Cl. B23f *3/10*; C22c *25/00*
U.S. Cl. 219—149 3 Claims

An apparatus for sintering metallic particles to form coherent objects wherein an electric spark is developed

between slightly compacted particles disposed in a mold. A carbon diffusion barrier is provided between a pair of electrodes and the particles in the mold to prevent diffusion of carbon into the mold.

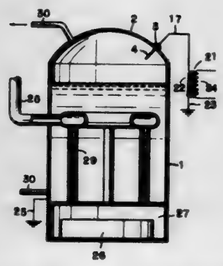


3,665,152
IRON WITH OVERTEMPERATURE PROTECTION MEANS
Harold S. Foster, Huntington Beach, and Wendell C. Walker, Alta Loma, both of Calif., assignors to General Electric Company
Continuation-in-part of application Ser. No. 880,053, Nov. 26, 1969, now abandoned. This application May 20, 1971, Ser. No. 145,177
Int. Cl. D06f *75/26*
U.S. Cl. 219—253 **12 Claims**



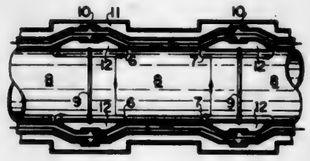
A flatiron having an overtemperature protection means operating in conjunction with a thermostat to prevent an excessive soleplate temperature in the event of failure of the thermostat.

3,665,153
APPARATUS AND METHOD FOR HEATING WATER
Yukichi Asakawa, Tokyo, Japan
Filed May 11, 1970, Ser. No. 35,964
Int. Cl. F27d *11/00*
U.S. Cl. 219—279 **10 Claims**



An apparatus and method for heating water to generate steam or provide hot water. The water is heated by a conventional heat source and is simulataneously subjected to an electric field. In a steam generator the field is produced by an electrode in the steam chamber. In a water heater the field is produced by immersing an electrode in the water.

3,665,154
METHOD FOR CONSTRUCTING TRANSPORTATION PIPES AND HEAT GENERATING PIPES UTILIZING SKIN-EFFECT CURRENT
Masao Ando, Yokohama, Japan, assignor to Chiyoo Corporation, Osaka, Japan
Filed Mar. 5, 1970, Ser. No. 16,788
Claims priority, application Japan, Mar. 26, 1969, 44/22974
Int. Cl. H05b *3/40*
U.S. Cl. 219—301 **5 Claims**



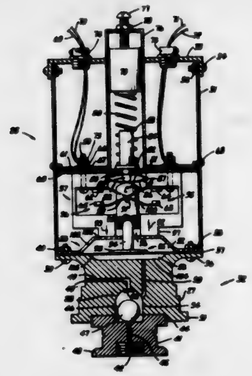
Units of transportation pipes heated by the skin-effect current flowing concentratedly only through the inner wall skin portion of a ferromagnetic pipe in which an insulated conductor line forming a primary circuit is placed to pass AC therethrough are constructed by electrically connecting the skin-effect current heat-generating pipes at all connecting parts of the transportation pipe so as to form a secondary circuit in all units of the transportation pipe by an electric connection between the said unit of the transportation pipe and the corresponding part of the skin-effect current heat-generating pipe.

3,665,155
ELECTRIC HEATERS
Steven J. Caroleo, Coraopolis, Pa., assignor to Emerson Electric Company, St. Louis, Mo.
Filed Jan. 8, 1971, Ser. No. 105,021
Int. Cl. H05b *1/00*
U.S. Cl. 219—335 **10 Claims**



A heater for use in a highly corrosive environment such as, for example, for heating pickling solutions, plating baths and the like, comprising an imperious graphite sheath, an electric heating element within the lower end of the sheath, granular refractory material within the sheath, an epoxy cement topping the refractory material and encapsulating a grounding plate which is in electrical engagement with the interior wall of the sheath, the entire heater being resistive to corrosive action of the heated solution or the fumes therefrom, and including a member to permit air to enter or exit from the sheath.

3,665,156
HEATING-ELEMENT PROTECTOR FOR ELECTRIC WATER-HEATER
Herbert P. Lee, 7490 N. Pennsylvania St., Indianapolis, Ind.
Filed Sept. 8, 1970, Ser. No. 70,240
Int. Cl. H05b *1/02*
U.S. Cl. 219—333 **8 Claims**

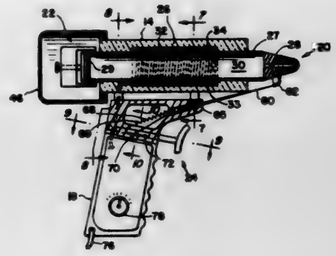


A device for preventing electrical energy flow to a water heating element when an insufficient amount of water is in contact with the element for absorbing the heat generated. The device or element protector is coupled to an exit pipe which extends into the heating tank immediately above the heating element. Normally open contact switches within the protector allow electrical energy flow to the element only when water covers the element and has entered the protector causing a diaphragm and a movable structure to force the switches closed. A helical spring and snap disc are employed to allow the switches to close and open at different pressure points. Means are provided to adjust the spring for different operating pressures. A float and chamber within the protector prevent switch activation when water does not cover the heating element.

3,665,157
METHOD OF PRODUCING A MOISTURE PERMEABLE SHEET MATERIAL
Kazuto Harada, Kurashiki, Japan, assignor to Kuraray Co., Ltd., Kurashiki, Japan
Filed Feb. 19, 1971, Ser. No. 117,143
Claims priority, application Japan, Feb. 17, 1970, 45/17481; June 12, 1970, 45/51403
Int. Cl. H05b *7/18*
U.S. Cl. 219—384 **19 Claims**

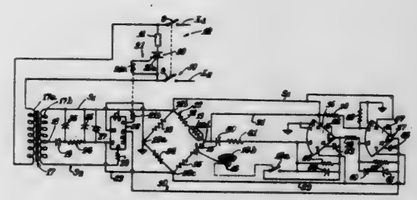
A method of imparting moisture permeability to a sheet material having a porous base and a non-porous surface layer is provided comprising impregnating the pores within the porous base with an aqueous medium, subjecting the impregnated sheet material to electrical discharge, thereby forming a plurality of perforations in said non-porous surface layer, and recovering the sheet material exhibiting enhanced moisture permeability.

3,665,158
PLASTIC EXTRUSION DEVICE
Don T. Froedge, 407 Cleveland Ave., Glasgow, Ky.
Filed July 31, 1970, Ser. No. 59,936
Int. Cl. F27d *14/00*
U.S. Cl. 219—421 **13 Claims**



The device, in the form of a hand gun, includes a chamber for receiving plastic material and a nozzle assembly disposed along the gun barrel. The nozzle assembly includes a conical element having an eccentric opening. This conical element is rotatable between positions misaligning and aligning the eccentric opening with a similar eccentrically disposed opening in the barrel in communication with the chamber. An access cover is provided for the chamber whereby it can be loaded with plastic material. Heating elements are disposed about the chamber and a trigger assembly is connected to a wire for rotating the conical nozzle element. In operation, the plastic material in the chamber is heated. When the nozzle element is rotated into a position aligning its opening with the barrel opening by actuation of the trigger, the pressure generated by heating the plastic material in the chamber displaces molten plastic material through the aligned nozzle and barrel openings.

3,665,159
HEATING SYSTEM CONTROL
Stephen A. Becker, and Donald E. Knoop, both of Benton Harbor, Mich., assignors to Whirlpool Corporation
Filed Oct. 19, 1970, Ser. No. 81,900
Int. Cl. H05b *1/02*
U.S. Cl. 219—497 **13 Claims**

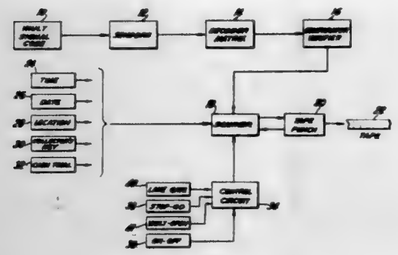


A control for regulating an electric heater of a heating system to provide substantially maximum rate of elevation of the system temperature at start-up without overshooting a preselected temperature to which the system is to be heated. The control includes means for sensing the instantaneous difference between the system temperature and the preselected temperature and for performing control operations based on the sensed temperature information to provide the desired control of the heater. The control may be further arranged for selective use as an infinite heat control as desired.

3,665,160
CODED SECURITY VAULT

Herman Lopata, New Rochelle, N.Y., assignor to Automatic Toll Systems, Inc., Bronx, N.Y.

Filed Dec. 18, 1970, Ser. No. 99,596
Int. Cl. G06k 1/18, 7/01; E05g 3/00
U.S. Cl. 235—61.1 9 Claims

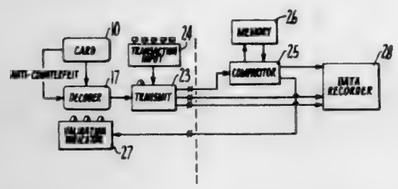


A vault into which cash, such as coins and tokens are deposited, is provided with a self-locking enclosure to be opened only by authorized personnel in preferably supervised facilities at which the contents are counted and accounted for. The vault is generally of a parallelapiped form adapted for slidable insertion in a drawer provided with an access port for conveying the cash therein. Mechanical, magnetic, optical or electronic means are provided as an adjustable code for identification of the vault. Means to sense the identification code on the vault are provided in the drawer housing and are so arranged as to prevent access by unauthorized personnel. A control circuit responsive to signals representative of the coded vault are processed by appropriate scanning and comparator circuits and, depending upon the code used, conversion matrices to develop a printout of the identified vault at a remote location upon the occurrence of certain actions such as the insertion, removal of the vault from the drawer or at some programmed interval on the hour or the like. In a preferred application the coded self-locking vault is included in a toll collection system for toll roads and toll bridges wherein the output is punched into a tape for translation at accounting centers in any desired printed form.

3,665,161
CARD READOUT SYSTEM

George S. Oberhart, San Mateo, Calif., assignor to Albert J. Day

Continuation-in-part of application Ser. No. 855,868, Aug. 4, 1969, now Patent No. 3,600,012. This application Oct. 20, 1969, Ser. No. 867,567
Int. Cl. G05b 1/08; G06k 7/04
U.S. Cl. 235—61.7 B 2 Claims

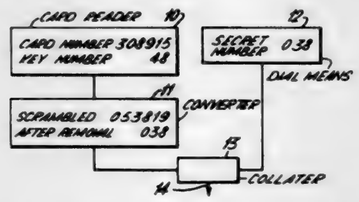


A system employing encoded cards and a card readout machine wherein the cards incorporate both embossments and electrically conductive means which cooperate with said machine to read out information encoded on individual cards. The readout machine which is employed in the system may be adapted for either "on line" usage with a computer or perform "off line" functions. In the latter arrangement the readout machine incorporates means to punch a memorized code thereinto, means to read encoding embossments on a card and means including electrical circuitry to determine for card verification purposes whether or not embossment encoding on the card complements the combination punched into the machine. The off line machine further includes means cooperating with electrically conductive encoding means on the card to determine whether or not the card is counterfeit. The on line machine incorporates means for reading a card encoded with both embossments and printed circuitry and for feeding the encoded information to an electronic data processing (EDP) center. In addition, the on line machine may be utilized to feed to the EDP center information relating to such matters as the location of the machine, the amount of money being charged and/or information regarding the source of the card being utilized in combination with the machine.

3,665,162
IDENTIFICATION SYSTEM

Mititaka Yamamoto, Kyoto; Kazuhiro Kawahara, Hyogo, and Tadao Morita, Kyoto, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Dec. 11, 1969, Ser. No. 884,270
Claims priority, application Japan, Dec. 16, 1968, 43/92201
Int. Cl. G06k 9/00
U.S. Cl. 235—61.7 B 4 Claims



A system for identifying the proper user of a credit card or the like in a vending machine or the like. Each card used in the system is given an identification number and a key number both written on the card and a secret number previously known to the proper owner of the card. To make the secret number, the order or arrangement of the numerals constituting the identification number is changed or scrambled in accordance with a program as determined on the basis of the key number, and from the scrambled identification number some of the component numerals are removed in accordance with a program as determined on the basis of the key number, so that the remaining numerals are formed into the secret number of the card. When the card is used for a credit purchase, the system recognizes the secret number of the card from its identification number and key number in accordance with the above-mentioned programs, and then compares that secret number thus recognized with the secret number separately entered into the system by the user of the card. If the two secret numbers are found identical, the system recognizes the user of the card as its proper owner.

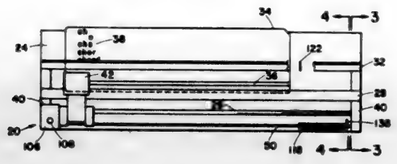
3,665,163
DRIVE AND CONTROL MEANS FOR EDUCATIONAL DEVICES SUCH AS CARD READERS AND THE LIKE

Gifford M. Mast, and Lloyd E. Moeller, both of Davenport, Iowa, assignors to Mast Development Company, Davenport, Iowa

Filed Feb. 16, 1970, Ser. No. 11,381
Int. Cl. F16d 21/00; G06k 7/00; G11b 5/00
U.S. Cl. 235—61.11 D 8 Claims

Drive and control mechanism of a reversible character for positively driving a "reading" head in advance and return

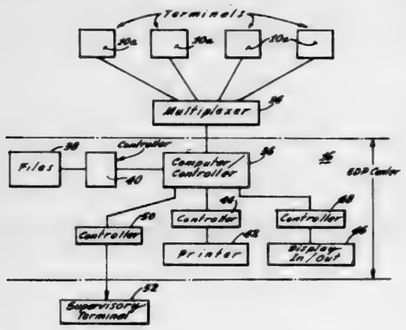
phases so as to avoid the use of return springs, including, in particular, a transmission including a unitary inner- and outer-periphery wheel means and selective stops responsive to cards of different lengths.



3,665,164
APPARATUS FOR READING OPTICALLY CARDLIKE ELEMENTS AND A MERCHANDISING SYSTEM UTILIZING THE SAME

Robert W. Beveridge, Costa Mesa; Felix Macaluso, Fountain Valley, both of Calif., assignors to Ricca Data Systems, Inc., Santa Ana, Calif.

Filed July 9, 1970, Ser. No. 53,473
Int. Cl. G06k 7/10
U.S. Cl. 235—61.11 E 10 Claims



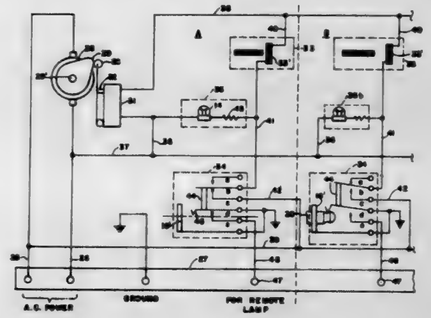
Apparatus for optically reading flat elements such as merchandise tickets and credit cards in which holes have been punched to encode information. When the element is properly indexed, the reading is accomplished by directing light against the element disposed against an opaque panel in which are embedded ends of light conductive fibers in a pattern such as to provide a fiber end in registry with every possible hole position in the element. The fibers extend to another opaque panel where their other ends are disposed in registry with a bank of phototransistors. Electronic means are connected to decode the current impulses produced by phototransistors as they receive light from the second fiber ends. The merchandising system employs this apparatus to read in sequence both Kimball type merchandise tickets and special credit cards.

3,665,165
TIME ACCUMULATOR FOR ACCUMULATING WORKERS' TIME ON THE JOB

Charles F. Strandberg, Jr.; Robert C. Strandberg, and Jerry M. Kennon, all of Greensboro, N.C., assignors to Strandberg Engineering Laboratories, Inc., Greensboro, N.C.

Filed Aug. 3, 1970, Ser. No. 60,506
Int. Cl. G07c 3/10
U.S. Cl. 235—92 T 12 Claims

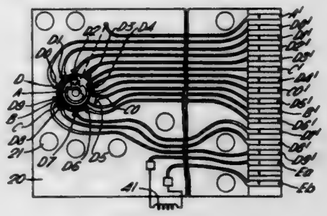
An apparatus for accumulating the time spent by individual workers on a job comprising a source of periodic electric timing pulses and worker assigned time accumulator units connected in circuit with the source of periodic timing pulses. Each of the time accumulator units includes an electrical counter for counting the periodic timing pulses and a normally closed switch requiring a separable actuator to open the switch. A worker when not on a job will insert a worker assigned separable actuating device in the normally closed switch to open the switch and stop the counter from counting the periodic timing pulses. When the worker goes on a job, the separable actuator is removed from the normally closed switch to permit the switch to close and the counter to resume counting the periodic timing pulses while the worker is on the job. Plural time accumulator units may be connected in parallel circuits to receive the electric pulses from the source of periodic electric timing pulses in accordance with the requirements for workers on a job, there being one time accumulator unit for each worker on the job within the capabilities of the apparatus. The apparatus includes a box-like housing having a display panel, the front face of which has a plurality of similar display areas, each display area having a workers's identification, an indicator for the worker's accumulated time on a job and an aperture through which the worker inserts a separable actuator to open the normally closed switch located behind the display panel of the particular worker's time accumulator unit.



3,665,166
ELECTRICAL COUNTER

Takashi Miyagawa, Osaka-fu; Shunsuke Matsuo, and Masanori Matsumoto, both of Kyoto-fu, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto-fu, Japan

Filed June 26, 1970, Ser. No. 50,174
Claims priority, application Japan, June 27, 1969, 44/51456
Int. Cl. G06m 1/27
U.S. Cl. 235—92 EA 10 Claims

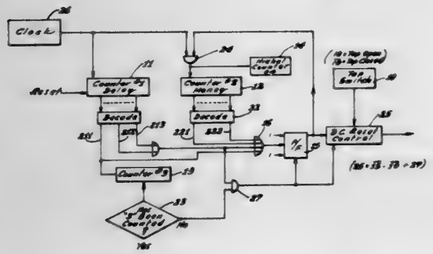


An electrical counter in which two movable contacts are provided in one rotatable wheel, six types of fixed contacts are provided on the respective orbits of circular movement of said movable contacts, and both magnet means and push-button means are provided for selectivity operating said rotatable wheel in accordance with a manual or electrical procedure.

3,665,167
APPARATUS FOR MONITORING DISPENSION OF LIQUID

Arthur J. Goodwin, Sepulveda, Calif., assignor to Diversified Inventory Systems, Inc., Honolulu, Hawaii

Filed Dec. 2, 1970, Ser. No. 94,491
Int. Cl. G01f 1/04
U.S. Cl. 235—92 FL 5 Claims

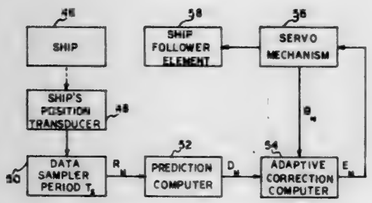


Dispensing of liquid is supervised and metered in monetary units permitting distinction between regular and large quantity discount prices. Resettable counters are employed to alternate between fast money counting periods and subsequent delay, tolerance and compensating periods, operating selectively on a cyclic basis in dependence upon continued or discontinued dispensing during delay periods. The counters determine particular periods during which a tally counter is operated.

3,665,168
ADAPTIVELY CONTROLLED POSITION PREDICTION SYSTEM

Eugene Beach Caulfield, Vestal, N.Y., assignor to General Electric Company

Filed Dec. 18, 1970, Ser. No. 99,600
Int. Cl. G06f 15/50
U.S. Cl. 235—150.2 7 Claims



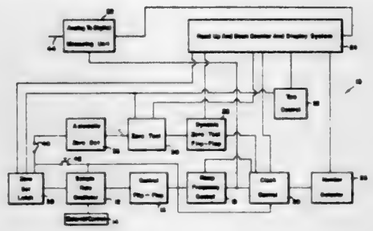
Ship's position predictor using sampled-data signal as input to a two-point predictor computer and having an adaptive correction system responsive to the predictor computer output for refining the prediction.

3,665,169
ELECTRONIC MEASURING UNIT

Robert M. Henderson, Williams Bay; Richard Zechlin, and Lowell E. Miller, both of Beloit, all of Wis., assignors to Fairbanks Morse Inc., New York, N.Y.

Filed Oct. 17, 1969, Ser. No. 867,140
Int. Cl. G06f 7/46
U.S. Cl. 235—151.3 64 Claims

The electronic measuring unit is a logic controlled system which is programmed by a clock control unit. A unit for producing a digital output indicative of a function to be measured is connected to feed a read up and down counter and indicator unit. This counter and indicator unit has the capability to provide an indication of the difference between a previous measurement and one or more subsequent measurements, the value of a single measurement, the difference between a measurement and a preset value, or the value of

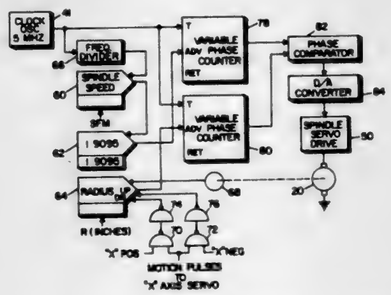


only a portion of a total value applied to a measuring sensor for the measuring unit. Additionally, the electronic measuring unit is adapted to automatically round off value indications and to zero itself when drift within predetermined limits occurs.

3,665,170
NUMERICAL CONTROL SYSTEM FOR PROVIDING A CONSTANT RATE OF METAL REMOVAL

Joseph F. Bakel, Lyndhurst, and George L. Rogers, Waynesboro, both of Va., assignors to General Electric Company

Filed Dec. 12, 1969, Ser. No. 884,417
Int. Cl. G05b 19/18; B23q 5/22
U.S. Cl. 235—151.11 47 Claims



A numerical control system for providing a constant rate of metal removal in terms of surface feet per unit time. The operative relationship between the rotational speed of a rotating workpiece (RPM), the effective radius in inches of the rotating workpiece (R) and the desired rate of metal removal in surface feet per minute (SFM) is defined as:

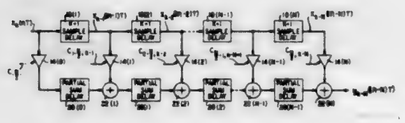
$$\int^{T} RPM \times R = \int^{T} SFM \times \int^{T} 1.9095$$

The relationship is mechanized by a plurality of digital integrators which generate pulse frequency signals proportional to each side of this relationship. These pulse frequencies are then compared with the result of this comparison affecting the speed of the rotating workpiece so as to close the control loop and fully mechanize this relationship. In one embodiment, the pulse frequencies are compared by generating phase varying signals which are then phase compared. In another, a single phase varying signal is generated and phase compared with a constant phase signal. A number of alternative embodiments are disclosed for indicating the speed of the rotating workpiece including a novel digitizer which also provides a steady state signal indicative of workpiece rotational speed.

3,665,171
NONRECURSIVE DIGITAL FILTER APPARATUS EMPLOYING DELAYED-ADD CONFIGURATION

John Phillip Morrow, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 14, 1970, Ser. No. 97,594
Int. Cl. G06f 7/38, 15/34
U.S. Cl. 235—152 8 Claims

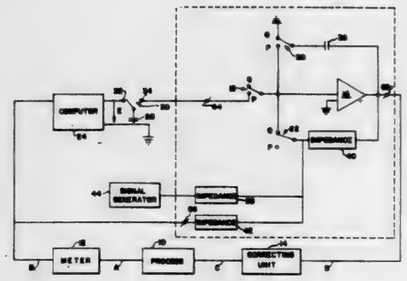


By selectively altering the delay introduced by each of the delay units of a nonrecursive digital filter and by employing an alternating series of two-input adders and partial sum delay units to perform the required addition of weight signal samples, the components of nonrecursive digital filters can be considerably simplified. In particular, the large adder required in prior art filters is eliminated.

3,665,172
CONTROL OF A PROCESS VARIABLE BY A COMPUTER AND A CONTROLLER WHICH REPLACES THE COMPUTER

Klaas Spaargaren, and Aart Bijl, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed June 25, 1969, Ser. No. 836,463
Int. Cl. G05b 7/00
U.S. Cl. 235—150.1 9 Claims

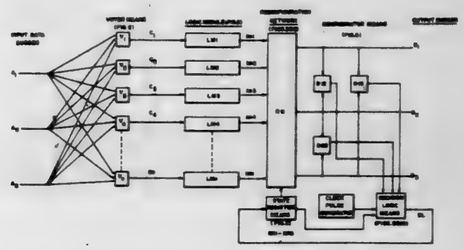


A method and apparatus for controlling a process variable wherein the variable is controlled primarily by a digital computer but where a part of the control function is performed by an analog controller. When the control is by the computer, an output signal is passed intermittently from the computer to a memory amplifier, the output signal of which is a control signal that may be used for correcting the process variable. When control is by the controller, the memory amplifier operates as a summing amplifier for negative feedback control.

3,665,173
TRIPLE MODULAR REDUNDANCY/SPARING

Willard G. Bouricius, Katonah, N.Y.; William C. Carter, Ridgefield, Conn.; John P. Roth, Ossining, and Peter R. Schneider, Peekskill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 3, 1968, Ser. No. 756,753
Int. Cl. G06f 11/04
U.S. Cl. 235—153 11 Claims

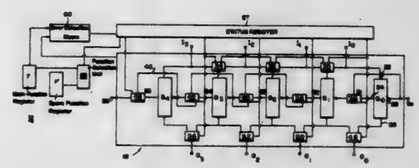


A computer system of the standby redundancy type including three active logic modules and at least one spare module, characterized by the provision of triple modular redundancy means for correcting and locating the failure of a first one of said active logic modules, in combination with sparing means for reconfiguring the system to by-pass the faulty module and to substitute the spare module therefor. The invention is further characterized by the provision of means for reintroducing the first module into the system upon the detection of failure of another active module.

3,665,174
ERROR TOLERANT ARITHMETIC LOGIC UNIT

Willard G. Bouricius, Katonah, N.Y.; William C. Carter, Ridgefield, Conn.; Keith A. Duke, Wappingers Falls, N.Y.; John P. Roth, Ossining, N.Y., and Peter R. Schneider, Peekskill, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 3, 1968, Ser. No. 756,817
Int. Cl. G06f 11/04
U.S. Cl. 235—153 8 Claims

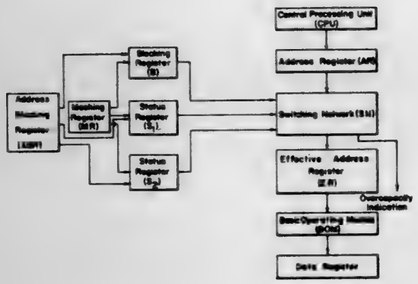


The error tolerant arithmetic logical unit is divided into vertical bit-planes which are relatively independent, being coupled mainly for the purposes of shifts and carry propagation. The system tolerates failures and still functions correctly by reconfiguring the unit through the control of interplane connections. By inserting a spare bit-plane into the system and switching between bit-planes to bypass a failed plane, the effect of the failed plane or of a failure in a position of control logic can be eliminated.

3,665,175
DYNAMIC STORAGE ADDRESS BLOCKING TO ACHIEVE ERROR TOLERATION IN THE ADDRESSING CIRCUITRY

Willard G. Bouricius, Katonah, N.Y.; William C. Carter, Ridgefield, Conn.; John P. Roth, Ossining, and Peter R. Schneider, Peekskill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 3, 1968, Ser. No. 757,002
Int. Cl. G11c *29/00*
U.S. Cl. 235—153 27 Claims

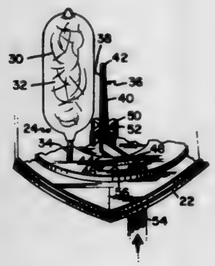


Mapping control means for achieving error toleration in computer addressing circuitry including switching means for connecting an address register with the effective address register of a basic operating module. The switching means are operable by a blocking register and at least one status register to control the mapping connections in a given manner. The invention is characterized by the provision of an address blocking register and a mask register that process a sequence of failed addresses and insert corresponding control instructions in the blocking and status registers so that the switching means dynamically excludes access to the memory area affected by the faulty address circuitry.

3,665,176
PHOTOGRAPHIC FLASHLAMP UNIT

John W. Shaffer, Williamsport, and Thomas B. McDonough, Allenwood, both of Pa., assignors to GTE Sylvania Incorporated

Filed Feb. 18, 1971, Ser. No. 116,514
Int. Cl. G03b *15/04*
U.S. Cl. 240—1.3 5 Claims



A multilamp photographic flashlamp unit, the lamps of which are of the percussive primer type, having self-contained firing elements each in the form of a self-latching folded torsional spring. The spring is shaped as a hairpin having two segments joined at the top by a bight with a supporting foot projecting from the lower end of one of the segments and a striker projecting from the bottom of the other segment for firing an associated lamp. One of the segments has a deformation just above the striker which tends to engage the other segment for stabilizing both the cocked position and arc of travel of the striker.

3,665,177
SHALLOW PROFILE VAULTED LIGHTING MODULE

Milton G. Brown; James C. Ollinger, and Joseph E. Sienkiewicz, all of Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Dec. 28, 1970, Ser. No. 101,486
Int. Cl. F21s
U.S. Cl. 240—9 R 3 Claims



A shallow profile vaulted lighting module is formed by making a dual module structure in the same space which would normally be occupied by a single module or by using half the area of a normal module to form a small module structure. The small module structures are then provided with lenses so that one or both sides of the vaulted section can function as the luminaire lens for a light.

3,665,178
RESERVE TYPE FLASHLIGHT

George J. Sunningham, Yonkers, and Franklin G. Fagan, Jr., Ossining, both of N.Y., assignors to P. R. Mallory & Co., Inc., Indianopolis, Ind.

Filed July 9, 1970, Ser. No. 53,522
Int. Cl. F21l *15/00*
U.S. Cl. 240—10.6 9 Claims

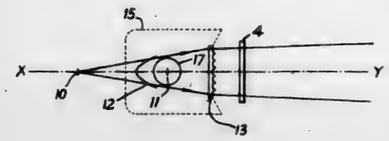


A reserve flashlight utilizing a reserve cell, normally inactive by keeping the electrolyte isolated, until desired for use, and then rendered active by releasing the electrolyte to function between the electrodes. The housing is a plastic molded structure, inexpensive enough to be discarded when the cell is used up.

3,665,179
LIGHTING SYSTEM

William James McLintic, London, England, assignor to British Lighting Industries Limited, London, England

Filed Jan. 24, 1969, Ser. No. 793,800
Claims priority, application Great Britain, May 28, 1968, 25,493/68
Int. Cl. F21v *13/04*
U.S. Cl. 240—41.3 10 Claims

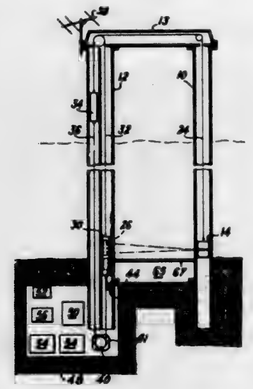


A lighting system has a generally hyperboloidal mirror having a light-reflecting and heat-transmitting coating to form a virtual image of a light source and a lens to project a beam of light of depleted heat content, the virtual image acting as the source of the light projected by the lens.

3,665,180
METHOD AND APPARATUS FOR MEASURING THE WATER CONTENT OF A SNOWPACK

Pierre Guillot, and Michel Vuillot, both of Grenoble, France, assignors to Electricite De France (Service National), Paris, France

Filed Nov. 25, 1969, Ser. No. 879,652
Claims priority, application France, Dec. 20, 1968, 179,725
Int. Cl. G01t *1/17*; G01n *23/08*
U.S. Cl. 250—43.5 D 11 Claims



A device for measuring the water content of a snowpack comprises two vertical tubes respectively locating a standard gamma ray source delivering a horizontal beam and a detector. The source and the detector are moved simultaneously in the respective tubes by a step-by-step motor. Each step occurs after a pre-determined number of pulses has been delivered by the detector so that the time interval between two successive movements is proportional to the water content of the snow layer between two successive movements of the source and detector.

3,665,181
HEATED CORONA CHARGING UNIT

Harold W. Cobb, Acton, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Jan. 14, 1970, Ser. No. 2,878
Int. Cl. G03g *15/02*
U.S. Cl. 250—49.5 ZC 2 Claims

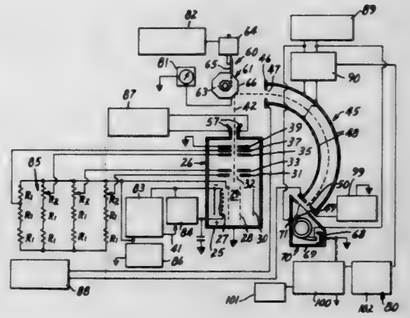


A corona charging unit for use in an electro-photographic copier apparatus wherein such unit utilizes a heater mounted on or nearby such unit so as to raise the operating temperature thereof above its normal operating temperature so as to eliminate streaking in the visible image produced by such copier apparatus.

3,665,182
ELEMENTAL ANALYZING APPARATUS

Robert F. Goff, White Bear Lake, Minn., and David P. Smith, North Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 18, 1969, Ser. No. 850,810
Int. Cl. H01j *37/26*
U.S. Cl. 250—49.5 PI 15 Claims



A compact instrument for solid surface analysis comprising a compact ion generator, a movable target support, an energy analyzer and an ion detector mounted together on a flange adapted to form the end wall of a vacuum chamber.

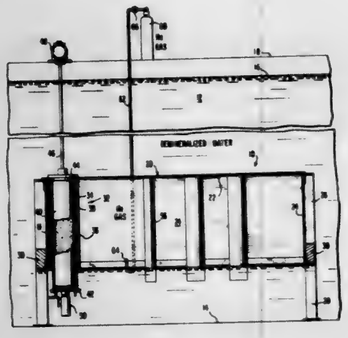
3,665,183
POOL IRRADIATOR WITH RADIATION SOURCE IN A ROTATING CONTAINER

Jackson A. Ransohoff, Bethesda, Md., assignor to Neutron Products Inc., Dickerson, Md.

Filed May 28, 1969, Ser. No. 828,519
Int. Cl. H01j *37/20*
U.S. Cl. 250—52 6 Claims

An irradiator operable with a radiation source under the surface of a pool of water includes a gas filled space within the irradiator and between the irradiation source and various positions in which containers of material are irradiated. The various positions are at preselected distances from the source to allow simultaneous experiments and the gas filled space

conserves radiation. The radiation source may be a plurality of rods within tubes arranged circumferentially to one of the

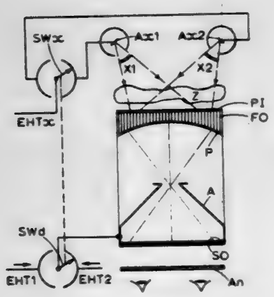


containers of material to be irradiated and the containers of material to be irradiated may be rotated during irradiation.

3,665,184
MULTI-COLORED STEREOSCOPIC X-RAY IMAGING AND DISPLAY SYSTEMS

Pieter Schagen, Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 11, 1970, Ser. No. 62,853
Claims priority, application Great Britain, Aug. 21, 1969, 41,704/69
Int. Cl. G01n *23/04*
U.S. Cl. 250—60 1 Claim



X-ray imaging and display apparatus comprise means for switching an X-ray source sequentially between two or more voltage levels so as to generate X-rays of different energies and a switchable multi-color filter or image converter with means for switching the color of the filter or converter automatically in accordance with changes in X-ray energy.

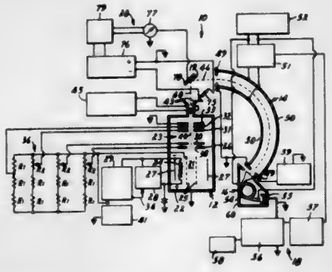
The system may employ a switchable multi-color filter or an image converter tube having a multi-color screen of the "-penetron" type.

If a switchable polarization system is added, the apparatus can provide stereoscopic pictures in color.

3,665,185
ION SCATTERING SPECTROMETER WITH NEUTRALIZATION

Robert F. Goff, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Oct. 19, 1970, Ser. No. 81,952
Int. Cl. H01j *37/00*
U.S. Cl. 250—49.5 P 5 Claims

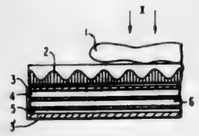


Ion scattering spectrometer for elemental analysis comprising an ion generator, an energy analyzer, an ion detector, an indicating apparatus and a closed-loop feed-back device for neutralizing an electrically non-conductive target.

3,665,186
HALF TONE RADIOGRAPHY METHOD AND APPARATUS

Mataichi Tajima, Kanagawa, Japan, assignor to Fuji Photo Film Co. Ltd., Nakasuna, Minami-Ashigara Machi Ashigara-Kamigura, Kanagawa, Japan

Continuation-in-part of application Ser. No. 513,958, Dec. 15, 1965, and 627,359, Mar. 31, 1967. This application Dec. 4, 1969, Ser. No. 882,246. The portion of the term of the patent subsequent to Apr. 28, 1987, has been disclaimed. Claims priority, application Japan, Dec. 15, 1964, 39/70319; Mar. 31, 1966, 41/20130
Int. Cl. G03b *41/16*
U.S. Cl. 250—62 23 Claims



A radiographic method by inserting between an object to be recorded and an X-ray film a sine-wave-like net-screen. The net pattern may be formed by filling a metallic powder having a property of absorbing the X-rays into the concave net pattern of the sine-wave-like screen. The presence of the screen prevents the occurrence of troubles caused by scattered X-rays and permits the tone of the image to be varied by selecting the material filled into the concave net pattern.

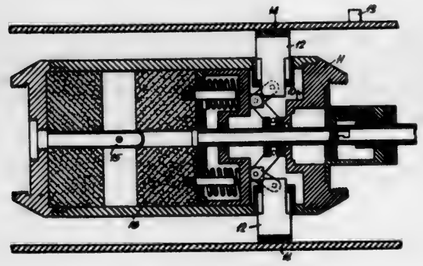
3,665,187
EQUIPMENT FOR RADIOGRAPHY OF PIPELINES AND CLOSED VESSELS

Stephen Stein, London, England, assignor to National Research Development Corporation, London, England

Filed Dec. 24, 1968, Ser. No. 786,576
Claims priority, application Great Britain, Dec. 27, 1967, 58,629/67
Int. Cl. G03b *41/16*
U.S. Cl. 250—83.3 D 7 Claims

A pipeline crawler in the form of a self-propelled vehicle is controlled by a radiation detector carried on the vehicle. The

vehicle carries a powerful radiation source and a movable shield for the source which is normally in the closed position. On energization of the detector from a weak radiation source placed outside the pipe the vehicle is stopped by the activa-

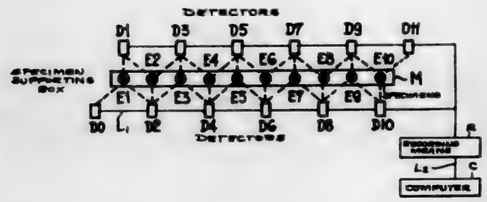


tion of its brakes and the radiation shield opens to expose the source. A timing mechanism operates to close the shield, release the brakes and restart the vehicle after a predetermined time.

3,665,188
METHOD AND APPARATUS FOR TESTING THE INDIVIDUAL EMISSIVE PROPERTIES OF A PLURALITY OF RADIOACTIVE SPECIMENS

Johannes Gutmann, Geneva, Switzerland, assignor to Sen Electronique

Filed Aug. 1, 1969, Ser. No. 846,878
Claims priority, application Switzerland, Aug. 16, 1968, 1238/68
Int. Cl. G01t *1/20*
U.S. Cl. 250—83.3 R 9 Claims



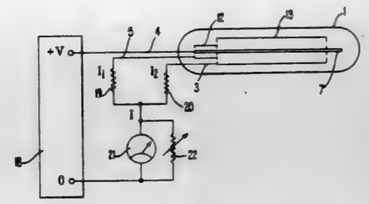
The radiation emanating from a plurality of radioactive specimens is examined by means of detectors arranged to each receive radiation emitted from two or three specimens, simultaneously, each specimen emitting radiation to a group of two or three detectors respectively. Coincidences of detection are ascertained by double and/or triple AND gates connected to the outputs of each group of detectors and heights of pulses emitted by the detectors are added by a transformer matrix, each transformer of the matrix being connected to the output of a group of the detectors. The sums are then recorded and the results analyzed by a digital computer.

3,665,189
RADIATION COUNTING TUBE OF THE GEIGER-MULLER TYPE

Jean-Paul Maillot, Meudon, France, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 22, 1970, Ser. No. 4,968
Int. Cl. G01t *1/18*
U.S. Cl. 250—83.6 R 10 Claims

A radiation counting tube includes a plurality of longitudinally disposed cathode sections of different sensitivities coaxially surrounding a common anode to permit simplified

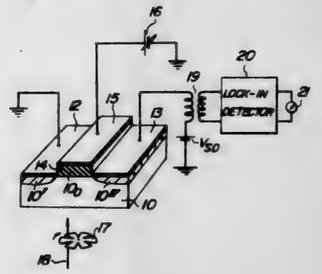


measurement of a wide range of radiation on a single meter scale without switching.

3,665,190
MOS-FET INFRARED DETECTOR

Nobuo Kotera, Kokubunji, and Yoshifumi Katayama, Hachioji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 11, 1970, Ser. No. 71,479
Claims priority, application Japan, Sept. 16, 1969, 44/72743
Int. Cl. G01t *1/24*
U.S. Cl. 250—83.3 H 7 Claims



An electromagnetic wave detecting element which employs an MOS type field effect device as an element for detection to enable the response time to be as short as 10^{-7} sec or less as compared to the conventional response of 10^{-4} sec. Electromagnetic waves for detection are directed to the surface of the MOS device opposite to the surface on which electrodes are provided.

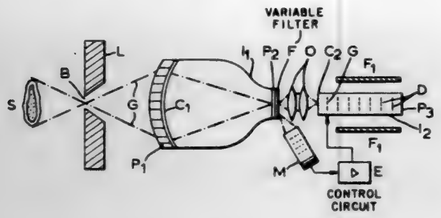
3,665,191
FILTER FOR COMPENSATING EFFICIENCY DIFFERENCES IN AN OPTICAL SYSTEM

Norman Frank Moody, Toronto, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Nov. 28, 1969, Ser. No. 880,730
Claims priority, application Great Britain, Dec. 16, 1968, 59,686/68
Int. Cl. G21h *3/00*
U.S. Cl. 250—86 7 Claims

A compensating filter for use in a registered position at an optical plane in an optical system having differences in efficiencies such that energy from a uniform source creates light of varying intensities over the area of the optical plane, the filter comprising a film negative produced by exposing the film while in registered position at the optical plane to a uniform source through the preceding elements of the system and then developing the film so that its density variations match the variations in light intensities arriving at the optical plane over the area thereof, the negative having its greatest

density where the light intensity was greatest and vice versa whereby energy from a uniform source after being translated



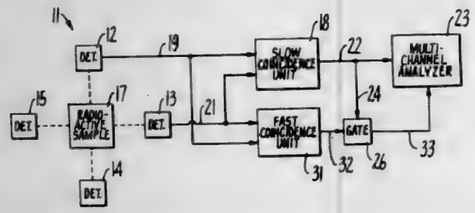
through the system and film negative emerges as substantially uniform light.

3,665,192

LABELING OF MOLECULES USING THE PERTURBED ANGULAR CORRELATION OF GAMMA RADIATION

John D. Baldeschwieler, 221 Durazno Way, Menlo Park, Calif.

Filed Nov. 28, 1969, Ser. No. 880,778
Int. Cl. G01t 1/20
U.S. Cl. 250—71.5 R 14 Claims



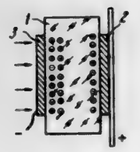
A method of studying molecular motion and orientation by labeling a molecule with a radio active tracer having a half life of an excited state generally comparable to the nuclear relaxation time in this state and measuring the rotational correlation time of a molecule from the perturbed angular correlation.

3,665,193

DIAMOND NUCLEAR RADIATION DETECTOR

Stanislav Fedorovich Kozlov, and Elena Alexandrovna Konorova, both of Moscow, U.S.S.R., assignors to Ordena Leninа Fizicheskiy Institut Imeni P. N. Lebedeva Leninsky Prospekt, Moscow, U.S.S.R.

Filed Mar. 28, 1968, Ser. No. 716,953
Claims priority, application U.S.S.R., Mar. 29, 1967, 1,144,951
Int. Cl. G01t 1/202
U.S. Cl. 250—83 R 14 Claims



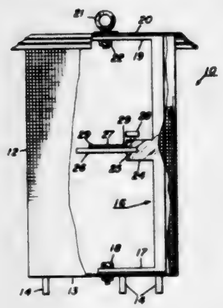
A diamond nuclear radiation detector comprising a diamond crystal plate and contacts on the opposite sides of said plate adapted for the application of an electric field to said diamond crystal plate. The contact on the side of the crystal plate to be irradiated in the course of detecting nuclear radiation is constituted as a blocking contact in relation to charge carriers, whereas the opposite contact is constituted of a meterial capable, in conjunction with the diamond plate, of injecting the charge carriers under the influence of the electric field. The thickness of the diamond crystal plate between the contacts does not exceed the maximum drift length of the charge carriers created by the detected nuclear radiation in the diamond crystal plate under the influence of the applied electric field corresponding to the maximum drift rate.

3,665,194

RADON DETECTION

Henry Ward Alter, Danville, Calif., and Paul B. Price, Schenectady, N.Y., assignors to General Electric Company

Continuation-in-part of application Ser. No. 654,631, July 19, 1967, now abandoned. This application Dec. 27, 1968, Ser. No. 787,431
Int. Cl. G01t 1/04
U.S. Cl. 250—83 CD 21 Claims



A method and apparatus for detecting and monitoring radon gas and its alpha-emitting daughter products. A sheet of track-registration material is exposed in an area to be monitored, the material having the property of forming damage tracks along paths traversed by alpha particles. After exposure, the material is etched with a reagent to enlarge the tracks, making them visible so they can be counted. The number of tracks formed during the exposure period is a measure of the amount of radon and radon daughters present in the monitored area. The invention is useful as a dosimeter to monitor mine atmospheres, and also has applications in uranium prospecting.

3,665,195

THERMAL NEUTRON ACTIVATION RADIOACTIVITY LOGGING METHOD

Arthur H. Youmans, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 16, 1969, Ser. No. 867,018
Int. Cl. G01v 5/00
U.S. Cl. 250—83.3 R 14 Claims

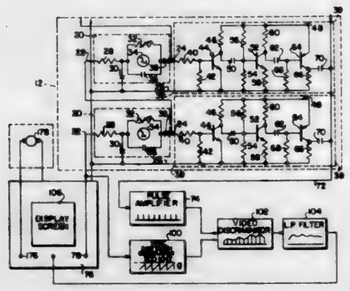
A method of determining the existence and quantity of an element in a formation. A portion of the formation is irradiated with neutrons and the gamma rays emanating from the formation due to induced radio-activity, or "activation" from thermal neutron captuse by the element of interest are detected and recorded. The thermal neutron capture cross section of the formation is determined. The product of the gamma ray emission and the thermal neutron capture cross section is obtained as a quantitative indication of the element's abundance in the formation.

3,665,196

SOLID STATE SCANNING SYSTEM

Thomas F. Macall, Sunnyvale, Calif., assignor to Midland Capital Corporation, New York, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,454
Int. Cl. G01t 1/16
U.S. Cl. 250—83.3 H 11 Claims



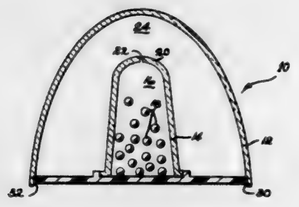
A solid state infrared scanning system for generating a train of pulse-position modulated pulses with the position of each pulse representative of the radiation incident upon a corresponding detector cell in a linear detector array. Conversion of the pulse-position modulated signal to a corresponding amplitude modulated signal allows visual display of the amplitude modulated signal to produce an image of the incident radiation. The array of detector cells can also be rotated to provide a solid angle field of view.

3,665,197

RADIATION DOSIMETER USING GAS OF GREATER ELECTRON AFFINITY AND MOLECULAR MOSS THAN AIR

Henry L. Richter, Pasadena, Calif., assignor to Dr. Henry L. Richter Corporation

Filed Sept. 15, 1969, Ser. No. 858,031
Int. Cl. G01t 1/14
U.S. Cl. 250—83.3 PD 7 Claims



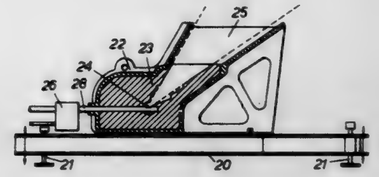
In a radiation dosimeter, wherein a sealed container encloses an ionizable gas and dielectric members for separating a triboelectric charge, the improvement wherein the ionizable gas comprises a material having a greater mass and greater electron affinity than air. Specific materials include sulfur hexafluoride and fluorinated hydrocarbons.

3,665,198

AIRCRAFT LANDING GUIDANCE SYSTEM USING COLLIMATED FAN SHAPED RADIATION BEAMS

Gottfred E. B. Barstad, Kjeller, Lillestrom, Norway, assignor to Norwegian Defence Research Establishment, Kjeller, Norway

Continuation-in-part of application Ser. No. 449,220, Apr. 19, 1965, now abandoned. This application Feb. 28, 1969, Ser. No. 805,109
Int. Cl. G21h 5/00
U.S. Cl. 250—106 S 45 Claims



The identification of flight paths by means of forming plural coded groups of beams which intersect desired flight paths and define a corridor of flight. The beams are formed by pairs of radiation sources placed on opposite sides of the flight corridor, or by a single source under the corridor or to the side thereof. Each source is masked to form flat collimated diverging beams of radiation which are non-intersecting and which form a code group. The masks are configured so that each code group provides a different digital or analog code for each flight path. The digital code is provided by the presence or absence of beams at periodic distances along any flight path intersecting a different grouping or digital code of the code group. The analog code is provided by angularly positioning certain of the beams in a code group and having others the intersection of which is planes along the flight direction are parallel. With the distances between parallel beams as a reference, the distance along any flight path between a parallel beam and the angularly positioned beam is unique for each flight path within the flight corridor. By generating identical code groups positioned all along the corridor, an entire flight path to touchdown can be defined.

3,665,199

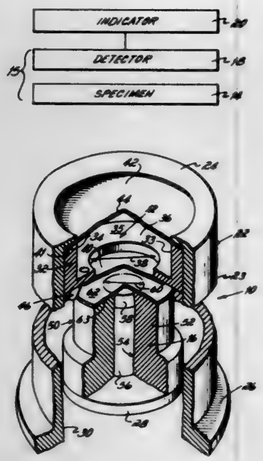
BETA-RAY THICKNESS GAUGE USING A TWO ENERGY LEVEL BETA-RAY SOURCE

Bonaventure B. Cahill, Ft. Mitchell, Ky., and Wilfred W. Lyon, Cincinnati, Ohio, assignors to The Ohmart Corporation, Cincinnati, Ohio

Filed Nov. 10, 1969, Ser. No. 875,200
Int. Cl. G21h 5/00
U.S. Cl. 250—106 S 10 Claims

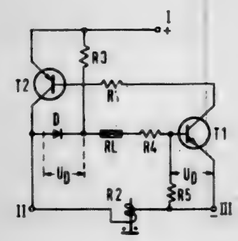
A beta gauge for measuring the thickness of material over an extended range, for example, 0 – 750 mg/cm², including a first cell containing gaseous low energy beta-emitting radioactive Krypton-85 and having a first window adjacent an air gap in which the specimen to be measured is located and a second window opposite thereto, and a second cell containing high energy beta-emitting radioactive Strontium-90/Yttrium-90 located adjacent the Krypton cell on the side thereof opposite the air gap and having a third window aligned with the first and second windows of the Krypton cell

through which beta radiation from the Strontium-90/Yttrium-90 passes along a path to the specimen which includes



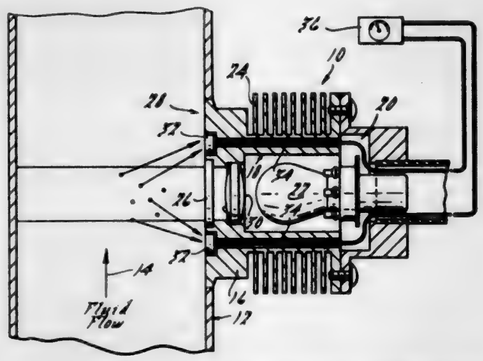
also the first and second windows of the Krypton cell as well as the Krypton itself.

3,665,200
OPTO-ELECTRONIC TIMING SWITCH
Richard Zaubitzer, Frankfurt am Main, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany
Filed Nov. 18, 1970, Ser. No. 90,637
Claims priority, application Germany, Nov. 26, 1969, P 19 59 357.8
Int. Cl. G02f 1/28; H01j 39/12
U.S. Cl. 250—217 R 18 Claims



An optoelectronic timing switch comprises a monostable bistate amplifier which furnishes an electric output signal when in one of its two states. The amplifier has an input which, as long as it receives an electric signal above a threshold intensity, maintains the switch in non-stable state. A radiation pulse source illuminates a phosphorescent layer to whose brightness a radiation detector is responsive, this detector being electrically connected with the amplifier input. The phosphorescent layer has an effective afterglow persistence of longer duration than the pulse duration of the source in order to maintain the amplifier input signal above the threshold intensity for a prolonged timing period.

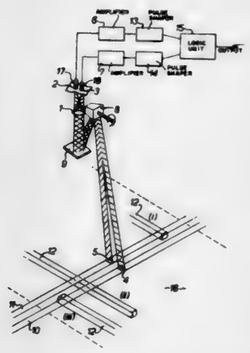
3,665,201
TURBIDIMETER UTILIZING BACK SCATTER
James J. Shea, Dearborn Heights, and Samuel S. Ochodnicky, Detroit, both of Mich., assignors to Gam Rad, Inc., Detroit, Mich.
Continuation-in-part of application Ser. No. 786,198, Dec. 23, 1968, now abandoned. This application Apr. 16, 1970, Ser. No. 28,996
Int. Cl. G01n 21/26
U.S. Cl. 250—218 4 Claims



A turbidimeter having a probe mounted in a single opening in a fluid flow line which has a smooth uniform face in contact with the flowing fluid, a collimated incident light source and a photosensitive cell positioned to receive back scatter light

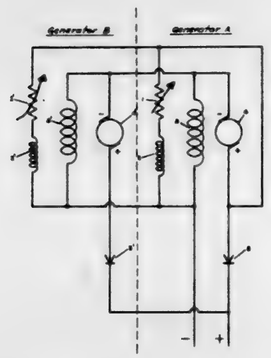
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3,665,202
APPARATUS FOR DETECTING OBJECTS
Alexander D. McLennan, Corby, England, assignor to British Steel Corporation, London, England
Filed May 25, 1970, Ser. No. 40,195
Claims priority, application Great Britain, June 2, 1969, 27,900/69
Int. Cl. H01j 3/14
U.S. Cl. 250—237 R 3 Claims



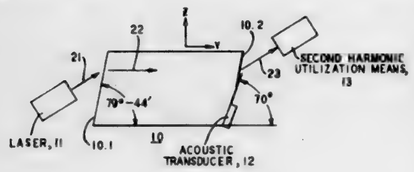
In apparatus for detecting an object by scanning two parallel paths having means for producing signals from radiation sensed by the scanning, an improvement comprises means for inhibiting the signal producing means at the limits of the scans. The inhibiting means comprise a shutter mounted for movement in synchronism with the scanning.

3,665,203
PARALLEL DIRECT CURRENT GENERATORS ARRANGEMENT
Elben Ray Barnett, and Raymond Ray Barnett, both of Charleston, W. Va., assignors to Jerry D. Hogg, Charleston; Secondo Dalporto, Charleston Hts., W. Va. and Tony Gentile, Wintersville, Ohio, part interest to each
Filed Mar. 15, 1971, Ser. No. 124,198
Int. Cl. H02j 1/10
U.S. Cl. 307—84 7 Claims



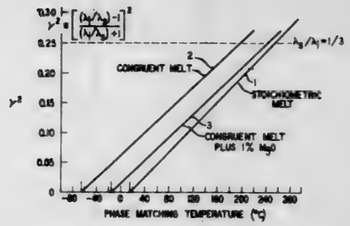
A circuit arrangement for arranging a number of direct current generators, including generators having different characteristics in parallel. One generator is used as a master to excite the shunt fields of all of the generators and rectifiers are arranged in the output terminals of the parallel generator arrangement for preventing current from the armature of each generator from passing through the armature of any other generator.

3,665,204
ACOUSTO-OPTIC TUNING OF OPTICAL SECOND HARMONIC GENERATORS AND OTHER PARAMETRIC DEVICES
Donald Frederick Nelson, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Nov. 16, 1970, Ser. No. 89,622
Int. Cl. H03f 7/00
U.S. Cl. 307—88.3 10 Claims



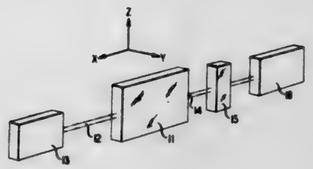
An input optical wave and an input acoustic wave are incident upon an optically nonlinear crystal to form a phase-matched intermediate acousto-optical wave propagating in the crystal. By appropriately orienting the crystal axes relative to the propagation and polarization directions of the various waves propagating therein, an output second harmonic optical wave can be generated which is also phase-matched, and which can be modulated in intensity according to the input acoustic wave intensity or frequency. This phase-matching of both the intermediate and the output waves increases the overall efficiency of modulation.

3,665,205
MODIFIED LITHIUM NIOBATE COMPOSITION AND DEVICES UTILIZING SAME
Paul Michael Bridenbaugh, Piscataway; John Robert Carruthers, Murray Hill, and Franklin Richard Nash, Griggstown, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Feb. 16, 1971, Ser. No. 115,467
Int. Cl. H03f 7/00
U.S. Cl. 307—88.3 6 Claims



The phase-matching temperature for different frequencies of electromagnetic waves in $LiNbO_3$ is increased by the addition of MgO to the melt. Variation of this temperature in successive portions of the grown crystal is minimized. The resulting product is usefully incorporated in nonlinear optical devices such as second harmonic generators and parametric oscillators designed for operation at elevated temperatures at which radiation damage is annealed out.

3,665,206
NONLINEAR DEVICES
John George Bergman, Jr., Morganville, and James Hoffman McFee, Colts Neck, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Mar. 12, 1971, Ser. No. 123,724
Int. Cl. H03f 7/00
U.S. Cl. 307—88.3 14 Claims

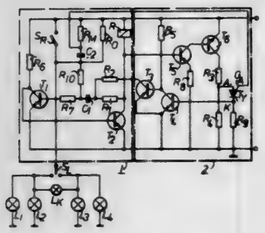


Nonlinear devices including second harmonic generators and other parametric devices are fabricated from thin films of organic polymer materials having net dipole moments. Such materials exemplified by polyvinylidene fluoride are prepared for use by mechanical working so as to produce crystallographic alignment, and by electrical poling so as to produce dipolar orientation. Continued "poling" may or may not be necessary during operation of the device. Relative indices of refraction may be altered by altering the degree of crystalline orientation so as to change birefringence. Phase matching with the traversing beam propagating in a given direction may therefore be accomplished for a variety of wavelengths.

3,665,207
PULSE GENERATOR

Paul Sieber, Lortzingstrasse 20, 71 Heilbronn-Bockinger, Germany

Filed Aug. 25, 1970, Ser. No. 66,782
Claims priority, application Germany, Sept. 3, 1969, P 19 44 691.4
Int. Cl. B60q 1/26
U.S. Cl. 307—106 13 Claims

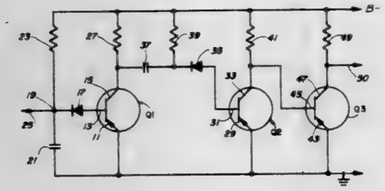


A pulse generator comprises a trigger stage for periodically interrupting the operation of a plurality of parallel loads. Connected to a voltage supply, are a capacitor and a precision resistor connected between the loads and the supply, a switching unit receiving voltage peaks which appear at the precision resistor on an interruption of operation, the switching unit being responsive to the voltage peaks and retaining its switching state caused by a voltage peak at least until it receives a voltage peak of another value and means for variation of the frequency of interruptions in response to a switching state of the switching unit caused by a voltage peak of a value indicative of a field load.

3,665,208
PULSE GENERATOR

Thomas P. Jachimek, Evergreen Park, and James A. Wrabel, Chicago, both of Ill., assignors to The Seeburg Corporation of Delaware, Chicago, Ill.

Filed Sept. 11, 1970, Ser. No. 71,585
Int. Cl. H03k 3/00
U.S. Cl. 307—106 8 Claims



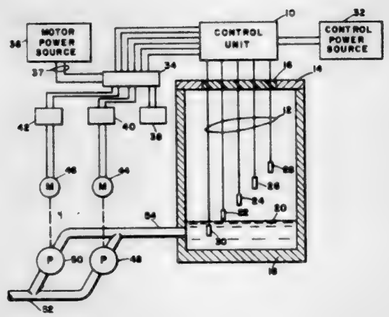
A pulse generator that does not rely upon regeneration is utilized to provide a shaped output pulse in response to an input signal. Three transistors are connected in what is essentially a three stage non-inverting amplifier having appropriate interconnections to provide a pulse output having a standard duration and shape regardless of input characteristics.

3,665,209
FLUID LEVEL CONTROL SYSTEM

Robert M. Webb, Cornell, and Keith S. Parry, Granada Hills, both of Calif., assignors to T. H. Creears Corporation

Filed Oct. 22, 1969, Ser. No. 870,519
Int. Cl. H01h 35/18
U.S. Cl. 307—118 1 Claim

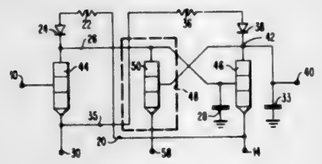
A fluid level control system employing a plurality of probes for detecting various fluid levels with each probe having a probe circuit that is closed in response to changes in a capacitive coupling between the probe and the fluid, to provide output signals to a control circuit that in response thereto selectively controls the operation of one or more motor-pump units in a manner that at least one of the motor-pump units is selected in random manner for initial operation, with all motor-pump units being energized upon the continued rising level of the fluid as detected by higher level probes. All the motor-pump units continue to operate until the fluid level is lowered to a point below the level of the lowest detecting probe. The probe circuit employs a capacitive coupling fluid detection, or a capacitive coupling with a neutral return probe through the fluid or with a direct electrical connection with common connected neutral return probes.



3,665,210
MONOLITHIC BIPOLAR CONVERTIBLE STATIC SHIFT REGISTER

Irving T. Ho, Poughkeepsie; Peter E. Howell, Wappingers Falls, and Teh-Sen Jen, Fishkill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1970, Ser. No. 51,188
Int. Cl. G11c 11/24, 11/34, 19/00
U.S. Cl. 307—238 13 Claims



A storage cell suitable for implementation as a monolithic shift register in which a pair of monolithic parasitic capacitors are selectively charged solely in response to periodic non-dc signals to set the digital state of the storage cell. Semiconductor switching means connected between the first and second capacitors is responsive to periodic signals to regenerate the cell for operation in a static mode. Alternatively, a dc circuit prevents loss of cell information during a static mode. The semiconductor switching means is virtually eliminated from the circuit by proper biasing so as to also render the cell operable for use in a dynamic shift register mode.

3,665,211
SURFACE ACOUSTIC WAVE COMPUTER LOGIC ELEMENTS

John M. Owens, Newport Beach, and Gary F. Sallee, Yorba Linda, both of Calif., assignors to North American Rockwell Corporation

Filed Jan. 11, 1970, Ser. No. 105,206
Int. Cl. H01h 35/00
U.S. Cl. 307—117 8 Claims

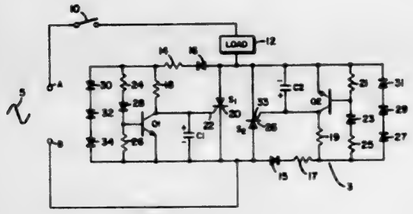


A complete set of logic elements utilizing the basic combination of two transducers adapted to convert electrical pulses to surface acoustical waves and a third transducer which converts the surface acoustical waves received from the first two transducers to an electrical pulse is disclosed. Surface acoustical waves are utilized to provide logical NAND, logical OR and logical inverter gates.

3,665,212
ZERO CROSSING SOLID STATE SWITCH

Arthur S. Roberts, Bluff City, and Orlyn W. Craig, Bristol, both of Tenn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Nov. 24, 1970, Ser. No. 92,476
Int. Cl. H03k 17/00
U.S. Cl. 307—252 T 6 Claims



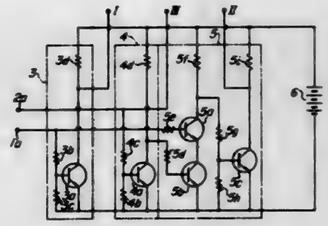
There is disclosed herein a solid state switch for use with the application of a. c. power to a load circuit to eliminate high surge currents and transients that normally occur when switching line voltage to a load. The initial application of full a. c. power to a load circuit is restricted to the next time that the voltage waveform goes through the zero. During the initial application of power before the voltage goes through zero, the load circuit is protected by control circuitry including a surge resistor.

3,665,213
GEAR POSITION SIGNAL GENERATING SYSTEM FOR ELECTRIC-TYPE AUTOMATIC TRANSMISSIONS

Takashi Kato, Toyohashi; Masuru Kawakubo, Kariya; Katsunori Ito, Kariya, and Hisato Wakamatsu, Kariya, all of Japan, assignors to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed June 9, 1970, Ser. No. 44,757
Claims priority, application Japan, June 13, 1969, 44/47166
Int. Cl. H03k 19/22
U.S. Cl. 307—218 3 Claims

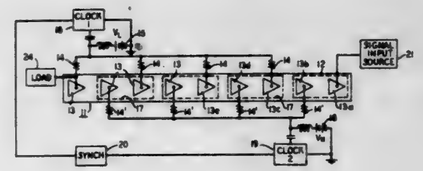
In the electric-type automatic transmission with a torque converter, which includes a hydraulic control system to control frictional coupling means of the transmission and an electric control system to control distributing valves of the hydraulic control system, a gear position signal generating system to generate signals corresponding to gear positions of the transmission in order to enable indication of the gear position.



3,665,214
SHIFT REGISTER USING INTEGRATED NEGATIVE RESISTANCE DEVICES

Robert Harold Krambeck, South Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 17, 1970, Ser. No. 90,316
Int. Cl. H03k 17/00
U.S. Cl. 307—221 9 Claims



One example of a shift register comprises a row of triangular n-type regions diffused into a p-type wafer. An n-type back contact region extends along the wafer opposite the row. Alternate n regions are connected in parallel to one clock source with the remaining regions connected to another clock source. A stored information bit is defined by a current filament extending between an n region and a back contact. The triangular configuration permits a bit to be stepped to successive n regions in the row by appropriately synchronized clock pulses.

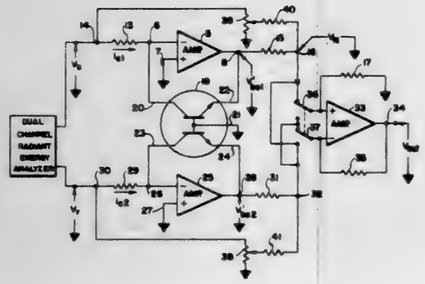
3,665,215
PURE NONLINEAR TRANSFER CIRCUIT

Attila D. Berenkay, La Hambra, Calif., assignor to Beckman Instruments, Inc.

Filed Nov. 27, 1970, Ser. No. 93,251
Int. Cl. G06g 7/12
U.S. Cl. 307—230 13 Claims

A circuit arrangement compensates for the undesired linear component of a transfer function which contains both linear and nonlinear terms. A nonlinear circuit element having a finite constant resistance is connected between the output and input of an amplifier. An input resistor determines the current conducted from a source of voltage potential to

the input of the amplifier. A resistance output network is connected between the output of the amplifier and circuit ground and has a terminal which forms the output of the transfer circuit. A variable resistance network is connected between the source of voltage potential and the output of the transfer circuit. By adjusting the variable resistance network



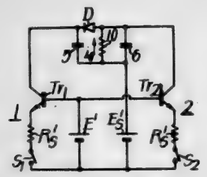
the linear term of the transfer function resulting from the finite constant resistance of the nonlinear circuit element can be eliminated to produce a pure nonlinear transfer function. Two pure nonlinear circuits are combined to form a dual channel transfer function having an output which is the difference between pure nonlinear functions of two independent variables.

3,665,216

PULSE WIDTH MODULATION DETECTOR

Tadayoshi Fuchie, Tokyo, Japan, assignor to Kabushikikaisha Yokogawa Denki Seisakusho, (Yokogawa Electric Works, Ltd.), Tokyo, Japan

Filed Nov. 12, 1969, Ser. No. 875,807
Claims priority, application Japan, Nov. 22, 1968, 43/85882; 43/85883
Int. Cl. H03k *5/20*
U.S. Cl. 307—234 **2 Claims**



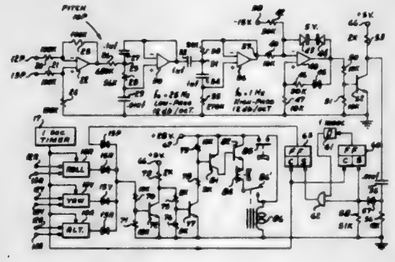
An electric signal converter having two constant-current power sources, two electric circuits respectively including said two constant-current power sources, switches incorporated in said electric circuits, a signal source for turning on and off said switches, means for producing in said electric circuits electric signals having differential factors opposite to each other, and means for coupling said two electric circuits to combine said electric signals for providing a substantially constant composite signal.

3,665,217

FLIGHT CONTROL DISABLING SYSTEM

Don L. Adams, Fairfield, Conn., and Nicholas Allen, Bedford, Mass., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 29, 1969, Ser. No. 888,585
Int. Cl. H03k *5/153*; **G06f** *11/08*
U.S. Cl. 307—235 **16 Claims**



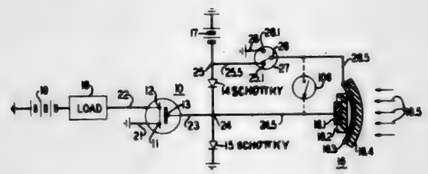
A flight control disabling system operates by measuring the amplitude and frequency of control signals in the various flight control channels of the system. If in any channel there develops an oscillatory control signal exceeding a certain amplitude and lying within a predetermined frequency band, then either that channel alone or the entire flight control system is disabled.

3,665,218

CONTROL CIRCUIT FOR INSULATED GATE FIELD EFFECT TRANSISTORS

John Marshall Andrews, Jr., Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 30, 1970, Ser. No. 85,655
Int. Cl. H03k *17/60*, *17/74*
U.S. Cl. 307—251 **10 Claims**



The gate voltage of an insulated gate switching transistor is controlled by means of a pair of reverse biased Schottky barrier diodes connected in mutual series aiding electrical relationship. A common node or terminal between these diodes is connected to the gate of the transistor and to an electrical switch, in order to provide means for varying the total electrical impedance across one or the other of the diodes, and thereby to turn the transistor between the "ON" and "OFF" states thereof.

3,665,219

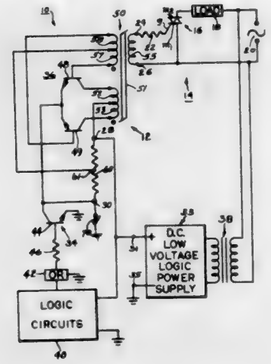
ELECTRICAL CONTROL SYSTEM

Daniel E. Teske, Tulsa, Okla., assignor to Emerson Electric Co., St. Louis, Mo.

Filed June 19, 1970, Ser. No. 47,743
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 B **6 Claims**

An A.C. semiconductor switch controlling the energization of a load from a relatively high voltage source is controlled by signal pulses supplied to the semiconductor from a circuit

connected to a relatively low voltage source. The control signal circuit incorporates a D.C. to A.C. converter including a rectangular hysteresis loop type transformer having feedback windings, and a pair of transistors arranged to provide a



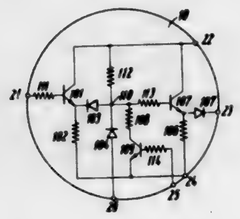
multivibrator type oscillator that produces the signal pulses for the switch in response to the application of a voltage to the converter. The converter provides control and electrical isolation between the relatively low and high voltage circuits.

3,665,220

CROSS-TRACK DISTRIBUTOR FOR VIDEO SIGNALS

Ernst Legler, Seeheim an der Bergstrasse, and Karl Kirchner, Griesheim bei Darmstadt, both of Germany, assignors to Fernseh GmbH, Darmstadt, Germany

Filed July 30, 1969, Ser. No. 846,033
Claims priority, application Germany, Aug. 9, 1968, P 17 62 722.4
Int. Cl. H03k *17/00*
U.S. Cl. 307—254 **13 Claims**



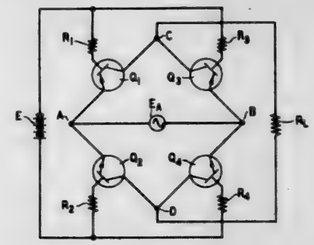
A cross-bar distributor applicable to color television signals, in which a parallel group of conductors serve as input lines to which the input television signals are applied. A second group of conductors cross over or intersect the first group of conductors and serve as output lines from which the output signals are taken. At the cross-over points of the input and output lines, electronic switching circuits are provided with semi-conductor elements and resistors in integrated circuit form. A T network of three diodes is contained within the switching circuit, and a transistor decoupling stage is connected in front of each one of the diodes lying in the longitudinal branch of the T network. The center point of the T network is connected to the tap of a voltage divider which has one branch consisting of a resistor, and the other branch in the form of a resistor connected in series with a switching transistor.

3,665,221

TRANSISTOR BRIDGE RECTIFIER CIRCUIT

Noble Ervin Wickliff, Indianapolis, Ind., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 12, 1970, Ser. No. 79,899
Int. Cl. H03m *7/12*
U.S. Cl. 307—255 **2 Claims**



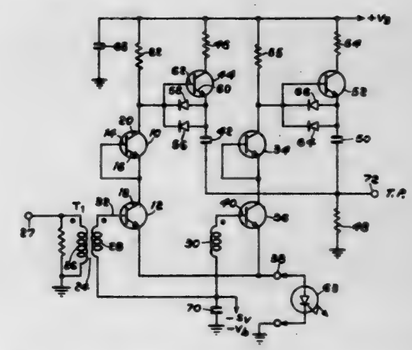
The collectors and emitters of two pairs of complementary transistors are interconnected to form a bridge circuit while their bases are connected in a forward biasing sense to a direct-current source. An alternating-current wave applied between one set of opposing corners of the bridge circuit causes a full wave rectified wave to appear between the remaining corners.

3,665,222

SHORT DURATION HIGH CURRENT PULSE GENERATOR

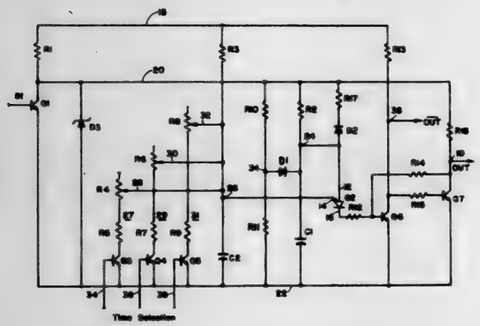
Robert K. Gatwood, Churubusco, Ind., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Nov. 13, 1970, Ser. No. 89,191
Int. Cl. H03k *17/00*
U.S. Cl. 307—283 **11 Claims**



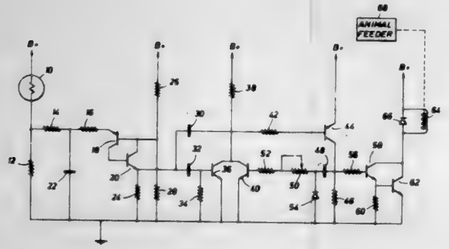
A pulse modulator includes a pair of avalanche breakdown transistors connected in series, a direct current source for maintaining the avalanche transistors in their quiescent states and a triggering means for applying a pulse to the avalanche transistors to switch them simultaneously from their quiescent states to their activated states to generate a high current short duration output pulse. The modulator further includes a charge storage circuit connected to the direct current source and diodes connected between the storage circuit and the avalanche transistors and poled such that the storage circuit charges during the quiescent states of the transistors and discharges the stored charge into the avalanche transistors for increasing the power output therefrom. A plurality of pairs of avalanche transistors, storage circuits, and diodes connected in a manner similar to that of the first pair may be provided in parallel therewith for further increasing the power output of the modulator.

3,665,223
MULTIPLE POTENTIOMETER TIMER FOR ELEVATOR CONTROLS
James H. Stichweh, Princeton, Ind.; Stephen A. Hornung, Augustine, France, and Paul Duckwall, III, Louisville, Ky., assignors to Armor Elevator Company, Inc., Milwaukee, Wis.
Filed Nov. 28, 1969, Ser. No. 880,788
Int. Cl. H03k 17/28
U.S. Cl. 307—293 11 Claims



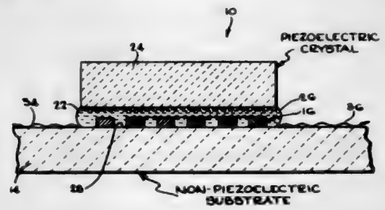
A timer circuit produces an output signal at a predetermined time following the application of an input signal. The input signal actuates a timing circuit which, at a specified time thereafter, causes a switching device to be actuated, which in turn produces the output signal. One or more of a plurality of control means are selectively insertable into the timing circuit, thereby to select one of a plurality of available time intervals between the input and output signals.

3,665,224
AMBIENT LIGHT LEVEL DETECTOR INCLUDING TRANSIENT SUPPRESSION CIRCUITRY
Newton D. Kelsey, Houston, Tex., assignor to Arthur P. Ruth
Filed Sept. 8, 1970, Ser. No. 70,025
Int. Cl. H01j 39/12
U.S. Cl. 307—311 2 Claims



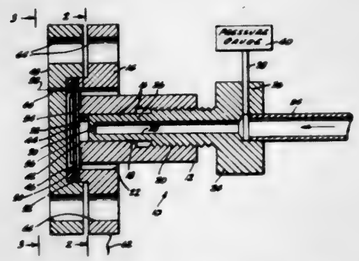
A circuit which includes a level detector circuit which is operated at two output levels, one level being indicative of a first ambient light condition and the second being indicative of another light condition, therebeing a timing circuit operated by the Schmitt trigger and an output circuit operated by the timing circuit after a predetermined delay to overcome transient and temporary changes in ambient light.

3,665,225
HYBRID SURFACE-WAVE TRANSDUCER
Anthony P. van den Heuvel, Homewood; Ronald B. Owen, Chicago, both of Ill., and Shrinivas G. Joshi, Bangalore, India, assignors to IIT Research Institute, Chicago, Ill.
Filed Aug. 28, 1970, Ser. No. 67,766
Int. Cl. H01v 7/00
U.S. Cl. 310—8.1 18 Claims



A transducer for generating and detecting surface elastic waves in a non-piezoelectric material may include an interdigital electrode array coupled to a piezoelectric crystal. The crystal is mechanically coupled to the non-piezoelectric material through an acoustical transmissive medium.

3,665,226
ELECTRIC POWER SOURCE
Robert A. Sinker, Beverly Hills, and George L. Williams, Santa Monica, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Continuation of application Ser. No. 725,726, May 1, 1968, now abandoned. This application July 13, 1970, Ser. No. 56,216
Int. Cl. H04r 17/00
U.S. Cl. 310—8.3 7 Claims

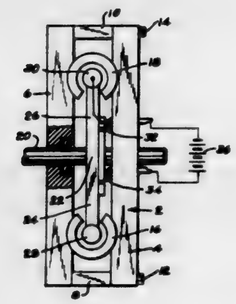


An electric generator operated by means of flow of fluid against a diaphragm to which a piezo-electric material is secured. The fluid flows into a cavity through an orifice and the fluid exhausts from the cavity between the diaphragm and a closely spaced annular shoulder. Pressure variations within the cavity caused by flexure of the diaphragm creates a self-sustained diaphragm vibration for generation of electricity by the piezo-electric material.

3,665,227
ELECTRIC MOTOR
Raymond W. Busch, 1701 N.W. 54th Terrace, Lauderhill, Fla.
Continuation-in-part of application Ser. No. 815,371, Apr. 11, 1969, now abandoned. This application Nov. 3, 1970, Ser. No. 86,466
Int. Cl. H02k 37/00
U.S. Cl. 310—46 8 Claims

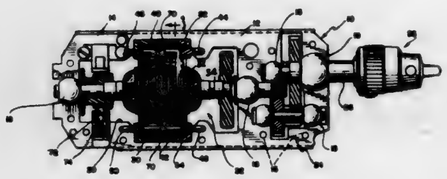
An electric motor module for converting electromagnetic energy into rotational mechanical energy having at least one

snap-in electromagnetic coil fixed radially about a rotating member on a shaft with the north-south polar axis disposed circumferentially relative to the shaft. A printed or laminated circuit plate takes the place of the usual hub commutator and is fastened on one side of the member to complete the circuit with the coil. The shaft is rotatably coupled to a transparent frame having a plurality of fixed magnetic members also having their north-south polar axis circumferentially disposed



about the shaft and sufficiently adjacent said coil to provide magnetic interaction between the coil and the fixed magnetic members for rotating the shaft. Contact members mounted on one or both side plates constituting the frame extend to the contact surface of the circuit plates thereby completing the circuit for the reception of electrical current. Terminal posts also used as plugs either receive current wire or a negative wire for use of electricity or plug into another module to multiply the H.P. rating of the motor.

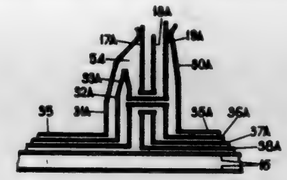
3,665,228
MODULAR DESIGN-DOUBLE INSULATED FIELD
Anthony Jacyno, Aurora, Ill., assignor to G. W. Murphy Industries, Inc., Houston, Tex.
Filed May 15, 1970, Ser. No. 37,810
Int. Cl. H02k 7/14
U.S. Cl. 310—47 7 Claims



In a power tool, an electric motor is mounted on an electrically conductive frame by an electrically insulating shield member which directly insulates the motor from the frame and also shields the motor field magnets against spark-gap conduction of electricity to the frame, preventing possible shock to the user.

3,665,229
ROTARY CRYOGENIC MACHINERY
Hugh Olaf Lorch, Stafford, England, assignor to The English Electric Company Limited, London, England
Filed Mar. 31, 1971, Ser. No. 129,712
Claims priority, application Great Britain, Apr. 3, 1970, 15,913/70
Int. Cl. H02k 9/00
U.S. Cl. 310—52 12 Claims

Cryogenic machinery in which coolant fluid is supplied to a rotor via a central path, and disposed radially outwards in an annular flow space into axially extending cooling paths in the periphery of the body. Fluid is exhausted from the cooling paths via annular flow spaces at each end of the body into outlet paths concentric with the inlet path, and the outlet paths and inlet path are vacuum insulated from one another.

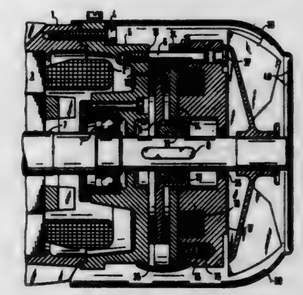


3,665,230
DEVICE FOR INCREASING THE INTENSITY OF GAS COOLING OF ELECTRICAL MACHINES WITH HIGH-SPEED ROTOR
Mihaly Wallenstein, Budapest, Hungary, assignor to Ganz Villamossagi Muvek, Budapest, Hungary
Filed Oct. 19, 1970, Ser. No. 81,874
Claims priority, application Hungary, Dec. 30, 1969, GA-988/69
Int. Cl. H02k 9/06
U.S. Cl. 310—60 2 Claims



A turbo-generator has a rotor having openings therethrough and stator windings also having openings therethrough, and ribs on the stator that extend toward but are spaced from the rotor and that are parallel to the axis of the rotor for augmenting the circulation of gas relative to the rotor surface and through the rotor.

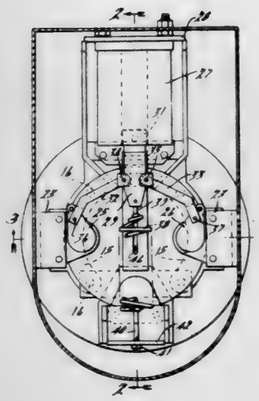
3,665,231
AUTOMATICALLY ADJUSTABLE SINGLE DISC BRAKE FOR MOTORS
Guenther Wendler, Schwarzenbach, Saale, Germany, assignor to Adam Baumueller GmbH Fabrik Fur Elektrotechnik, Marktredwitz, Germany
Filed Mar. 18, 1970, Ser. No. 20,617
Claims priority, application Germany, Mar. 21, 1969, P 19 14 469.5
Int. Cl. H02k 7/102
U.S. Cl. 310—77 21 Claims



A motor disc brake has a brake disc axially displaceable on

the motor shaft, a displaceable armature disc which is normally in engagement with the brake disc and a displaceable magnet mounting element supporting an electromagnet which, when energized, moves the armature disc away from the brake disc to a limited extent and the mounting element towards the armature disc. Movement of the armature disc and mounting element away from the brake disc is limited by locking devices, so that the displaceable armature disc and the mounting element move towards the brake disc as the brake linings wear.

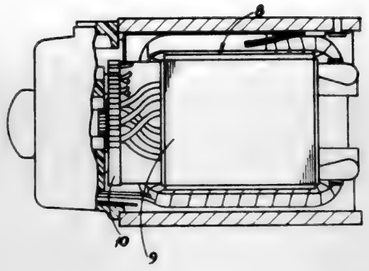
3,665,232
ELECTROHYDRAULIC CALIPER DISC BRAKE
Jaroslav Speransky, and Harry E. Ceray, both of Duluth, Minn., assignors to Microdot, Inc., Greenwich, Conn.
Filed Nov. 12, 1970, Ser. No. 88,635
Int. Cl. H02k 7/102
U.S. Cl. 310—77 **9 Claims**



A unit attached to the frame of a motor for insuring quick braking when the current is shut off. The unit comprises a housing enclosing a solenoid and supporting a pair of mechanical calipers on opposite sides of a disc secured to the motor shaft. A pair of opposed links connect the solenoid plunger to the calipers, and a spring urges the plunger toward a position setting the brake. When current is supplied to the motor it will energize the solenoid to release the brake. A hydraulically operated caliper brake is also mounted in the housing for alternate use.

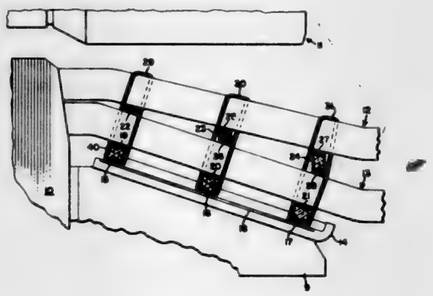
3,665,233
DYNAMO ELECTRIC MACHINES
Roy Price Bowcott, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Original application Feb. 7, 1969, Ser. No. 797,457, now abandoned. Divided and this application Oct. 28, 1970, Ser. No. 83,223
Int. Cl. H02k 13/04
U.S. Cl. 310—234 **4 Claims**

A dynamo electric machine having a wound rotor and a commutator rotatable with the rotor. The conductors of the rotor are in pairs each pair being connected electrically to a respective commutator segment. One end of one conductor of each pair is electrically and physically connected to the



other conductor and a projecting portion of said other conductor is electrically connected to the commutator segment.

3,665,234
GENERATOR END WINDING SUPPORT
James S. Bishop, Schenectady, N.Y., assignor to General Electric Company
Filed Dec. 14, 1970, Ser. No. 97,777
Int. Cl. H02k 1/24
U.S. Cl. 310—260 **2 Claims**



Support members and spacer blocks positioned between and supporting the conductors extending beyond the magnetic core of rotating electrical machinery. The members comprise a solid insulating member having a deformed surface sandwiched between a conformable absorbent material which is impregnated with a curable resin. Upon curing of the resin, the comformable absorbent material with the solid insulating member sandwiched therebetween provides a rigid support between the conductors which is conformable to the space therebetween and which has its structural elements locked together for increased durability.

3,665,235
MERCURY VAPOR LAMP
Andre Albert Hugot, Asnieres, France, assignor to Compagnie Electro-Mecanique, Paris, France
Filed Apr. 21, 1970, Ser. No. 30,413
Claims priority, application France, Apr. 28, 1969, 6913435
Int. Cl. H01j 61/52
U.S. Cl. 313—23 **10 Claims**

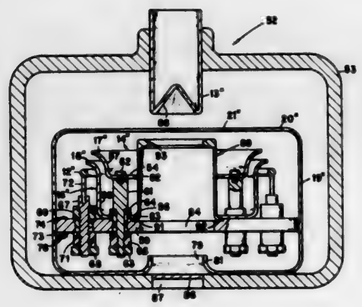
In a doped mercury vapor lamp having an elongate vertical burner, an upper portion of the surface of the burner is maintained at a lower temperature than a lower portion to reduce separation of the dopant. Heat-emission from the upper portion of the surface of the burner may be increased compared to the lower portion of the burner by increasing the diameter

(and hence the heat-exchange area per unit length) in the upper portion, by reducing the thickness of an air gap to an



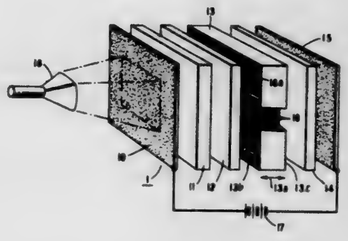
envelope in the upper portion, or by playing coolant selectively on to the upper portion of the surface of the burner.

3,665,236
ELECTRODE STRUCTURE FOR CONTROLLING ELECTRON FLOW WITH HIGH TRANSMISSION EFFICIENCY
Jerry L. Gaines; Paul J. Ebert; Lloyd Mancebo, and Frederick D. Cook, all of Livermore, Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Dec. 9, 1970, Ser. No. 96,514
Int. Cl. H01j 35/04
U.S. Cl. 313—55 **8 Claims**



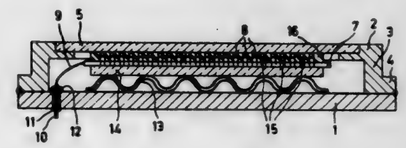
Electrode structure for controlling flow of electrons from a cathode to an anode, characterized by the absence of electrodes in the flow path whereby electron flow is substantially unimpeded by physical structure and proceeds with high transmission efficiency. The structure is such as to establish an electron accelerating field and associated flow path between cathode and anode which bulges outwardly about an interposed control electrode and is thus not physically intercepted by same. By virtue of the high efficiency of electron transmission, the electrode structure may be advantageously incorporated in an X-ray tube to provide X-ray pulses of increased intensity. In addition, the transmission characteristic in conjunction with the capability of the bulging field to enable the use of relatively small control voltages to govern electron flow render the electrode structure particularly well suited to the attainment of a high amplification factor in a high power amplifier tube for voltage regulation or switching applications.

3,665,237
IMAGE-RETAINING PANEL IMPERVIOUS TO AMBIENT LIGHT
Jeofry Stuart Courtney-Pratt, Locust, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Dec. 21, 1970, Ser. No. 100,168
Int. Cl. H01j 1/70
U.S. Cl. 313—108 A **5 Claims**



An image-retaining panel receives a momentarily projected image, and retains a replica of that image for extended periods irrespective of local lighting. The panel consists of a pair of electroluminescent slabs electrically connected by an opaque layer that conducts only laterally. The viewing image formed on the outer electroluminescent slab does not affect the photoconductivity of the medium which drives the inner electroluminescent slab. Hence, ambient light falling on the outer slab does not affect the image.

3,665,238
ELECTRIC GAS DISCHARGE TUBE HAVING VACUUM TIGHT SEALING MEANS FOR A PLURALITY OF SUPPLY LEADS POSITIONED CLOSE TOGETHER
Johannes Van Esdonk, and Joannes Franciscus Maria Janssen, both of Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.
Filed June 11, 1970, Ser. No. 45,438
Claims priority, application Netherlands, June 13, 1969, 6909119
Int. Cl. H01j 17/16
U.S. Cl. 313—220 **5 Claims**

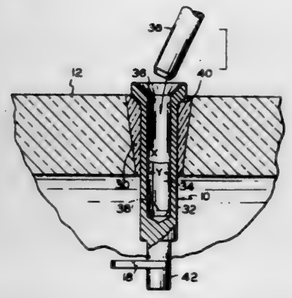


A gas discharge tube having intersecting conductors which are loosely situated in grooves of an insulating plate having open sides remote from the base of the tube. The insulating plate is kept urged against a window plate by a spring. The electrodes are connected to lead-in conductors placed close together in the base plate of the tube. The lead-in conductors pass through ceramic tubes inserted in the base plate of the tube and are vacuum sealed by means of a vitreous insulating material.

3,665,239
ELECTRICAL LEAD-IN TUBULAR SOCKET MEMBER FOR ELECTRONIC TUBES

Pierre C. Merinaud, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation of application Ser. No. 766,912, Oct. 11, 1968, now abandoned. This application Nov. 12, 1970, Ser. No. 88,739
Int. Cl. H01j 5/50; H05k 5/06; H01r 9/12
U.S. Cl. 313—318 17 Claims

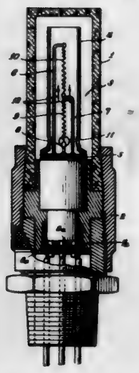


An electrical lead-in connector of low capacitance and high strength is described including a tubular socket member. The connector socket member is sealed within an aperture extending through an envelope wall and is provided with a pin receiving chamber open to the exterior of the envelope which has a length greater than its width. A lead attachment projection of solid metal is provided on the interior end of the socket member for welding an electrical lead thereto which may be connected to an electrode within the envelope of a cathode ray tube or other electrical device. The lead-in connector is provided with spring contacts within the pin receiving chamber for engagement with a connector pin inserted into the chamber, or the connector pin itself may be formed with leaf spring contacts or of a resilient member of twisted wire.

3,665,240
VARIABLE PITCH COIL FILAMENTS PROVIDING UNIFORM TEMPERATURE THROUGHOUT

Lee A. Archer, Wheaton, Ill., assignor to Erdco Engineering Corporation, Addison, Ill.

Continuation-in-part of application Ser. No. 696,835, Jan. 10, 1968, now Patent No. 3,522,010. This application June 15, 1970, Ser. No. 46,012
Int. Cl. H01j 5/50
U.S. Cl. 313—344 8 Claims

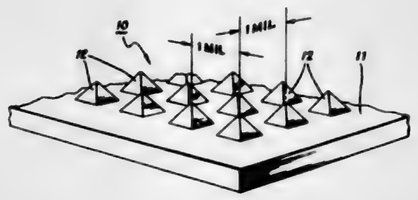


The catalytic metal filaments of gas detectors and the like are in coil form with progressively increasing pitch toward their middle portions whereby excessively high temperatures at such middle portions are avoided. The substantially uniform operating temperatures throughout most of the lengths of such coil filaments result in dependably good performance and greatly lengthened useful lives of the filaments.

3,665,241
FIELD IONIZER AND FIELD EMISSION CATHODE STRUCTURES AND METHODS OF PRODUCTION

Charles A. Spindt, Menlo Park, and Louis N. Heynick, Palo Alto, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed July 13, 1970, Ser. No. 54,222
Int. Cl. H01j 1/30
U.S. Cl. 313—351 11 Claims

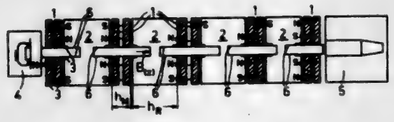


Field-forming devices primarily useful as field ionizers and field emission cathodes and having as a basic element an array of closely spaced cones with sharp points supported on a substrate (in the most usual case conductive or semiconductive) are disclosed. Preferably, the field-forming structure is completed by a screen-like structure, e.g. as fine mesh screen, insulatively supported above the points with the center of apertures in the screen substantially aligned with the longitudinal axis of corresponding cones. A novel method of forming such structures includes placing a screen with a mesh corresponding to the desired number and packing density of sharp conical points in close proximity to, or in contact with, the substrate and projecting material through the screen onto the substrate whereby sharp cones of the material are formed on the substrates.

3,665,242
PERMANENT MAGNETIC FOCUSING DEVICE FOR MULTI-CAVITY KLYSTRONS

Vladimir Dubravec, Kastanienallee, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 1, 1970, Ser. No. 51,506
Int. Cl. H01j 23/08
U.S. Cl. 315—5.35 6 Claims

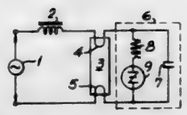


A permanent magnetic focusing device for periodically guiding the electron beams of multicavity klystrons comprising axially arranged magnets that are radially magnetized in the same sense.

3,665,243
DISCHARGE-LAMP OPERATING DEVICE USING THYRISTOR OSCILLATING CIRCUIT

Isao Kaneda, and Kiyokazu Takeuchi, both of Otsu, Japan, assignors to New Nippon Electric Company Ltd., Osaka, Japan

Filed Feb. 26, 1970, Ser. No. 14,325
Claims priority, application Japan, Feb. 27, 1969, 44/15106; Apr. 30, 1969, 44/34011; Apr. 26, 1969, 44/38565; June 10, 1969, 44/54290; June 16, 1969, 44/47720
Int. Cl. H05b 41/16, 41/20, 41/23
U.S. Cl. 315—101 5 Claims

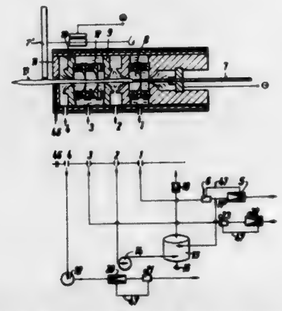


A circuit including a starting device and in which a discharge lamp is connected to the output terminal of a nonlinear thyristor oscillator. The thyristor oscillator includes a first closed circuit comprising a power source, a choke coil and a capacitor. This first closed circuit is set for a first oscillating condition. A second closed circuit is also employed. It comprises an inductance element and a voltage responsive switch such as a thyristor which elements are connected to said capacitor. This second closed circuit is set for a second oscillating condition, preferably near resonance state. A high frequency transformer can be combined with the second closed circuit in order to realize a faster turning on or initiation of the discharge lamp. In a hot-cathode type discharge lamp, a third circuit for increasing preheating current is included in said oscillator circuit.

3,665,244
REGULATION OF PLASMA GENERATORS

Tibor Kugler, Sins, Switzerland, assignor to Lonza Ltd., Gampel/Valais (Direction: Basle), Switzerland

Filed June 2, 1970, Ser. No. 42,809
Int. Cl. H05b 31/26
U.S. Cl. 315—111 12 Claims



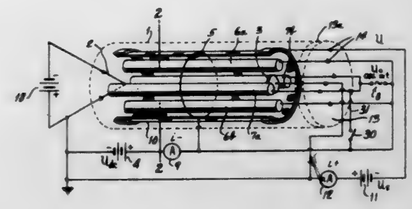
For regulating the flows in a liquid stabilizing plasma generator a constant amount of stabilizing liquid, which is independent of the flow resistant of the generator, is supplied through at least one stabilizing liquid supply duct to the generator. Various means are employed for keeping the supply constant.

3,665,245
QUADRUPOLE IONIZATION GAUGE

Helmut J. Schwarz, Simsbury, Conn., assignor to Research Corporation, New York, N.Y.

Filed Oct. 27, 1969, Ser. No. 869,757
Int. Cl. G01n 27/62
U.S. Cl. 315—111 10 Claims

A non-magnetic ionization gauge or ion pump comprising a tube containing spaced cathodes at the same potential, with an intermediately positioned ring anode for setting up an oscillating stream of electrons that is focused or constrained within an axial path by an electric quadrupole lens arrangement which may be excited by the RF force. The quadrupole lenses create a field which is tuned firstly to lengthen and stabilize the path of the electrons thus causing greater ionization of the gas atoms in the tube, and also to expel the ions

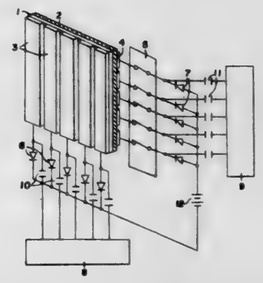


produced thereby, which ions are then collected by a cylindrical collector screen at a slightly negative potential surrounding the whole electrode structure. The collector current produced with this arrangement has been found to be approximately inversely proportional to the pressure within the range from 10^{-8} to 10^{-10} torr, so that collector currents of the order of microamperes can be obtained at very low pressure levels.

3,665,246
SOLID STATE DISPLAY DEVICE

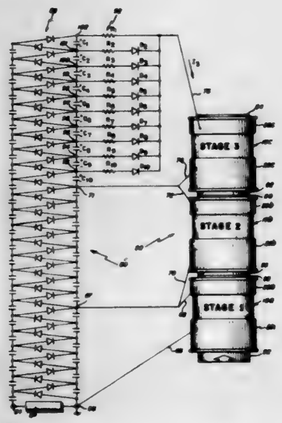
Koichiro Kurahashi, Osaka, and Shigeki Ikebata, Takatsuki, both of Japan, assignors to Mitsubishi Electric Corporation, Tokyo, Japan

Filed June 8, 1970, Ser. No. 44,176
Claims priority, application Japan, June 14, 1969, 44/46967
Int. Cl. H05b 37/00
U.S. Cl. 315—169 R 9 Claims



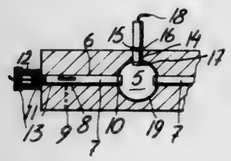
A solid state display device has stripe type conductive electrodes on both sides of an electroluminous layer in differing and crossing directions to each other to provide a matrix arrangement for selectively enabling a desired image to be formed. A non-crystalline switching type semiconductor is placed on said electroluminous layer to provide a memory capability for the display device upon obtainment of a light image. Switching elements are connected to each stripe type conductive electrode to enable the selective control of luminescence at a matrix point. The switch elements are selectively turned on and off in accordance with the generating of initiating pulses from a pair of electrode sources, whereby the image is controlled in the desired manner.

3,665,247
POWER REGULATING MEANS FOR LIGHT AMPLIFIER TUBES
Jeffrey L. Gordon, Spring Valley, Calif., assignor to Machlett Laboratories, Incorporated, Springdale, Conn.
Filed July 2, 1970, Ser. No. 52,034
Int. Cl. H05b 37/00
U.S. Cl. 315—205 9 Claims



A light amplifier tube having a voltage source and circuit means connected between the cathode and the anode of the tube for regulating the power supplied to the tube and thereby controlling the output brightness of the tube.

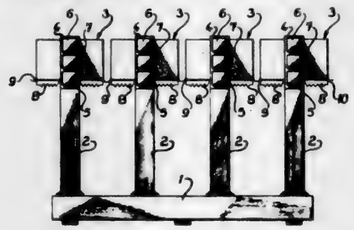
3,665,248
DEVICE FOR PRODUCING IONIZED AIR
Paul A. Forslind, Karstorpsvagen 4, Vastervik, Sweden
Filed Feb. 13, 1970, Ser. No. 11,083
Int. Cl. H05b
U.S. Cl. 317—4 4 Claims



A device for producing ionized air comprises a block of insulating material with a cylindrical channel through the block through which an airstream is passed. The interior portion of the channel is covered with a layer of conducting material and is also provided with three radial openings through which extend a positive terminal of a voltage source and two negative-ion generators.

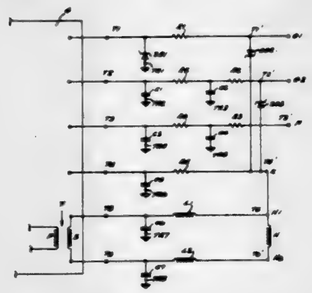
3,665,249
HIGH VOLTAGE DIRECT CURRENT CIRCUIT BREAKER
Vladislav Zajic, Montreal, Quebec, Canada, assignor to Institut De Recherche De L'Hydro-Quebec, Varennes, Province of Quebec, Canada
Filed Oct. 28, 1970, Ser. No. 84,576
Claims priority, application Canada, Sept. 8, 1970, 92,579
Int. Cl. H02h 7/22
U.S. Cl. 317—11 C 8 Claims

A high voltage direct current circuit breaker comprising several modules connected in series, each module including an electrodynamic mechanism connected to the mobile contacts of the circuit breaker and permitting to open very rapidly such contacts under load thus creating an electric arc between the contacts. Each module includes at least one deionizing chamber comprising a suitable number of parallel metallic plates disposed perpendicularly to the electric arc to form quenching channels for the electric arc. Finally, each



module comprises at least one magnetic arc extinguishing system for deflecting the electric arc of the contacts into the deionizing chamber and for forcing such arc to enter into the quenching channels to break it into a number of short arcs so as to create an arc voltage which is higher than the nominal voltage of the circuit, and for quenching such small arcs and finally extinguish them.

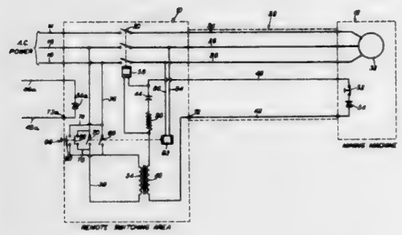
3,665,250
OVERLOAD CURRENT SUPPRESSION CIRCUIT NETWORK
Walter D. Bales, III, Garden Grove, and Neal H. Cosand, Fullerton, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed May 19, 1970, Ser. No. 50,002
Int. Cl. H02h 9/04
U.S. Cl. 317—16 5 Claims



A circuit network adapted for interconnection between the electron gun of a cathode ray tube and the intensity coupler therefor for the purpose of suppressing resultant overload currents caused when arcing occurs within the tube in a path originating at the tube's anode. A significant feature of the network is its ability to provide protection against serious malfunctioning of related circuitry especially overload current sensitive microcircuitry. The network greatly limits both the achievable levels of overload currents and rate of change thereof with attendant benefits.

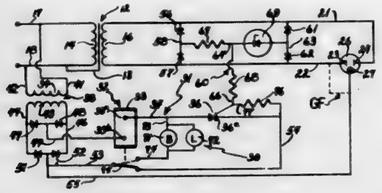
3,665,251
CONTINUOUS GROUND MONITORING CIRCUIT
Roger M. Buckeridge, Downers Grove, Ill., assignor to Westinghouse Air Brake Company, Pittsburgh, Pa.
Filed May 14, 1971, Ser. No. 143,460
Int. Cl. H02h 3/16
U.S. Cl. 317—18 A 3 Claims

A fail-safe continuous ground monitoring circuit formed by ground and check wires extending between a remote switching area and a mobile machine or point of use. The monitoring circuit is arranged to hold main power contactors closed, at the remote switching area, only as long as there is a satisfactory ground for the machine and as long as the monitoring circuit is functioning properly. In the event a fault or



short occurs in the ground or check wires, the monitoring circuit automatically causes the main power contactors to open, removing power from the machine, and at the same time deenergize a control relay to remove all power from the monitoring circuit.

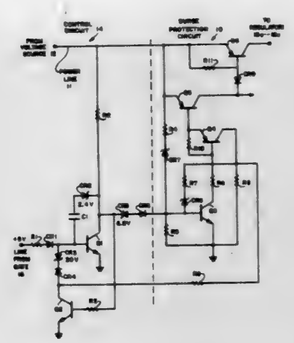
3,665,252
ELECTRICAL PROTECTIVE CIRCUIT
Charles J. Rogers, Sr., 1312 Coosaw Drive, Charleston, S.C., and Paul E. Stanley, 100 Hideway Lane, West Lafayette, Ind.
Filed July 17, 1970, Ser. No. 55,788
Int. Cl. H02h 3/16
U.S. Cl. 317—18 D 2 Claims



A protective circuit for an isolated load circuit utilizing an isolation transformer having a primary winding connected to an associated source of power and a secondary winding connected to a load by a pair of load conductors which includes fault condition responsive means, a normally inoperative control circuit having a normally open electrical valve and a relay connected to the source of electrical power by an auxiliary transformer with an auxiliary circuit connected to the control circuit and to the load conductors for closing the valve at a predetermined voltage to operatively condition the control circuit upon the presence of a ground fault on one of the load conductors to energize the relay and actuate the fault condition responsive means.

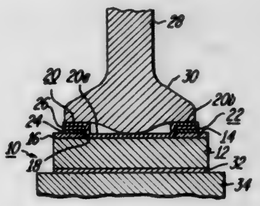
3,665,253
SHORT CIRCUIT PROTECTION DEVICE FOR MULTIPLE POWER SUPPLIES
Richard D. Stefani, Le Roy, N.Y., assignor to GTE Sylvania Incorporated
Filed Dec. 2, 1970, Ser. No. 94,376
Int. Cl. H02h 7/20
U.S. Cl. 317—22 4 Claims

A short circuit protection device includes a surge protection circuit having first and second input connections coupled to a voltage source and a control circuit, respectively, and an output connection coupled to a plurality of voltage regulator circuits. The output voltages of the regulator circuit are sensed through a gate circuit by the control circuit. In the event one of the regulator output voltages goes to zero, the



control circuit directs a control signal to the surge protection circuit which then disconnects the voltage source from the plurality of regulator circuits.

3,665,254
SEMICONDUCTOR DIODE
Jacques Roger Collard, Trenton; Subrahmanyam Yegna Narayan, Cranbury, and John Paul Paczkowski, Scotch Plains, all of N.J., assignors to RCA Corporation
Filed Oct. 12, 1970, Ser. No. 79,981
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R 4 Claims

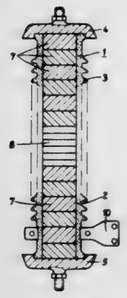


A Schottky surface barrier junction diode in which a metal layer is provided over a surface of a body of semiconductor material. The metal layer has a first portion which is in contact with the surface of the body to form the Schottky surface barrier junction, and a second portion which is spaced from the surface of the body. A bonding layer is provided between the second portion of the metal layer and the surface of the body and mechanically secures the metal layer to the body. A terminal lead is in contact with the metal layer and is bonded only to the second portion of the metal layer so that the terminal lead is mechanically secured to the body without disrupting the Schottky surface barrier junction.

3,665,255
OVERVOLTAGE ARRESTER
Werner Jakszt; Gert Schicle, and Wolfgang Werner, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Munich, Germany
Filed Sept. 4, 1970, Ser. No. 69,624
Claims priority, application Germany, Sept. 9, 1969, P 19 46 416.5
Int. Cl. H02h 9/06
U.S. Cl. 317—68 3 Claims

An overvoltage arrester has a stack of spark gap assemblies, each having two disc-shaped metallic electrodes and a

weakly conductive spacer member disposed between the two electrodes and forming a current limiting resistor in addition to the spacer function. Each of the spacer members is constituted by a ring which has a generally Z-shaped cross-section thus forming a step configuration of an inner ring portion integrally joined with an outer portion of larger diameter. The outer portion surrounds the inner portion of the next adjacent ring in the stack, the spacer member proper being constituted substantially only by the inner portion of the ring.

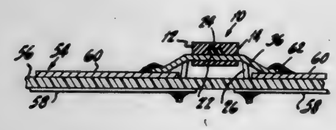


3,665,256

HEAT DISSIPATION FOR POWER INTEGRATED CIRCUITS

Nathan M. Goun, Metuchen, and Carl F. Wheatley, Jr., Somerset, both of N.J., assignors to RCA Corporation

Filed Oct. 15, 1968, Ser. No. 767,753
Int. Cl. H01l *1/12*
U.S. Cl. 317—100 3 Claims



An integrated circuit chip having circuit elements capable of relatively high power operation is encapsulated in a body of polymeric material having the form of an elongated rectangular prism. Conductors are electrically coupled to the elements in the integrated circuit chip and extend outwardly of the body of polymeric material through its relatively long sides. Heat conductors thermally coupled to the integrated circuit chip extend outwardly of the package through the same sides as the electrical conductors and are adapted to couple the integrated circuit chip to an external heat dispersing means.

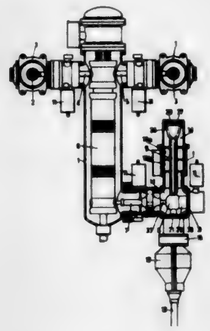
3,665,257

METAL CLAD SWITCH-GEAR FOR HIGH VOLTAGE COMPRISING CABLE TERMINAL BOXES

Aart Arnoldus De Heus, De Meern, Netherlands, assignor to N.V. "COQ", Utrecht, Kanaalweg, Netherlands

Filed Oct. 5, 1970, Ser. No. 77,859
Claims priority, application Netherlands, Nov. 5, 1969, 69.16682
Int. Cl. H02b *1/20, 3/00, 13/06*
U.S. Cl. 317—103 10 Claims

Metal-clad switchgear for high voltage comprising at least one cable terminal, of which the terminal members for the cable are connected by means of a conductor extending insulatedly through the wall of the envelope of the switchgear with the fixed contact of a detachable plug-and-bushing-connection accommodated in a compartment of said envelope, the movable contact of said plug-and-bushing-connection being in permanent contact with a stationary connecting element of the switchgear and mounted for operation from outside said envelope in order to enable the switchgear to be disconnected from the cable.

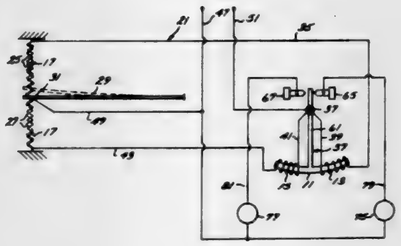


3,665,258

ARMATURE CONROL SYSTEM

Harold A. McIntosh, South Pasadena, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Original application Mar. 7, 1969, Ser. No. 805,138, now Patent No. 3,577,066. Divided and this application Mar. 10, 1971, Ser. No. 122,728
Int. Cl. H01h *47/26*
U.S. Cl. 317—132 10 Claims



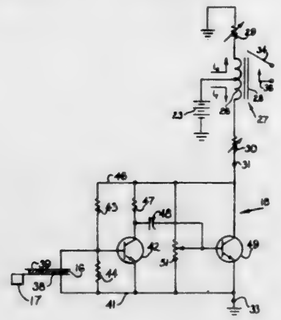
An armature control system including coil means for controlling positioning of a movable armature. Electrical resistance means is provided which has transverse portions in heat exchange relationship with each other and flexible for movement toward and away from one another to adjust the heat exchange relationship, the electrical resistance of the portions being temperature responsive so current flow therethrough is responsive to the temperature thereof. Adjustment means is provided for moving the portions toward and away from one another to adjust the proximity thereof and alter mutual heat transfer therebetween so the electrical current passing through the resistance means is correspondingly adjusted. Circuit means connects the resistance means with the coil means so the adjustment means may be adjusted to adjust the spacing between the transverse portions to alter the heat exchange relationship therebetween and adjust the current flow through the coil means to thereby adjust the electromagnetic force on the armature to effect movement thereof.

3,665,259

VIBRATION TRANSDUCER FOR BURGLAR ALARMS AND THE LIKE

Harrison D. Brailsford, Milton Point Road, Rye, N.Y.

Filed Aug. 19, 1970, Ser. No. 64,968
Int. Cl. H01v *7/00*
U.S. Cl. 317—144 2 Claims



A sensing device constructed on a support to be attached to a safe or the like and having an electrical signal generator, such as a piezoelectric crystal, rigidly attached to the support at one end and freely movable at the other end to generate a voltage in response to vibrations of the safe. A feedback amplifier amplifies this voltage to produce a resultant output signal for connection to an alarm. The amplifier includes input and output stages and a controllable positive feedback loop to provide a two-terminal replacement for a carbon granule transducer.

3,665,260

ALLOY CAPACITOR POROUS ANODES

Milton E. Kirkpatrick, Palos Verdes Peninsula, and Ralph A. Mendelson, Westminster, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed June 1, 1970, Ser. No. 42,087
Int. Cl. H01g *9/00, 3/075*
U.S. Cl. 317—230 16 Claims



YAL (-325) ETCHED 200 X

Alloys of intermetallic compounds and solid solutions are prepared as powders, compacted, and sintered at high temperatures to form porous, single phase alloys; the porous alloys are then surface-oxidized such as by anodization to form a mixed metal oxide film on the surfaces of the porous structure. This results in a mixed metal oxide surface film having good dielectric properties. The placement of conductive material in the void space of the porous anode results in the formation of a capacitor structure of superior properties.

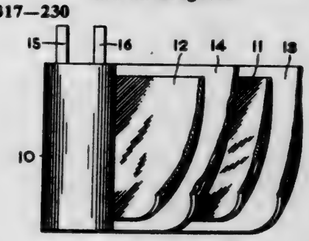
The general formula for the sintered alloys is AB where A and B are metals in the form of solid solutions or intermetallic compound alloys. Of specific interest are those 1:1 compounds which form ABO_3 oxides. Preferred materials include YaI, CoTi and NiTi alloys. These AB sintered alloys are oxidized or anodized to form surface films of ABO_3 and A_2B_2O

3,665,261

ELECTROLYTIC CAPACITOR WITH IMPROVED ELECTROLYTE

Franz S. Dunkl, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Sept. 25, 1970, Ser. No. 75,588
Int. Cl. H01g *9/02*
U.S. Cl. 317—230 3 Claims



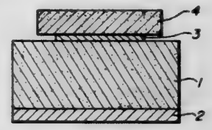
A glycol-pentaborate electrolyte, such as those commonly employed in photoflash capacitors, is improved by the addition of 0.0025–0.006 percent chromium ions thereto in the form of CrO_3. The addition of said chromium ions increases the breakdown voltage therein, and practically eliminates breakdowns during the aging process.

3,665,262

SEMICONDUCTOR PRESSURE-ELECTRIC TRANSDUCER INCLUDING A SEMICONDUCTOR ELEMENT HAVING A DEEP LEVEL IMPURITY AND A SEMICONDUCTOR PRESSURE TRANSMITTING PLATE

Akio Yamashita, Ikeda-shi, and Tadashi Yamada, Suita-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed July 14, 1969, Ser. No. 841,281
Claims priority, application Japan, July 19, 1968, 43/51417
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R 1 Claim



In a semiconductor pressure-electric transducer comprising a semiconductor element which contains a deep level impurity and whose electric resistance varies with a pressure applied thereto, a structure of the plate for transmitting a pressure applied to said transducer to said semiconductor element.

3,665,263

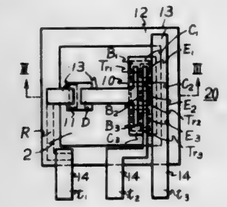
IMPROVEMENTS IN AIR-ISOLATED INTEGRATED CIRCUIT DEVICES TO FACILITATE THE CONNECTION THEREOF TO CIRCUIT BOARDS

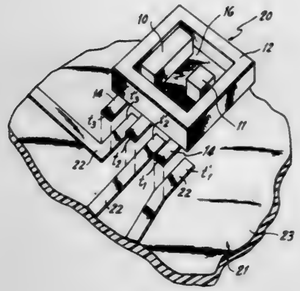
Katsuhiko Akiyama, 1311-2 Hase, Atsugi, Japan

Continuation-in-part of application Ser. No. 747,360, July 24, 1968, now abandoned. This application June 5, 1970, Ser. No. 43,667
Int. Cl. H01l *19/00*
U.S. Cl. 317—235 R 7 Claims

An integrated circuit device has a frame of semiconductor material and blocks of the same semiconductor material situ-

ated in a space or spaces substantially enclosed by the frame, with the blocks being spaced from the frame and having circuit elements therein which are interconnected by beam leads also functioning as the sole means mechanically coupling or locating the blocks relative to the frame. Certain





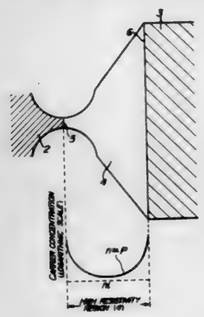
of the beam leads project beyond the periphery of the frame and all of the beam leads are substantially coplanar and constitute the highest elevations on the circuit device so that the projecting beam leads can be conveniently bonded to conductive areas on a substrate, such as a circuit board, defining external circuits.

3,665,264

STRESS SENSITIVE SEMICONDUCTOR ELEMENT HAVING AN N^+PP^+ OR P^+NN^+ JUNCTION

Noboru Yukami, Hirakata; Hiroshi Otani, Shijonawate, and Hideo Kurokawa, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 18, 1970, Ser. No. 64,696
Claims priority, application Japan, Sept. 1, 1969, 44/70415
Int. Cl. H01l *11/00, 15/00*
U.S. Cl. 317—235 R 7 Claims



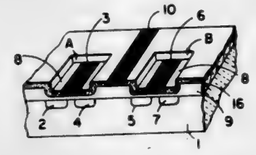
A stress sensitive semiconductor element comprising first and second low-resistivity regions of different conductivity types formed in a common semiconductor substrate, and a third region of a higher resistivity and of the same conductivity type as that of said first region, said third region being formed between said first and second regions in said common semiconductor substrate, and a constricted portion being formed at the non-rectifying contact between said first and third regions, wherein the length of said third region is longer than the effective diffusion distance of carriers; such a device having a good linear conversion characteristics and a high sensitivity, a wide range of application being expected for a high sensitivity microphone, various pick-up elements and switching elements.

3,665,265

MOS INTEGRATED CIRCUIT SEMICONDUCTOR DEVICE

Syoji Fujimoto, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Oct. 27, 1970, Ser. No. 84,332
Claims priority, application Japan, Oct. 29, 1969, 44/86216
Int. Cl. H01l
U.S. Cl. 317—235 R 2 Claims



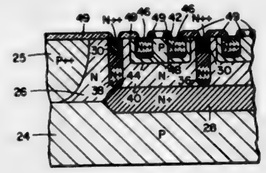
An MOS integrated circuit having a duplex insulating material structure wherein an aluminum oxide layer is disposed over the silicon oxide layer. Gate insulating material is protected against contamination from organic solvent and photoresist. In an n-channel device, the threshold voltage of the thick insulating material is increased to thereby reduce the likelihood of parasitic or leakage conduction between adjacent MOS transistors in the circuit.

3,665,266

LOW SATURATION RESISTANCE, LOW OFFSET VOLTAGE, MONOLITHIC ANALOG SWITCH

Kenneth Paul Drozdowicz; William Rey Fowler, both of Scottsdale, and George Averkiou, Temple, all of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 10, 1970, Ser. No. 96,787
Int. Cl. H01l *11/06*
U.S. Cl. 317—235 R 3 Claims



A low saturation resistance, very low offset voltage, monolithic, analog switch is provided which has high impedance in the off state; this switch being produced by fabricating a transistor on a chip. The transistor is adapted to have its base collector junction forward biased and its emitter base junction reverse biased. The parasitic action of a further transistor including the base and the collector of the inversely biased transistor and the substrate on which the inversely biased transistor is deposited, is eliminated. The inverse beta

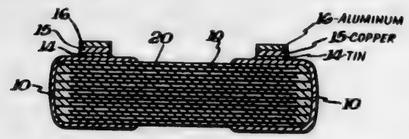
of the transistor switch is increased, and also the distributed current crowding effects in the so provided transistor is minimized.

3,665,267

CERAMIC CAPACITOR TERMINALS

Salvatore J. Acello, North Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Sept. 16, 1970, Ser. No. 72,712
Int. Cl. H01g *1/14*
U.S. Cl. 317—258 5 Claims



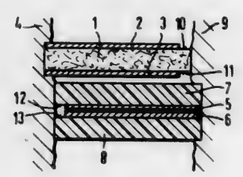
A monolithic multi-electrode ceramic capacitor chip has silver electrode pickups on opposed edges of the capacitor stack. A multi-metal clad strip is affixed on the silver pickup, thereby affording a smooth compatible terminal surface for further bonding purposes for use in hybrid circuitry.

3,665,268

IMPREGNATED ELECTRICAL CAPACITOR

Reinhard Behn, Munich; Karl-Heinz Preisinger, Taufkirchen, and Reiner Simeon, Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed May 6, 1971, Ser. No. 140,867
Claims priority, application Germany, May 12, 1970, P 20 23 193.0
Int. Cl. H01g *1/00*
U.S. Cl. 317—258 4 Claims



An impregnated capacitor which has an especially coiled body of alternate layers of an insulating band such as paper and a pair of plastic dielectric bands such as polypropylene bands with one charge-carrying layer being formed by metalized surface coatings on the insulating band and the other charge-carrying later being formed by facing surface coatings on each of the pair of dielectric bands. The entire coiled body is impregnated with an oil to remove any air gaps between the layers by causing the swelling of the plastic dielectric bands.

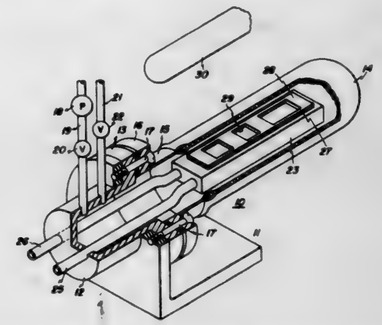
3,665,269

CAPACITORS HAVING A PHOTOPOLYMERIZED DIELECTRIC FILM

Archibald N. Wright, Schenectady, and Richard C. Merrill, Glen Falls, both of N.Y., assignors to General Electric Company

Continuation of application Ser. No. 530,813, Mar. 1, 1966, now abandoned. This application Dec. 29, 1969, Ser. No. 888,524
Int. Cl. H01g *1/00*
U.S. Cl. 317—258 6 Claims

Capacitors are provided having a first metal substrate, a dielectric film on such substrate and a second electrode on the dielectric film which is made by the photopolymerization



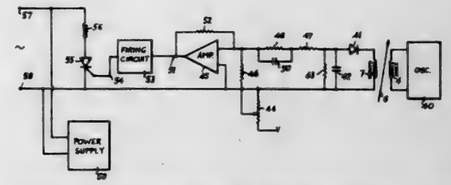
of certain photopolymerizable organic materials in vaporous form.

3,665,270

ELECTRIC TRANSDUCERS FOR TENSION CONTROL IN A WINDING DEVICE

Peter John Henry Ayers, Lowestoft, England, assignor to T. V. Manufacturing Limited, Suffolk, England

Continuation-in-part of application Ser. No. 792,698, Jan. 21, 1969. This application Nov. 9, 1970, Ser. No. 87,701
Claims priority, application Great Britain, Jan. 23, 1968, 3,573/68
Int. Cl. B65h *59/38*
U.S. Cl. 318—6 2 Claims



A winding arrangement for controlling the tension in a filament or web being wound includes an electrical transducer comprising a first winding carried by a core of ferromagnetic material, a second winding carried by a separate core of ferromagnetic material which is spaced from said first core and a movable member of electrically conducting material which can be moved into and out of the gap between the cores and which is connected to a dancer arm resting on the web or filament to be wound. The varying output signal produced by the transducer with movement of the dancer arm is employed to control the drive means to the winding spindle in order to keep the tension in the web or filament substantially at the correct value.

3,665,271

DRIVING CIRCUIT FOR A TIME-KEEPING DEVICE

Friedrich Assmus, Schramber/Wurttemberg, and Wolfgang Ganter, Schramber-Sulgen/Wurttemberg, both of Germany, assignors to Firma Gebruder Junghans G.m.b.H., Schramberg/Wurttemberg, Germany

Continuation-in-part of application Ser. No. 647,554, June 20, 1967, now abandoned. This application Sept. 8, 1970, Ser. No. 70,083
Claims priority, application Germany, June 23, 1966, J 31 155
Int. Cl. H02k *29/00*
U.S. Cl. 318—138 6 Claims

A driving circuit for initiating oscillatory or rotary move-

ment in a mechanical system wherein a control coil and driving coil are mounted in coupled relationship between opposing pole faces of a permanent magnet system and an initial driving pulse is provided to the driving coil by a transistor



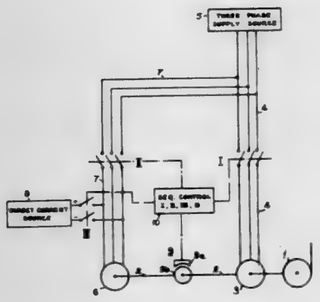
circuit which includes a capacitance charged through a resistance from a voltage source. The control coil generates pulses to operate the transistor circuit and provide output driving pulses to the driving coil to maintain the oscillatory or rotary movement of the system.

3,665,272

ARRANGEMENT FOR BRAKING A THREE-PHASE MOTOR DRIVEN HOIST

Gustav Spiess, deceased, late of Zug, Switzerland; Lina Spiess-Guttinger, Zug; Peter Spiess, Zug; Marianne Spiess, Zug; Hansjorg Spiess, Zug, and Walter Spiess, Oberrohrdorf, all of Switzerland (heirs), assignors to Aktiengesellschaft Brown, Boveri & Cie., Baden, Switzerland

Filed Nov. 6, 1970, Ser. No. 87,441
Claims priority, application Switzerland, Nov. 7, 1969, 16577/69
Int. Cl. H02p *3/18*
U.S. Cl. 318—204 **1 Claim**



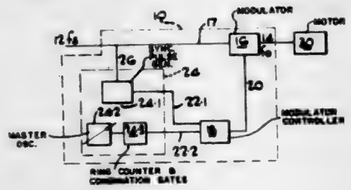
A braking system for a hoist driven by a polyphase drive motor includes a polyphase eddy current braking machine coupled to the hoist and which has a larger number of poles than the drive motor and a solid rotor. To initiate a braking function after the drive motor has been disconnected from its polyphase power supply source, the stator of the eddy current braking machine is first connected to the polyphase power supply which dynamically reduces the normal hoist speed to a lower value determined by the pole ratio between the drive motor and braking machine. Thereafter, the stator of the braking machine is disconnected from the polyphase power supply source and connected to a direct current power supply source which dynamically effects a further reduction in speed of the hoist to a near stand still level, after which the hoist is then brought to a complete stop by means of a further braking device such as a mechanical brake.

3,665,273

POLYPHASE ALTERNATING CURRENT FREQUENCY VARIATOR FOR INDUCTION AND SYNCHRONOUS TYPE MOTOR

Nicholas Charl de Villiers Enslin, 7 Longacres, Sans Souci Road, Newlands, Cape Providence, Republic of South Africa

Filed Aug. 11, 1969, Ser. No. 848,944
Claims priority, application South Africa, Aug. 15, 1968, 68/5306
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 **4 Claims**



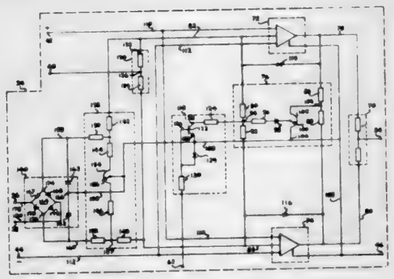
A frequency variator for controlling the speed of polyphase alternating current induction and synchronous type motors. The frequency of the A.C. power supply to the motor is varied by controlling the firing of power control gates in series with the motor windings in an ordered sequence.

3,665,274

REVERSIBLE MOTOR CONTROL HAVING ALTERNATIVELY OPERATIVE DUAL AMPLIFIERS AND AUTOMATIC RESPONSE ADJUSTMENT

Norman E. Born; Edwin E. Kolatorowicz, and Harry A. Plumb, Jr., all of Erie, Pa., assignors to General Electric Company

Filed May 5, 1970, Ser. No. 34,709
Int. Cl. H02p *5/06*
U.S. Cl. 318—257 **8 Claims**



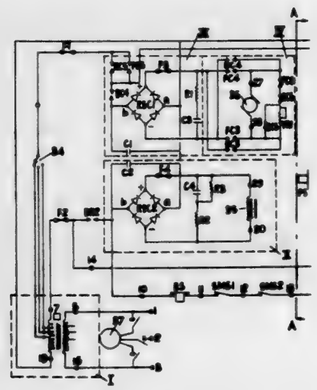
A drive system including a d-c motor has improved control means for generating a regulated control signal for controlling the supply of electric power to the motor. The control system includes a first amplifier operative when a net positive input signal is supplied thereto, a second amplifier operative when a net negative input signal is supplied thereto, means for supplying a command signal having a polarity and magnitude representative of desired motor performance to each amplifier, means for supplying a negative polarity signal representative of actual motor performance to the first amplifier and a positive polarity signal representative of actual motor performance to the second amplifier, and means for producing in response to the output of said amplifiers the regulated control signal. The control system also includes stabilizing means common to the two amplifiers and means for automatically adjusting the response of the amplifiers.

3,665,275

DRIVE APPARATUS FOR PRINT ROLLERS FOR PRINTING MACHINERY

Thomas Robinson, Reading, Berkshire, England, assignor to Antoma (Hairdressing) Company Limited

Filed Aug. 22, 1969, Ser. No. 852,329
Claims priority, application Great Britain, Aug. 28, 1968, 41,169/68
Int. Cl. H02p *3/14*
U.S. Cl. 318—261 **3 Claims**



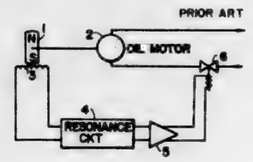
Means for controlling a shunt wound motor for driving the printing roller of a printing machine which includes electrical circuits for controlling the speed of rotation of the motor and for applying a braking force to the motor at the end of the printing operation, which force is proportional to the speed of the motor.

3,665,276

SPEED CONTROLLER FOR PRIME MOVER

Masaru Fujii; Kazuo Segara, and Shuichi Isomura, all of Nagasaki-ken, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of application Ser. No. 766,717, Oct. 11, 1968, now abandoned , and a continuation-in-part of 766,718, Oct. 11, 1968, now abandoned. This application Mar. 6, 1969, Ser. No. 804,971
Int. Cl. H02p *5/06*
U.S. Cl. 318—318 **1 Claim**



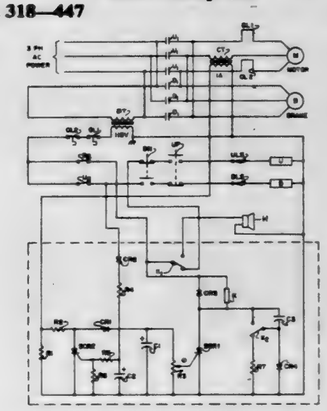
A speed controller for a prime mover includes a permanent magnet rotor, rotated at a speed corresponding to the speed of the prime mover, and an annular stator provided with an output winding connected, through an amplifier, to a throttle or the like controlling the speed of the prime motor. The rotation of the permanent magnet rotor developes a voltage in the output winding at a first frequency corresponding to the speed of the prime mover. Speed setting means are coupled with the stator to develop, in the output winding, a voltage at a second frequency corresponding to a desired speed of the prime mover as set by the speed setting means. The output winding thus supplies to the throttle or the like a control voltage at a frequency which is the difference between the first and second frequencies. In one embodiment of the invention, the annular stator is rotatable independently of the permanent magnet rotor, by a motor whose speed is controlled in accordance with a setting of the speed setting means. In another embodiment of the invention, an input winding on the stator is supplied by an oscillator at a frequency set by the speed setting means.

3,665,277

MOTOR AND HOIST CONTROL ARRANGEMENT

Edward Velazquez, Towson, Md., assignor to AAI Corporation, Cockeysville, Md.

Filed Aug. 10, 1970, Ser. No. 62,342
Int. Cl. H02p *1/26*
U.S. Cl. 318—447 **16 Claims**



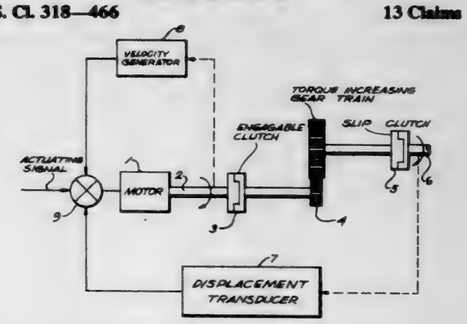
A motor and hoist control arrangement having a motor energization circuit, with a motor current sensitive power disconnect network operative only after a time delay after motor start-up, to prevent undesired power disconnect due to motor surge current, and motor-current signal by-pass means for preventing motor current sensing action during start-up of the motor for a selected predetermined period to prevent power disconnect action during such period.

3,665,278

COMPACT SERVO ACTUATOR

Edward Kazmarek, Reseda, Calif., assignor to Lear Siegler, Inc., Santa Monica, Calif.

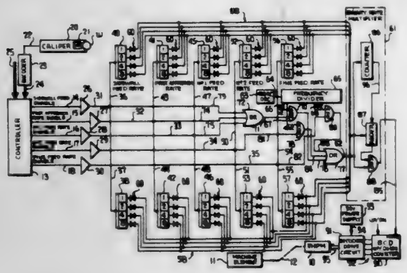
Filed Feb. 12, 1970, Ser. No. 10,756
Int. Cl. G05b *5/01*
U.S. Cl. 318—466 **13 Claims**



An engageable clutch is connected to the output shaft of a motor. The clutch is coupled to a servo actuator output shaft

by a gear train that increases the motor torque. A slip clutch is disposed between the gear train and the servo actuator output shaft. A displacement transducer is coupled to the servo actuator output shaft and a velocity generator is coupled to the motor output shaft. The motor actuating signal, the output of the displacement transducer, and the output of the velocity generator are applied to the inputs of a summing junction that drives the motor. A housing encloses all of the components of the servo actuator to form a compact package capable of delivering large torque. The gear train is arranged in multiple columns that transmit torque to the output shaft in a back and forth path.

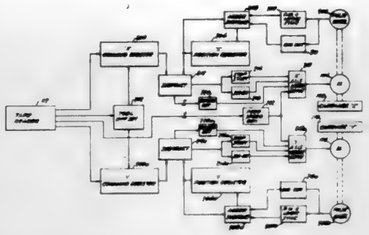
3,665,279
CONTROL SYSTEM FOR A MACHINE TOOL
Michael D. McIntosh, Greencastle, Pa., assignor to Landis Tool Company, Beverly Hills, Calif.
Filed June 12, 1970, Ser. No. 45,832
Int. Cl. G05b *19/24*
U.S. Cl. 318—571 **30 Claims**



A control system for a machine tool which utilizes an electro-hydraulic pulse motor to move a machine tool element is described. The pulse motor is energized from a decoder drive circuit which receives signals from a binary coded decimal counter having its input coupled to the output of a binary rate multiplier. The binary rate multiplier, in turn, receives as its inputs pulses of predetermined repetition rates from a crystal controlled frequency divider and preselected binary coded decimal signals from one or another of a plurality of rate sources. A controller is arranged, via logic circuits, to select one or another of various outputs from the frequency divider as one of the inputs to the binary rate multiplier. The controller also selects which of the plurality of rate sources provides a binary coder decimal signal to the rate multiplier.

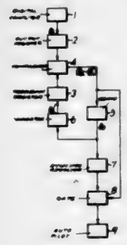
3,665,280
ZERO OFFSET NUMERICAL SERVO MACHINE CONTROL SYSTEM
Robert A. Payne, Des Plaines, and John F. Van Der Molen, Elmhurst, both of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.
Continuation of application Ser. No. 560,322, June 24, 1966. This application Aug. 22, 1969, Ser. No. 852,330
Int. Cl. G05b *19/24*
U.S. Cl. 318—572 **11 Claims**

A numerical control system for machine tools or the like such as milling machines is disclosed which directs movement by absolute measurement from a reference zero. Programmed data relating to a desired absolute position of the reference zero is entered into a command register, the contents of which is compared bit by bit with data relating to the absolute actual position of the machine tool entered into a position register. The programmed dimension data relates to the actual size of the desired workpiece as provisions are made for entering data relating to tool size offset by means other than the program. A complete system is disclosed including the logic which synchronizes the input of the machine tool actual position with the command position data



entered into the system from the programmer as well as the means for controlling the feed speed of the machine tool responsive to programmed data.

3,665,281
AUTOPILOT FOR SHIP
Yoichi Hirokawa, Kamakura-shi, Japan, assignor to Kabushiki Kaisha Tokyo Keiki Seizosho (Tokyo Keiki Seizosho Co., Ltd.), Tokyo, Japan
Filed Oct. 27, 1969, Ser. No. 869,546
Claims priority, application Japan, Nov. 1, 1968, 43/79723
Int. Cl. G05d *1/00;* **B64c** *13/18*
U.S. Cl. 318—588 **4 Claims**

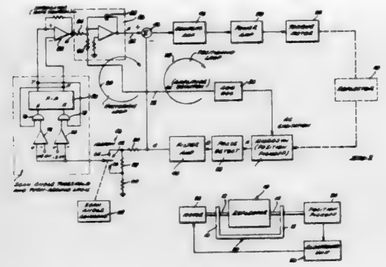


An autopilot for a ship in which a course of a ship is calculated by a computer mounted in the ship and an output of the computer is supplied to the autopilot through a servo system to automatically steer the ship and having a gate circuit inserted between the servo system and the autopilot, the gate circuit being controlled by the output of the computer to thereby steer the ship automatically.

3,665,282
SCAN CONTROL SYSTEM
Bernard J. Skehan, Manhattan Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed July 24, 1969, Ser. No. 846,302
Int. Cl. G05g *5/00*
U.S. Cl. 318—627 **13 Claims**

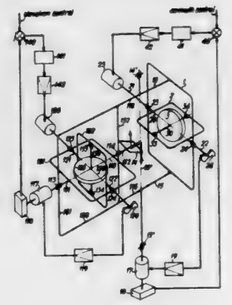
A system for accurately reciprocally driving a structural element, such as a flat reflector. The system includes a torque motor for driving the reflector, a position pick-off device for monitoring the position of the reflector, and an electronic unit comprising feedback paths coupling the pick-off device to the torque motor. The electronic unit includes a negative feedback positioning loop enclosed within an outer positive feedback hysteresis loop. The positioning loop comprises a type II (double integration) loop which yields a zero position error for a constant scan rate (angular velocity) input. The outer positive feedback loop functions to produce a precise triangular waveform (scan rate input) whose turn around points are precisely maintained in order to prevent

drift of the scan angle center point position. The system enables different scan angles (e.g., wide and narrow) to be



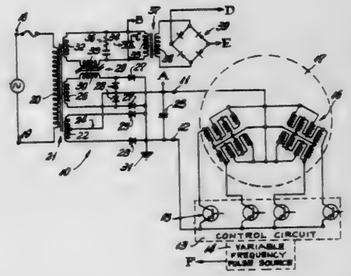
selected by varying scan frequency while maintaining scan rate constant.

3,665,283
PLURAL AXES GYRO-MOTOR LIGHT-BEAM TARGET TRACKING FACILITY
Jean Claude Le Gall, Rue des Bruyeres La Clante Ploumanach, Perros-Guirec, France
Filed June 18, 1970, Ser. No. 47,327
Claims priority, application France, June 20, 1969, 6920826
Int. Cl. B64c *17/06*
U.S. Cl. 318—649 **5 Claims**



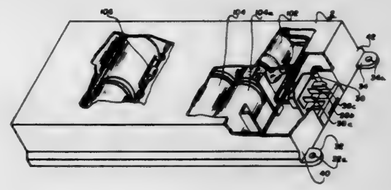
Light-beam target tracking facility comprising a stationary base, a source emitting a light beam lying on said base and an arrangement including two gyroscopes, a bearing gyroscope and an elevation gyroscope, used as motors and having intersecting and rectangular precession axes. Each gyroscope comprises a precession outer gimbal, a nutation inner gimbal, a rotor and a torque motor connected to its nutation inner gimbal. The precession outer gimbal of the bearing gyroscope bears a frame rigidly connected thereto and the precession outer gimbal of the elevation gyroscope is rotatable around said frame and bears a principal mirror rigidly connected thereto. The precession shaft of the bearing gyroscope is hollow and conveys the light beam. At the intersection of the precession axes of the two gyroscopes, another mirror deviates the light beam along the direction of the precession axis of the elevation gyroscope. Then the light beam falls on to the principal mirror which has a plane 45° apart from the plane of the precession outer gimbal of the elevation gyroscope and the beam is rejected perpendicularly to said outer gimbal plane.

3,665,284
POWER SUPPLY FOR A STEPPING MOTOR DEPENDENT UPON VOLTAGE LEVEL AND PULSING RATE
Robert J. Loyzim, Coventry, Conn., assignor to The Superior Electric Company, Bristol, Conn.
Filed July 20, 1970, Ser. No. 56,526
Int. Cl. H02k *37/00*
U.S. Cl. 318—696 **6 Claims**



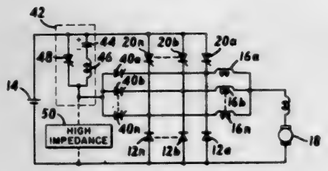
A power circuit for supplying power from an A.C. source to a D.C. energized variable speed stepping motor to increase the torque at high speeds and the maximum stepping speed of the motor with the speed of the motor being regulated by a control circuit to be independent of the voltage supplied thereto, by adjusting the value of the voltage from the A.C. source to the motor substantially inversely to the value of the current drawn by the motor during a relatively low range of speeds and by providing a substantially constant voltage of a higher value at high stepping speeds with the high constant voltage source being made operative from information that both the motor speed is above a predetermined value and the motor voltage exceeds a predetermined value.

3,665,285
POLARITY-MATED RECHARGEABLE BATTERY AND CHARGING UNIT
Ferdinand H. Mullersman, and Robert E. Rockey, both of Gainesville, Fla., assignors to General Electric Company
Filed May 27, 1970, Ser. No. 41,002
Int. Cl. H01m *45/04*
U.S. Cl. 320—2 **4 Claims**



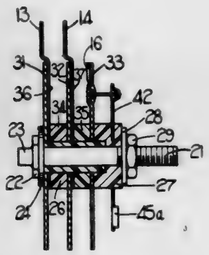
A novel charging system is disclosed wherein a battery pack and a battery charger are interconnected to provide predetermined desired charging rates to the cells in the battery pack. A plurality of means carried by the pack and the charger cooperate to allow insertion of the pack into the charger in only one way thus assuring proper polarity.

3,665,286
DIRECT CURRENT POWER CONTROL SYSTEM
Eiichi Ohno, and Masahiko Akamatsu, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 29, 1970, Ser. No. 76,442
Int. Cl. H02m 3/32
U.S. Cl. 321—2 11 Claims



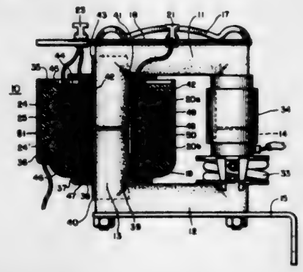
Plural main thyristors are connected in parallel between a dc source and a load and successively fired to electrically interconnect them. A pulse generator including a capacitor charged from the source and a thyristor for inverting a charge on the capacitor is connected across the main thyristors through individual distribution thyristors fired at predetermined time intervals to supply a discharge current from the capacitor to the associated main thyristors to render them nonconducting. After each discharge, the capacitor is again charged from the source and inverted in polarity. The power supply to the load is controlled by varying the starting times of the main thyristors.

3,665,287
FULL WAVE RECTIFIER ASSEMBLIES
Dennis Rowland Cross, Solihull, England, and Edward Stephens, Station B, Ottawa, Canada, assignors to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Mar. 25, 1970, Ser. No. 22,511
Claims priority, application Great Britain, Apr. 17, 1969, 19,578/69
Int. Cl. H02m 7/00
U.S. Cl. 321—8 R 4 Claims



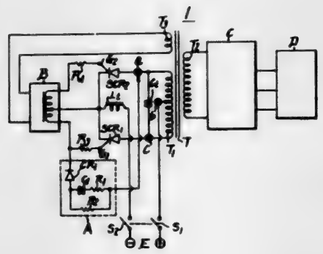
In a full wave rectifier assembly an axially extending support member has a pair of terminal plates mounted on it but insulated from one another. Each terminal plate carries a number of diodes equal in number to the number of phases of the supply to be rectified, with the diodes carried by one terminal plate having their cathodes electrically connected thereto and the diodes carried by the other plate have their anodes electrically connected thereto. In addition, a plurality of phase plates equal to the number of phases to be rectified are fixed relative to the support member and are insulated from one another and from the terminal plates, leads interconnecting the diodes and phase plates ensuring that the arrangement acts as a full wave rectifier. The phase plates are constructed from a single plate around which is moulded an insulating body used to support the phase plates relative to the support member, and the original plate is split to separate the phase plates from one another.

3,665,288
TELEVISION SWEEP TRANSFORMER
Theodore J. Godawski, Des Plaines, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Sept. 2, 1970, Ser. No. 68,830
Int. Cl. H01f 15/14
U.S. Cl. 321—24 6 Claims



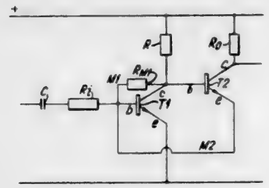
A harmonically tuned horizontal output transformer has the turns of the tertiary winding apportioned between two series connected winding sections in order to reduce its distributed capacitance and leakage inductance. These sections enclose the primary to establish a predetermined coupling therewith such that the leakage inductance of the tertiary resonates its distributed capacitance at the fifth harmonic of the characterizing frequency of the retrace pulse. The retrace pulse and the harmonic algebraically combine to provide a broadly peaked drive pulse for the high voltage rectifier.

3,665,289
INVERTER
Yoichi Hirokawa, Kamakura, and Masatoshi Sato, Tokyo, both of Japan, assignors to Kabushiki Kaisha Tokyo Keiki (Tokyo Keiki Co., Ltd.), Tokyo, Japan
Filed Jan. 18, 1971, Ser. No. 107,109
Claims priority, application Japan, Jan. 23, 1970, 45/7169
Int. Cl. H02m 7/48
U.S. Cl. 321—45 R 3 Claims



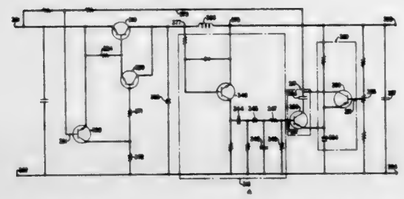
A parallel-connected type, self-commutation and self-controlled inverter employing two controlled rectifier elements, in which the connection point of one electrode of one of the controlled rectifier elements with the primary winding of a transformer of the inverter is connected to the gate of the other controlled rectifier element through a pulse generator circuit.

3,665,290
ELECTRONIC CONVERTER
Benjamin Trok, Johanneshov, Sweden, assignor to International Standard Electric Corporation, New York, N.Y.
Continuation of application Ser. No. 872,113, Oct. 29, 1969, now abandoned. This application Apr. 28, 1971, Ser. No. 138,277
Claims priority, application Sweden, Nov. 15, 1968, 15,506/68
Int. Cl. H02m 7/20
U.S. Cl. 321—47 7 Claims



A circuit including an amplifier and a transistor for rectification including a feedback path to maintain the output voltage proportional to the input voltage. The amplifier also may include a feedback resistor to maintain the transistor at cutoff in the absence of an AC input signal.

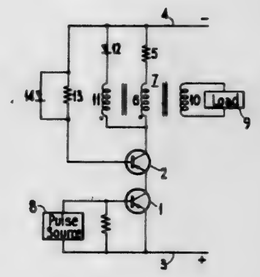
3,665,291
SELF-OSCILLATING CONSTANT FREQUENCY SWITCHING REGULATOR WITH PHASE CONTROL OF VOLTAGE REGULATION LOOP
Herbert Rudolf Weischedel, Rockaway, and George Raymond Westerman, Denville, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 21, 1970, Ser. No. 100,233
Int. Cl. G05f 1/56
U.S. Cl. 323—17 6 Claims



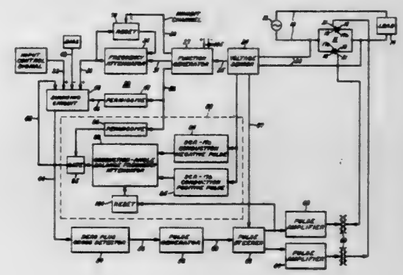
A self-oscillating switching mode regulator is frequency regulated by controlling the phase of the voltage control feedback signal. The phase lag of the feedback signal is controlled by a frequency regulation control loop. By continuously adjusting the phase lag of the feedback signal, the frequency of switching is maintained at a regulated value.

3,665,292
ELECTRIC SWITCHING CIRCUITS
Adrian Francis Flynn, Feustanton, England, assignor to The General Electric Company Limited, London, England
Filed Sept. 23, 1970, Ser. No. 74,610
Int. Cl. H01f 29/00
U.S. Cl. 323—48 2 Claims

In a transistor switching circuit in which a transistor is connected selectively to energize a load circuit including an inductive element, for example an output transformer, and in which a rectifier element is connected across the inductive element in the sense to conduct in response to reverse voltages induced when the transistor switches to its non-conducting condition, an auxiliary winding coupled to the inductive element is connected in series with the rectifier element in a sense such as to oppose the induced reverse voltages, whereby the de-energizing time or recovery time of the inductive element is reduced.



3,665,293
PHASE-CONTROLLED STATIC SWITCH FOR A POWER CIRCUIT HAVING A VARIABLE POWER FACTOR
Yoel Keller, Philadelphia; Fred W. Kelley, Jr., Media, both of Pa., and Georges R. E. Lezan, Cherry Hill, N.J., assignors to General Electric Company
Filed Mar. 3, 1971, Ser. No. 120,509
Int. Cl. G05f 1/56
U.S. Cl. 323—24 14 Claims

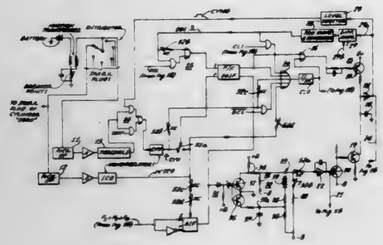


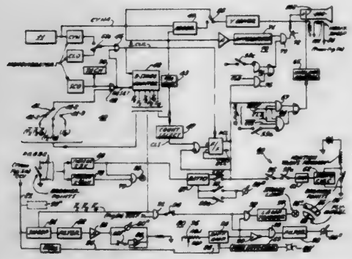
A gating control for an a-c phase-controlled, single-phase static switch comprising a pair of thyristors connected in inverse parallel relationship in a power circuit that has a variable power factor. The gating control controls the length of the non-conducting period between successive conduction periods of the switch in such a manner that the length of the non-conducting period is made approximately inversely proportional to an input control signal for the gating control, when the input control signal is between 0 and 1 per unit. A conduction-angle balancing circuit modifies the action of the gating control in such a manner that the conduction angles are forced toward a condition of equality despite a change therein produced by a change in the effective input control signal and despite the power circuit's having a low power factor.

3,665,294
SYSTEM FOR DETERMINING THE IGNITION ADVANCE IN THE DISTRIBUTION OF AN ENGINE

Edmond R. Pelta, Pacific Palisades, and Kenneth Stewart Gold, Canoga Park, both of Calif., assignors to Autoscan, Inc., Culver City, Calif.

Original application June 10, 1966, Ser. No. 556,710, now Patent No. 3,619,767. Divided and this application May 15, 1970, Ser. No. 37,515
Int. Cl. G01m *15/00*
U.S. Cl. 324—16 14 Claims



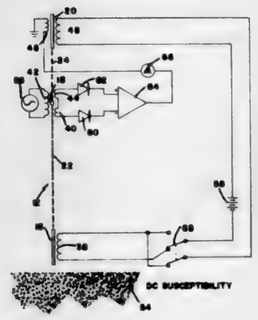


The invention relates to a system for indicating the ignition advance in the distributor of an engine where the speed of the engine increases. The system indicates this ignition advance for a particular cylinder by producing a ramp voltage to a particular level for the particular cylinder regardless of changes in ignition speed and by producing a triggering signal when the ramp voltage reaches a particular level which is adjustable. When the triggering signal is produced, an output indication of the ignition advance is provided. This output indication may be provided by a meter of by the strobing of the relative positions of a stationary marker and a marker on a flywheel driven by the engine.

3,665,296
SUSCEPTIBILITY METER FOR FIELD USE FOR DETERMINING SUSCEPTIBILITY OF A ROCK OUTCROP

Harry Gross, and David T. Symons, both of Ottawa, Ontario, Canada, assignors to Canadian Parts and Development Limited, Ottawa, Ontario, Canada

Filed Dec. 16, 1969, Ser. No. 885,412
Int. Cl. G01r *33/16*
U.S. Cl. 324—34 S 2 Claims

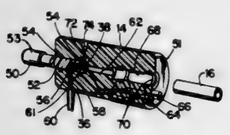


A method and apparatus measures susceptibility of a rock specimen by measuring the change of the equilibrium forces acting upon an electromagnet. The displacement of the magnet from equilibrium is detected in any one of a number of ways and is translated into an error signal which is amplified and coupled so as to give rise to a force which always opposes any displacement and which tends to reduce it to zero. When the magnet is again in equilibrium the force to keep it so against the added influence of the rock specimen is measured and gives the susceptibility.

3,665,295
CONDUCTIVITY CELL FOR PARTICLE COUNTING APPARATUS

Kurt Schoen, Zurich, Switzerland, assignor to Contraves AG, Zurich, Switzerland

Continuation of application Ser. No. 35,384, May 7, 1970. This application May 18, 1970, Ser. No. 38,039
Int. Cl. G01n *27/42, 27/00*
U.S. Cl. 324—30 B 8 Claims



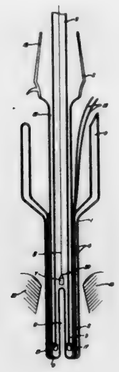
A conductivity cell for counting particles suspended in a liquid by detection of changes in the impedance of a fluid path caused by passage of particles through an aperture of the cell. The conductivity cell is provided with a pair of electrodes with an easily removable aperture disposed therebetween and a vent port adapted to permit purging of the cell after an analytic run.

3,665,297
APPARATUS FOR DETERMINING MAGNETIC SUSCEPTIBILITY IN A CONTROLLED CHEMICAL AND THERMAL ENVIRONMENT

Kenneth P. Yates, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Mar. 4, 1970, Ser. No. 888,969
Int. Cl. G01r *33/12*
U.S. Cl. 324—34 S 5 Claims

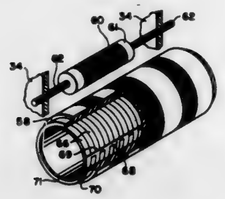
An apparatus for determining the static magnetic susceptibility of dia- and paramagnetic compositions in a controlled chemical and thermal environment comprises an elongate dewar flask containing a first inner tube sealably attached to the interior of the dewar flask at the lower end defining an annular volume between the first tube and the dewar flask, a second tube removably concentrically positioned within the said first tube defining an annular passage and being open at its lower end in communication with the annular passage, a sample container positioned within the second tube and suspended from a micro balance, means for heating and cooling the interior or the second tube and said sample and for introducing and withdrawing fluids from the interior of the second tube and the annular passage between the first and second tubes and a relatively high field density magnet positioned proximate the sample container.



3,665,298
METAL IMPURITY DETECTOR FOR TUBULAR CONVEYOR SYSTEM

Willard L. Geiger, Chagrin Falls, Ohio, assignor to Erico Products, Inc., Cleveland, Ohio

Filed Jan. 5, 1970, Ser. No. 764
Int. Cl. G01r *33/00*
U.S. Cl. 324—41 4 Claims

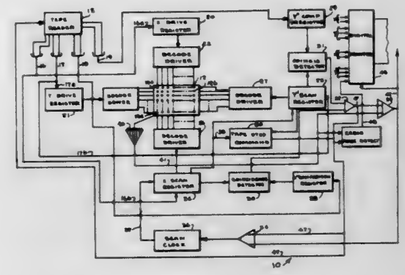


Apparatus for locating and removing foreign metal objects in the supply system of a plastic molding machine and the like wherein particulate plastic material is transported from a supply source at high velocity by way of a tubing system, consisting of a detector unit for monitoring the flow of the material through the tubing and a remote unit for momentarily diverting the flow when the presence of metal is detected. The diverter unit is a solenoid actuated flapper valve in the tubing system and the detector unit consists of a dual transmitter and receiver coil arrangement surrounding a part of the tubing, energized from a radio frequency energy source and arranged to develop an output signal when a transported metal object affects the normal balanced condition. Solid state components are employed throughout radio frequency oscillator, amplifier, differential detector and relay driver circuits and a balance coil and tuning slug are employed for critical adjustment of the signal balance and sensitivity in the sensing area.

3,665,299
TEST APPARATUS FOR DETERMINING CONTINUITY PATHS ON A MULTI-TERMINAL ARRANGEMENT

Kenneth A. Yarbrough, 1030 Medalist, Dallas, Tex.

Continuation of application Ser. No. 622,698, Aug. 23, 1967, now abandoned. This application Mar. 2, 1970, Ser. No. 14,796
Int. Cl. G01r *31/02*
U.S. Cl. 324—51 9 Claims

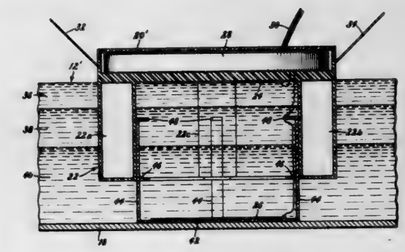


Test apparatus preferably comprising a signal forming means connected to a selected drive point which is one of the terminals, scanning apparatus for scanning the plurality of terminals, means for ascertaining electrical continuity between the driven point and each scanned point whereby continuity is either desired or undesired depending on the accuracy and faithfulness of wiring to the plurality of terminals, and output means identifying errors in test point wiring between the terminals.

3,665,300
LIQUID LAYER THICKNESS DEVICE HAVING A FLOATING ELECTRODE

Walter Edwin Sauer, Pottstown, and Vytautas Klemas, Berwyn, both of Pa., assignors to General Electric Company

Filed Mar. 5, 1971, Ser. No. 121,285
Int. Cl. G01n *27/26*
U.S. Cl. 324—61 R 8 Claims

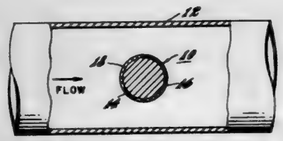


A device for measuring the thickness of a given immiscible liquid in a multi-liquid system wherein the other liquid or liquids in the system have a relatively higher dielectric constant than that of the given liquid. The device is comprised of a pair of substantially planar parallel electrodes which are mounted so that the upper electrode floats on the surface of the liquid system due to flotation means and the second electrode is positioned parallel thereto and at a level no higher than the lower-most level of the given liquid and means for measuring the capacitance between the pair of electrodes. The capacitance measured is therefore proportional to the thickness of the layer of the first liquid as the other liquids in the system are more highly conductive and therefore will not contribute significantly to the impedance (capacitance) measured.

3,665,301
CAPACITANCE-TYPE MONITORING APPARATUS

Frederick L. Maltby, Jenkintwon, Pa., assignor to Drexelbrook Controls, Inc., Glenside, Pa.

Filed Dec. 24, 1968, Ser. No. 786,663
Int. Cl. G01r 27/26
U.S. Cl. 324—61 P 6 Claims

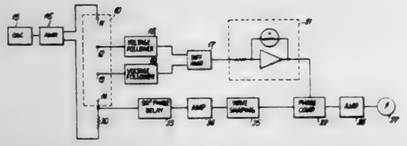


Capacitance-type monitoring apparatus for determining the composition of fluid mixtures and detecting the presence and amount of organic impurities in an aqueous stream is disclosed.

3,665,302
METHODS AND APPARATUS FOR DETERMINING THE CONDITION OF FOOD

Alexander Lees; John Charles Shenstone Richards, and Alfred Charles Jason, all of Aberdeen, Scotland, assignors to National Research Development Corporation, London, England

Filed Feb. 19, 1970, Ser. No. 12,568
Claims priority, application Great Britain, Feb. 24, 1969, 9,859/69
Int. Cl. G01r 1/06, 25/00, 27/02
U.S. Cl. 324—64 12 Claims



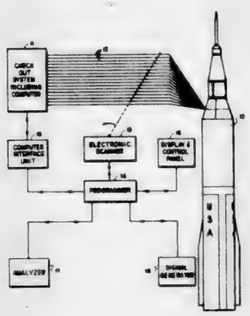
A method and an apparatus are described for testing the condition of foods, particularly fish. It has been found that the dielectric properties of some foods vary with time and consequently that the electrical quality factor and phase angle of a food sample are indicative of the amount of spoilage of the food. A probe comprising two pairs of electrodes is described for use in measuring the phase angle of a sample. The construction of the probe and the apparatus coupled thereto prevents interfacial polarization where one pair of electrodes contact the sample, and hence one important source of error is overcome. The phase angle is found by passing a current through the sample and measuring the relative phase of the current and of a potential sensed between the electrodes of the said pair.

3,665,303
SYSTEM FOR AUTOMATICALLY AND MANUALLY TESTING LINES FOR DETERMINING IF INFORMATION CAN BE ACCURATELY TRANSMITTED THEREON

Leo O. Richards, 8344 Sylvan Drive, West Melbourne, Fla., and Walter E. Parsons, Route 1, Box 53 A, Kissimmee, Fla.

Filed Dec. 4, 1969, Ser. No. 882,123
Int. Cl. G01r 15/12, 31/00
U.S. Cl. 324—73 10 Claims

A hardline monitoring system for monitoring a plurality of lines over which signals are transmitted in order to determine if the characteristics of the lines are within certain predetermined tolerances. The monitoring system includes a programmer, an electronic scanner, an analyzer, a display and control panel, a signal generator, a computer interface unit, and a checkout computer. In operation, the electronic scanner, which is under the control of the programmer, scans a plurality of hardlines or cables over which the signals are transmitted. The programmer, in turn, couples these lines through the scanner to an analyzer which analyzes the signals

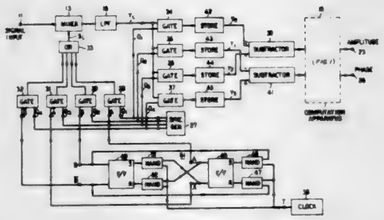


to determine if there is any distortion or deterioration of the line. If the signals being transmitted are out of tolerance, then the analyzer sends such information to a display and control panel to illuminate a lamp indicating such. Such information is also fed to a checkout computer through a computer interface unit and the programmer. A signal generator is provided for placing continuous data signals, FM signals and wordburst signals on the line when such is necessary.

3,665,304
SIGNAL AMPLITUDE AND PHASE HOMODYNE

Richard Lee Maybach, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 28, 1970, Ser. No. 101,813
Int. Cl. H04b 1/16
U.S. Cl. 324—85 19 Claims

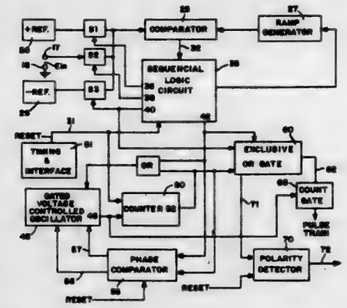


Homodyne signal detection apparatus which utilizes a unitary signal channel including a single mixer for processing an applied input signal with successively applied waveforms separated in phase by π/2 radians is disclosed. The product signals of each waveform and the input signal are filtered, stored, and selectively combined to develop signals which are sinusoidal or cosinusoidal functions of the phase angle of the applied signal and have magnitudes proportional to the amplitude of the input signal.

3,665,305
ANALOG TO DIGITAL CONVERTER WITH AUTOMATIC CALIBRATION

Harry G. Petrohilos, Yellow Springs, Ohio, assignor to United Systems Corporation, Dayton, Ohio

Filed Feb. 24, 1970, Ser. No. 13,621
Int. Cl. G01r 17/06, 1/02
U.S. Cl. 324—99 D 13 Claims

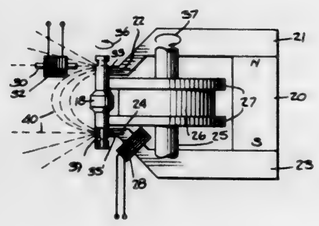


In a digital voltmeter, a single comparator circuit compares the output of a linear ramp generator with a first reference voltage, an unknown input voltage, and a second reference voltage to define a time ratio, which is independent of the slope of the ramp generator voltage, from which the magnitude of the unknown input voltage can be determined. A gate controlled oscillator generates a predetermined number of pulses in the reference time interval (i.e., the time interval between ramp voltage coincidence with the first and second reference voltages), and a feedback circuit is employed to maintain the number of pulses generated during this time interval constant regardless of any variations in the time interval. A smaller number of pulses representing the voltage ratio of unknown input voltage to the reference voltages is then applied to a conventional digital voltmeter display device.

3,665,306
PROCESS FOR MEASURING REVOLUTION SPEED OF A BODY

Peter Orth, Lippstadt, Germany, assignor to Herberlein Patent Corporation, New York, N.Y.

Filed Oct. 30, 1969, Ser. No. 872,491
Claims priority, application Switzerland, Nov. 18, 1968, 17200/68
Int. Cl. G01p 3/48
U.S. Cl. 324—174 2 Claims

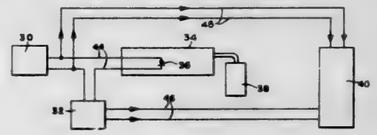


Process for measuring speed of revolution of a body in a magnetic field by forming the body to induce variations in the filed proportional to the speed of revolution of the body, inductively transferring such variations to a coil situated in the range of the magnetic field, and measuring the variations thus induced in the coil.

3,665,307
METHOD AND APPARATUS FOR DETECTING SURFACE IONS ON SILICON DIODES AND TRANSISTORS

Frank J. Cocca, East Boston, Mass., assignor to The United States of America as represented by the National Aeronautics and Space Administration

Filed June 5, 1970, Ser. No. 43,884
Int. Cl. G01r 31/22
U.S. Cl. 324—158 D 4 Claims

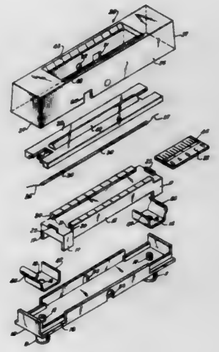


A method and apparatus for detecting surface ions on silicon diodes and transistors is disclosed. The apparatus disclosed comprises a temperature chamber for housing the diode or transistor under test, a power supply, an ammeter and an X-Y recorder. The semiconductor under test is subjected to various low temperatures and the reverse current-voltage characteristic curves of the semiconductor are plotted at each of the temperatures. From the reverse I-V characteristic curves, the presence of surface ions can be detected.

3,665,308
PACKAGE FOR AN ELECTROCHEMICAL ELAPSED TIME METER

Curtis C. Beauman, Mt. Kisco, N.Y., assignor to Curtis Instruments, Inc., New York, N.Y.

Filed May 28, 1970, Ser. No. 41,300
Int. Cl. G04f 9/00; G01r 1/04
U.S. Cl. 324—182 6 Claims

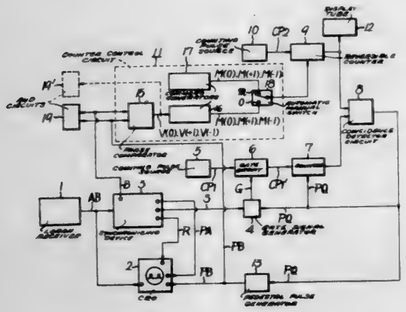


The electrochemical elapsed time meter package of the invention includes two parts which are separable from each other and which can be reassembled in reverse position. A coulometer tube and the magnifier therefor are mounted in mutual alignment and in inseparable and fixed relation to each other on one part of the package. The scale which cooperates with the coulometer tube is mounted on the other or second part of the package and is shiftable on its carrier so that its zero point can be reset with respect to the coulometer tube.

3,665,309
TIME INTERVAL MEASURING INSTRUMENT

Shosuke Sato, Tokyo; Shigeru Saito, Yokohama, and Saburo Kobayashi, Tokyo, all of Japan, assignors to Kabushiki Kaisha Tokyo Keiki Seizosho (Tokyo Keiki Seizosho Co., Ltd.), Tokyo, Japan

Filed May 6, 1970, Ser. No. 35,001
Claims priority, application Japan, May 14, 1969, 44/36691
Int. Cl. G04f 9/00, 11/06
U.S. Cl. 324—186 6 Claims

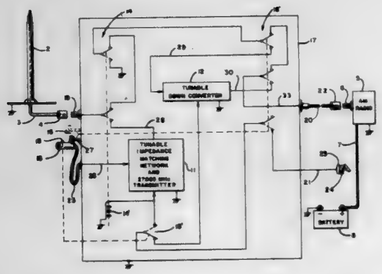


An instrument for measuring the time interval between first and second signals of the same period having a gate circuit for permitting the passage therethrough of a counting pulse controlled by a first pulse synchronized with the first signal in phase, a first counter for pulse derived from the gate circuit, a second counter capable of reversible counting another pulse, a detector circuit detecting agreement of the outputs of the first and second counter, means controlling the gate circuit to inhibit the passage therethrough of the pulse of the first counter based upon the output of the detector circuit, means producing a second pulse based upon the output of the detector circuit, and means stopping the operation of the second counter when the second pulse is in phase with the second signal, whereby the time interval between the first and second pulses is obtained when the second counter is in its inoperative condition.

3,665,310
ADAPTER FOR CONVERTING AN AM RADIO RECEIVER INTO A CITIZENS BAND CHANNEL 9 TRANSCEIVER

Horace A. Tweed, Jr., Vallejo, Calif., assignor to Sylvania Electric Products Inc.

Filed June 18, 1970, Ser. No. 47,428
Int. Cl. H04b 1/54
U.S. Cl. 325—21 2 Claims

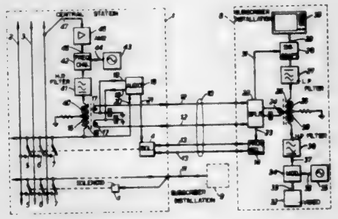


This adapter circuit comprises a microphone, a transmitter operating only at 27.065 MHz, and a down converter. It can be used with any conventional amplitude modulated (AM) radio set in an automobile without necessitating any physical change in the car radio. It is connected between the existing cable plug on the antenna and the antenna jack on the radio. During normal operation, signals received by the antenna are directly connected to the radio which is responsive only to signals having frequencies in the AM radio broadcast band. Emergency messages are transmitted at 27.065 MHz by actuating a switch that connects the antenna to the output of the transmitter, and talking into the microphone. Received signals having frequencies of 27.065 MHz are reproduced by down converting such signals to approximately 1,600 kHz signals that are coupled to the radio, the radio being manually tuned to the latter frequency.

3,665,311
WIRED BROADCASTING SYSTEMS

Eric J. Gargini, West Drayton, England, assignor to Communications Patents Limited

Filed June 2, 1970, Ser. No. 42,773
Claims priority, application Great Britain, June 6, 1969, 28870/69
Int. Cl. H04h 1/02
U.S. Cl. 325—53 25 Claims

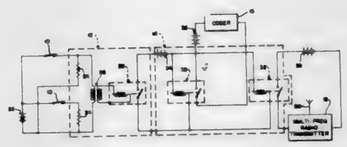


Wired broadcasting systems provide for originating programs at the subscriber station for transmissions over the same signal conductors for receiving programs. Central equipment makes the subscriber originated programs available for other subscribers.

3,665,312
RADIO ALARM SYSTEM

Michael Jarvis, Livingston, N.J., assignor to Paul Goldman, Livingston, N.J., a part interest

Filed Oct. 6, 1969, Ser. No. 864,077
Int. Cl. H04b 1/00
U.S. Cl. 325—54 9 Claims

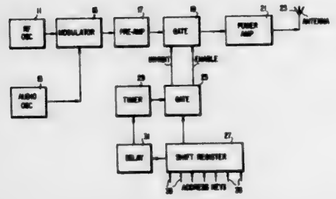


An alarm and monitoring system for a vehicle in which a transmitter is actuated upon illegal entry into or theft of the vehicle. The transmitter sends out a coded signal, which identifies the vehicle, sequentially on different frequencies with a predetermined and different time interval between each transmission. The received coded signals are used to located the vehicle by triangulation.

3,665,313
LOCATION IDENTIFICATION SYSTEM

Robert L. Trent, Marblehead, Mass., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed July 13, 1970, Ser. No. 54,270
Int. Cl. H04b 1/00
U.S. Cl. 325—55 26 Claims



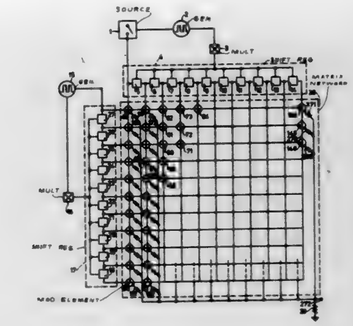
This disclosure describes a location identification system for identifying a particular ground location from among a plurality of ground locations. Each ground location includes a transmitter that transmits a continuous tone signal when the transmitter is activated. Each transmitter also includes a binary encoder for encoding the continuous tone signal at spaced intervals. Each binary code uniquely identifies the particular transmitter with which it is associated. An aircraft flying above ground locations carries a receiver for receiving the continuous tone signal transmitted by an activated transmitter, and a decoder for decoding the binary encoded portion of the signal. A display device is provided for displaying the identity of the ground location determined as a result of decoding the encoded portion of the signal.

3,665,314
COMMUNICATIONS SYSTEM COMPRISING A MATRIX NETWORK OF MODULATION ELEMENTS

Peter Leuthold, Erlenbach, Switzerland, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 21, 1970, Ser. No. 65,968
Claims priority, application Switzerland, Aug. 21, 1969, 12694/69
Int. Cl. H04b 1/04
U.S. Cl. 325—141 20 Claims

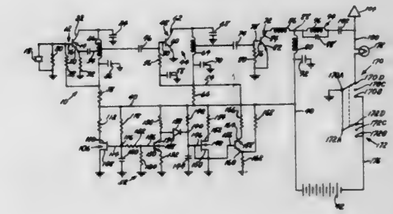
In a transmission system a shift register controlled modulator matrix is employed to filter unwanted modulation products from the frequency band.



3,665,315
SIGNAL TRANSMITTER

Stephen G. Glatzer, 541 Pelham Road, New Rochelle, N.Y., and Rocco Scappatura, 102 Lawn Terrace, Mamaroneck, N.Y.

Filed Sept. 3, 1969, Ser. No. 854,882
Int. Cl. H04b 7/00
U.S. Cl. 325—178 11 Claims



A signal transmitter for transmitting the international distress signal which includes a generator for simultaneously producing the military and civil distress signals having the appropriate frequencies. An antenna is provided which is tuned to a frequency intermediate the military and civil signal frequencies. An impedance matching network is connected between the antenna and the generator which is adapted to produce the conjugate impedance of the antenna at the military and civil signal frequencies so that the signals are transmitted with substantially maximum power.

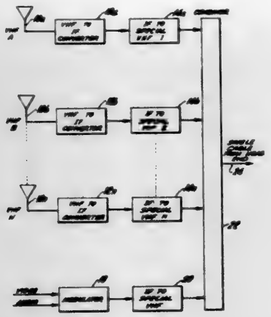
3,665,316
MAXIMUM CHANNEL UTILIZATION USING SINGLE ENDED AMPLIFIERS IN A FREQUENCY BAND GREATER THAN ONE OCTAVE

Michael F. Jeffers, Flourtown, Pa., assignor to Jerrold Electronics Corporation, Hatboro, Pa.

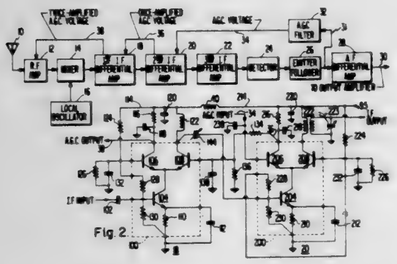
Filed July 6, 1970, Ser. No. 52,511
Int. Cl. H04b 1/06
U.S. Cl. 325—308 10 Claims

A CATV system is disclosed in which the channels are assigned so that all second order distortion components fall

within a sideband in a TV channel, such that the resulting interference is not perceptible to the eye. The channel assignment is selected by utilizing odd multiples of the sideband frequency as the video carrier for each channel.



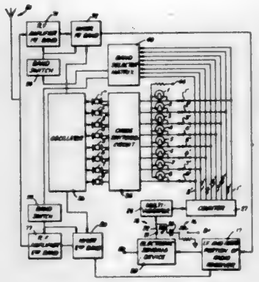
3,665,317
SEQUENTIAL AGC SYSTEM FOR SIGNAL RECEIVER
Robert Palmer Crow, Los Angeles, Calif., assignor to RCA Corporation
Filed Apr. 7, 1970, Ser. No. 26,372
Int. Cl. H04b 1/28
U.S. Cl. 325—319 9 Claims



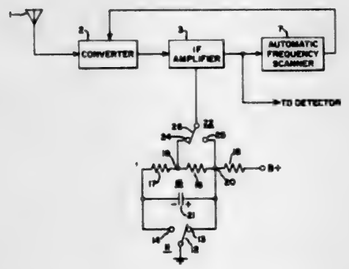
The use of one or more differential amplifiers in a cascaded carrier-frequency (IF and/or RF) amplifier for performing signal amplification in the forward direction of the cascaded amplifier, while simultaneously performing DC amplification of an AGC voltage derived from the output of the detector stage of the receiver in the backward direction of the cascaded amplifier.

3,665,318
RADIO RECEIVER
Stephen J. Hoffman, Indianapolis, and Louis E. Schonegg, Brownsburg, both of Ind., assignors to Regency Electronics, Inc., Indianapolis, Ind.
Filed Mar. 18, 1970, Ser. No. 20,669
Int. Cl. H04b 1/32
U.S. Cl. 325—470 8 Claims

An FM monitor type radio having indicator lights on its front face to indicate the particular channel to which the receiver is tuned. A digital counter driven by a multivibrator cycles the radio in order, through its various channels. The multivibrator is switchable from a free running state to a state in which it is actuated to drive the counter one position by means of a manual selector switch. The number of channels to which the radio tunes can be controlled by opening or closing one or more of a plurality of switches each of which is provided for a respective one of the channels. Each of the channels of the receiver is capable of being pretuned to a desired frequency in one or the other of two separate frequency bands.



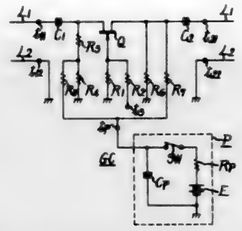
3,665,319
STATION DISENGAGEMENT AND SENSITIVITY CIRCUIT FOR SCAN TUNED RADIO RECEIVERS
Joseph A. Worcester, Frankfort, N.Y., assignor to General Electric Company
Filed Dec. 29, 1970, Ser. No. 102,305
Int. Cl. H04b 1/32
U.S. Cl. 325—470 8 Claims



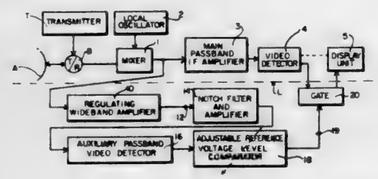
Upon scan initiation, a voltage is supplied to an amplifier of a scan tuned radio receiver to drive it into saturation and remove an input from the receiver's automatic frequency scan system, causing it to disengage from a previously tuned station. The source of said voltage also charges a control capacitor that, upon having the reference connection thereto reversed, selectively provides a voltage of opposite polarity to that originally supplied for reducing the sensitivity of the amplifier during the duration of the scan. Shortly after a station is encountered, full sensitivity is restored when the capacitor discharges.

3,665,320
GATE CIRCUIT
Mitsuo Ohsawa, Fujisawa, and Shinziro Mino, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed July 7, 1970, Ser. No. 52,954
Claims priority, application Japan, July 11, 1969, 44/55240
Int. Cl. H04b 1/16
U.S. Cl. 325—478 7 Claims

A gate circuit utilizing a field effect transistor which has very rapid turn-off and turn-on time so that it may be used as a muting or squelch circuit in a communication system, for example.



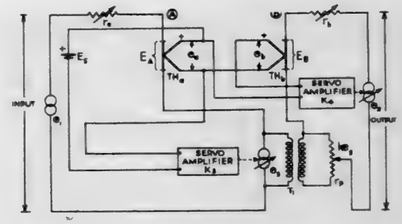
3,665,321
SYSTEM FOR PASSING ON-FREQUENCY SIGNALS AND FOR GATING-OUT OFF-FREQUENCY SIGNALS
Lewis Michaik, Buffalo, and William G. Tapply, West Seneca, both of N.Y., assignors to Sierra Research Corporation
Continuation-in-part of application Ser. No. 603,865, Dec. 22, 1966, now abandoned. This application July 2, 1969, Ser. No. 842,799
Int. Cl. H04b 1/10
U.S. Cl. 325—478 15 Claims



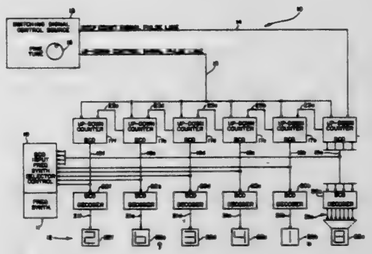
A system for accepting signals of a desired frequency as well as undesired signals of other frequencies together therewith, examining the desired and undesired frequency components with regard to their intensities and using the results thereof to control gating means in the main receiver output path to pass signals whenever the relative levels of desired and undesired signal components fall within a satisfactory range. This determination is made by regulating a composite of both signal components to a constant level, and then comparing the level of a selected one of these components of the regulated composite with a preadjusted reference threshold level to derive a gate control signal.

3,665,322
PRECISION CONVERTER/AMPLIFIER UTILIZING A COMPARATOR NETWORK AND A PAIR OF INTERNAL SIGNAL SOURCES
Loebe Julie, New York, N.Y., assignor to Julie Research Laboratories, Inc., New York, N.Y.
Continuation of application Ser. No. 627,846, Apr. 3, 1967, now abandoned. This application June 17, 1970, Ser. No. 47,144
Int. Cl. G06g 7/20
U.S. Cl. 328—3 17 Claims

A precision converter or power amplifier of electrical signals comprised of a comparator bridge having a pair of isolated circuit branches matched for a particular voltage level. An input signal *a* is applied to one branch, a second signal *b* after amplification or attenuation by a factor *k* is applied to the other branch, and a third signal *c* is coupled to both branches so as to add either in linear or in rms fashion to each of the signals *a* and *b* respectively. The amplitudes of the two signals *b* and *c* are adjusted so that, for any value of input signal *a*, the matched operating level is restored across both branches, whereupon $ka = b$ and the desired signal conversion between input and output is obtained. In an rms converter embodiment, each of the circuit branches contains a power-sensitive element (e.g., a thermistor or thermocouple), the third signal *c* has a waveform which is non-coherent with the waveforms of both *a* and *b*, and the respective signals add in rms fashion so that ka rms $= b$ rms.



3,665,323
PROPORTIONAL DIGITAL CONTROL FOR RADIO FREQUENCY SYNTHESIZERS
Max E. Peterson, Richardson, Tex., assignor to Collins Radio Company, Dallas, Tex.
Filed May 10, 1971, Ser. No. 141,895
Int. Cl. H03b 19/00
U.S. Cl. 328—14 12 Claims

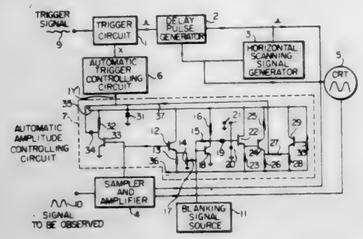


A proportional digital control system for radio frequency synthesizers using binary coded decimal control to a frequency synthesizer tunable in contiguous small interval increasing or decreasing steps throughout the frequency bandwidth range of operation. A fine tune dial switch circuit generates a two signal output with one a step count signal and the other an up-down control signal generated only upon rotation of the fine tuning dial and with the signal pulse rates thereof a direct function of the rate of fine tune dial turning. The up-down control signal is an up or down signal input to up-down pulse counting to BCD output circuits as determined by phase relation thereof to the step count signal and with the phase determined by direction of fine tune dial turning clockwise for up count and counterclockwise for down count. The up-down counters to BCD are in a chain circuit with carry over circuitry for up-down count transition from one digit location to another that in some equipments is paralleled by supplemental band switching circuits. The BCD outputs of the up-down counter chain circuits are applied to a frequency synthesizer circuit and to readout display device circuits.

3,665,324
TRIGGER CONTROLLING METHOD

Naohisa Nakaya, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed June 12, 1970, Ser. No. 45,795
Claims priority, application Japan, July 10, 1969, 44/54079
Int. Cl. H03k 5/00
U.S. Cl. 328—63 8 Claims

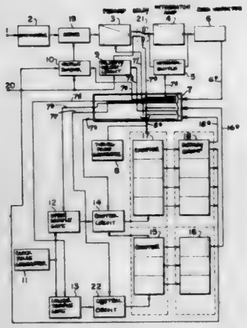


An improved trigger controlling method of the present invention uses a memory circuit for storing a signal which is proportional to the differentiated waveform of a sampled observing signal, and the differentiated waveform is controlled by the signal stored in the memory circuit. As a result of this, the improved method of the present invention provides a trigger signal which is obtained automatically and in a stable condition, an output pulse synchronized with an input observing signal for all magnitudes of the input observing signal which is to be applied to a sampling device such as a sampling oscilloscope.

3,665,325
VOLTAGE COMPARATOR

Ikuo Takeda, and Takashi Suzuki, both of Tokyo, Japan, assignors to Takeda Riken Industry Company Limited, Tokyo, Japan

Filed July 8, 1969, Ser. No. 839,892
Claims priority, application Japan, July 10, 1968, 43/47789
Int. Cl. G06g 7/14
U.S. Cl. 328—146 1 Claim

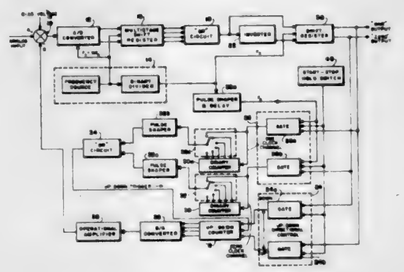


This invention relates to a voltage comparator of a high resolving power and high accuracy wherein an input voltage and a reference voltage are respectively integrated to indicate as a digital quantity the ratio of times required for the integrated values to become proper equal values, an analog value corresponding with this digital quantity is an then multiplied by the reference voltage to obtain an analog error voltage, the difference between said error voltage and the reference voltage is amplified by a scaling factor, and said amplified error voltage is again integrated against a reference voltage to obtain a second ratio of times represented by a digital quantity and these two digital quantities representing said ratios of times are synthesized to provide most-significant digits and least-significant digits interrelated by said scaling factor to represent the input voltage as compared with the reference voltage.

3,665,326
AUTOMATIC THRESHOLD DETECTOR WITH SELECTABLE PERCENTAGE OF THRESHOLD CROSSINGS

Dean R. Sullivan, Lakeside, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Mar. 30, 1970, Ser. No. 24,015
Int. Cl. H03b 3/02
U.S. Cl. 328—151 5 Claims

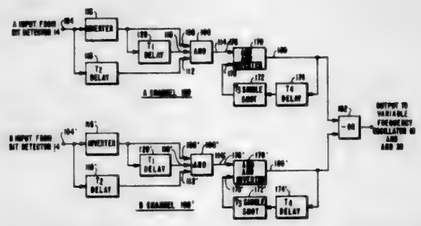


An automatic threshold detector provides a variable-threshold correction voltage that allows a selectively predetermined percentage of an incoming signal to exceed a threshold voltage when the signal is sampled at a given rate. The detector generates a logic "one" for each crossing and a "zero" for each non-crossing of the threshold. The "one" and "zero" counts are then converted by digital techniques into a feedback correction voltage to maintain the selectively predetermined percentage of "ones" at the output.

3,665,327
NOISE DISCRIMINATOR FOR DIGITAL DATA DETECTION SYSTEM

Peter I. Prentky, Los Gatos, and Alonzo A. Wilson, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 14, 1969, Ser. No. 876,948
Int. Cl. H03k 5/12
U.S. Cl. 328—163 15 Claims

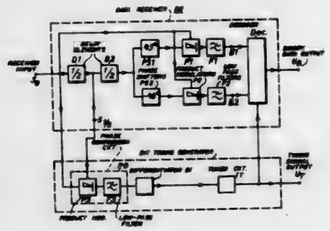


In a digital data detection system in which a readout signal derived from a magnetic recording of the data in encoded form is differentiated to identify the various data and clock bits represented by the peaks thereof, a discriminator is provided for eliminating shoulder noise pulses from the differentiated signal prior to the separation of the various zero-crossings thereof into "ones" and "zeros" at the output. The discriminator includes two symmetrical complementary channels through which the data and clock bits are alternately passed. The data and clock bits are delayed at the channel inputs for a period of time at least equal to the duration of the shoulder noise pulses to eliminate those noise pulses which occur prior to a valid date or clock bit. Each channel is inhibited for a selected period of time after the occurrence of a valid data of clock bit therein to eliminate noise pulses occuring subsequent to the valid bits.

3,665,328
SYNCHRONIZING SIGNAL GENERATOR FOR USE WITH A DIFFERENTIALLY MULTIPHASE MODULATED SIGNAL RECEIVER

Walter Herbert Erwin Widl, Bandhagen, Sweden, assignor to Telefonaktiebolaget LM Ericson, Stockholm, Sweden

Filed June 24, 1970, Ser. No. 49,255
Claims priority, application Sweden, July 2, 1969, 9381/69
Int. Cl. H03d 3/02
U.S. Cl. 329—110 3 Claims



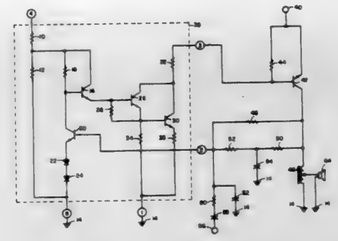
In data receivers used for receiving and demodulating a differentially multiphase modulated signal, i.e. a signal in which the phase position is changed with definite intervals wherein the magnitude of the phase change determines the information contents of the signal received, there is included an arrangement for producing a control signal upon the occurrence of such phase changes. The arrangement includes a phase comparison circuit having one input supplied by the input of the receiver and another input connected to the output of a delay circuit connected to the receiver input. The delay of said delay circuit is approximately equal to half of the interval in which the phase position is changed. The output signal value of the phase comparison circuit is changed at the beginning of each interval and the control signal is obtained from a differentiating circuit connected to the output of the phase comparison circuit.

3,665,329
AUDIO FREQUENCY AMPLIFIER

William F. Davis, Tempe, and Thomas M. Frederiksen, Scottsdale, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 23, 1969, Ser. No. 887,531
Int. Cl. H03f 3/42, 3/04
U.S. Cl. 330—19 11 Claims

An amplifier is provided to be used as a driver for a class A power transistor amplifier particularly adapted to be operated in the audio frequency range. The performance of the complete audio system is characterized by high openloop gain and minimized phase shift around the closed feedback loop. This allows excellent frequency performance with low distortion over the entire audio range at power levels greater than one watt. The driver portion of the amplifier allows the overall performance of the audio system to be independent of B variations of the power transistor and B variations of the

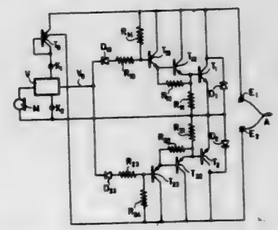


transistors used in the driver itself. The driver portion can easily be fabricated as an integrated circuit if desired.

3,665,330
TRANSISTOR AMPLIFIER INSENSITIVE TO THE POLARITY OF THE SUPPLY VOLTAGE

Posthathamby Tharmaratnam, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 10, 1970, Ser. No. 53,940
Claims priority, application Netherlands, Nov. 11, 1969, 6916988; May 20, 1970, 7007313
Int. Cl. H23f 3/10
U.S. Cl. 330—24 3 Claims



A transistor amplifier comprising at least two output transistors having their emitters connected together, their collectors connected to different D-C supply voltages and diodes connected across the emitter and collector terminals of each transistor. In accordance with the polarity of the supply voltage, either one of the transistors can be made to cooperate with the diode across the other transistor that is not operating thereby resulting in amplification of an input signal independent of the polarity of the supply voltage. The circuit is suitable for use in integrated circuits.

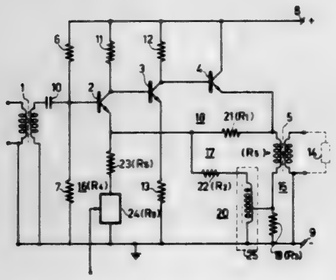
3,665,331
DEVICE COMPRISING A TRANSISTOR AMPLIFIER HAVING AN INPUT AMPLIFYING STAGE AND AN OUTPUT AMPLIFYING STAGE

Robartus Pieter Wiarda, and Willem Van Dorn, both of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of application Ser. No. 770,189, Oct. 24, 1968. This application Apr. 3, 1970, Ser. No. 22,143
Claims priority, application Netherlands, Nov. 6, 1967, 6715086
Int. Cl. H03f 1/34
U.S. Cl. 330—28 2 Claims

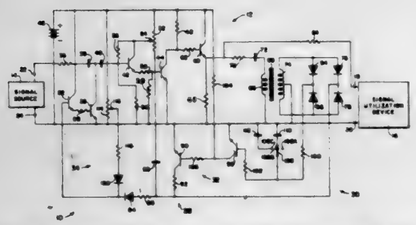
The invention relates to a device comprising a transistor amplifier having an input amplifying stage an output amplifying stage and an output circuit including an output transformer transistor amplifier has a combined voltage and current negative feedback. The output circuit of the output amplifying stage is coupled with the emitter circuit of the input

amplifying stage through a coupling network in which the voltage of the output circuit is applied through a voltage coupling circuit for the negative voltage feedback and the voltage proportional to the current through the output circuit across a series resistor in series with the output transformer is



applied through a current coupling circuit for the negative current feedback to the emitter circuit. The negative current feedback circuit includes furthermore an adjustable control-resistor for controlling the amplification factor of the transistor amplifier.

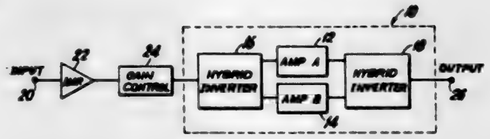
3,665,332
AVC SYSTEM
Richard H. Campbell, Rockford, Ill., assignor to Webster Electric Company, Inc., Racine, Wis.
Filed Apr. 20, 1970, Ser. No. 30,111
Int. Cl. H03g 3/30
U.S. Cl. 330—29 **11 Claims**



An audio amplifier is provided with an automatic volume control system including an unpolarized junction transistor coupled in shunt with the amplifier input terminals and serving as a bidirectional variable resistance shunt having a resistance level controlled in accordance with an AVC operating signal appearing upon a capacitor charged by a detecting circuit in accordance with the amplifier output signal amplitude. Release time of the AVC system is determined by a variable resistance device connected in a capacitor discharge path, and the device is controlled to have decreasing resistance as amplifier output signals decrease. Sensitivity of the amplifier is controlled by an adjustable circuit providing a residual, nonvarying signal component to the control electrode of the unpolarized transistor to establish a maximum resistance level.

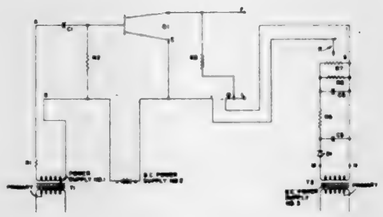
3,665,333
PUSH-PULL AMPLIFIER
Henry Yastrov, Langhorne, Pa., assignor to Jerrold Electronics Corporation, Hatboro, Pa.
Filed May 5, 1970, Ser. No. 34,704
Int. Cl. H03f 3/60; H03k 3/28
U.S. Cl. 330—53 **5 Claims**

In an improved push-pull amplifier, the input and output phase inverters each include 3db hybrid splitters with a 180° phase shift transformer in one output leg and a 0° phase shift transformer in the other leg. Each phase inverter is separate-



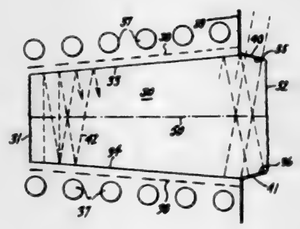
ly mounted on a plug-in circuit board having provisions for releasable connection with the inputs and outputs of the amplifier sections.

3,665,334
BIAS VOLTAGE SUPPLY
Lloyd D. DeCoster, 63 Wall Street, Bridgewater, Mass.
Filed May 12, 1969, Ser. No. 825,127
Int. Cl. H03f 3/04
U.S. Cl. 330—40 **1 Claim**



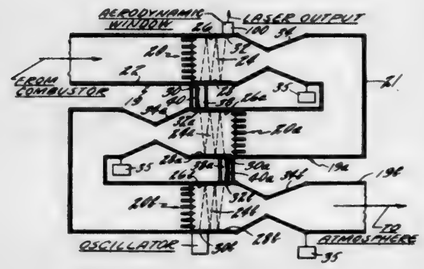
My invention applies an unmodulated A. C. voltage, having the form of a sine-wave, and derived from standard household electricity, commonly known as line voltage, to the input of a standard transistor configuration, namely that of the grounded-emitter configuration, which amplifies both voltage and current.

3,665,335
COOLABLE SLAB LASER
Kiyo Tomiyasu, Paoli, Pa., assignor to General Electric Company
Filed Jan. 26, 1970, Ser. No. 5,595
Int. Cl. H01s 3/06
U.S. Cl. 331—94.5 **6 Claims**



A coolable slab laser is disclosed wherein the effects of thermal gradients within the laser element are minimized. The laser beam is made to traverse the longitudinal axis of the laser element a plurality of times in a zig-zag fashion so as to travel parallel to the thermal gradient as closely as possible. The laser element itself is an eight sided solid with beam entrance and exit areas on the same end of the element.

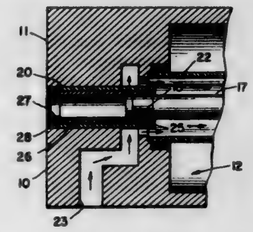
3,665,336
LASER DEVICE
George H. McLafferty, Manchester, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed May 23, 1968, Ser. No. 731,659
Int. Cl. H01s 3/05, 3/09
U.S. Cl. 331—94.5 **6 Claims**



A multistage laser device has in combination a plurality of gas dynamic lasers to obtain a high level of laser power output. A combustor having an exhaust duct with the proper gas constituents is directed into a supersonic nozzle and expanded thereby. During the expansion process a population inversion occurs in the gas constituents which provides a laser action which occurs in a laser region downstream of the expansion nozzle. The gases are then diffused in a variable geometry diffuser and directed into the second supersonic nozzle and re-expanded thereby. A second laser region is formed and the gases are then diffused in a second variable geometry diffuser. This diffuser directs this flow into a third supersonic nozzle and expands it again. A third laser region is formed and the gases are diffused again in a third variable geometry diffuser and directed into the atmosphere or to a turbine for obtaining shaft power necessary for pumps or compressors. The gas dynamic lasers are positioned so that an oscillator can direct a beam into the lasing region of one gas laser through an opening and have it amplified by action therein between two reflecting surfaces and then directed to the exterior of the region through an opening and passed through an interconnecting optical cavity where it is redirected to the lasing region of a second gas laser. The beam is re-amplified by the two reflective surfaces in this region and directed to a second interconnecting optical cavity where the beam is then redirected into the third lasing region of another gas laser. The beam is re-amplified by the reflective surfaces in this third region and directed as a laser output beam through an aerodynamic window. While the gas lasers shown are of the expansion type, it is probably desirable to employ a supersonic-mixing gas dynamic laser configuration for the first unit downstream of the combustor. This is because the supersonic-mixing laser avoids many of the losses associated with rapid kinetic rates at high pressures.

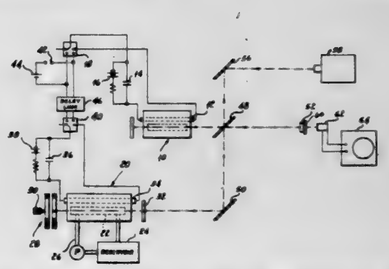
3,665,337
METHOD AND MEANS FOR SEALING LASER RODS
Walter Koechner, Malibu, Calif., assignor to Union Carbide Corporation, New York, N.Y.
Filed July 17, 1970, Ser. No. 55,891
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 **4 Claims**

A metallic film in the form of a band is provided about each end of a laser rod. These metal bands in conjunction with a specially desiged rod holder enable conventional elastomer type O-rings to be used to seal the rod in the laser head cavity. Heretofore, such O-rings could not be used because of deterioration resulting from the high intensity pump radiation within the cavity. By means of the metal



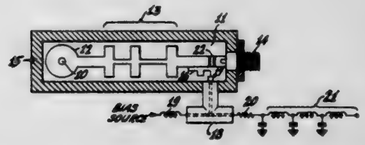
bands and holder, the O-rings are shielded from such radiation.

3,665,338
VARIABLE FREQUENCY INFRA RED SOURCE
Robert B. Harris, and John A. MacDonald, both of Cherry Hill, N.J., assignors to Synergetics Research, Inc., Sea Girt, N.Y.
Filed Oct. 28, 1969, Ser. No. 871,885
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 **6 Claims**



A variable frequency infrared source in which the output of a laser of a fixed wave length and the output of a variable wave length laser are mixed in a nonlinear medium to produce an output containing a separable component in the infrared region, the frequency of which can be varied over substantially the entire infrared spectrum by varying the wave length of the variable laser.

3,665,339
SELF-PULSED MICROWAVE OSCILLATOR
Shing-Gong Liu, Princeton, N.J., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Sept. 25, 1970, Ser. No. 75,416
Int. Cl. H03b 7/14
U.S. Cl. 331—107 R **10 Claims**

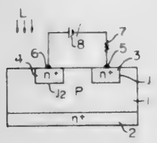


A pulse forming network, comprising a delay device and a matching resistor, is used to control the bias signal necessary for activating a negative resistance semiconductor device into microwave oscillations. The delay device is designed to control the duration of microwave oscillation and the matching resistor controls the period between output pulses.

3,665,340
PHOTOSENSITIVE SOLID OSCILLATOR

Kiyoshi Kojima, and Toshiro Abe, both of Osaka, Japan, assignors to Matsushita Denko Kabushiki Kaisha, Osaka, Japan

Filed Dec. 30, 1969, Ser. No. 889,236
Claims priority, application Japan, Jan. 5, 1969, 44/1264; Feb. 14, 1969, 44/11180; Mar. 31, 1969, 44/25113; Apr. 24, 1969, 44/32102; Apr. 30, 1969, 44/33831
Int. Cl. H03b 7/06
U.S. Cl. 331—107 R 4 Claims

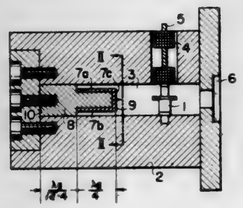


A photosensitive solid oscillator, which comprises an impurity layer formed on a surface of a semi-conductor wafer, two separate impurity layers formed on the other surface of said wafer as spaced along the surface from each other, and electrodes respectively provided at least on each of the latter two impurity layers. The respective impurity layers on both surfaces of the wafer are of a reversely conducting type semiconductor with respect to said wafer and contain an impurity of a higher concentration than in the wafer.

3,665,341
TEMPERATURE COMPENSATED CAVITY FOR A SOLID STATE OSCILLATOR

Kenji Sekine, Hachioji, and Yoichi Kaneko, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 20, 1971, Ser. No. 107,944
Int. Cl. H03b 7/14
U.S. Cl. 331—107 R 8 Claims



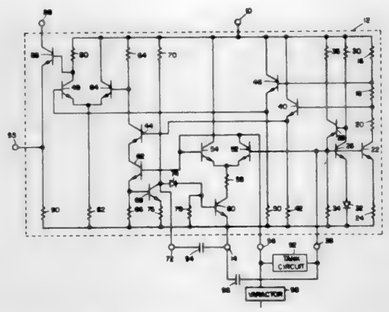
A temperature compensated cavity for a solid state oscillator in which part of the conductive plates forming the cavity resonator is constituted by a movable plate, said movable plate being secured to one end of a dielectric rod having a large coefficient of linear expansion, the end of which is supported extensibly, and the other end of which is secured to the extended part of said cavity resonator.

3,665,342
RESONANT CIRCUIT TRANSISTOR OSCILLATOR SYSTEM

L. J. Reed, Mesa, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 4, 1970, Ser. No. 86,685
Int. Cl. H03b 3/02, 5/12
U.S. Cl. 331—109 8 Claims

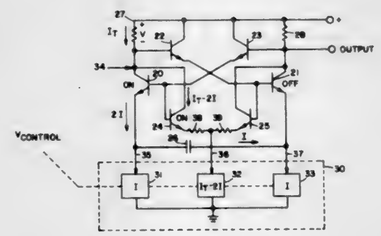
An oscillator including a bias source which may be applied to a chip by integrated circuit techniques is disclosed. The oscillator has a tank circuit for determining frequency and has an automatic gain control for keeping the amplitude of the oscillator output constant. The oscillator includes an output circuit which makes it possible to use the oscillator as a source of input waves for an emitter coupled logic circuit.



3,665,343
VOLTAGE CONTROLLED MULTIVIBRATOR

James Elbert Thompson, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 9, 1970, Ser. No. 87,909
Int. Cl. H03k 3/282
U.S. Cl. 331—113 R 5 Claims



A voltage controlled multivibrator having an output frequency which is a linear function of a control voltage over the entire operating range of the device is disclosed in which the output frequency is a linear function of the current drawn by the multivibrator circuit. The multivibrator includes a variable current source to regulate its output frequency in which current through the variable current source is a linear function of the control voltage.

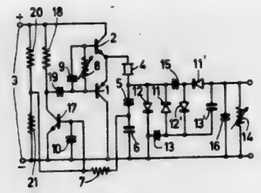
3,665,344
SELF-OSCILLATING VOLTAGE CONVERTER

Engel Roza; Herman J. G. M. Benning, and Anthonius J. J. C. L. Lommers, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 22, 1969, Ser. No. 852,398
Claims priority, application Netherlands, Aug. 22, 1968, 6812023
Int. Cl. H03b 5/36
U.S. Cl. 331—116 R 6 Claims

A self-oscillating voltage converter including a pair of complementary transistors connected in single-ended push-pull configuration without the use of a transformer. The first transistor is shunted by a piezo-electric two-terminal device

in series with a relatively large capacitor, across which an output alternating voltage at the resonant frequency of the

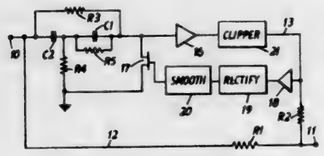


device is produced and fed back to both transistors through an R-C network.

3,665,345
COMPRESSORS AND EXPANDERS FOR NOISE REDUCTION SYSTEMS

Ray Milton Dolby, London, England, assignor to Dolby Laboratories Inc., New York, N.Y.

Filed July 15, 1970, Ser. No. 55,201
Claims priority, application Great Britain, July 21, 1969, 36,466/69
Int. Cl. H04b 1/64; H03h 7/10; H03g 5/16
U.S. Cl. 333—14 10 Claims



The invention concerns noise reduction systems and compressors and expanders therefor in which the overall characteristic is formed by combining the output of a further path additively or subtractively with the output of a main, straight-through path, the further path including a filter and limiter.

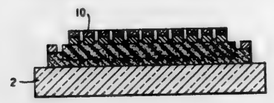
In this improvement the filter is essentially all-pass at low levels and only becomes high- pass or low-pass at higher levels. At low levels noise reduction is therefore wide-band.

Applicable to tape and disc audio noise reduction.

3,665,346
THIN FILM DISTRIBUTED RC STRUCTURE

William H. Orr, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Original application Sept. 16, 1966, Ser. No. 579,953, now Patent No. 3,542,654. Divided and this application Oct. 16, 1969, Ser. No. 871,200
Int. Cl. H03h 7/10; H05k 1/16
U.S. Cl. 333—70 CR 3 Claims

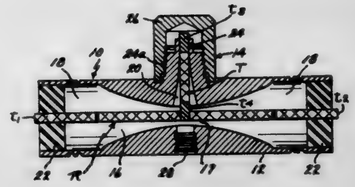


This disclosure describes a thin film distributed RC circuit component consisting of an inert substrate, an anodizable resistive film, an oxide dielectric layer produced upon the film and a conductive counterelectrode deposited on the dielectric layer. The resistive film is a suitable refractory metal. A pattern of spaced apertures are etched through the conductive counterelectrode to but not beyond the underlying oxide layer. The apertures must be sufficiently large to pass an anodizing solution. By selecting the thickness and resistor pattern of the anodizable film, as well as the size and spacing of the apertures, the resulting component is readily adjusted as to frequency response or other characteristics.

3,665,347
T-ATTENUATOR OR COUPLING NETWORK HAVING AN IDENTICAL CHARACTERISTIC IMPEDANCE FROM EITHER END

Jon E. Barth, Twinsburg, Ohio, assignor to Barth Electronics, Inc., Cleveland, Ohio

Filed Mar. 3, 1970, Ser. No. 16,074
Int. Cl. H01p 1/22, 5/02
U.S. Cl. 333—81 A 1 Claim



An attenuator or pad device which has an outer conductor in the form of a generally T-shaped body, formed with an interior cavity extending longitudinally therethrough. The cavity is also generally T-shaped in configuration having one part in the form of a double-ended expotential horn having its apex or smallest diameter at the center of the tubular body and extending continuously expotentially outwardly therefrom in opposed longitudinal directions to the outer ends of said body.

A second part of the cavity forming the stem thereof is also generally expotential in form extending from the bottom of said stem outwardly and upwardly to communicate with the double-ended cavity part at its center.

An elongated resistance element defining the inner conductor of the attenuator or pad extends centrally through the cavity and provides an impedance pad which has the same input and output magnitude whereby the device may be utilized as an interstage coupling device.

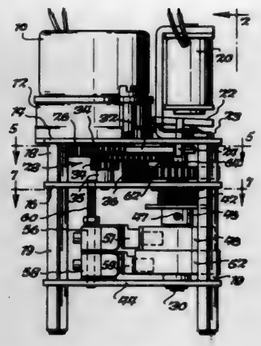
3,665,348
TIME DELAY RELAY

Arthur W. Haydon, Middlebury, and Harry E. Crossley, Cheshire, both of Conn., assignors to Tri-Tech, Inc., Waterbury, Conn.

Filed May 3, 1971, Ser. No. 139,699
Int. Cl. H01h 43/14
U.S. Cl. 335—68 9 Claims

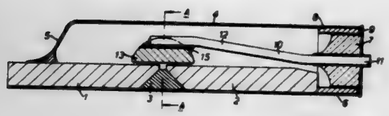
One or more timing switches are operated by cams driven through a gear train by a constant speed motor. After turning through a predetermined cycle a portion of the gear train is disconnected from the motor by a solenoid actuated lever arm and the gear train and cams are reset by a coiled return spring. A pair of projecting lugs mounted on the faces of a pair of adjacent gears engage with each other to stop the reset operation and ensure that the gear teeth are in precise

alignment when the driving motor is reengaged. In one embodiment, the motor is capable of being stopped substantially



instantaneously, thereby allowing the gears to be remeshed after being reset with a minimum of gear slippage.

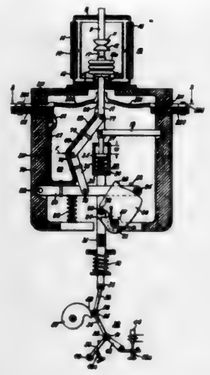
3,665,349
REED SWITCHES
Alan Robert Beavitt, Towcester, England, assignor to Square D Company, Park Ridge, Ill.
Filed Oct. 28, 1970, Ser. No. 84,860
Claims priority, application Great Britain, Oct. 28, 1969, 52,712/69; June 5, 1970, 27,233/70
Int. Cl. H01h 1/66, 51/28
U.S. Cl. 335—154 4 Claims



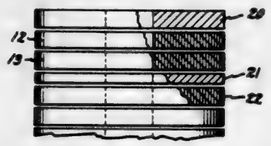
A reed switch comprises a pair of longitudinally spaced members of magnetizable material which constitute an electrical contact of said switch, a magnetizable armature which is movable into and out of bridging contact with said members, and a cantilever, preferably of non-magnetic material on which the armature is mounted, the cantilever being mounted so as to be electrically independent of said members and forming a second electrical contact of said switch.

3,665,350
ELECTRIC CIRCUIT BREAKER WITH ELECTROMAGNETICALLY ASSISTED CLOSING MEANS
Robert V. Klint, Woodstown, N.J., assignor to General Electric Company
Filed Apr. 19, 1971, Ser. No. 135,326
Int. Cl. H04r 71/26
U.S. Cl. 335—195 4 Claims

Discloses an electric circuit breaker that includes electromagnetic assist means for opposing the magnetic contact-repulsion forces developed when a high current flows through the circuit breaker. The electromagnetic assist means comprises flexible conductive means in series with the contacts of the breaker for carrying the inter-contact current through a loop-shaped path where a magnetic closing force is developed on the contacts. Only a minor portion of the total inter-contact current is conducted through the loop-shaped path. For carrying the remaining and major portion of the current, additional flexible conductive means is connected in series with the contacts and in parallel with the loop-shaped path, and this additional conductive means follows a path separate from and independent of the loop-shaped path. Sufficient closing force is obtained from the minor portion of the total current that passes through the loop-shaped path to hold the contacts engaged during the highest current surges for which the breaker is rated.



3,665,351
SUPERCONDUCTIVE MAGNETS
Gordon W. Donaldson; Charles D. Graham, Jr., and Howard R. Hart, Jr., all of Schenectady, N.Y., assignors to General Electric Company
Continuation of application Ser. No. 787,970, Dec. 30, 1968, now abandoned. This application July 9, 1970, Ser. No. 56,175
Int. Cl. H01f 7/22
U.S. Cl. 335—216 9 Claims

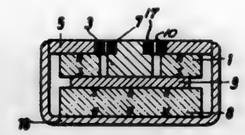


Superconductive tape-wound solenoids used for the production of high magnetic fields are susceptible to being driven into the normal resistance state by flux jumping occurring in the end coils. This is caused by the high concentration of magnetic flux components perpendicular to the planes of the tapes in these coils. The performance of such solenoids may be substantially improved by providing an alternative path for such flux components through a body having a relatively high saturation magnetization such as iron or mild steel closely adjacent the end coils but electrically isolated therefrom.

3,665,352
PERMANENT MAGNET SYSTEM FOR A LOUDSPEAKER
Hermann Dietrich, Willich; Karl Schuler, Dortmund-Hoerde, and Heinz Gunter Meese, Dortmund-Aplerbeck, all of Germany, assignors to Deutsche Edelstahlwerke Aktiengesellschaft, Krefeld, Germany
Filed May 12, 1970, Ser. No. 36,594
Int. Cl. H01f 7/00
U.S. Cl. 335—231 4 Claims

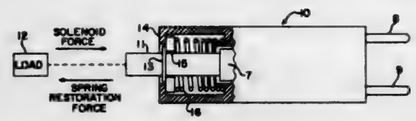
A permanent magnet system is made for a loudspeaker consisting of a rod or ring-formed axial magnetic magnets

and soft iron parts. A portion of the ferromagnetic circuit in the system is made from a mechanically machinable, dense



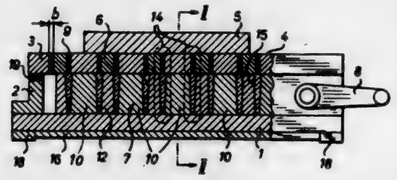
alloyed ferritic steel with higher electrical and lower magnetic resistance than soft iron and a saturation magnetism at least equal to the air gap induction required by the system.

3,665,353
SOLENOID WITH MULTI-RATE RETURN SPRING
Melvin L. Campbell, Marion, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa
Filed Apr. 27, 1971, Ser. No. 137,916
Int. Cl. H01f 7/08
U.S. Cl. 335—258 7 Claims



A multi-rate return spring optimizes solenoid operational efficiency by providing a spring restoring force versus deflection characteristic more nearly matching the inverse-square solenoid stroke versus force characteristic. The spring may be fashioned from two or more contiguous sections having progressively greater winding pitches such that the resulting multiple restoring force rates compositely more nearly match the solenoid force characteristic over a predetermined stroke.

3,665,354
MAGNETIC CHUCK
Maurer Werner, Oberhubstrasse 21, Zollikerberg, Switzerland
Filed Feb. 1, 1971, Ser. No. 111,353
Int. Cl. H01f 7/04
U.S. Cl. 335—295 7 Claims



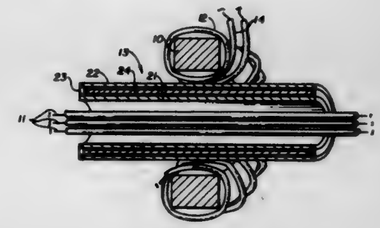
A magnetic chuck in which the magnetic holding force is produced by permanent magnets and mechanically movable means are provided for diverting the magnetic flux and thus facilitate removal of the workpiece in the unclamped position. For suppressing an undesirable magnetic shunt from the magnetic chuck through the machine and therefore preventing magnetization of the tools, such as drills or milling cutters, at least one magnet member is disposed on the lower side of the base plate of the magnetic chuck, having an upper pole of identical polarity to the bottom poles of the permanent magnets, and further the base plate is magnetically isolated relative to the head plate of the magnetic chuck.

3,665,355
COVER FOR PROTECTING COATINGS OF AUTOMOBILES AND THE LIKE
Kenkichi Sasaki, and Hisashi Saikawa, both of Osaka, Japan, assignors to Yamauchi Rubber Industry Co., Ltd., Osaka, Japan
Filed Nov. 16, 1970, Ser. No. 89,897
Claims priority, application Japan, Nov. 19, 1969, 44/110014
Int. Cl. H01f 7/02
U.S. Cl. 335—306 5 Claims



A cover for protecting coatings of automobiles and the like is a composite sheet having a substantial length and width. The composite sheet comprises a flexible sheet, a plurality of magnets arranged in spaced relation to each other on one surface of the flexible sheet, and a cushion material filling the spaces between the magnets. The magnets and the cushion material are secured to the flexible sheet. The magnets are flexible and made of a flexible plastic material having finely divided magnetized magnetic material dispersed therein.

3,665,356
DIFFERENTIAL TRANSFORMER WITH BALANCING MEANS
Ellwood S. Douglas, Orinda, and Wallace W. Wahlgren, Oakland, both of Calif., assignors to The Rucker Company, Oakland, Calif.
Filed Apr. 23, 1969, Ser. No. 818,558
Int. Cl. H01f 17/06
U.S. Cl. 336—73 2 Claims

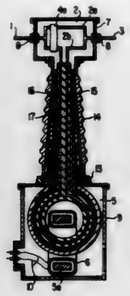


A differential transformer having a balancing sleeve interposed between its primary and secondary windings to provide a substantially identical degree of coupling between each of the primary windings and the secondary winding. The balancing sleeve is made of magnetic and/or electrically conductive materials.

3,665,357
CURRENT TRANSFORMER ASSEMBLY
Denji Tsubouchi, Yokohama, and Kenji Wada, Yamato, both of Japan, assignors to Tokyo Shibaura Electric Company, Ltd., Kawasaki-shi, Japan
Filed Mar. 15, 1971, Ser. No. 124,398
Claims priority, application Japan, Mar. 16, 1970, 45/21542; Mar. 19, 1970, 45/22881; Mar. 28, 1970, 45/25821
Int. Cl. H01f 40/06
U.S. Cl. 336—73 5 Claims

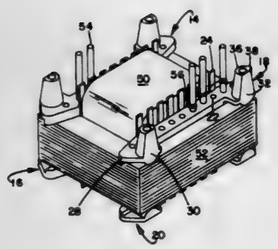
A current transformer assembly includes a shunt circuit connected to a main circuit, the shunt circuit having n number of shunt conductors; a main current transformer for transforming current passing through one of the shunt conductors; and $(n-1)$ number of current balancers having secondary windings connected to each other to enable a cir-

culating secondary current flow. Each of the current balancers is formed of two subcurrent transformers so as to fix the



ratio of the magnitude of the currents conducted through the individual shunt conductors.

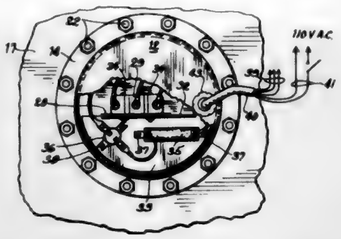
3,665,358
REACTOR COIL FORM
Carl A. Leuck, Costa Mesa, and Fritz H. Schindelbeck, Orange, both of Calif., assignors to Collins Radio Company, Dallas, Tex.
Filed Feb. 9, 1971, Ser. No. 113,845
Int. Cl. H01f 27/02, 27/30
U.S. Cl. 336—96 **7 Claims**



A reactor coil form or bobbin comprising shelves for holding magnetic laminations in place and structured to additionally space the reactor from a potting container. The shelves include irregularities to produce better bonding of the potting compound to the shelves and the magnetic laminations. Further, the coil form includes integral stand-off and mounting projections for positioning and holding a potted reactor to and slightly off a mounting base.

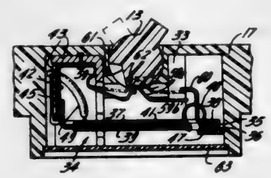
3,665,359
HEATER FOR PRESSURE SWITCH
Erhard E. Alms, 419 Valencia Avenue, Barrington, Ill.
Filed Aug. 10, 1970, Ser. No. 62,291
Int. Cl. H01h 31/00
U.S. Cl. 337—2 **1 Claim**

A flexible diaphragm-type pressure switch sensitive to light pressures on the order of 7 ounces to 11 ounces for use in freezing, moist atmospheres containing plant particles such as husks, cracked seeds and leaves which are likely to cake and freeze on the diaphragm, thus rendering the diaphragm insensitive to its designed pressures. A thermostatically controlled heating element is incorporated in the switch without changing the external dimensions of the switch, the heating element preventing freezing of moisture on the diaphragm



and drying the plant particles accumulated thereon so that they can be carried away by air currents.

3,665,360
THERMOSTAT
Alexander R. Norden, 350 Central Park West, New York, N.Y.
Filed Mar. 11, 1970, Ser. No. 18,492
Int. Cl. H01h 61/00
U.S. Cl. 337—100 **29 Claims**

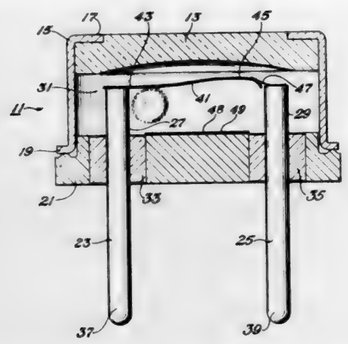


A thermostat for an electric heater containing a thermal relay and a temperature-sensing unit in the same assembly. The thermal relay is mounted above the temperature sensing unit so that the convection air currents resulting from the heat generated by the thermal relay induce room-temperature air to flow past the temperature-sensing unit and this effect speeds up the response of the temperature sensor to the ambient temperature of the room. Heating of the relay contacts due to the relatively heavy heater current helps to induce the convection air currents and does not cause any appreciable "droop." An anticipator resistor and the ambient temperature sensing bimetal are mounted together on a heat-exchange member. This promotes a short cycling time, as required for effective room heating, taking into account the response times of the thermal relay. The operating bimetal of the thermal relay is mounted on a compensating bimetal element to insure operation of the thermal relay in response to the temperature-sensing unit even under extreme weather conditions. A manual control is provided to open the relay contacts and to operate an additional switch for breaking the room-heater curcuit at both sides of the line.

3,665,361
FUSE WITH RETRACTABLE INDICATOR STRIP
Robert A. Williams, 55 Bounty Road East, Fort Worth, Tex.
Filed Aug. 28, 1970, Ser. No. 67,892
Int. Cl. H01h 85/30
U.S. Cl. 337—265 **10 Claims**

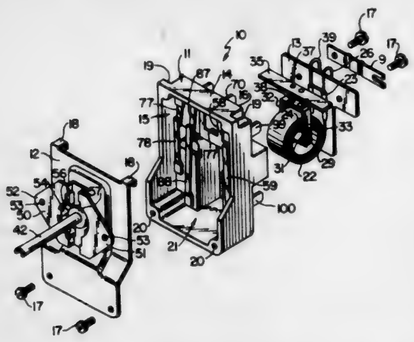
A fuse for monitoring low level electrical energy by means of a strip of resilient material disposed beneath a translucent surface, with one end supported by a portion of a terminal pin inside an enclosure, and the other end supported by a wire to another terminal pin. The strip is formed to have

residual stresses, such that when electrical energy at a predetermined level disintegrates the wire, the strip retracts. The width of the strip is such that the retracted position is



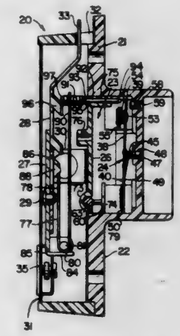
easily detected as contrasted with the extended position. To improve visibility during the night, and often during the day, a light source is used in one embodiment of the invention such that retraction of the strip is detected more easily.

3,665,362
THERMOSTATIC CONTROL DEVICE AND SYSTEM UTILIZING THE SAME
Henry F. Hild; Siegfried E. Manecke, and James L. Shaw, all of Indiana, Pa., assignors to Robertshaw Controls Company, Richmond, Va.
Filed Oct. 7, 1970, Ser. No. 78,737
Int. Cl. H01h 37/28; H01h 37/42
U.S. Cl. 337—322 **26 Claims**



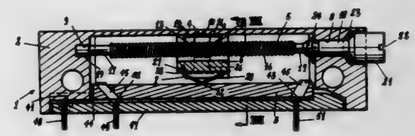
A coiled tube having opposed ends one of which being interconnected to a frame means and the other being movable relative thereto and being interconnected to a temperature sensing bulb whereby expansion and contraction of the fluid in the bulb causes movement of the other end of the tube relative to the frame means. A pair of switch blades are carried by the frame means and normally are moved toward each other for electrical contact therebetween. Control means is carried by the frame means for selectively adjusting the position of one of the switch blades relative to the frame means. The other end of the tube carries means for engaging against the other of the blades to cause movement thereof in a direction away from the one blade when a certain temperature is sensed by the bulb whereby the setting of the control means determines the sensed temperature that will cause the tube to open the switch blades.

3,665,363
THERMOSTATIC CONTROL DEVICE AND SYSTEM UTILIZING THE SAME
David M. Rosenberg, and Siegfried E. Manecke, both of Indiana, Pa., assignors to Robertshaw Controls Company, Richmond, Va.
Filed Oct. 8, 1970, Ser. No. 79,122
Int. Cl. H01h 37/12
U.S. Cl. 337—361 **30 Claims**



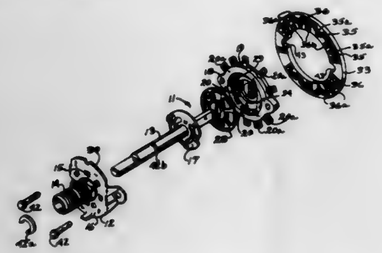
Electrical switch means carried by frame means. A U-shaped bimetal member defining a pair of legs interconnected at adjacent ends thereof by an elbow portion pivotally mounted to the frame means. A plunger means is movably carried by the frame means and is disposed between one of the legs of the bimetal member and the switch means to operate the switch means in relation to the position of the one leg relative to the frame means. Cam means is movably carried by the frame means and acts on the other leg of the bimetal member to adjust the pivotal position of the bimetal member and, thus, the temperature setting that the thermostatic device will open the switch means, the cam means being movable across the longitudinal axis of the other leg of the bimetal member to adjust the same.

3,665,364
FINE-ADJUSTMENT POTENTIOMETER
Jean Maurice, Nice, France, assignor to Societe Francaise De L'Electro-Resistance, Nice, France
Filed June 22, 1970, Ser. No. 47,972
Claims priority, application France, July 18, 1969, 6924642
Int. Cl. H01c 9/02
U.S. Cl. 338—180 **3 Claims**



A fine-adjustment potentiometer which comprises a slider in contact with a resistance track and with a conductive band, a device for controlling the displacement of the slider, and an external protective casing fitted with a detachable cover. The potentiometer comprises a lead-screw which can be operated from the exterior of the casing, a sliding unit through which the lead-screw passes and which comprises a slider applied against the resistor and a rider placed on the side opposite to the slider and slidingly applied against the casing. The sliding unit further comprises resilient arms engaged with the lead-screw and intended to drive the moving system as thus constituted. The actuating device thus permits accurate displacement of the slider and stopping of this latter at the end of travel while preventing any damage.

3,665,365
MULTI-IMPEDANCE ELECTRICAL COMPONENT
Clinton W. Hartman, Elkhart, Ind., assignor to CTS Corporation, Elkhart, Ind.
Continuation of application Ser. No. 741,720, July 1, 1968, now abandoned. This application Feb. 8, 1971, Ser. No. 113,759
Int. Cl. H01c 5/06
U.S. Cl. 338—190 8 Claims



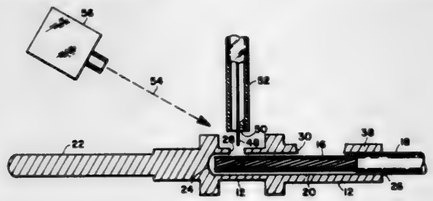
Multi-impedance electrical component having an impedance selecting means assembled with at least one circuit wafer supporting a plurality of operationally discrete film type impedance elements, i.e., film type elements supported in groups on the wafer to form a single integrated mechanical structure, the film type impedance elements being useful in an electrical circuit in lieu of structurally independent resistors, capacitors, and inductors. Film type conductive interconnectors are connected with the operationally discrete impedance elements and a conductive contactor forming part of the impedance selecting means is movable to different contact positions for completing an electrical connection with selected ones of the conductive interconnectors. An indexical detent mechanism cooperates with a shaft for selectively changing the position of the conductive contactor, operation of the shaft causing one or more of the operationally discrete impedance elements to be connected in a circuit between termination points on the wafer. The wafer is formed of heat resistant material, and the operationally discrete impedance elements are formed from film type material and are precisely adjusted to a nominal impedance value by removing portions of the film from the surface of the wafer.

3,665,366
HALL PROBE FOR MEASURING AN AXIAL MAGNETIC FIELD IN A BORE
Helmut Freller, and Magdalena Obitz, both of Nuremberg, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany
Filed July 1, 1969, Ser. No. 838,233
Claims priority, application Germany, July 12, 1968, P 17 66 756.6
Int. Cl. H01c 7/16
U.S. Cl. 338—32 H 8 Claims



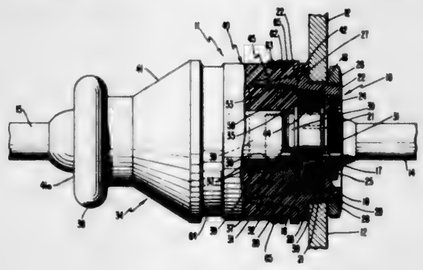
Four molybdenum wires are embedded in a hardened glass rod having a small diameter and resistant to extreme temperature changes. Each of the wires has an end at an axial end surface of the rod coplanar with such surface. A layer of semiconductor material of specific configuration on the end surface of the rod covers the wire ends and has a temperature coefficient of the Hall voltage and the electrical specific resistance which is less than or equal to 0.1 percent per degree Centigrade.

3,665,367
SIDE HOLE TERMINAL
Joseph D. Keller, Winter Park, and Solomon C. Osborne, Orlando Park, both of Fla., assignors to Martin Marietta Corporation, New York, N.Y.
Filed Aug. 20, 1969, Ser. No. 851,714
Int. Cl. H01r 11/06
U.S. Cl. 339—275 T 13 Claims



An electrical terminal designed to be attached to an electrical conductor in the form of a conventional insulated wire or the like, by means of a solder connection. The body portion of the terminal comprises a channel extending into its interior and at least one hole or aperture formed in the side of the body portion intermediate the extremities of the channel and communicating with the interior of the channel. Solder applied to the interior of said channel through the side hole flows about the connector within the channel due to capillary action. Proper filling of the channel with a required minimum amount of solder may be evidenced by the provision of a second hole also formed in the side of the body portion a spaced distance from the first hole and communicating with the interior of the channel such that the presence of solder in the channel may be observed.

3,665,368
ELECTRICAL CONNECTOR
John H. Ellis, Concord, Mass., assignor to The Bendix Corporation
Filed June 17, 1970, Ser. No. 47,076
Int. Cl. H01r 13/52
U.S. Cl. 339—60 R 17 Claims



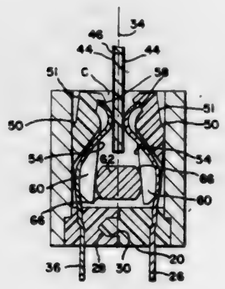
A plug and socket type electrical connector adapted for use under liquid such as water or under damp conditions. The connector has encapsulating means for securely sealing the immersed connector parts when they are in mated position, to maintain the contacts and other elements thereof dry. The encapsulating means is pressure responsive, so that its sealing effectiveness increases as the assembly is subjected to increased external liquid pressure.

3,665,369
MOUNTING DEVICE FOR PRINTED WIRING BOARDS
Charles E. Ester, Glendale, Ariz., assignor to Honeywell Information Systems INc.
Original application Dec. 26, 1967, Ser. No. 693,599, now Patent No. 3,550,062. Divided and this application June 10, 1970, Ser. No. 44,941
Int. Cl. H01r 13/54
U.S. Cl. 339—75 MP 2 Claims



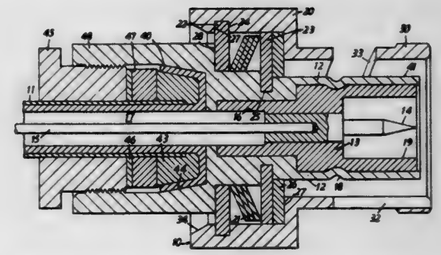
This invention relates to mounting of printed wiring boards, and more particularly to a mounting device for mechanically attaching a printed wiring board to a backpanel.

3,665,370
ZERO-INSERTION FORCE CONNECTOR
Karl Wilhelm Hartmann, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Feb. 8, 1971, Ser. No. 113,421
Int. Cl. H01r 13/54
U.S. Cl. 339—75 MP 4 Claims



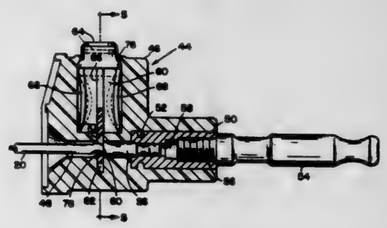
The disclosure relates to a cam actuated ceramic substrate edge connector or the like. The connector has a cavity in one wall for receiving the substrate edge. Located on either side of the inserted substrate edge within the cavity are rocker member actuated electrically conductive leaf spring contacts movable from a first position offering zero-insertion force of the substrate edge to a second position of electrical engagement with circuitry located on opposite substrate surfaces. An elongated cam member pivots from a first position to a second position to actuate the rocker members.

3,665,371
ELECTRICAL CONNECTORS
Jack Cripps, Herne Bay, England, assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed May 19, 1970, Ser. No. 38,701
Claims priority, application Great Britain, May 19, 1969, 25,442/69
Int. Cl. H01r 13/54
U.S. Cl. 339—90 C 11 Claims



Electrical plug-and-socket connectors have plastics locking sleeves, preferably colored for coding, for couping and retaining the connectors to mating connectors, and the sleeves can yield outwardly, have some resilience and are arranged to interlock onto the respective connector bodies with a "snap" action when the sleeves are pushed onto their bodies in assembly. In one connector, the body carries a washer that is a snap-in fit in a groove in the resilient locking sleeve, and in another connector, the resilient locking sleeve has an inwardly-pointing lip which snaps into a space between two shoulders on the body. The sleeve can be one-half of a bayonet- or screw-type coupling.

3,665,372
ELECTRODE RETAINING CHUCK HANDLE ASSEMBLY WITH ADAPTER UNIT
John P. Goode; John J. Seali, both of Rochester, and James P. Sforno, Spencerport, all of N.Y., assignors to Sybron Corporation, Rochester, N.Y.
Original application Jan. 8, 1969, Ser. No. 789,686, now Patent No. 3,597,582. Divided and this application Aug. 3, 1970, Ser. No. 67,640
Int. Cl. H01r 13/54
U.S. Cl. 339—91 R 2 Claims



An electrosurgical chuck handle assembly with an adapter unit is disclosed. The chuck handle assembly is designed to provide a means for retaining the electrode used for cutting or coagulating and is held firmly with provisions for changing the electrode. The chuck handle assembly is constructed of materials having sufficient heat distorting properties to allow the handle to distort whenever the assembly is sterilized by heating, thereby rendering the handle ineffective for further reuse. The distortion feature helps eliminate open circuits in the assembly which occur from repeated heat sterilizing.

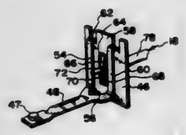
Also disclosed is an adapter unit for receiving the terminal plug of the chuck handle assembly and electrically connecting the terminal plug to an existing electrosurgical unit. The adapter unit contains novel locking means whereby the terminal plug is retained within the adapter unit in an electrical contact position thereby preventing inadvertant disconnection from the electrosurgical unit.

3,665,373

PUSH-IN CONNECTOR SWITCH

Harry M. Vogiesonger, Riverton, Conn., assignor to Dynamics Corporation of America, New York, N.Y.

Filed Feb. 24, 1970, Ser. No. 13,342
Int. Cl. H01n 9/12
U.S. Cl. 339—95 D **11 Claims**



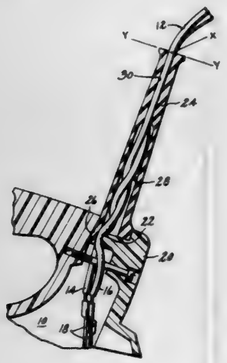
An appliance switch including a push-in electrical terminal safety assembly in which a bared conductor wire is simply inserted endwise in guided relationship transversely through an insulating side wall to be received normal to a spring metal base element held in place by a cover where the bared wire is clamped between the ends of two cooperating aligned and converging spring metal tongues in the base element that are disposed against the opposite side of the wall.

3,665,374

APPLIANCE CORD-CONNECTING STRUCTURE

Bryce A. Denton, Ontario, Calif., assignor to General Electric Company

Continuation-in-part of application Ser. No. 886,058, Dec. 18, 1969, now abandoned. This application May 28, 1970, Ser. No. 41,189
Int. Cl. H01r 13/56, 13/58
U.S. Cl. 339—101 **11 Claims**



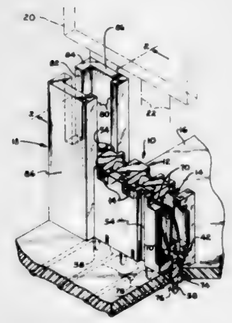
The invention discloses a cord-connecting structure for stress relief beyond an appliance envelope using the usual elongated flexible bushing around the cord and anchored to the appliance to prevent sharp cord bends at the appliance. The bushing may have different internal cross sections to conveniently accommodate in part of its length twisted and preferably separated conductors and, in the rest of its length, to help rotationally restrain the cord by the bushing itself or equivalent. Thus, constant flexing of the cord, even with the tough new materials, imposes substantially no or very minimal stresses on the conductors throughout resulting in extremely long life and safer cords.

3,665,375

CONNECTOR BLOCK AND METHOD OF MAKING THE SAME

William C. Thoms, East Berlin, and Lloyd Mancini, New Cumberland, both of Pa., assignors to Berg Electronics, Inc., New Cumberland, Pa.

Filed July 23, 1970, Ser. No. 57,547
Int. Cl. H05k 1/07; H01r 33/76
U.S. Cl. 339—192 R **10 Claims**



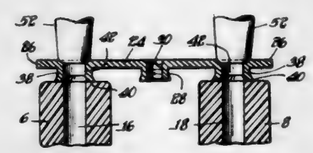
A connector block formed from an extruded hollow insulating body of uniform cross section having grooves in the sides of the body at selected locations aiong its length and terminals inserted into the body through certain of the grooves. Contacts are inserted through grooves to establish electrical connections with the terminals in the body and portions of the terminals extend from the body for establishing electrical connections with circuitry on the board.

3,665,376

TERMINAL BLOCK AND METHOD OF MAKING THE SAME

Ray J. Paris, and Harry M. Rudd, both of Erie, Pa., assignors to Teledyne Mid-America Corporation, Hawthorne, Calif.

Filed Dec. 23, 1970, Ser. No. 100,876
Int. Cl. H01r 9/00
U.S. Cl. 339—198 E **3 Claims**



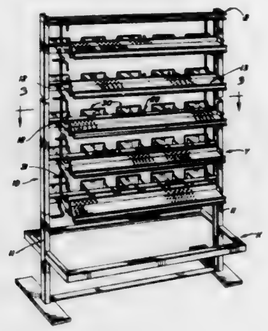
A terminal block comprises a thermoplastic body and a plurality of jumper bars. Each jumper bar has end portions with tubular projections that define holes in the jumper bar through which conductor-retaining screws are inserted. Each projection terminates in a radially outwardly extending locking ring. The jumper bar is secured to the terminal block with the projections embedded therein whereby the retaining ring on each projection locks with the plastic of the body. The process for attaching the jumper bar to the body utilizes the application of axial pressure to the jumper bar while at the same time applying axial vibratory forces at a sufficient frequency to cause the plastic to flow around the retaining rings and lock therewith.

3,665,377

FRAME AND WIRE TERMINATION BLOCK ASSEMBLY

Joseph H. MacKenzie, Jr., 431 Prairie Avenue, Wilmette, Ill.

Filed Jan. 27, 1971, Ser. No. 110,164
Int. Cl. H01r 9/00
U.S. Cl. 339—198 G **14 Claims**



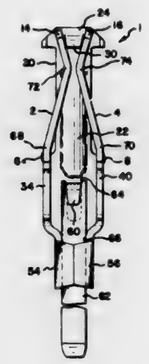
A frame and wire termination block assembly is provided which enables a plurality of wire termination blocks mounted on the frame to independently assume various selected positions of tilted adjustment so as to facilitate connecting or disconnecting of various wire leads with respect to one or more blocks.

3,665,378

SPRING RECEPTACLE CONTACT AND HOUSING THEREFOR

Kemper Martel Hammell, Harrisburg, and Karl Lester Kaylor, Middletown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sept. 4, 1970, Ser. No. 69,696
Int. Cl. H01r 9/08
U.S. Cl. 339—217 S **7 Claims**



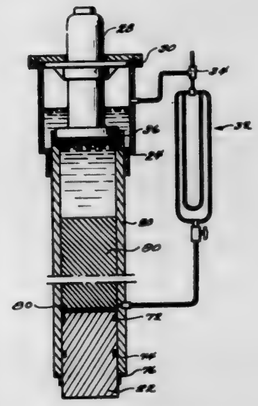
A spring receptacle contact and a housing therefor, the contact including a pair of resilient cantilever spring fingers which cooperate to provide a receptacle. The fingers are each provided with a button compressibly engaged on opposed sides of a housing recess into which the spring contact is inserted. The contact is further provided with a tab in spaced relationship from a pair of flaps. Together, the tab and flaps are crimped over an electrical post which projects from the housing recess. The receptacle contact is further provided with an elongated embossed base which terminates in a generally T-shaped end portion which seats laterally within the housing recess. Such end portion additionally carries a tine which abuts against a shoulder in the housing to prevent withdrawal of the contact receptacle. A pair of diagonally projecting levers compressibly engage against a side of the housing recess for seating the longitudinal base of the receptacle contact laterally against an opposed side of the housing recess. Additionally, the levers abut against a shoulder provided in the housing recess to lock the recess to lock the receptacle contact therein. To remove the receptacle contact, a suitable tool is inserted into the housing recess for resiliently deforming the tine and disengaging it from the cooperating shoulder.

3,665,379

PULSE-SOUND TRANSMITTING TUBE FOR CALIBRATING UNDERWATER SOUND TRANSDUCERS

Winfield James Trott, 7053 Wardell Street, Annandale, Va.

Filed Sept. 25, 1969, Ser. No. 861,087
Int. Cl. G01s 9/66
U.S. Cl. 340—5 C **13 Claims**



A method and apparatus for calibrating sound transducers wherein the transducer to be calibrated is mounted so as to radiate sound into a water filled, thick walled, metal tube sealed at the transducer end by a rubber diaphragm and at the other end by a metal reflector that approximates a quarter wave in length. The water sealed in the tube is preferably deaerated to prevent formation of air bubbles that would affect acoustic transmission and means are provided to transmit pulses of sound from the transducer to the reflector from which they are reflected back to the transducer. The sensitivity of the transducer in terms of open circuit voltage per unit of sound pressure as a function of frequency can be simply ascertained by driving the transducer with a constant current over the frequency range of interest and recording the resultant sensitivity versus frequency in decibels with a 1 volt/microbar reference. Other characteristics of the transducer, including impedance, can be ascertained by adding an absorber in front of the reflector.

3,665,380

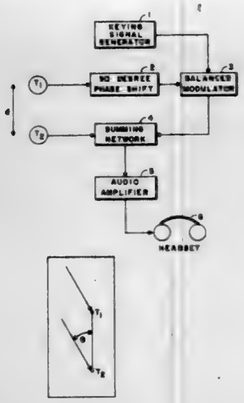
ELECTRONIC AIDS FOR AQUANAUTS

Harris A. Stover, Cedar Rapids, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa

Filed June 18, 1970, Ser. No. 47,408
Int. Cl. G01s 3/00
U.S. Cl. 340—6 R **20 Claims**

An aural orientation aid for an aquanaut uses pairs of space separated receiving transducers which are integrated

into the aquanaut's headpiece for reception of a sound beacon signal. The perpendicular bisector of the transducer pair baseline defines a reference plane. Received signal is processed to present aurally distinguishable tone intensity



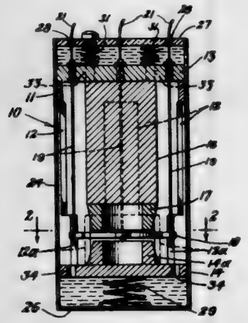
patterns and/or frequency patterns which bear a definite relationship to the beacon location with respect to the reference plane. Multiple transducer pairs may be employed to aurally provide complete three dimensional orientation.

3,665,381

MOVABLE COIL BI-GRADIENT TRANSDUCER

Benjamin B. Bauer, Stamford, Conn., assignor to The United States of America as represented by the Secretary of the Navy

Filed Jan. 25, 1971, Ser. No. 109,347
Int. Cl. H01b *13/00*
U.S. Cl. 340—8 **7 Claims**



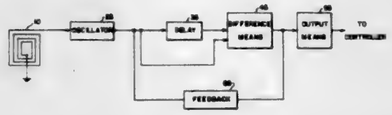
A movable coil bi-gradient transducer responsive to the angle of arrival of a given sound wave. An orthogonal array of four coils are embedded in a flat non-magnetic disk and suspended in the air gap of an annular magnetic unit by four thin rods. Opposite coils are wired in series with only their outer halves normally in the annular field of flux whereby the combined voltages of the coils is equal to zero. A cylindrical acoustically transparent boot, filled with silicon oil, encases the magnetic unit and suspended disk. Acoustic pressure waves arriving at the outside of the boot are transmitted through the silicone oil causing lateral displacement of the four coils in the same direction as the pressure wave to produce electrical output signals at respective pairs of coils indicative of the sine and cosine functions of the arrival angle of the pressure wave.

3,665,382

VEHICLE DETECTION APPARATUS

Gregory Sikios, Bronx, N.Y., assignor to The Marbelite Company, Inc., Brooklyn, N.Y.

Filed Oct. 30, 1969, Ser. No. 872,487
Int. Cl. G08g *1/01*
U.S. Cl. 340—38 L **15 Claims**



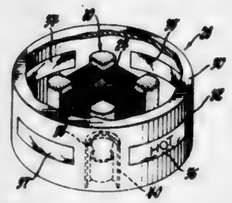
A vehicle detection oscillating circuit includes an inductive sensing loop imbedded in a road, or highway. The output signal amplitude of the oscillating circuit fluctuates when a vehicle is near the sensing loop. A differential amplifier has one input coupled without, and a second with a delay circuit to the output of the oscillator circuit. The differential amplifier is coupled to a relay which is normally energized and becomes de-energized upon the detection of a vehicle near the sensing loop.

3,665,383

VEHICLE CONDITION RESPONSIVE MONITORING SYSTEM HAVING PRIORITY INDICATION

Douglas I. Fales, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 20, 1970, Ser. No. 91,490
Int. Cl. G08b *19/00*
U.S. Cl. 340—52 F **3 Claims**



Apparatus for providing information as to plurality of conditions using a single air core gauge. Each condition being monitored controls a switch that in turn controls the energization of at least one winding, the magnetic fields generated by the windings forming a resultant magnetic field that controls the orientation of an indicia-bearing rotatable disc. When one or more windings are energized a lamp illuminates the indicia which the disc locates at a certain position so as to indicate the status of the condition which caused energization of the winding. The apparatus also gives priority to information on conditions which are of greater importance than other conditions also being monitored.

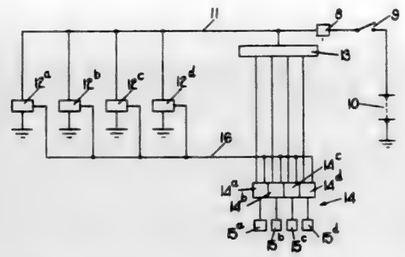
3,665,384

ROAD VEHICLE ELECTRICAL SYSTEM WITH TRANSDUCERS DETECTING FAULTS AND PRODUCING UNIQUE OUTPUTS OPERATING A RECEIVING AND DISPLAY UNIT

Andrew Peter Ives, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Aug. 25, 1970, Ser. No. 66,699
Claims priority, application Great Britain, Aug. 26, 1969, 42,455/69
Int. Cl. B60q *1/00*
U.S. Cl. 340—52 F **3 Claims**

A fault detecting system for a road vehicle includes a plurality of fault transducers, each producing its own unique output in the event of a fault. The receiving and display unit is operable by these unique outputs for indicating each fault,



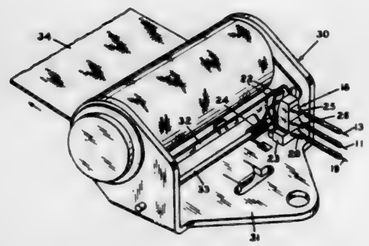
and a single cable is used to connect all the transducers to the receiving and display unit.

3,665,385

VEHICLE SEAT BELT WARNING SIGNAL SYSTEM

Frederick C. Booth, Birmingham, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Jan. 15, 1971, Ser. No. 106,822
Int. Cl. B60r *21/10*
U.S. Cl. 340—52 E **14 Claims**



A seat belt warning signal, when initiated, indicates that one or more seat belts provided for vehicle occupant's use is not fastened about the occupant. A switch in the warning signal electrical circuit is biased in a first position. It is forced into a second position, initiating the signal, when a locking member, provided in the retractor assembly, is disposed in its non-locking position corresponding to full belt retraction. A timer is provided to initiate the signal if the bell is disposed in its unretracted position for a time longer than a reasonable driving period.

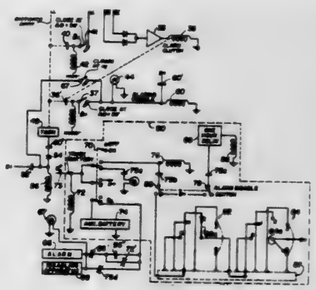
3,665,386

ANTI-HIJACK SYSTEM FOR VEHICLES

Thomas J. Dosch, Jupiter, Fla., assignor to Electronic Systems Division, a division of Dynamics Corporation of America, Boynton Beach, Fla.

Filed Dec. 18, 1970, Ser. No. 99,354
Int. Cl. B60r *25/00*
U.S. Cl. 340—53 **13 Claims**

An anti-hijack system carried by a vehicle includes means for monitoring the route being traveled by the vehicle and means for continuously comparing the traveled route with a stored preprogrammed route. If the vehicle deviates materially from the programmed route, at any time, vehicle disabling means and an alarm means are actuated. The system includes means for determining the position of the vehicle and means for deactiviating the disabling means when the vehicle speed is below a prescribed low speed. Also included in the system is a means for deactivating the disabling means



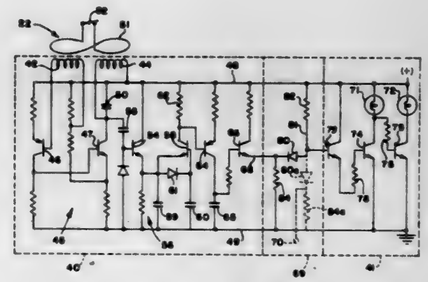
and thus permit vehicle operation at all speeds at a predetermined time after the vehicle has been disabled.

3,665,387

SIGNALLING SYSTEM FOR LOW TIRE CONDITION ON A VEHICLE

Robert S. Enabnit, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 31, 1970, Ser. No. 68,445
Int. Cl. B60c *23/02*
U.S. Cl. 340—58 **17 Claims**

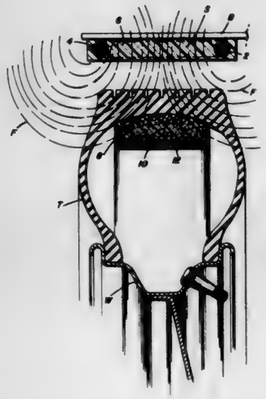


A fail-safe low tire pressure warning system adaptable for any number of wheels of a vehicle and providing dashboard indications of system operation and low pressure conditions while the vehicle is in motion. A pair of coils mounted on each wheel are interconnected under normal conditions by a switch responsive to tire pressure and periodically, due to wheel rotation, quench an oscillator circuit by reversing the normal magnetic field occurring in a second pair of coils in the oscillator. Pulses generated as a result of the quenching are accumulated to form a signal for controlling lamp indicator circuits. A low pressure condition or inoperativeness of the circuit is recognized by a red lamp indication or absence of any indication. A minimal warning system for a multiple wheeled vehicle using diode logic is described as are tire pressure switches for truck and passenger car applications.

3,665,388
TIRE AIR PRESSURE DETECTION AND SIGNALLING DEVICE

Erich Cornelius Johnsen, Victoria, B. C., Canada, assignor to Eltico Manufacturing Ltd., Victoria, British Columbia, Canada

Filed Aug. 12, 1969, Ser. No. 849,397
Int. Cl. B60c 23/06
U.S. Cl. 340—58 2 Claims

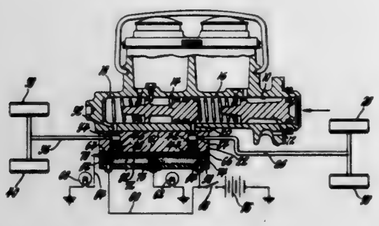


An apparatus for detecting dangerous deflation of automobile tires and for signaling the existence of the deflation. A sensor in the form of an inductance device is positioned at a fixed distance from the axis of rotation of the wheel. A metallic annulus is carried within the tire casing and is moved away from the sensor to change the reactance of the inductance when the tire is dangerously deflected. The change of inductance is used to operate a relay for operating a signaling device.

3,665,389
BRAKE CONDITION WARNING SWITCH AND SYSTEM

John M. Winston, Birmingham, and Walter H. Zimmerman, Rochester, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation of application Ser. No. 606,945, Jan. 3, 1967, now abandoned. This application Apr. 17, 1970, Ser. No. 28,240
Int. Cl. B60g 1/44; B60t 17/22
U.S. Cl. 340—60 3 Claims

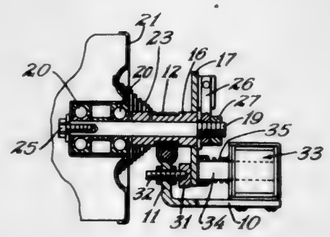


This specification describes a pressure failure indicating device for use with dual hydraulic master cylinders in a vehicle braking system. This system senses a loss of pressure in either of two power chambers to energize a warning lamp in one of the pressures is not up to a predetermined value and also energizes a stop light when pressure in either chamber is up to a predetermined value.

3,665,390
SPEED INDICATING DEVICE

Robert E. Lee, North Branch, Minn.

Filed May 13, 1970, Ser. No. 36,957
Int. Cl. B60q 1/54
U.S. Cl. 340—62 10 Claims

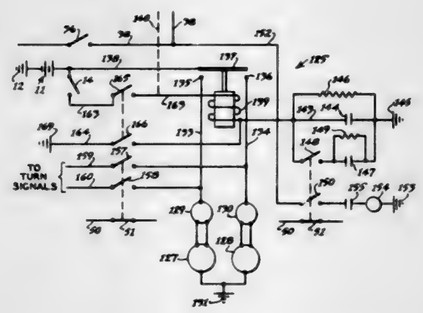


A speed indicating device is provided which may be adjusted to indicate a maximum and a minimum speed as the vehicle is in motion. A pair of switches or contacts are provided which indicate maximum and minimum speeds which may be perhaps ten miles per hour different. A fan or propeller actuates an arm which will oscillate between contacts depending upon the vehicle speed. However, the contacts are adjustable through operation of the arm. The normally fixed contact support may be released, so that the vehicle speed may be increased to a predetermined maximum, and then the contact support may be locked to provide an indication when the desired speed is exceeded.

3,665,391
AUTOMATIC VEHICLE SIGNAL SYSTEM

William H. Bumpous, 100 South Bellevue Drive, Nashville, Tenn.

Original application Oct. 24, 1967, Ser. No. 677,606, now Patent No. 3,538,496. Divided and this application June 15, 1970, Ser. No. 57,430
Int. Cl. B60q 1/38, 1/44
U.S. Cl. 340—67 6 Claims

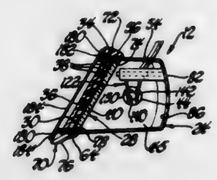


An electrical circuit for a motor vehicle including a plurality of electrical signals, an inertial starting switch, a time delay mechanism and one or more inertial signal switches to energize the signals for brief periods of time to indicate different operational conditions of the vehicle, including different degrees of deceleration.

3,665,392
VEHICLE DRIVER-ACTUATED SAFETY SIGNAL LIGHT ASSEMBLY

John T. Annas, 2644 Indian Mount South, Birmingham, Mich.

Continuation-in-part of application Ser. No. 817,543, Apr. 18, 1969, now abandoned. This application Aug. 24, 1970, Ser. No. 66,276
Int. Cl. B60q 1/44
U.S. Cl. 340—67 7 Claims

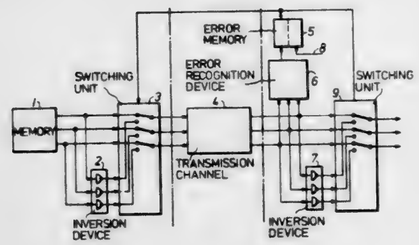


A driver communication signal mounted against the front windshield of a motor vehicle, visible to pedestrians and oncoming traffic and automatically energized upon brake application to indicate driver's intention to stop. The invention provides a double light source and driver-observed light source monitoring means as well as provision to ensure good visibility even on bright sunshine days.

3,665,393
CORRECTING ERRORS IN TRANSMITTED BINARY DATA

Werner Brune, Darmstadt; Gunter Schwartz, Seligenstadt; Ernst Hermann Dull, Darmstadt-Eberstadt, and Edgar Polly, Seligenstadt, all of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany

Filed June 8, 1970, Ser. No. 44,254
Claims priority, application Germany, June 6, 1969, P 19 28 673.8; May 23, 1970, P 20 25 340.1
Int. Cl. G08c 25/00
U.S. Cl. 340—146.1BA 18 Claims

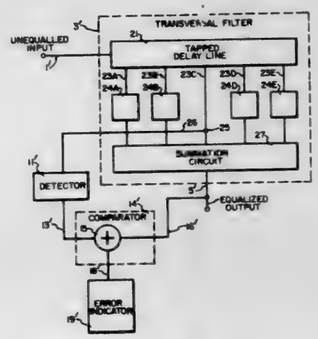


Single errors occurring in parallel transmitted binary data words, due to one path of the transmission channel having a fault which causes it to invariably transmit one binary value or the other, are corrected by transmitting the complement of each word found to contain such error and inverting the transmitted complement word at the output end of the path.

3,665,394
DATA ERROR DETECTOR FOR DETERMINING THE ERROR RATE PRIOR TO EQUALIZATION

Adam Lender, Palo Alto, and Berton E. Detter, Jr., Belmont, both of Calif., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 23, 1970, Ser. No. 74,786
Int. Cl. G08c 25/00
U.S. Cl. 340—146.1AX 9 Claims

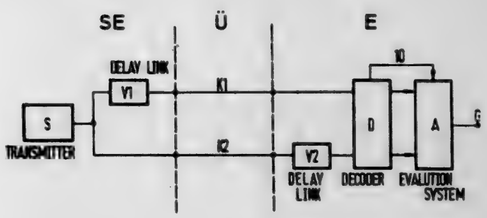


A transversal filter or equalizer will reduce to zero, errors that result from amplitude or phase distortion in the transmission facility where such distortion is within the equalization range of the transversal filter. The equalized output is used as a reference and is connected to one input of a comparator. The unequalized data signal is connected to another input of the comparator and the comparator produces an error signal at its output whenever an error occurs. The error signal actuates an indicator such as an impulse counter thereby giving bit-by-bit error indications.

3,665,395
METHOD OF DATA TRANSMISSION

Karlheinz Bochmann, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed June 25, 1968, Ser. No. 739,683
Claims priority, application Germany, June 29, 1967, P 15 12 525.4
Int. Cl. G08c 25/00
U.S. Cl. 340—146.1 3 Claims

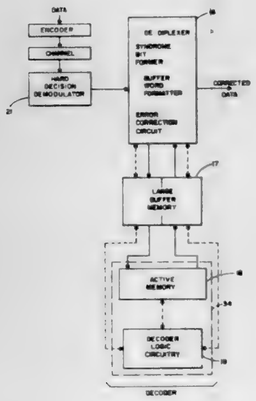


A method of transmitting data over connection paths subject to signal distorting influences wherein the transmitted message signals compriae parity bits interspersed according to a predetermined ratio with the individual information bits comprising the message signal. The message signals are transmitted in the form of two time spaced transmission signals of the above described type in different frequency channels.

3,665,396
SEQUENTIAL DECODING

George David Forney, Jr., Lexington, Mass., assignor to Codex Corporation, Watertown, Mass.

Filed Oct. 11, 1968, Ser. No. 766,738
Int. Cl. H03k 13/34; H04l 1/10
U.S. Cl. 340—146.1 21 Claims



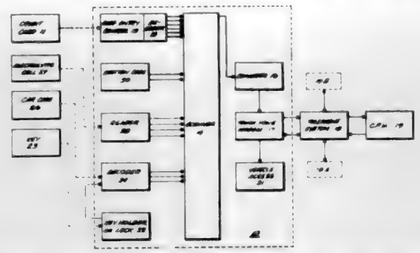
An improved error-correcting decoder for convolutional codes, of the sequential decoding type, is described. By restriction of received digit quantization to hard decisions, the number of alternatives in a single decoding search move is made sufficiently small that an entire move can be completed in one cycle of a synchronous clock. An efficient organization of the decoder memory is disclosed in which the decoder logic circuitry operates on a small, fast memory, while a larger, slower bulk buffer memory interfaces with the channel, stores data, and exchanges bits with the small fast memory on demand. The bulk memory contains variable amounts of decoded and undecoded data, which together comprise a constant capacity. A new buffer memory employing untapped shift registers is described. Use of a syndrome-forming circuit to preprocess the data is disclosed. An automatic resynchronization method in which a number of stored syndrome bits are set to 0 is presented. These features in combination are employed to produce efficient communication at high data rates over satellite channels.

3,665,397
AUTOMOBILE RENTAL SYSTEM

Nicholas Di Napoli; Donald Friedman; Robin P. Nicholls; Howard A. Wilcox, all of Santa Barbara, and Charles E. Wood, Porterville, all of Calif., assignors to Minicars, Inc., Goleta, Calif.

Filed June 8, 1970, Ser. No. 44,055
Int. Cl. H04q 9/00; G06k 15/00
U.S. Cl. 340—147 R 16 Claims

An automatic automobile rental system having a plurality of remote rental stations and a central data processing station for system control and customer billing is described. A system user employs a credit card that is automatically read at a rental station to identify the user, and this information is checked at the central station to verify that the card holder is entitled to receive an automobile. The same card identifies the holder when the automobile is returned to the same or a different rental station. An ignition key and machine-readable car identification and mileage module are interconnected for reading and dispensing at a rental station and for use in operating an automobile. Mileage or other measure of usage of the rented automobile is recorded in an electrolytic cell as a state of charge proportional to mileage. The cell is transferred to the automobile for mileage recording and to the rental station for discharge and mileage reading. Standard pulses of charge in a number proportional to mileage are

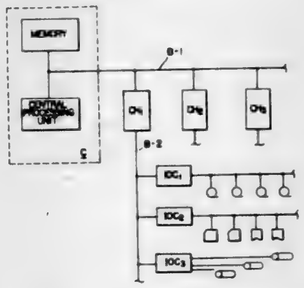


used to charge the electrolytic cell. Data read from the electrolytic cell, from the user card, and from the automobile identification are transmitted to the central data processing unit over conventional telephone lines.

3,665,398
INPUT/OUTPUT MULTIPLEX CONTROL SYSTEM

Hidetoshi Kawai; Hajime Iizuka, both of Tokyo-to; Takuo Shinkai, and Yoshiro Yoshioka, both of Kawasaki-shi, all of Japan, assignors to Kogyo Gyustium (also known as "Agency of Industrial Science and Technology," Ministry of International Trade and Industry, Japanese Government), Tokyo-to, Japan

Filed Apr. 2, 1969, Ser. No. 812,817
Claims priority, application Japan, Apr. 6, 1968, 43/22393
Int. Cl. H04g 9/00, 11/00
U.S. Cl. 340—147 2 Claims

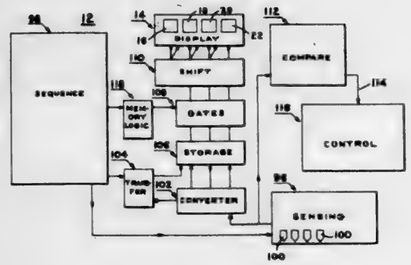


An input and output control system is disclosed including at least one channel and input-output devices which are connected by a set of interconnecting lines which include a data input bus adapted to transfer data from said input-output devices to said channel and a data output bus adapted to transfer data from said channel to said input-output devices. An improved system of a bus type connection system is defined in which connection of one channel and a plurality of input-output devices is attained by said set of interconnecting lines and said input-output devices is attained by said set of interconnecting lines and said input-output devices utilize one interconnecting line in time-divisional manner, said improved system being adapted to select one from among said several input-output devices said one having a request to be coupled with the channel. According to the improved system, it is therefore possible that the several input-output devices to be connected to the channel can impart the connecting requirement to the channel unit by utilizing the data input bus without providing signaling lines provided inherently on each of said devices, and that designation of any input-output device to be coupled can be attained by utilizing the data output bus without providing lines for designating connection of a required input-output device on the channel.

3,665,399
MONITORING AND DISPLAY SYSTEM FOR MULTI-STAGE COMPRESSOR

Richard M. Zehr, Tonawanda; James Mott, Buffalo, and Lawrence Schlimgen, Tonawanda, all of N.Y., assignors to Worthington Corporation, Harrison, N.J.

Filed Sept. 24, 1969, Ser. No. 860,768
Int. Cl. H04q 9/00; G06f 11/00
U.S. Cl. 340—152 R 53 Claims



A system is disclosed for sequentially monitoring and displaying the instantaneous value of a plurality of parameters associated with a motor driven device such as a multi-stage compressor. In addition to the basic functions of monitoring and displaying these values, the system performs a multitude of other functions such as: continuously comparing preselected ones of these parameters with pre-established reference signals to determine if these various parameters exceed predetermined safe limits; activating alarm devices should the particular parameters chosen exceed their pre-established limits; shutting down or otherwise controlling the device being monitored should the selected parameters exceed their predetermined levels so as to generate alarm signals; and storing the values of other preselected parameters such that these values can be subsequently displayed after the occurrence of an alarm situation. The system can be operated in a "scan" mode whereby the parameters are sequentially monitored, checked, and stored values updated at a preselected rate.

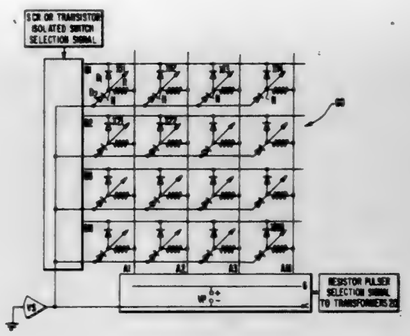
Alternatively, an operator can select a particular station to be monitored in which case the instantaneous value of that particular parameter will continuously be displayed by the system. Regardless of whether the system is operated in the "scan" or "hold" mode, the occurrence of an alarm condition in any of the pre-established parameters will generate appropriate command signals to shut down or otherwise control the device being monitored; while at the same time, the value of the parameter which generated the alarm signal will be displayed on the apparatus.

3,665,400
SWITCHING CIRCUITS AND METHOD FOR DIODE ELEMENTS IN CONDUCTOR SELECTION MATRICES

Donald D. Leuch, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed Apr. 19, 1971, Ser. No. 135,021
Int. Cl. H04q 9/00
U.S. Cl. 340—166 R 9 Claims

A gas discharge display and memory panel having parallel row and parallel column conductor arrays wherein the conductors in the arrays are connected to selection and addressing resistor-diode matrix circuitry having non-inductive switch means for rendering nodal points in said matrix effective to change a discharge condition at selected sites of the panel. One embodiment discloses use of an SCR as the switch and another embodiment discloses a transistor switch.

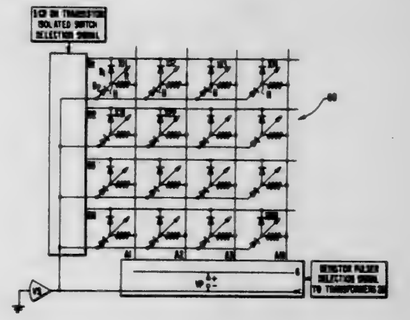


The circuits are reversible to accomodate negative and positive type pulses.

3,665,401
SWITCHING CIRCUITS AND METHOD FOR RESISTOR ELEMENTS IN CONDUCTOR SELECTION MATRICES

Leonard M. Budzynski, and Donald D. Leuck, both of Toledo, Ohio, assignors to Owens-Illinois Inc.

Filed Apr. 19, 1971, Ser. No. 135,023
Int. Cl. H04q 9/00
U.S. Cl. 340—166 R 4 Claims



A gas discharge display and memory panel having parallel row and parallel column conductor arrays wherein the conductors in the arrays are connected to selection and addressing resistor-diode matrix circuitry having non-inductive switch means for rendering nodal points in said matrix effective to change a discharge condition at selected sites of the panel. An NPN transistor switch is used to connect a high voltage source to the resistors in the matrices to thereby pulse the nodal points. The circuits are reversible to accomodate negative and positive type pulses.

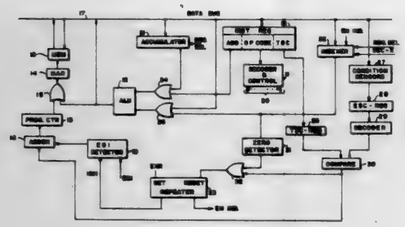
3,665,402
COMPUTER ADDRESSING APPARATUS

Lawrence E. Greenspan, Reeds Ferry, and Earl J. Whitaker, Amherst, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Feb. 16, 1970, Ser. No. 11,634
Int. Cl. G06f 9/20; G05b 1/01
U.S. Cl. 340—172.5 3 Claims

Operand list control apparatus for controlling the repeated execution of an instruction on a specified number of

operands. The contents of an execution status register is updated at the conclusion of each execution of the instruction. The updated execution status field is then compared with a termination status field. On disagreement thereof, the repetitive execution of the instruction continues. However, upon agreement of the termination and execution status fields, the repetitive execution of the instruction is interrupted by returning control to the program addressing means.

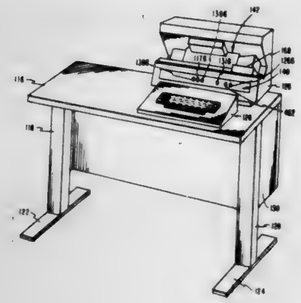


3,665,403

DATA RECORDER AND VERIFIER

John J. Igel, Rochester, and Myron D. Schettl, Oronoco, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 1, 1970, Ser. No. 24,780
Int. Cl. G06k 5/00; G06f 15/02
U.S. Cl. 340—172.5 **15 Claims**



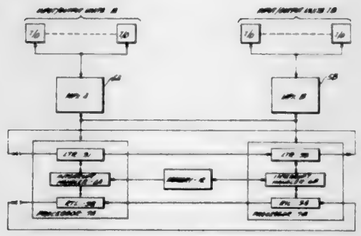
A data recorder for punching document cards which are of the type having three tiers into which encoded data may be punched, the system including a keyboard on which characters are entered serially, a magneto-strictive delay line constituting a storage device for storing encoded data from the keyboard in such serial form and circuitry for actuating punches from spaced characters in the storage device. The same machine may be used for verifying a previously punched document card utilizing the same keyboard as that for punching and includes circuitry by means of which program data may be entered into the data circulating through the delay line; and the recorder includes, in addition, circuitry for providing a right adjust function and for field or record erasing both under program control and in verify mode. Also, the machine includes circuitry for changing the data circulating through the delay line on verification to correct an error and repunching mechanism so that a corrected document card may then be made without any rekeying.

3,665,404

MULTI-PROCESSOR PROCESSING SYSTEM HAVING INTERPROCESSOR INTERRUPT APPARATUS

John R. Werner, Glendora, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 9, 1970, Ser. No. 26,944
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 **11 Claims**



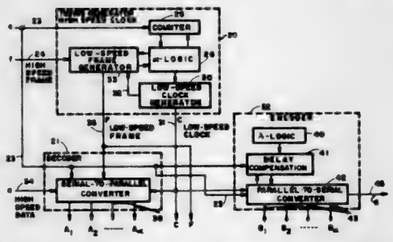
A data processing system has a plurality of processors each including an interrupt handler for interrupting the execution of object programs and controlling the handling of interrupt conditions. Apparatus distributes the load of handling a class of external interrupts between the processors on a dynamic priority basis. For example, if the processor having highest priority for handling the interrupt related to a particular input/output unit is busy handling an uninterruptable procedure or is otherwise unavailable when the input/output unit requires attention, the apparatus couples an interrupt transfer signal to the processor having the next highest priority and thereby enables the interrupt handler within that processor to service the input/output unit. Each processor within the system can include circuitry for generating transfer signals to enable any one of the processors to service each input/output unit.

3,665,405

MULTIPLEXER

Ray W. Sanders, Los Angeles; Neil T. Keyes, Palos Verdes, and William Quan, Los Angeles, all of Calif., assignors to Computer Transmission Corporation, Los Angeles, Calif.

Filed Mar. 17, 1970, Ser. No. 20,283
Int. Cl. G06f 5/06
U.S. Cl. 340—172.5 **10 Claims**



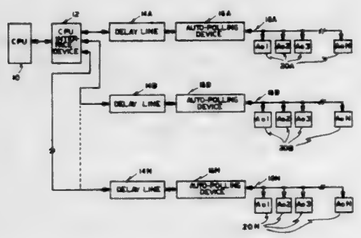
This invention involves a time division multiplex system designed particularly for use with data communication systems. The disclosure discloses a variety of interconnection systems by which a number of different data rate sources or utilization devices may be connected into a common transmission channel. It employs a number of data terminal transmission adapters which adjust the rate, compensate for delays and combine and interleave data in the manner which allows its ready separation and utilization at the opposite end of the transmission medium. The system employs a single master clock for the entire system. Disclosed is a variable data rate combiner which allows the combining of data rates related by the ratio of any two integers, thereby allowing great flexibility in system application.

3,665,406

AUTOMATIC POLLING SYSTEMS

Frank William Gallagher, Norwalk, and Richard C. Casey, Darien, bothof, Conn., assignors to The Bunker-Ramo Corporation, Stamford, Conn.

Filed Apr. 13, 1970, Ser. No. 27,877
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 **22 Claims**



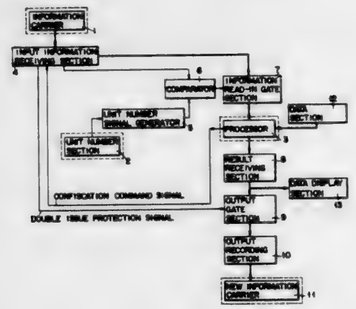
A device for generating polling messages to a plurality of addressable stations. A central processing unit (CPU) generates a polling table which is stored in an external automatic polling device. The polling device detects an address in the polling table and generates a polling message to the indicated station. The device receives responses to polling messages and tests to determine if they are positive or negative. A negative response causes a polling message to be sent to the station indicated by the next address in the polling table. A positive response causes an interrupt to the CPU which then receives the reply message. Interrupts to the CPU may also be generated when there is no response to a polling message, when there is an error response, or when the end of the polling table is reached.

3,665,407

AN AUTOMATIC PROCESSING SYSTEM FOR BOWLING GAMES

Satoshi Negishi, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed May 25, 1970, Ser. No. 40,089
Claims priority, application Japan, May 23, 1969, 44/39544
Int. Cl. G06f 3/06
U.S. Cl. 340—172.5 **3 Claims**



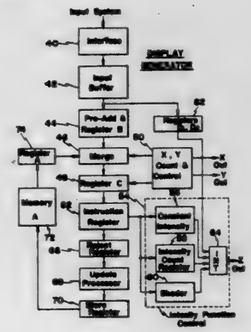
A processing system for bowling games which receives information carriers carrying prior bowling information for each participant. Progressing current bowling information is received and processed and a new information carrier carrying new updated information is produced after it is ascertained that the old information carrier is confiscated to prevent repeated use thereof.

3,665,408

ELECTRONICALLY-GENERATED PERSPECTIVE IMAGES

Alan C. Erdahl, and David C. Evans, both of Salt Lake City, Utah, assignors to University of Utah

Filed May 26, 1970, Ser. No. 40,647
Int. Cl. G06f 3/14
U.S. Cl. 340—172.5 **54 Claims**



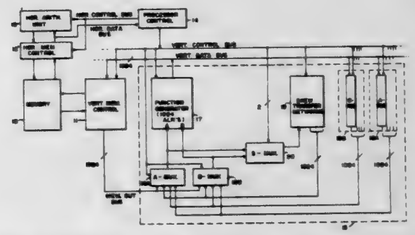
A method and system for generating point intensity control signals for producing complex images on an electronic display device. The image to be displayed is defined by data specifying bounded areas of the viewing screen of the display device together with an intensity function for that area. This data is fed in the order in which the bounded areas first appear in the scanning pattern of the display, utilized to generate point intensity control signals then updated for future use and stored in order. The appropriate data for each portion of the viewing screen is chosen from either the stored data or newly received data. A plurality of intensity functions may be specified by the data to provide images with constant linear and nonlinear intensities or any combinations thereof. In addition, provision is made for providing lines and overwriting the image.

3,665,409

SIGNAL TRANSLATOR

Howard S. Miller, and William Shooman, both of Nashua, N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed June 18, 1970, Ser. No. 47,404
Int. Cl. G06f 7/38
U.S. Cl. 340—172.5 **7 Claims**

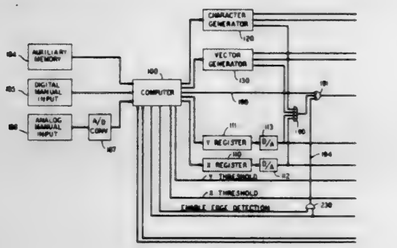


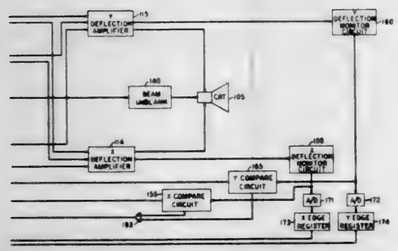
Signal translator for skew transfer or shifting of data from original data positions to remote positions. A number N of data bits is skew transferred or shifted in data position increments which are powers of the system radix, herein illustrated as two. A skew transfer network includes a routing net at each data position. The routing net at a particular data position receives data bits from data positions which are powers of two increments away therefrom. A control means responds to a skew distance code to provide timing signals to the routing nets so as to select the data bits corresponding to the specified shifting or skewing increment.

3,665,410
COMPUTER GRAPHICS SYSTEM WITH EDGE VIOLATION DETECTION

John Rickman Holland, Greensboro, N.C., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 13, 1970, Ser. No. 54,400
Int. Cl. H01j 29/70
U.S. Cl. 340—172.5 8 Claims



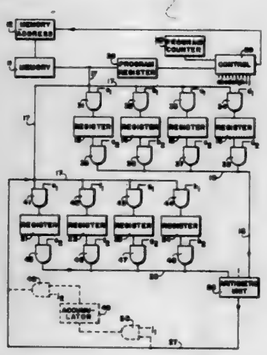


A computer graphics system is disclosed which includes means for detecting the attempted passing of a display boundary by a continuous portion of the visual entity to be displayed. This detecting means typically includes a comparator for generating a signal whenever the instantaneous deflection voltage exceeds a selectable threshold and a programmed data processor responsive to this signal for processing following display data.

3,665,411
COMPUTER

Daniel G. O'Connor, Eadwell, N.Y., assignor to The Singer Company, New York, N.Y.

Filed June 8, 1970, Ser. No. 44,249
Int. Cl. G06f 7/38
U.S. Cl. 340—172.5 6 Claims

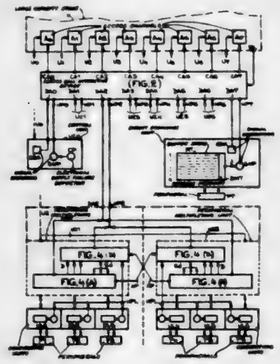


In normal digital computer operation each operation which is performed, normally requires a separate instruction. Time is required to obtain each instruction from storage and to decode each instruction. This invention comprises an improvement which provides means for performing several serial operations on several data words from different groups of words in response to a single instruction. This saves overall computer time, increases overall computer speed, and saves memory space.

3,665,412
NUMERICAL DATA MULTI-PROCESSOR SYSTEM

Roger H. Briand, Versailles, France, assignor to Compagnie Internationale Pour l'Informatique, Louveciennes, France

Filed July 20, 1970, Ser. No. 56,285
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 11 Claims

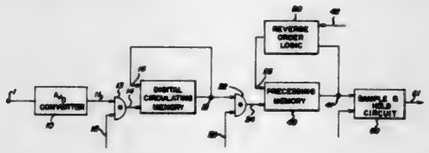


A numerical data processing system is disclosed which is comprised of a general large capacity information store and a plurality of processors selectively connectable to as many access channels of said store from the selective activation of as many store access calling lines. Part at least of said processors are provided with additional store access calling lines which are associated with hardware equipment for organizing a hierarchy of priority conflicting access calls from said processors to said store.

3,665,413
WAVEFORM REGENERATOR FOR USE WITH A DIGITAL CORRELATOR

George M. Walsh, Middletown, and Mark A. Chramiec, Newport, both of R.I., assignors to Raytheon Company, Lexington, Mass.

Continuation of application Ser. No. 695,257, Jan. 2, 1968.
This application July 29, 1970, Ser. No. 64,100
Int. Cl. G05b 1/01; G01s 3/86
U.S. Cl. 340—172.5 12 Claims



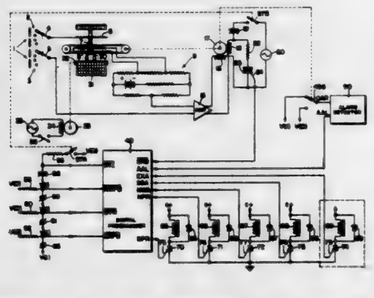
A waveform regenerator for use with a digital correlator having a first circulating memory and a second precessing circulating memory for storing and processing digital signal sequences. The apparatus comprises circuits responsive to each successive digital signal sample in the second memory for extracting the digital signal and reproducing each sample

for a time interval equal to one circulating memory cycle. Reverse Order Logic is included in the second circulating memory for changing the order of succession of the digital signal samples. Means responsive to the contents of the first memory and the second memory replace the digital signal samples contained in the second memory by the digital signal samples stored in the first memory in the proper sequence to be extracted from the second precessing circulating memory.

3,665,414
MULTI-POINT RECORDER WITH SOLID STATE PROGRAMMER

Frederick S. Hutch, Glenside, and Bruce G. Phares, Philadelphia, both of Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 12, 1970, Ser. No. 63,079
Int. Cl. G01d 9/00
U.S. Cl. 340—172.5 18 Claims

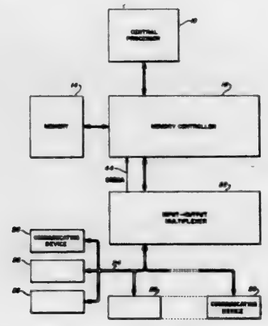


A multipoint recorder includes a solid state electronic digital programmer which includes a clock means for generating basic timing pulses which includes a clock means for generating basic timing pulses which are conditioned by a plurality of solid state circuits to operate the recorder in a predetermined operational sequence.

3,665,415
DATA PROCESSING SYSTEM WITH PROGRAM INTERRUPT PRIORITY APPARATUS UTILIZING WORKING STORE FOR MULTIPLEXING INTERRUPT REQUESTS

Albert L. Beard, and John C. Hunter, both of Phoenix, Ariz., assignors to Honeywell Information Systems, Inc.

Filed Apr. 29, 1970, Ser. No. 32,837
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 6 Claims

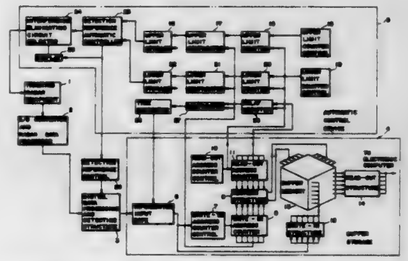


A data processing system having program interrupt apparatus with classes of interrupts for awarding priority to devices requesting service based in part on the relative priority of the device as a physical entity within the system and in part on the class or relative importance of the particular service requested by the device. Provision is made for storing a large number of interrupt requests in an interrupt multiplex table in working store. A representation of the relative importance of the service requested is supplied by the device in an interrupt level code and stored by enabling one of a plurality of bistables. Associated with each bistable is an area of system store in which a representation of the preassigned relative priority of the device is stored. In servicing interrupt requests a memory vector derived from the highest priority bistable and the highest representation stored in the corresponding area of system store is provided to the central processor.

3,665,416
ON-LINE REAL TIME DATA PROCESSING SYSTEM

Mitsuo Hikosaka, 1590-18, Oaza Kakura Kasuga-cho, Chikushi-gun, Fukuoka-ken, Japan

Filed Oct. 5, 1970, Ser. No. 77,860
Claims priority, application Japan, Oct. 9, 1969, 44/81005; June 10, 1970, 45/49464
Int. Cl. G06f 9/00, 3/00
U.S. Cl. 340—172.5 10 Claims



An on-line real time data processing system having a buffer storage and in which the flow of input information into the buffer storage is controlled in accordance with the amount of information stored in the buffer storage thereby to keep the amount of stored information at an optimum level for the entire system as well as to prevent saturation of the buffer storage with the input information. This data processing system is adapted especially for a radar track information processing system. A register is adapted to effect counting in synchronism with the counting of the readout address counter of the buffer storage in such a manner that the number of counts of said register is a few counts smaller than that of said read-out address counter at all times. The number of counts of said register is compared with that of the write-in address counter of the buffer storage by a comparator which, upon coincidence of those numbers of counts, generates a coincidence signal. This coincidence signal is supplied to an information input gate in order to shut off the flow of input information into the buffer storage. An upper-limit counter and a lower-limit counter are provided which effect countings in synchronism with the counting of the read-out address counter in such a manner that the number of counts of said upper-limit and lower-limit counters are, respectively, appropriate numbers of counts larger than that of said read-out address counter at all times. Those numbers of counts of said upper-limit and lower-limit counters are compared with that of said write-in address counter by an upper-limit comparator and a lower-limit comparator, respectively. These comparators generate coincidence signals upon coincidence of their numbers of counts and that of the write-in address counter. The coincidence signals are supplied to a detection-reference controller which, in response thereto, select the optimum detection reference in the track

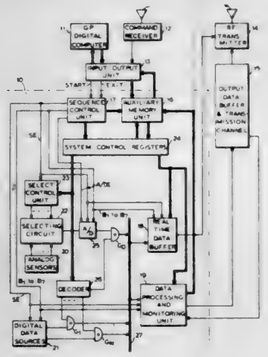
information detecting structure of the radar track information processing system so that an optimum amount of input information may be fed to the buffer storage. If the amount of information being supplied to the buffer storage falls beyond control of the detection-reference controller, an interference-eliminating circuit selector is actuated by the detection-reference controller to automatically select the optimum interference-eliminating circuit.

3,665,417

FLEXIBLE COMPUTER ACCESSED TELEMETRY

George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of; Richard A. Easton, 1760 State Street 040, South Pasadena, Calif., and Edward E. Hilbert, 195 South Wilson Avenue, Pasadena, Calif.

Filed Feb. 19, 1971, Ser. No. 116,786
Int. Cl. G06f 5/06; H04l 7/08
U.S. Cl. 340—172.5 12 Claims



Flexible, computer-accessed telemetry is provided by a sequence control unit, auxiliary memory and system control registers to permit sensors and digital data sources to be sampled in a programmed format with various groups of samples taken at different rates. Each programmed sample may be processed for transmission in a specified way by including an operation code with the programmed address code used to select the designated sensor or digital data source. Index registers and a scratch pad memory permit flexibility in programming sample sequencing formats. A particular format may be started, stopped and altered by ground station commands received through a receiver, or directly by a digital computer.

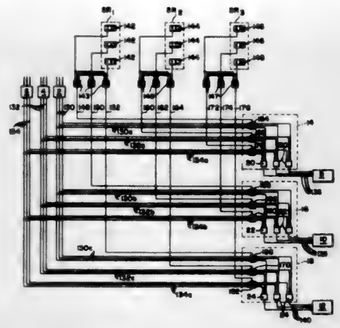
3,665,418

STATUS SWITCHING IN AN AUTOMATICALLY REPAIRED COMPUTER

Willard Gail Bouricius, Katonah, N.Y.; William Caswell Carter, Ridgefield, Conn.; John Paul Roth, Ossining, and Peter Robert Schneider, Peekskill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 15, 1968, Ser. No. 744,888
Int. Cl. G06f 11/00, 11/08
U.S. Cl. 340—172.5 14 Claims

Status switching means for an automatically repaired computer system of the stand-by redundancy type adapted to replace a failed component by a stand-by spare, characterized in that the switching means include separate selection or switch means associated with each data receiving device, respectively, so that there is no sharing of a given selection means between different receiving devices, whereby no selection means constitutes a "hard core" component the failure of which would interrupt computer operation. By the operation of encoded control means, a reconfiguration of the switching system is effected to shift around a faulty component.

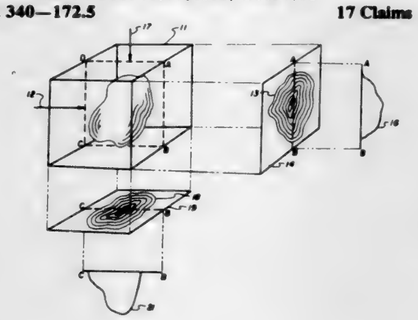


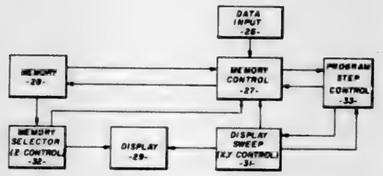
3,665,419

APPARATUS FOR DETERMINING SHAPE

Frederick Hartmann, Rolling Hills Estates, and Billy J. Huffmann, Mission Viejo, both of Calif., assignors to North American Rockwell Corporation

Filed Feb. 18, 1969, Ser. No. 800,222
Int. Cl. G11c 15/00, 5/02; G06f 7/02
U.S. Cl. 340—172.5 17 Claims





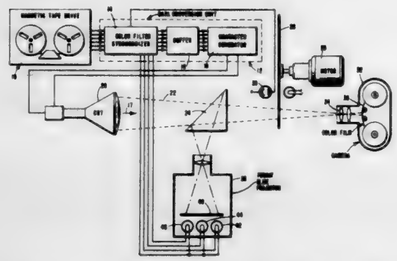
A superposition algorithm is presented for reconstruction of a closed curve from length and width values. That is, the "thickness" of the curve as viewed from two intersecting directions. A special purpose digital computer is described for automatically reconstructing the shape of closed curves. The computer performs the algorithm steps, displays the results and permits easy correction of input data. A memory is employed in the computer with a plurality of memory planes each in the form of a matrix which is a spatial analogy of a matrix in which a closed curve lies. The computer operates by an element by element scan of these matrixes, reading memory content, counting elements, or entering results as determined by the operating state of the computer.

3,665,420

COLOR PHOTOGRAPHY FROM CATHODE RAY TUBES AND OTHER RADIATING AREAS

James A. Somervell, Chevy Chase, Md., assignor to Micromation Systems Inc.

Filed Oct. 2, 1969, Ser. No. 863,296
Int. Cl. G06f 3/00; G01d 9/42
U.S. Cl. 340—172.5 15 Claims



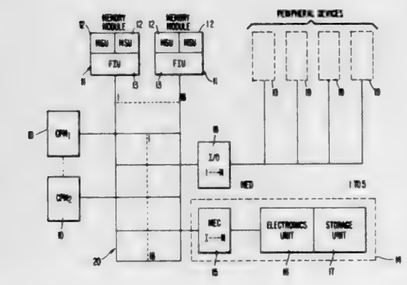
An improvement for data conversion apparatus which transforms magnetic tape into microfilm or which transforms any electrically transmittible code onto film. The improvement comprises an electronic synchronization and a rotating disc color filter insertion unit which, operating on command from special coding on the input media, causes the Cathode Ray Tube of the data display to be synchronized with the moving color filter so that selected portions of the displayed data can be photographed in color.

3,665,421

INFORMATION PROCESSING SYSTEM IMPLEMENTING PROGRAM STRUCTURES COMMON TO HIGHER LEVEL PROGRAM LANGUAGES

Frederick V. Rehhausser, Malvern; Elmer Dean Earnest, Downingtown; Robert V. Bock, Malvern; Frederick H. Gerbstadt, Berwyn, and James J. Monek, Exton, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 28, 1969, Ser. No. 880,536
Int. Cl. G06f 15/16
U.S. Cl. 340—172.5 10 Claims



This disclosure relates to an information processing system adapted to implement functions common to many higher level programming languages which functions require information structures to be variable in length and size. Each processor in this multiprocessing system contains various structure buffers to manage different process or program structures that are nested to provide a hierarchy of processes and subprocesses. The structure buffers include resource stack buffers that reference resources available to a currently allocated process including a description of that process environment that in turn references control information for currently executed routines. Buffers are also provided to the various process name stacks that describe parameters and operands required and also for the value stacks which hold such operands.

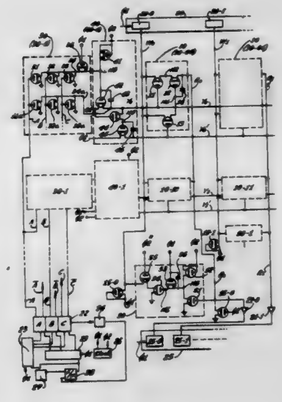
The structure buffers are addressed through an associative memory to allow for the searching of the buffers for often used entries.

3,665,422

INTEGRATED CIRCUIT, RANDOM ACCESS MEMORY

Michael R. McCoy, San Jose, and Terry R. Walther, Sunnyvale, both of Calif., assignors to Electronic Arrays Inc., Mountain View, Calif.

Filed Jan. 26, 1970, Ser. No. 5,575
Int. Cl. G11c 11/40; H03k 3/26
U.S. Cl. 340—173 R 23 Claims



An integrated circuit MOS type memory is disclosed operating with two phases and minimum component cells. The cells are respectively located at intersections of a pair of two phase operated addressing lines and of a set of data write and read lines synchronously operated with addressing. Read addressing of cells in controlled concurrently with address decoding; write addressing of memory cells is dependent upon preceding read addressing of the same cells and concurs with preparation for the next addressing operation. Memory read lines are kept at floating potential prior to reading addressed cells which control the respective read lines to obtain node discharge or no-discharge in refresher amplifiers. Refresh write operations are controlled during the respective next write phase in dependence upon the charge contents of the nodes in the refresher amplifiers.

3,665,423

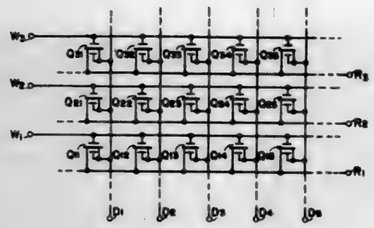
MEMORY MATRIX USING MIS SEMICONDUCTOR ELEMENT

Sho Nakamura; Toharu Tsujide; Toshio Wada; Ryo Igarashi, and Katsuhiro Onoda, all of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Minato-ku, Tokyo, Japan

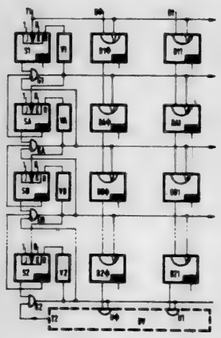
Filed Mar. 13, 1970, Ser. No. 19,217
Claims priority, application Japan, Mar. 15, 1969, 44/20670
Int. Cl. G11c 11/40
U.S. Cl. 340—173 R 6 Claims

A memory matrix device is disclosed in which an MIS semiconductor element is employed as the memory element. The semiconductor element has an insulating film disposed

between the semiconductor substrate and conductor electrode. That film contains canture centers which capture electrons upon the application of a voltage exceeding a critical value across the electrode and substrate.



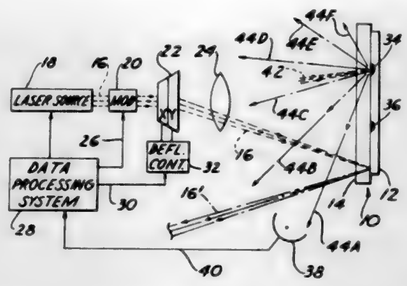
3,665,424
BUFFER STORE WITH A CONTROL CIRCUIT FOR EACH STAGE
Eckhart Scharkowitz, Krailling, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed June 29, 1970, Ser. No. 50,562
Claims priority, application Germany, July 3, 1969, P 19 33 907.2
Int. Cl. G11c *7/00, 19/00*
U.S. Cl. 340—173 R **4 Claims**



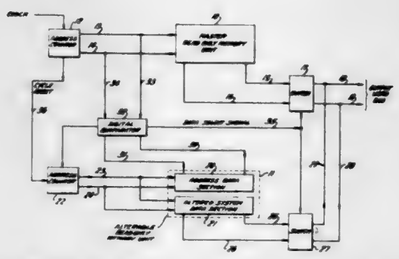
A buffer store employs a buffer control for advancing data through the buffer store until the data reaches the last or highest free data stage. The buffer control automatically advances the data by means of control stages which function as an internal clock to regenerate the clock pulse of the input apparatus, such as a computer, and the control stage of the last data stage empties the data content in accordance with the beat of the utilization apparatus, such as a magnetic tape system.

3,665,425
INFORMATION STORAGE SYSTEMS UTILIZING AMORPHOUS THIN FILMS
Julius Feinleib, Birmingham, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.
Filed Mar. 9, 1970, Ser. No. 17,641
Int. Cl. G06f *3/00*
U.S. Cl. 340—173 **18 Claims**

The system disclosed herein employs an amorphous semiconductor thin film which is switched between two stable states by applying a focused beam of laser energy. In one state the thin film exhibits specular reflection while in the other state it exhibits diffuse reflection. Data bits or images are recorded by the laser beam on the thin film. This information is retrieved by illuminating the thin film with collimated light, by employing the same laser beam used to record the information, or by recording on a sensitized medium.



3,665,426
ALTERABLE READ ONLY MEMORY ORGANIZATION
Robert D. Gross, North Caldwell, and Roland T. Rogers, Wayne, both of N.J., assignors to The Singer Company, New York, N.Y.
Filed Oct. 7, 1970, Ser. No. 78,731
Int. Cl. G11c *29/00, 17/00*
U.S. Cl. 340—173 SP **8 Claims**

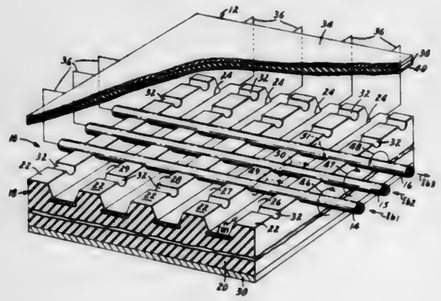


An alterable read only memory organization is provided having a relatively inexpensive master read only memory which is capable of handling system data storage requirements. A smaller capacity, easily alterable, read only memory is used to store changed system data. A digital comparator compares the address of words stored in the master memory with the address of changed words in the alterable memory and controls a gating arrangement which selects the output of the alterable memory and inhibits the output of the master memory when the addresses are the same and selects the master memory output and inhibits the alterable memory output when the addresses are different.

3,665,427
MAGNETIC DEVICES UTILIZING GARNET COMPOSITIONS
Andrew Henry Bobeck, Chatham; Richard Curry Sherwood, New Providence, and Le Grand Gerard Van Uitert, Morris Township, Morris County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Apr. 20, 1970, Ser. No. 30,060
Int. Cl. G11b *5/00*
U.S. Cl. 340—174 TF **10 Claims**

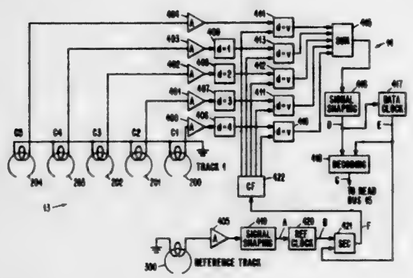
Rare earth iron garnet crystalline materials magnetic with compositions adjusted so as to lower magnetostriction in the <111> directions are advantageously incorporated in devices depending for their operation on "bubble" domains.

3,665,428
KEEPERED PLATED-WIRE MEMORY
Murray Olyphant, Jr., Lake Elmo; Michael David Cartier, North Saint Paul, and Charles Robert Freeman, Lincoln Twp., Washington Cty., all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 16, 1970, Ser. No. 81,285
Int. Cl. G11c *11/14, 5/02*
U.S. Cl. 340—174 JA **6 Claims**



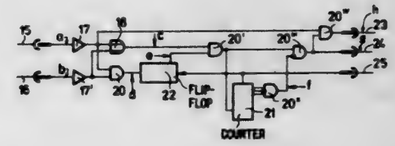
A plated-wire memory array, and a method of making the same, including a flexible integrally molded grooved keeper and word conductor combination having reinforcing material molded to the base of the keeper, plated bit wires in intimate contact with the keeper, and a ground plate.

3,665,429
RECORDED SIGNAL ENHANCING APPARATUS AND METHOD
Richard F. M. Thornley, Pine Brook Hills, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 18, 1970, Ser. No. 73,288
Int. Cl. G11b *5/44, 5/26*
U.S. Cl. 340—174.1 H **10 Claims**



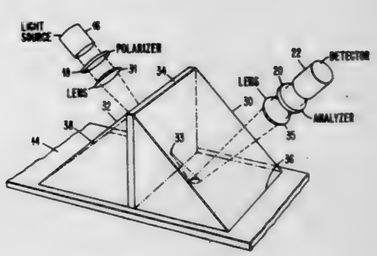
Previously recorded magnetizable spot indicia carried on a magnetic surface medium, are each repeatedly accessed for reading by a magnetic head transducer by relative motion of the surface and the head. Each time that the spot is read, the head supplies an output signal which is combined with previous and subsequent signals caused by repeated reading of the same spot. An enhanced signal, with a signal-to-noise ratio better than that normally obtainable, is formed by combining all output signals caused by repeated reading of a spot.

3,665,430
DIGITAL TAPE ERROR RECOGNITION METHOD UTILIZING COMPLEMENTARY INFORMATION
Kurt Hiuricha, and Gerd Wilken, both of Coburg, Germany, assignors to ERC Electronic Research Corporation, Basel, Switzerland
Filed Feb. 16, 1970, Ser. No. 11,805
Claims priority, application Germany, Feb. 18, 1969, P 19 08 060.5
Int. Cl. G11b *5/02*; G06f *11/12*
U.S. Cl. 340—174.1 H **1 Claim**



A method for recognizing errors appearing during the playback of digital tape recordings by recording the digital information on one track of a tape and complementary information on the other track of the tape, the complementary information being constituted by pulses which occur during every period when no pulse appears on the information track, and combining the signals in the two tracks during playback to form a reference clock pulse train.

3,665,431
MAGNETO-OPTIC TRANSDUCER
John K. Alstad; John D. Armitage, Jr., and Geoffrey Bate, all of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 25, 1970, Ser. No. 49,758
Int. Cl. G11b *5/30*
U.S. Cl. 340—174.1MO **9 Claims**

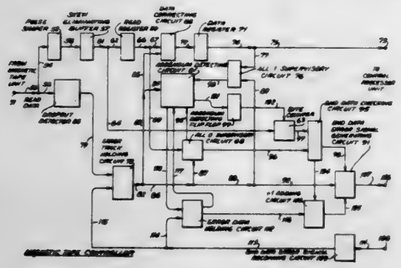


Disclosed herein is a new magneto-optic transducer which orients the transfer film non-parallel to the record storage medium with only an edge of the transfer film adjacent the record storage medium. The magneto-optic transducer also provides a reflecting surface adjacent the surface of the record storage medium on either side of the transfer film so that the magneto-optic Kerr or Faraday Effect may be utilized with the transducer. Furthermore, the reflecting surface permits a focused light beam to be directed near the edge of the transfer film adjacent the storage medium.

3,665,432
MAGNETIC TAPE UNIT READING SYSTEM

Takashi Kimura, Yokohama; Kazuo Kumagai, Kawasaki, and Kaoru Kanda, Yokahama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 24, 1970, Ser. No. 92,418
Claims priority, application Japan, Dec. 8, 1969, 44/98502; Dec. 23, 1969, 44/104017
Int. Cl. G11b 5/00, 27/36
U.S. Cl. 340—174.1 H 5 Claims

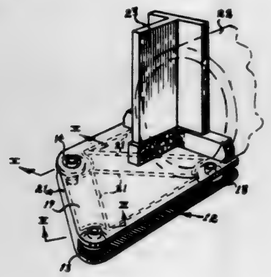


An all 0 byte detector detects from read data in a magnetic tape unit reading system a byte having data bits which are all 0. An all 1 byte detector detects from the read data a byte having data bits which are all 1. An addendum detector connected to the outputs of the all 0 byte detecting means and the all 1 byte detecting means detects all 0 and all 1 bytes as a virtual addendum to the read data by detecting the all 0 and all 1 bytes of the all 0 byte detector and the all 1 byte detector. A timer connected to an output of the addendum detector times a specific predetermined period of time starting with the detection of the data as a virtual addendum by the addendum detector. A byte counter connected to the timer counts the bytes of the read data. An end data checking circuit connected to the output of the byte counting means and to an output of the all 0 byte detector determines if an all 0 byte is detected by the all 0 byte detector during the specific period of time. An output is connected to the output of the end data checking circuit.

3,665,433
LINEAR POSITIONER FOR MAGNETIC TRANSDUCER

Daniel L. Gillum, Santa Barbara, and Donald E. Gillum, Goleta, both of Calif., assignors to Information Magnetics Corporation, Goleta, Calif.

Filed Oct. 9, 1970, Ser. No. 79,481
Int. Cl. G11b 21/02; F16c 21/00
U.S. Cl. 340—174.1 F 10 Claims

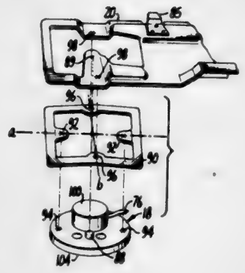


A carriage for moving read-write transducers for moving data media (discs, drums, tape, etc.) is designed for minimum friction of movement by having wheels with rims of circular cross-section that engage rails or grooves of circular cross-section, but with a different radius. Minimum mass is achieved by having the carriage body webbed and the spaces between the webs filled with an adherent lightweight material such as plastic foam. One of the carriage wheels is adjustable.

3,665,434
CERAMIC TRANSDUCER WITH METALLIC PLUGS TO FACILITATE MOUNTING

Roy A. Applequist, San Jose, and Laurence M. Wilson, Los Gatos, both of Calif., assignors to Memorex Corporation, Santa Clara, Calif.

Original application Mar. 22, 1968, Ser. No. 715,237, now Patent No. 3,544,980. Divided and this application Feb. 26, 1970, Ser. No. 18,390
Int. Cl. G11b 5/60, 5/42
U.S. Cl. 340—174.1 E 1 Claim



The recording head is in direct contact with the access arm at only the point at which a pivot pin fixed to the recording head contacts a support portion of the access arm. The actual suspension of the head is accomplished by a square gimbal spring with tabs on the inner periphery of the spring. The recording head is drilled with undercut blind holes and metal inserts with sloping sidewalls are secured in the holes with epoxy resin so that the tabs may be welded to the metal inserts. The difficulty of attaching a gimbal spring to a ceramic head is obviated by inserting metallic plugs into the holes in the ceramic shoe of the head.

3,665,435
SYSTEM FOR CONTROLLING TAPE READ-OUT DEVICES

Tsutomu Oya, and Kiyoshi Ebine, both of Tokyo, Japan, assignors to Japan Business Automation Co., Ltd., Tokyo and Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

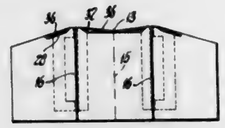
Filed May 11, 1970, Ser. No. 36,254
Claims priority, application Japan, May 12, 1969, 44/35785
Int. Cl. G11b 15/20
U.S. Cl. 340—174.1 B 4 Claims

A system for controlling tape read-out devices to read out data recorded on a tape in such a manner that the tape is first driven in the direction opposite to the read-out direction and after a predetermined time it is driven in the read-out direction for starting the read-out.

3,665,436
LONG-WEARING MAGNETIC HEAD

Joseph John Murray, Neaconset, and Charles B. Pear, Jr., Greenlawn, both of N.Y., assignors to Potter Instrument Company Inc., Plainview, N.Y.

Filed June 17, 1970, Ser. No. 47,007
Int. Cl. G11b 5/22, 5/40
U.S. Cl. 340—174.1 F 2 Claims

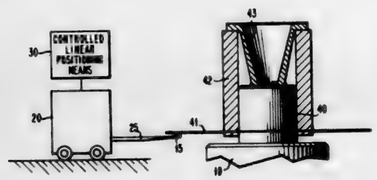


The specification and drawings disclose a long-wearing, multiple-track magnetic head in which a ceramic coating tapers to a feather edge that resists spalling and galling on each side of the transducer gap line.

3,665,437
METHOD FOR ALIGNING MAGNETIC HEADS FOR USE IN RECORDING A MASTER DISK PACK

Francis E. Mueller, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 22, 1970, Ser. No. 48,062
Int. Cl. G11b 5/46, 21/10
U.S. Cl. 340—174.1 C 1 Claim

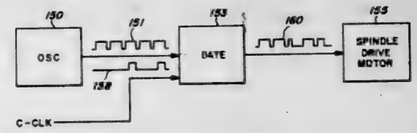


This invention discloses a method for aligning magnetic heads for use in recording a master disk pack. The steps comprise recording a signal for use in determining a reference track on each of a plurality of disks, assembling the disks on a hub so as to form a disk pack, and aligning a plurality of packwriting heads so that each head corresponds to the reference track.

3,665,438
APPARATUS FOR CONTROLLING TAPE SPEED

Kenneth E. Pope, Litchfield Park, Ariz., assignor to Cas, Inc., Phoenix, Ariz.

Filed Aug. 1, 1969, Ser. No. 846,779
Int. Cl. G11b 15/52; B65h 25/12
U.S. Cl. 340—174.1 A 3 Claims

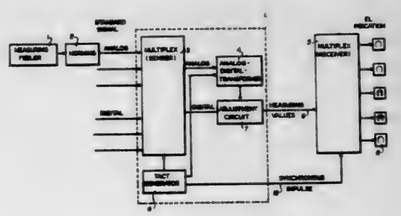


A magnetic tape cassette, having magnetic tape therein pre-recorded with a clock track, receives information in digitally encoded form from a keyboard. The information from the keyboard is encoded and temporarily stored in a magnetic core encoder and subsequently delivered to a shift register. The shift register applies the information to the cassette magnetic tape on a data track parallel to the clock track. Clock pulses are placed on the data track at the beginning of each bit cell to identify the bit cell boundary. The data clock and the data bit are written in concert with the pre-recorded clock track so that the data track on the cassette magnetic tape may be written and subsequently be read independent of the velocity considerations. The information thus recorded on the cassette magnetic tape is transferred to conventional computer tape by reading the data present in the data track and re-encoding the data to be temporarily stored in a buffer. The information thus stored is read onto the computer tape in the middle three tracks of the computer tape regardless of the number of tracks available on the computer tape. The information is read onto the computer tape such that each transverse bit position on the tape represents an encoded form of a single information bit rather than the encoded form of an information character. The magnetic tape cassette is mounted in a receiver that is hinged to permit removable engagement of cassette hubs with a spindle. The spindle is driven by an electric motor, the speed of which is controlled by applying electrical energy thereto from an oscillator through a gate; the gate is responsive to pulses from the pre-recorded clock track for controlling the drive motor velocity.

3,665,439
OPERATION SUPERVISION SYSTEM FOR AIRPLANES

Hans Brunner, and Karl Busch, both of Frankfurt, Germany, assignors to VDO Tachometer Werke, Adolf Schindling GmbH, Frankfurt, Germany

Filed Apr. 13, 1970, Ser. No. 27,869
Int. Cl. G08b 5/22
U.S. Cl. 340—183 14 Claims



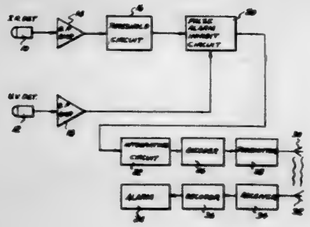
An operation supervision system for airplanes with a plurality of measuring feelers, which comprises means for transforming the measuring values into the form of electrical out-

put signals. Indication devices are coordinated to and are operable by the electrical output signals. Norming members follow the measuring feelers. A multiplex sender is operatively connected with the norming members, and senses cyclically the measuring values normed to standard signals and fed to an analog to digital converter. A multiplex receiver is connected with the output of the analog to digital converter by means of a transmission conduit, and quasi-analog electroluminescent display means are provided to which the multiplex receiver divides the measuring values.

3,665,440
FIRE DETECTOR UTILIZING ULTRAVIOLET AND INFRARED SENSORS

James M. McMenamin, Livonia, Mich., assignor to Teeg Research, Inc., Detroit, Mich.

Filed Aug. 19, 1969, Ser. No. 851,221
Int. Cl. G08b 17/12
U.S. Cl. 340—228.2 8 Claims

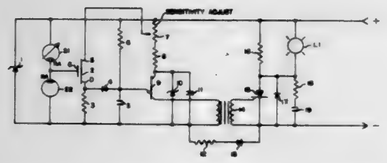


A fire detector consisting principally of a first radiation detector for detecting radiation in the infrared region of the spectrum and a second detector for detecting radiation in the ultraviolet region of the spectrum, connected to an alarm through a logic circuit. The logic circuit is adapted to set-off the alarm only if the infrared detector detects infrared radiation at a predetermined level in the flicker frequency range of a flame for a predetermined period of time in the absence of ultraviolet radiation at such flicker frequency detected by the ultraviolet detector.

3,665,441
METHOD AND APPARATUS FOR DETECTING AEROSOLS

Michael Suchomel, Mountainside; William Tipton, Newark, both of N.J., and James H. Burnett, Wilton, Conn., assignors to General Signal Corporation, Rochester, N.Y. and Edwards Company, Inc., Norwalk, Conn.

Continuation of application Ser. No. 702,881, Feb. 5, 1968, now abandoned. This application Sept. 14, 1970, Ser. No. 72,103
Int. Cl. G08b 17/10
U.S. Cl. 340—237 S 6 Claims

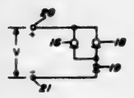


Apparatus whereby the presence of aerosols in an atmosphere is detected by measuring the level of the ion current through a chamber open to the atmosphere, wherein an electric field impressed across the electrodes of the chamber is selected within a range of values maximizing the effect of aerosols on the level of the current through the chamber and the signal developed relative to the chamber current is detected by circuitry including a metal oxide silicon field effect transistor.

3,665,442
NON-VOLTAGE SENSITIVE INDICATOR LIGHT

William Thomas Brooks, 4300 Washington, Midland, Mich.

Filed June 2, 1969, Ser. No. 829,339
Int. Cl. G08b 21/00
U.S. Cl. 340—248 R 3 Claims

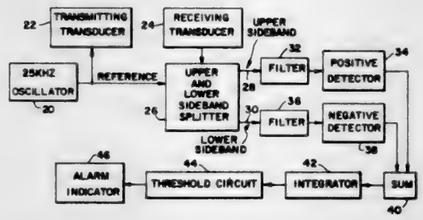


An indicator light unit comprising a field effect current regulator diode in series with a gallium arsenide phosphide diode (solid state light). This configuration when connected across a pair of terminals such as the firing circuit of an airborne rocket, will enable the detection of stray voltages on the terminals considerably below the normal firing voltage without damage to the light when the operating voltage is impressed.

3,665,443
ULTRASONIC INTRUSION ALARM

Aaron A. Galvin, Lexington, Mass., assignor to Aerospace Research, Inc., Boston, Mass.

Filed Sept. 3, 1970, Ser. No. 69,306
Int. Cl. G08b 19/00
U.S. Cl. 340—258 A 14 Claims



An ultrasonic intrusion alarm system for detecting moving targets in a manner which effectively discriminates against interfering phenomena which could otherwise cause false alarm indications. The alarm system is operative to discriminate against signals attributable to spurious conditions and to process those signals attributable to true moving targets, thereby to subtantially lessen the false alarm rate.

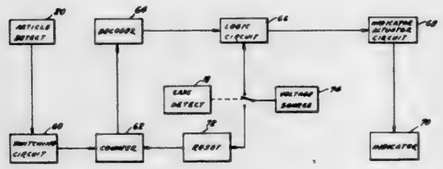
3,665,444
MISSING CONTAINER DETECTOR HAVING INTEGRATED CIRCUIT MODULES

Hugh D. Scott, Richmond, Va., assignor to Simplimatic Engineering Co., Lynchburg, Va.

Filed Dec. 28, 1970, Ser. No. 101,629
Int. Cl. G08b 21/00
U.S. Cl. 340—259 16 Claims

A control apparatus for a missing container detector comprises a photoelectric cell mounted on a suitable frame at a control station along a conveyor belt for sensing the presence of a case at said control station, a plurality of container sensing heads, one for each lane, mounted above the conveyor belt and adapted to sense individual containers as they pass thereunder, and a control circuit for indicating when a case is missing one or more containers.

The control circuit comprises a binary counter, a switching circuit adapted to produce a count signal in response to the passage of each full row of containers under said sensing heads, a plug-in decoder adapted to provide a unique logic output upon the registration of a predetermined count in said counter, and a logic circuit operatively connected to said

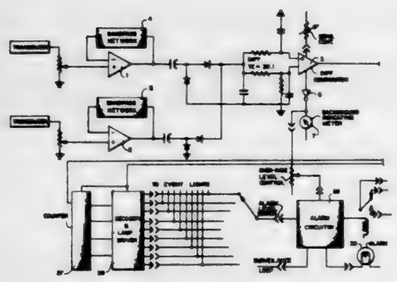


photoelectric cell and said decoder output and adapted as a case leaves said control station to actuate an indicating means in the absence of said unique output from said decoder. The indicating means may be an audible or visible alarm, means to eject a case, and/or means to stop the conveyor. The circuit utilizes exclusively solid state components and a variety of differently programmed plug-in decoders may be used thereby to adapt the circuit to cases having varying capacities.

3,665,445
DETECTION SYSTEM

Robert E. Riley, Jr., Jackson, Miss., assignor to Scientific Security Systems, Incorporated, Jackson, Miss.

Filed Dec. 22, 1970, Ser. No. 100,716
Int. Cl. G08b 19/00
U.S. Cl. 340—261 5 Claims

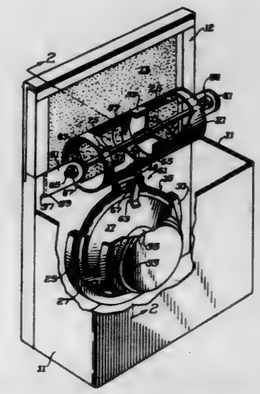


An intruder detection system wherein vibrations generated by an intruder are detected apart from normal environmental noise and are utilized to set off an alarm. The system detects activity rate rather than total generated energy by measuring duration, frequency and amplitude of generated sound. Detected vibrations having a predetermined frequency range provide an input signal for both legs of a differential amplifier. The output signal of the differential amplifier is analyzed for presence of characteristics typical for intruder-generated vibrations.

3,665,446
APPARATUS FOR SPEAKER ACTUATED VISUAL EFFECTS HAVING MECHANICAL DISPLAY ACTUATION

George C. Burns, Glendale Heights; Elmer C. Henriksen, Chicago, and Eugene V. Mateja, Norridge, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Jan. 18, 1971, Ser. No. 107,206
Int. Cl. G08b 21/00; H01h 27/04, 35/02
U.S. Cl. 340—261 16 Claims

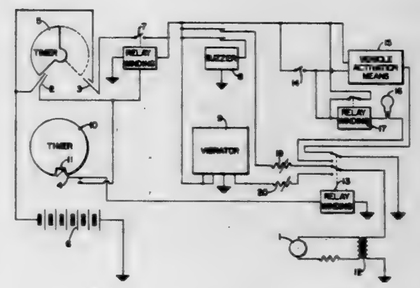


A permanent magnet speaker is mounted within an enclosure. The vibratory movements of the speaker cone are used to drive a translucent color cylinder which is positioned behind a viewing screen. A pair of incandescent bulbs are connected across the speaker coil and vary in intensity in accordance with the signal applied to the speaker. The screen displays a changing color pattern which varies in intensity with the audio signal.

3,665,447
METHOD AND APPARATUS FOR PREVENTING INEBRIATED PERSONS FROM OPERATING VEHICLES

Dennis P. Bidwell, 31 North Main St.; Douglas R. Davies, 4 Occum Ridge; John T. Hanley, Jr., 202 South Massachusetts Hall; William K. Hart, 102 Hitchcock Hall; Thomas A. Henderson, 114 French Hall; Thomas W. Lovell, 409 New Hampshire Hall, all of Hanover, N.H., and Lloyd C. Fogg, 2 Strafford Avenue, Durham, N.H.

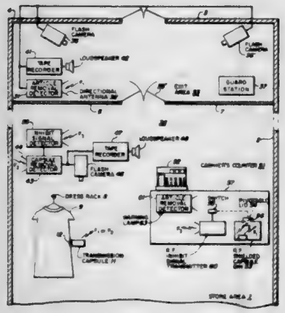
Filed Dec. 5, 1969, Ser. No. 882,626
Int. Cl. G08b 21/00
U.S. Cl. 340—279 8 Claims



A method and apparatus for preventing an inebriated person from operating a motor vehicle utilizing the flicker fusion

frequency phenomenon to identify the inebriate and automatically prevent him from operating the vehicle. The individual is exposed to a light source which randomly changes between an illumination which appears flashing to the sober individual and an illumination which appears steady. Means are provided to prevent operation of the vehicle until a signal from the individual and a signal representing the light change are received contemporaneously by said means.

3,665,448
ELECTRONIC SHOPLIFTING PREVENTION SYSTEM
Hugh A. McGlinchey, 122 Milton Street, Waltham, Mass., and Robert L. Nathans, 36 Stag Drive, Billerica, Mass.
Filed Aug. 3, 1970, Ser. No. 60,593
Int. Cl. G08b *21/00*
U.S. Cl. 340—280 **30 Claims**

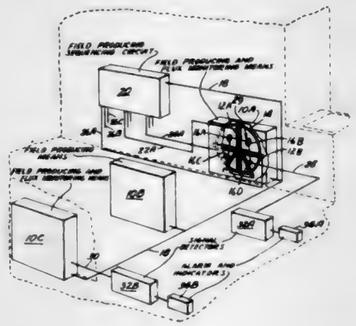


A system for preventing shoplifting of articles through a first exit area having an article removal detector positioned therein. A small capsule bearing the designation DON'T REMOVE ELECTRONIC ALARM is attached to an article to be protected, such as a dress, by means of a safety pin. The capsule includes a wristwatch battery which powers a single-stage, solid state oscillator which generates an RF signal having a frequency F_1 when the safety pin is closed. A shoplifter who passes through the exit area with the dress having the capsule fastened thereto will actuate an article removal detector which will in turn actuate a pair of flash cameras which are positioned to effectively photograph the entire exit area. If the shoplifter unfastens the safety pin in the process of discarding the radiating capsule within the store in an attempt to thwart the system, a capsule removal detector will immediately actuate a flash camera or annunciator to indicate unauthorized removal of the capsule. Upon payment of the dress, the cashier removes the capsule and very briefly causes an inhibit signal to be transmitted to the capsule removal detector to prevent activation of the capsule removal alarm devices during authorized removal of the capsule. Another detector may be utilized at the cashier's counter to detect secreted items bearing the capsule.

3,665,449
METHOD AND APPARATUS FOR DETECTING AT A DISTANCE THE STATUS AND IDENTITY OF OBJECTS
James T. Elder, Shoreview, and Donald A. Wright, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed July 11, 1969, Ser. No. 840,973
Int. Cl. G01r *33/02*; G08b *13/24*
U.S. Cl. 340—280 **23 Claims**

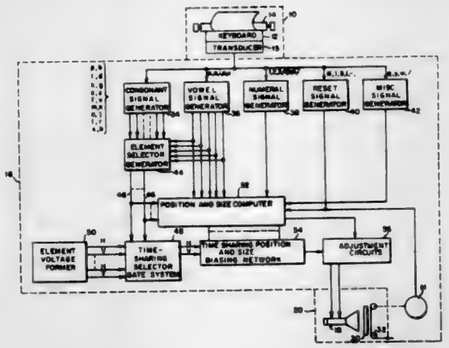
A non-contact method of and system for distinguishing the presence, identity or status of an object.

The system comprises a marker including a ferro-magnetic material to accompany each object to be detected, means for producing an alternating magnetic field within a zone through which the objects are to pass, means for monitoring magnetic flux changes within the zone and a circuit for detecting a flux change within the zone which corresponds to a signal characteristically produced by magnetization reversal of the marker ferro-magnetic material. The marker includes a relatively long, relatively thin, open-strip of a ferro-mag-



netic material and may include a remanently magnetizable control element to provide a sensitized and desensitized marker for demagnetized and magnetized states, respectively, of the control element. A plurality of magnetic field producing means are employed to produce in the zone magnetic fields of different orientations, virtually assuring production of a characteristic signal when a marker is passed into the zone.

3,665,450
METHOD AND MEANS FOR ENCODING AND DECODING IDEOGRAPHIC CHARACTERS
Carl Leban, Lawrence, Kans., assignor to Leo Stanger, Summit, N.J., a part interest
Continuation-in-part of application Ser. No. 682,400, Nov. 13, 1967, now abandoned. This application July 2, 1968, Ser. No. 742,076
Int. Cl. G06k *15/20*; B41b *19/04*
U.S. Cl. 340—324 A **21 Claims**



Chinese language characters are transcribed by assigning coded digits such as letters or numerals to define first the gross form of each character on the basis of the arrangement of sections in the character, then to define the shapes of elements in each section, then to define the relative juxtaposition and cross over and enclosure and size differentiation of elements within each section; and by ordering the digits on

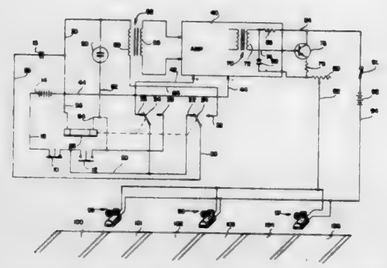
the basis of a predetermined sequence of element appearance within each section and on the basis of a predetermined sequence within sections. The thus transcribed characters can be numerically or alphabetically indexed. They can be used to select preset typing strokes that can be assembled into characters and thus form a Chinese language typewriter.

3,665,451
HEAD ATTACHED SAFETY LIGHT
Constant E. Keith, Rt. 3, Box 663, Theodore, Ala.
Filed Aug. 31, 1970, Ser. No. 68,339
Int. Cl. G08b *5/00*
U.S. Cl. 340—321 **4 Claims**



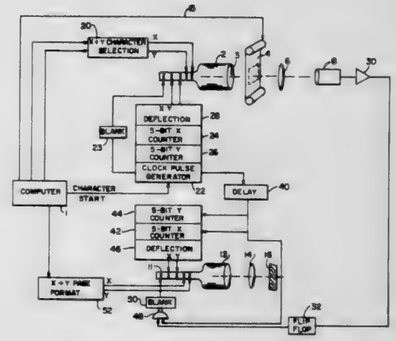
A head supported safety light device primarily for use when riding a bike, walking alongside a dimly lighted road or traversing a similarly dangerous area. It comprises a readily attachable harness embodying an adjustable head encircling strap suspended and held by a complemental bridle-like strap saddled over the wearer's head. An encased flashlight battery is perched atop the bridle-like strap and is cooperable with current conducting wires and a suitable switch. These wires are passed upwardly through tubular hingedly mounted arms which are ornamental, if desired, and which have socket members atop the elevated upper ends equipped with easy-to-see bulbs with or without built-in flashers.

3,665,452
STARTING-TIMING DEVICE FOR SWIMMING, TRACK AND FIELD
William T. MacCreadie, R.D. No. 2, Mifflinburg, Pa.
Filed Mar. 16, 1970, Ser. No. 19,631
Int. Cl. G08b *21/00*
U.S. Cl. 340—323 **6 Claims**



A combination sound-flash system for starting races wherein a sound, indicating the start of the race, is produced through loudspeakers adjacent the racing lanes so that all contestant involved in the event receive the start signal simultaneously. Accompanying the sound is a flash produced by the system to permit accurate timing of the race from a distant point.

3,665,453
CHARACTER GENERATOR EMPLOYING PULSED BEAM INTERROGATION OF MATRIX
Asger T. Nielsen, San Diego, Calif., assignor to Compufoto, Inc., Wellesley Hills, Mass.
Filed June 1, 1970, Ser. No. 42,009
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **7 Claims**



A cathode ray tube character generator suitable for computer output microfilming employs pulsed beam interrogation of a selected sector of a character matrix according to a predetermined pattern. There is shown a tube having a phosphor plate producing stationary light spots for effectively dissecting a character on a matrix transparency that is external of the tube. The pattern of stationary light pulses is produced with high speed phosphor and digitally implemented deflection system, with each stationary light spot being judged on a digital on or off basis. High quality character generation at suitable rates results. The system provides improved signal to noise ratio for the signal produced from the character matrix; e.g. with a cathode ray tube light source, the system decreases noise which is realized to be related to microscopic variations in the phosphor surface.

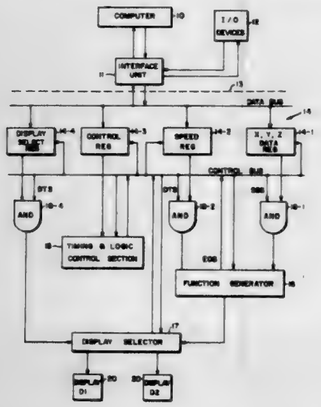
An implementation of the control system is shown as essentially a logic network, with transistor switching of various resistors in and out of the deflection coil circuit according to predetermined progression, with the light spot pattern being developed e.g., on a left to right, down, right to left down basis. Incremental shift of the deflection system from one setting to the next occurs with the beam blanked, and no change in setting occurs when the beam is unblanked.

A cathode ray tube system identical to the character generator is used as the display tube for the microfilm camera, both controlled by a master clock, with delay of the pulses to the display tube. In both systems the beam unblank pulses are correlated with the clock pulses, and the falling edge of the clock pulses controls the next incremented setting of the deflection network.

3,665,454
VARIABLE RATE DISPLAY GENERATOR
Robert D. Stoddard, Reeds Ferry; Arnold Schumacher, Cricket Hill; Grant W. Conley, Milford, and Roy M. Williams, Jr., Nashua, all of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.
Filed Apr. 21, 1969, Ser. No. 818,015
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **16 Claims**

A computer controlled multi-station display system utilizing a single display generator unit time shared by display indicators which have different writing rates. The display generator includes a register bank which receives and holds display indicator select and writing rate information as well

as symbol tracing information. A control section routes the display select information to a display selector and the writing rate and the symbol tracing information to a function generator which produces X, Y and Z axis modulating signals at a rate which corresponds to the writing rate information.

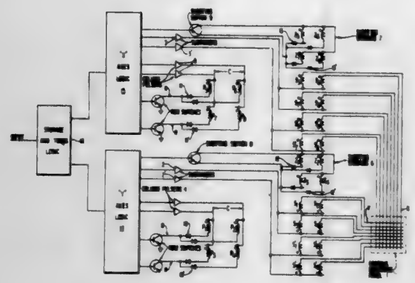


The display selector routes the generated X, Y and Z signals to a display indicator having a writing rate corresponding to the rate at which the X, Y and Z signals are produced. The function generator is illustrated as including a character generator having circuitry for varying rate at which characters are written on the display surface of the indicator.

3,665,455
BINARY ADDRESSABLE MAGNETICALLY MULTIPLEX DISCHARGE MANIPULATION SYSTEM FOR MULTIPLE GASEOUS DISCHARGE DISPLAY/MEMORY PANEL

Larry J. Schmersal; Joseph L. Mlavec; Edward W. Pierce, and David S. Wojcik, all of Toledo, Ohio, assignors to Owens-Illinois, Inc.

Filed Sept. 1, 1970, Ser. No. 68,761
Int. Cl. H05b *41/24*; G08b *5/36*
U.S. Cl. 340—343 4 Claims

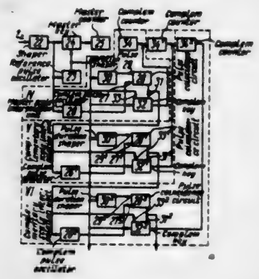


A binary addressable magnetically multiplexed system for selectively supplying discharge conditioning and discharge manipulating pulse potentials to row-column conductor pairs of a multiple gaseous discharge display/memory panel having a row-column conductor display/memory matrix wherein the conductors are non-conductively coupled to the gaseous medium in the panel. The panel discharge manipulation system is characterized by plurality of transformers, preferably of the printed circuit type wherein all of the windings of a set are printed on flexible board sheets and are the primary and secondary windings are layered. The transformers for selected groups of the row and column conductors, respectively are thereby magnetically coupled to multiple secondary windings which are electrically connected to the row and column conductors in the panel matrix. The system is further characterized by means for pulsing the primary windings including binary logic circuit means and means for selectively energizing select ones of the primary windings and their multiple secondary windings.

3,665,456
METHOD OF AND APPARATUS FOR ANALOG-TO-DIGITAL CONVERSION OF PHYSICAL VALUES AND THEIR RATIOS

Alexandr Alexandrovich Bogoroditsky, ulitsa Krasnaya, 122, kv. 2.; Tamara Nikolaevna Ryzhevskaya, ulitsa Mira, 18, kv. 51; Alexei Gordeevich Ryzhevsky, ulitsa Mira, 18, kv. 51, and Viktor Mikhailovich Shlyandin, ulitsa Lermontova, 12, kv. 17, all of Penza, U.S.S.R.

Filed June 8, 1970, Ser. No. 44,256
Claims priority, application U.S.S.R., July 14, 1969, 1348411
Int. Cl. H03k *13/06*
U.S. Cl. 340—374 AD 7 Claims



A method of analog-to-digital conversion of physical values and ratios thereof, consisting in that the value to be digitized is compared against a reference scale of standards based on the value of a divisor, and then several complementary scales are successively compared against the reference scale, each of the complementary scales being shifted relative to the reference scale by a value equal to the remainder left over as a result of the preceding comparison, the number of comparison operations being selected in accordance with the required accuracy of conversion, while the standards of the reference scale are presented in the course of each comparison as a sum of a coincidence zone equalling the required error of the sampling constant during the given comparison and a non-coincidence zone equal in magnitude to a respective complementary scale; and devices based on said method for analog-to-digital conversion of frequency-time signals (time intervals, duration of electric pulses, frequency of oscillations, phase shift angle between two oscillations, etc.).

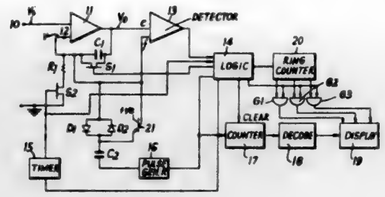
3,665,457
ANALOG TO DIGITAL CONVERTER

Desmond Wheable, Farnborough, England, assignor to The Solartron Electronic Group Limited, Farnborough, Hampshire, England

Filed Oct. 2, 1968, Ser. No. 764,489
Claims priority, application Great Britain, Oct. 4, 1967, 45,281/67
Int. Cl. G09b *13/00*
U.S. Cl. 340—347 NT 8 Claims

A successive approximation type of analog to digital converter is disclosed which combines the advantages of high linearity, high precision and high speeds of digitization which

are characteristic of converters of this type, with certain important advantages which are characteristic of analog to

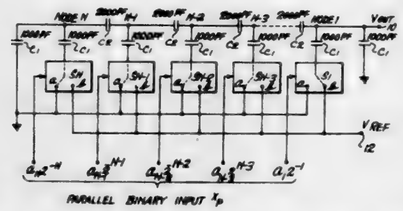


digital converters of the integrating type; specifically, good common or series mode rejection.

3,665,458
CAPACITOR LADDER NETWORK

Owen R. Mulkey; Charles A. Kleingartner, and Arnold A. Zoutte, all of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 14, 1970, Ser. No. 37,081
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 DA 11 Claims

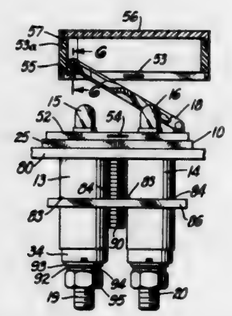


A high speed digital to analog converter which utilizes capacitors. A capacitor ladder network in combination with switching means for selectively excluding individual ones of the capacitors from the network depending upon the parallel binary input signal information present is determinative of the analog output signal of the converter.

3,665,459
ANNUNCIATOR LIGHT HINGED COVER

James N. Dupree, South El Monte, and Frank A. Walker, Huntington Beach, both of Calif., assignors to Dupree, Inc., El Monte, Calif.

Filed Dec. 17, 1970, Ser. No. 98,979
Int. Cl. G09f *9/00*; B60q *3/04*
U.S. Cl. 340—381 11 Claims

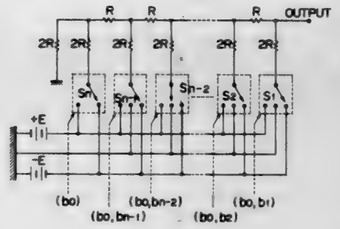


A light housing for mounting in an instrument panel or the like and carrying a legend for illumination when lamps are energized. An annunciator light requiring small frontal panel space, while providing a maximum legend area and high intensity. In the housing one end of a plate is hinged to a removable front cap with the other end hinged to the housing providing access to lamps carried in sockets fixed in the housing.

3,665,460
DECODING SYSTEM

Junzo Murakami, Kawasaki-shi; Shigeo Asakawa, Tokyo, and Keiji Takeuchi, Yokohama-shi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Sept. 22, 1969, Ser. No. 859,879
Claims priority, application Japan, Sept. 26, 1968, 43/69116; Nov. 14, 1968, 43/82854; Sept. 26, 1968, 43/69117; Nov. 20, 1968, 43/83226; Nov. 15, 1968, 43/84524
Int. Cl. H03k *13/04*
U.S. Cl. 340—347 DA 14 Claims

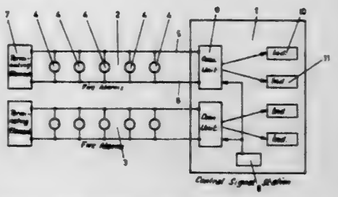


A decoding system comprising a network including a plurality of signal supply terminals respectively corresponding to individual digits in the form of binary code, a signal source generating electric signals of three different values in response to the most significant digit and each corresponding digit, said electric signals being selectively applied to the corresponding signal supply terminals by means of switching circuits.

3,665,461
APPARATUS FOR MONITORING THE CONDUCTORS OR LINES OF FIRE ALARM INSTALLATIONS

Alex Gnagi, Stafa, and Peter Muller, See, both of Switzerland, assignors to Cerberus AG, Mannedorf, Switzerland

Filed Sept. 10, 1970, Ser. No. 71,111
Claims priority, application Switzerland, Sept. 16, 1969, 13981/69
Int. Cl. G08b *29/00*
U.S. Cl. 340—409 15 Claims



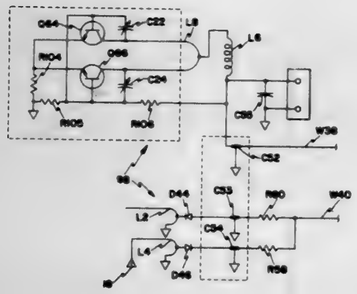
An apparatus for supervising the continuity of the conductors of an alarm installation, especially a fire alarm installation, comprising a central signal station and a plurality of fire alarms each of which draws a quiescent current during normal operation and an alarm current when in an actuated condition. At least one pair of conductors electrically couples the fire alarms in parallel with one another and with such central signal station. A direct-current voltage supply is provided for the parallely connected fire alarms. Terminating element means serves to monitor the continuity of the con-

ductors, such terminating element means being connected across the ends of the conductors located remote from the central signal station and generates and applies to such conductors a signal containing at least an alternating-current component, said signal being distinguishable from the signal delivered by said direct-current voltage supply to said fire alarms and further being distinguishable from the quiescent and alarm current signals drawn by said fire alarms. Also, the central signal station is provided with means responding to the presence of the signal applied to the conductors by the terminating element means.

3,665,462
ALARM SYSTEM

William Joe Seaton, Kearns, and Arnold T. Pratt, Woods Cross, both of Utah, assignors to Garside Corporation, Salt Lake City, Utah

Filed Apr. 20, 1970, Ser. No. 29,977
Int. Cl. G01s *9/02*
U.S. Cl. 343—5 PD **4 Claims**



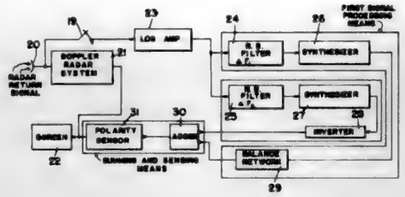
An alarm system the operation of which is controlled by a key switch and, if desired, by a seven-button decoder. Several abnormality detecting devices are connected to a computer dialer. The detecting devices may consist of a wide variety of sensors, three types of which are mentioned in this specification. Upon receipt of an alarm signal from a detecting device, some of the computer dialer circuitry interrogates that signal and, as a function of that signal, actuates the proper output circuitry of the computer dialer. The output circuitry specifically comprises a two-track tape playback and telephone dialing equipment for use with a commercial telephone system to deliver one or more prerecorded telephone warning messages to selected persons. The system cannot be jammed by incoming calls. An alarm device adapter for use with such equipment as cameras, tape recorders, lights, sirens or bells may also be provided.

3,665,463
FIXED TARGET DETECTOR FOR USE WITH DOPPLER RADAR

Jacob H. Kubanoff, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Army

Filed Sept. 14, 1970, Ser. No. 71,817
Int. Cl. G01s *9/42*
U.S. Cl. 343—5 R **16 Claims**

A return radar signal processing system which may be connected to existing doppler radar for detecting a stationary target or normally moving target which has stopped. The return radar signal is sampled in the clutter portion and moving target (or doppler) portion thereof, the noise energy in the clutter portion being compared with the noise scintillation products energy in the doppler portion. An unbalance or

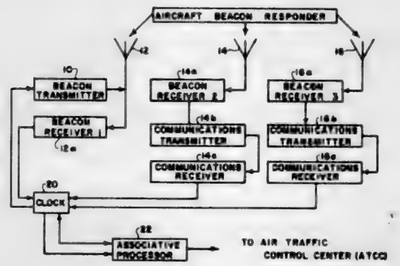


change in the ratio of these two energy levels is detected as a fixed target.

3,665,464
METHOD AND APPARATUS FOR HIGH SPEED VEHICLE POSITION ACQUISITION

Willard C. Mellander, Kent, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed May 1, 1969, Ser. No. 821,028
Int. Cl. G01s *9/56*
U.S. Cl. 343—6.5 R **9 Claims**

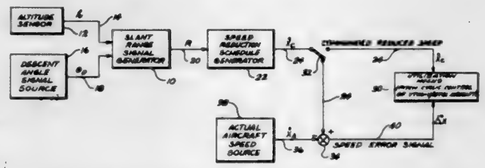


A transmitted interrogation and multiple receptions are utilized to provide aircraft position determination at high speed. A processing application of a data processor is utilized to implement the extensive data handling requirements of the system. The system may be ground based or is completely compatible with a navigational satellite or suitably equipped aircraft. Overlapped responses are substantially eliminated by discretely interrogating aircraft or other vehicles in accordance to distance.

3,665,465
DECELERATION SCHEDULE FOR AIRCRAFT LANDING

Justin G. Miller, deceased, late of Los Angeles, Calif. (by Rita Ann Miller, administratrix), assignor to Lear-Siegler, Inc., Santa Monica, Calif.

Filed Oct. 22, 1969, Ser. No. 870,008
Int. Cl. B64c *19/00*; G06f *7/66*
U.S. Cl. 343—7 ED **23 Claims**

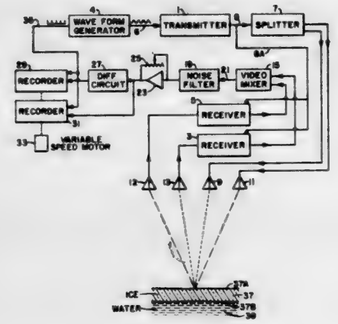


An aircraft guidance system for generating a speed reduction schedule during deceleration along a known descent angle. Radar-sensed altitude along the descent angle is used to produce a signal representative of the aircraft's range to touchdown. The derived range signal is used to command a controlled speed reduction as range to touchdown decreases.

3,665,466
DETERMINATION OF ICE THICKNESS

Haines C. Hibbard, Houston, Tex., assignor to Esso Production Research Company

Filed Mar. 20, 1970, Ser. No. 21,325
Int. Cl. G01s *9/04*
U.S. Cl. 343—12 R **6 Claims**

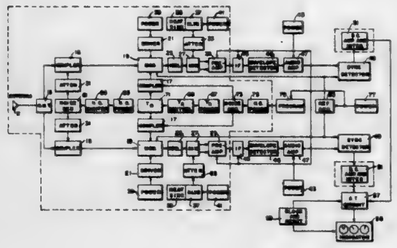


The thickness of sea ice is measured using a radar technique with radio frequency energy having frequency in the range between a frequency below 2000 MHZ and a frequency above 4000 MHZ. The penetration of radio frequency energy transmitted from above the ice and reflected by the ice or the water below it depends on the frequency of the energy. The frequency may be swept over the above range and the travel time of reflected energy recorded to obtain a measure of the salt concentration in ice.

3,665,467
CLEAR AIR TURBULENCE DETECTOR

George G. Haroules, Lexington; Wilfred E. Brown, III, Acton; Harold I. Ewen, Weston; Arthur E. Lilley, Belmont, and Ralph D. Kedis, Newton, all of Mass., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Nov. 19, 1969, Ser. No. 877,990
Int. Cl. G01w *1/00*
U.S. Cl. 343—100 ME **7 Claims**

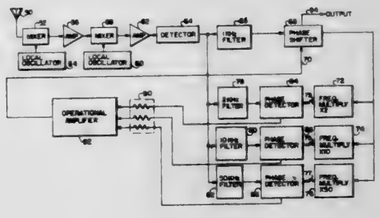


This disclosure describes an apparatus for warning the pilot of an aircraft of a region of clear air turbulence. A multi-channel radiometric sensor mounted on the aircraft detects both the ambient temperature of the air and any temperature anomaly that is present along the forward flight path. In those cases where temperature anomalies are associated with the presence of a clear air turbulence region, the invention provides means for remotely sensing these temperature anomalies through the application of a unique radiometric technique. By the detection of difference temperatures between a minimum of two channels, the invention provides a means for indicating the existence of a temperature anomaly indicative of clear air turbulence region. In addition, the distance from the aircraft to the anomalous temperature region is directly determined from the output indication of the radiometric sensor channels. The distance between the clear air turbulence region and the aircraft is determined by utilization of at least two observing frequencies which have known absorption coefficients of different values.

3,665,468
RADIO COMMUNICATION SYSTEM

James Evans Fleming, Fairfax; Clarence A. Lovell, McLean, and James M. Bendle, Alexandria, all of Va., assignors to Air Land Systems Co., Fairfax, Va.

Filed Feb. 25, 1970, Ser. No. 14,031
Int. Cl. G01s *1/08*
U.S. Cl. 343—102 **12 Claims**



A novel radio communication system is disclosed, the system having particular applicability and utility as a radio navigation aid. A transmitting means is utilized which, in the preferred inventive embodiment, comprises a plurality or array of antennas disposed in fixed spaced-apart relationship with one another at a known location. One of the transmitting antennas transmits a reference signal, preferably a carrier wave, modulated by a first frequency. The remaining transmitting antennas each transmits a single or double sideband suppressed carrier signal produced by respectively different modulating frequencies for each signal. These different modulating frequencies bear a harmonic or multiple relationship with the first modulating frequency. In the preferred inventive embodiment, each of the remaining transmitting antennas are disposed at different distances from the first or reference transmitting antenna.

The novel system further includes receiver and signal processing means disposed at a location remote from the location of the transmitting means. The receiver means generates from the received reference signal a signal having the frequency and phase of the first modulating signal at the transmitter. From this signal, the other modulating signals coherent with the first signal are derived. The receiver/signal processing means derives from the other received signals the second, third, and fourth modulating signals, and compares the phases of the signals of like frequency. The detected phase differences are indicative of the relative angular direction of the receiver from the transmitting array. In the preferred embodiment, the antennas of the transmitting array are disposed on a line and the phase difference detected in

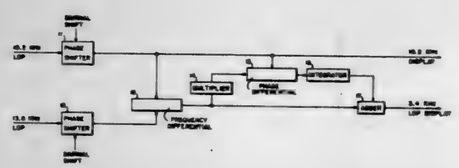
the receiver represents the angular deviation of the receiver from a plane bisecting and perpendicular to the line of transmitting antennas. The accuracy of the system is determined by the maximum spacing between a pair of antennas in the array. The other antennas are used only for resolving ambiguities.

3,665,469

APPARATUS FOR IMPROVING THE LANE RESOLUTION CAPABILITIES OF OMEGA NAVIGATION RECEIVERS

Melvin F. Williams, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 27, 1970, Ser. No. 14,913
Int. Cl. G01s *1/30*
U.S. Cl. 343—105 **4 Claims**



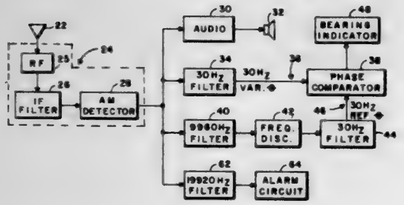
The invention consists of a system to improve the lane resolution of Omega Navigation Receivers. By measuring the average phase offset of the 3.4 kHz signal from the 10.2 kHz signal due to propagation variations, the offset can be added to the 3.4 kHz phase measurement to provide spatial coincidence of the 10.2 and 13.6 kHz lanes and thus provide better lane resolution of the 10.2 kHz lane.

3,665,470

MIST LINED VOR RECEIVER ALARM

William R. Hemme, Marion, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa

Filed Aug. 7, 1970, Ser. No. 61,954
Int. Cl. G01s *1/50*
U.S. Cl. 343—106 R **9 Claims**



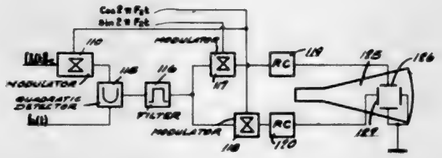
This invention relates to methods and apparatus for monitoring a frequency outside the standard VOR modulation spectrum to prevent reception of false information when a VOR receiver has been mistuned 50 kHz from the transmitting frequency of a desired ground station, and there is no actual ground station transmitting on the wrongly selected frequency.

3,665,471

METHOD OF INTEGRATION OF PHASE, INTEGRATOR-PHASEMETER AND THEIR APPLICATIONS

Robert Louis Gustave Laval, Chevilly-la-Rue, France, assignor to Societe Alsacienne De Constructions Mecaniques, Paris, France

Filed Oct. 20, 1959, Ser. No. 847,478
Claims priority, application France, Dec. 7, 1958, 778656
Int. Cl. G01s *5/02*
U.S. Cl. 343—112 R **3 Claims**



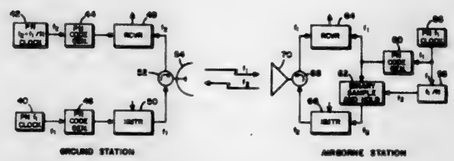
The present invention relates to a method of phase integration, and an electronic integrator-phasemeter for the application of this method as well as their applications, especially to an electronic correlator intended for the study of narrow band background noises, particularly utilizing the method disclosed in my copending application Ser. No. 847,477 filed Oct. 20, 1959.

3,665,472

TWO-WAY COMMUNICATION SYSTEM EMPLOYING TWO-CLOCK FREQUENCY PSEUDO-NOISE SIGNAL MODULATION

Earl M. Kartchner, Salt Lake City; Gary R. Van Horn, Granger, both of Utah, and Richard A. Wallace, Phoenix, Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Oct. 8, 1969, Ser. No. 864,596
Int. Cl. H04b *1/38*
U.S. Cl. 343—175 **3 Claims**



A digital two-way communication system utilizing RF transmissions that are phase-shift-keyed (PSK) by binary pseudo-noise (PN) code generators operating at different clock rates. Transmissions in the first and second directions are modulated by composite PN code generators operating at different first and second clock frequencies f_1 and f_2, respectively, where $f_1 = Nf_2$, with N being a positive integer having no factors in common with the lengths of the component PN codes from which the composite is formed. The binary digital data signals that are to be transmitted in either direction modulate a binary PN code which is a composite code generated from a plurality of component PN codes. Each of these data-modulated composite PN codes, which are generated at clock frequencies f_1 and f_2, respectively, modulates, in turn, an RF carrier signal.

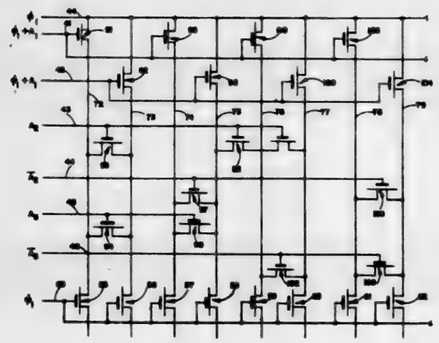
By having the two communication stations transmit and receive at different PN clock frequencies, equipment limitations that restrict transmitter performance in the second direction need not limit performance in the first direction, thereby allowing a higher clock frequency f_1, in the first direction and subsequent lower power required at the receiver at the other end for the same SNR out of the receiver.

3,665,473

ADDRESS DECODE LOGIC FOR A SEMICONDUCTOR MEMORY

Gary Lee Heimbigner, Anaheim, Calif., assignor to North American Rockwell Corporation

Filed Dec. 18, 1970, Ser. No. 99,440
Int. Cl. G11c *7/00*; H03k *19/34*, *19/168*
U.S. Cl. 340—166 FE **3 Claims**



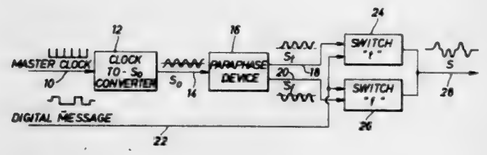
One address line of a related pair of address lines implementing address decode logic for a semiconductor memory provides an electrical ground discharge path for itself and the adjacent address line of the related pair when neither line is addressed. When one line of the related pair of address lines is addressed, the unaddressed line is converted to an electrical ground line and the addressed line remains charged. The related pairs of address lines provide decode logic for addresses differing at only one bit position (X, X). The different bit positions are implemented by field effect transistors used in precharging the address lines and in evaluating the address input signals.

3,665,474

HIGH DENSITY COMMUNICATIONS SYSTEM

Olin E. Thayer, Houston, Tex., assignor to Amecat Corporation, Houston, Tex.

Original application Aug. 19, 1966, Ser. No. 573,632, now Patent No. 3,497,618, dated Feb. 24, 1971. Divided and this application Jan. 12, 1970, Ser. No. 7,424
Int. Cl. H04b *1/04*, *1/16*
U.S. Cl. 343—200 **11 Claims**



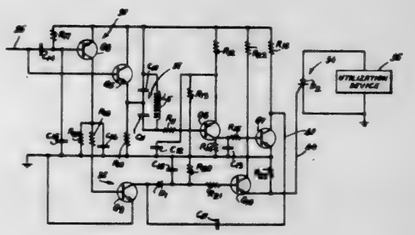
Binary data is encoded in sinusoidal form. Two complementry sine waves at the binary data frequency are generated; one is positively biased, the other is negatively biased. The binary data selectively gates each sine wave. At the receiver, a zero dc level sine wave is recovered and clock pulses are derived from the peaks of the recovered wave. One binary level is produced when a clock pulse coincides with a positive peak of the incoming sinusoid; the other binary level is produced when a clock pulse coincides with a negative peak of the incoming sinusoid.

3,665,475

RADIO SIGNAL INITIATED REMOTE SWITCHING SYSTEM

Herbert R. Gram, Madison, Conn., assignor to Transcience, Inc., Stamford, Conn.

Filed Apr. 20, 1970, Ser. No. 29,949
Int. Cl. H04b *7/00*
U.S. Cl. 343—225 **4 Claims**



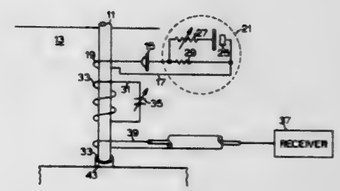
A radio signalling system includes a transmitter operating to transmit a continuous carrier signal periodically modulated with a tone signal burst. A receiver includes an amplifier-detector operating to recover the audio tone signal bursts, which are then amplified, threshold detected, and converted to corresponding output pulses. A discriminator, responding to the amplifier-detector output, enables a gate only during the intervals between tone signal bursts when unmodulated carrier is received. The output pulses are passed by the enabled gate and accumulated to ultimately effect triggering of switching means to initiate a remote switching function. Energization of the transmitter is achieved by selectively positioning a pivotally mounted battery to make an electrical contact between a battery terminal and a stationary terminal contact.

3,665,476

ANTENNA

Allen R. Taylor, Nutley, N.J., assignor to the Singer Company, New York, N.Y.

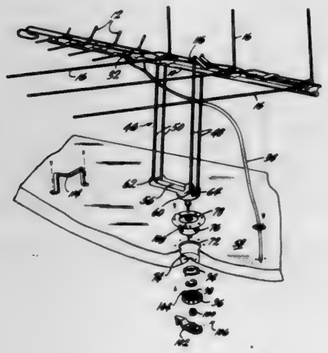
Filed Dec. 1, 1965, Ser. No. 510,808
Int. Cl. H01q *1/26*
U.S. Cl. 343—701 **1 Claim**



A receiving antenna for submarines wherein tunnel diodes are inductively coupled to a plurality of ferrite rod by a

coupling link. The tunnel diodes are back-biased by a biasing circuit to establish operation in the negative resistance region. Bias current and coupling are adjusted to provide cancellation of the major portion of the ferrite core losses and copper losses of the main turning winding.

3,665,477
ELEVATABLE AND FOLDABLE ANTENNA
Jack C. Budrow, and Glenn A. Reed, both of Battle Creek, Mich., assignors to Barker Manufacturing Co., Inc., Battle Creek, Mich.
Continuation-in-part of application Ser. No. 789,834, Jan. 8, 1969, now Patent No. 3,587,104. This application July 30, 1970, Ser. No. 59,604
Int. Cl. H01q *3/02*
U.S. Cl. 343—714 **13 Claims**



An antenna having dipole signal receiving elements pivotally mounted on an antenna body supported upon a parallelogram linkage connected to a rotatable base member. The dipole elements are capable of pivoting between open and closed positions, and the parallelogram linkage includes operating means for raising the antenna body from a retracted position to an elevated position, and the linkage is connected to the dipoles such that the dipoles are automatically positioned to the open signal receiving position upon the antenna body being elevated, and are pivoted to a closed position in general alignment with the antenna body in the retracted position.

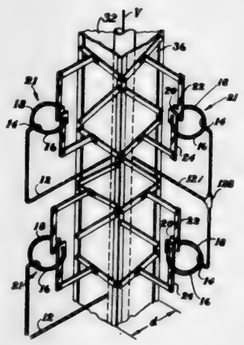
3,665,478
FOLDABLE ANTENNA OPERABLE IN DUAL MODES
Richard C. Dempsey, 9718 Quartz Ave., Chatsworth, Calif.
Filed Aug. 31, 1970, Ser. No. 68,132
Int. Cl. H01q *21/00*
U.S. Cl. 343—725 **3 Claims**

A foldable antenna for mounting on a base member. A vertical mounting mast includes the base member at one end thereof and a cavity member at the other end. A plurality of rigid radiating elements depend from the cavity member and are threadably secured thereto. A plurality of rigid ground plane members extend from the base member in a plane perpendicular to the mounting mast and are threadably secured thereto. The radiating elements may be designed to transmit and receive circularly polarized waves. Further, the cavity may have a monopole radiating element threadably secured thereto in a plane parallel to the plane of the mounting mast and a second set of ground plane elements operatively associated with the monopole radiating element threadably secured to the cavity in a plane perpendicular to the mast. The radiating elements and the ground plane elements may be removed and transported in a carrying case member



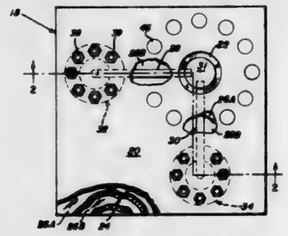
which encompasses the mounting mast between the cavity and the base member.

3,665,479
OMNIDIRECTIONAL TOWER SUPPORTED ANTENNA
Robert M. Silliman, Silver Spring, Md., assignor to Electronics Research, Inc., Evansville, Ind.
Filed July 28, 1970, Ser. No. 58,975
Int. Cl. H01q *21/00*
U.S. Cl. 343—726 **9 Claims**



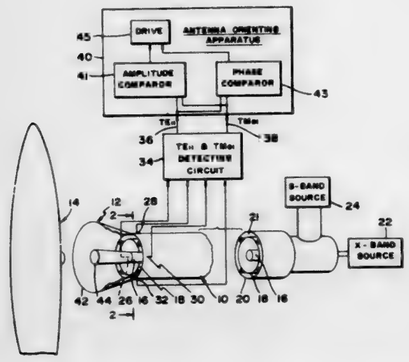
A combined dipole-loop antenna for bipolarized radio frequency signals. A dipole-loop is mounted on each face of an electrically large multi-faceted tower such as a triangular tower with the plane of the loop being perpendicular to the axis of the tower and transverse to the face plane of the tower with the dipole portion extending above and below the loop and parallel to the vertical axis with the loop portion encircling the transmission line and the dipole portion facing the tower.

3,665,480
ANNULAR SLOT ANTENNA WITH STRIPLINE FEED
Matthew Fassett, Billerica, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Jan. 23, 1969, Ser. No. 793,266
Int. Cl. H01q *3/26*
U.S. Cl. 343—754 **15 Claims**



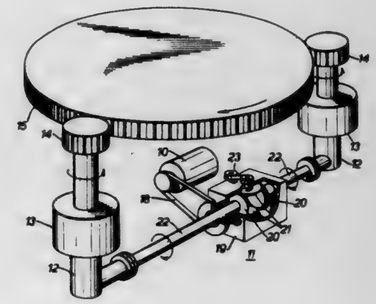
A stripline antenna having a radiating aperture in the form of an annular slot provided in one of its conducting plates and a pair of orthogonal narrow strip conductor feeds disposed between its two conducting plates and terminating under the central disk formed by the annular slot. Adjustment of the relative phase and amplitude of the electromagnetic energy applied to the strip conductor feeds permits radiation from the annular slot of circular, elliptical or orthogonal linear polarizations into space or into a waveguide.

3,665,481
MULTI-PURPOSE ANTENNA EMPLOYING DISH REFLECTOR WITH PLURAL COAXIAL HORN FEEDS
George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to the application of, and Kenneth E. Woo, 1621 Amberwood Dr., South Pasadena, Calif.
Filed May 12, 1970, Ser. No. 36,531
Int. Cl. H01q *19/14*
U.S. Cl. 343—762 **7 Claims**



A microwave antenna useful on a spacecraft, which utilizes a single dish reflector and single coaxial horn structure to transmit at two frequencies, and to receive signals at a third frequency that allow tracking. The horn structure includes a coaxial wave-guide with an inner pipe for transmitting X-band waves, an intermediate pipe, surrounding the inner pipe for transmitting S-band waves through the space between it and the inner pipe, and an outer pipe surrounding the intermediate pipe for receiving S-band tracking signals. An outer horn flares from the outer pipe and an inner horn flares from the inner pipe, to efficiently illuminate the dish reflector at both X and S bands.

3,665,482
TRACKING ANTENNA WITH ANTI-BACKLASH SPRING IN GEAR TRAIN
Richard Cresswell, Essex, England, assignor to The Marconi Company Limited, London, England
Filed Mar. 10, 1971, Ser. No. 122,807
Claims priority, application Great Britain, Mar. 13, 1970, 12,079/70
Int. Cl. H01q *3/00*
U.S. Cl. 343—765 **5 Claims**



A steerable aerial, driven via a differential and two reduction gearboxes, on which backlash is eliminated by a spring biassing arrangement. The spring biassing arrangement is connected between the cage member of the differential and one of the planet gears of the differential and provides a constant torque spring bias to one of the reduction gearboxes in relation to that of the other.

3,665,483
LASER RECORDING MEDIUM
Carl H. Becker; Harold R. Dell, both of Palo Alto; Keith E. McFarland, Woodside, and Herman Wong, Santa Clara, all of Calif., assignors to Chase Manhattan Capital Corporation, New York, N.Y.
Filed June 6, 1969, Ser. No. 831,172
Int. Cl. G01d *15/34*
U.S. Cl. 346—1 **13 Claims**

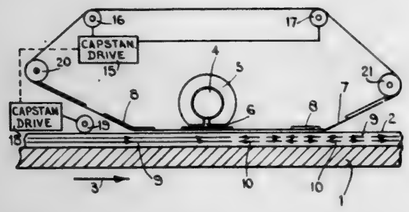


A recording medium for permanent storage of data by selective laser beam ablation of a layer of energy-absorbing material. The recording medium is formed by a substrate, a uniform layer of light energy-absorbing material coated on the substrate, and a protective layer of transparent material coated over the layer of energy-absorbing material. The protective layer and substrate seal the respective sides of the layer of energy-absorbing material.

3,665,484
MAGNETIC RECORDING SYSTEMS

Alan Foster, Hitchin, England, assignor to International Computers Limited, London, England

Filed July 30, 1970, Ser. No. 59,613
Claims priority, application Great Britain, July 30, 1969, 38,139/69
Int. Cl. G06k *19/00*, *19/06*; G11b *5/80*
U.S. Cl. 346—74 MP 4 Claims

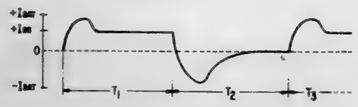


A magnetic recording apparatus in which fixed information, which may be an outline of a business form, is recorded as a predetermined pattern on a magnetizable member. A magnetic recording member is separated from the magnetizable member by a screening member which includes a plurality of magnetic elements thereon. The magnetic elements are positioned on a backing layer and selectively prevent the magnetic field produced by the recording means from changing the magnetic state of the magnetizable member so that the predetermined pattern is recorded on the magnetizable member. The screening member may also include further small magnetic materials to increase the number of magnetic fringe fields which will allow a more uniform change of state of areas of the magnetizable member.

3,665,485
METHOD AND SYSTEM FOR HIGH DENSITY RECORDING OF INFORMATION ON PREMAGNETIZED MAGNETIC TAPE

Charles B. Pear, Jr., Greenlawn, N.Y., assignor to Potter Instrument Company, Inc., Plainview, N.Y.

Filed June 11, 1969, Ser. No. 832,316
Int. Cl. G11b *5/06*
U.S. Cl. 346—74 M 13 Claims

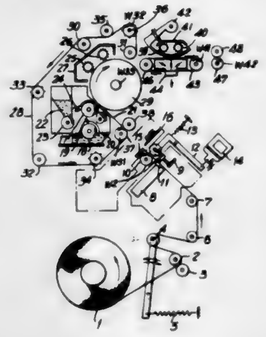


A method and system for recording information on a premagnetized magnetic media, such as a magnetic tape, employs an unsymmetrical write current wave form. When recording to produce a transition from the direction of magnetization of the media to the reverse direction, the current through the recording head is initially increased to a relatively large value for a short interval and then reduced to a lesser value, comprising respectively an overdrive or step pulse of relatively high current amplitude followed by a pedestal level, or lower amplitude of recording current is maintained until the next transition is recorded. When recording a transition from the now established opposite direction of magnetization to that of the premagnetized direction, the recording current is initially increased to a large value, but of opposite polarity, for a short interval, comprising a return step pulse, after which the current is reduced to zero until the next transition is recorded. There results high recording densities wherein the recorded transitions may be read with high resolution and without undesirable interference, the reading of both switching and return transitions with either forward or reverse motion of the tape producing output pulses of substantially identical shape and of substantially identical timing.

3,665,486
ELECTROSTATIC RECORDING APPARATUS FOR HIGH SPEED OPERATION

Tadakazu Seto, Yokohama-shi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 27, 1969, Ser. No. 853,376
Claims priority, application Japan, Aug. 30, 1968, 43/63483
Int. Cl. G03g *15/00*, *15/22*
U.S. Cl. 346—74 ES 2 Claims

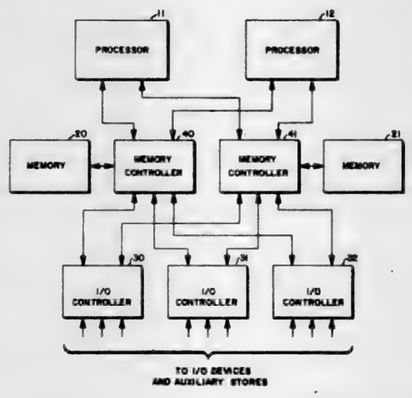


An electrostatic recorder as driven at a specific low speed to record information on a continuous sheet of recording paper. A developer and fixer is simultaneously driven at a specific high speed to develop and fix recorded information on the recording paper after the recorded paper is cut upon passing through the recorder.

3,665,487
STORAGE STRUCTURE FOR MANAGEMENT CONTROL SUBSYSTEM IN MULTIPROGRAMMED DATA PROCESSING SYSTEM

Donald J. Campbell, Lansdale; William J. Heffner, Robesonia, both of Pa.; Paul H. Jennings, Mesa, and Jane E. King, Sun City, both of Ariz., assignors to Honeywell Information Systems Inc.

Filed June 5, 1969, Ser. No. 830,724
Int. Cl. G05b *19/18*
U.S. Cl. 444—1 4 Claims



A management control subsystem for a multiprogrammed data processing system, wherein large amounts of virtual working storage are provided for chains of operating system programs performing services for user programs without substantially reducing the real working storage space available for other user programs.

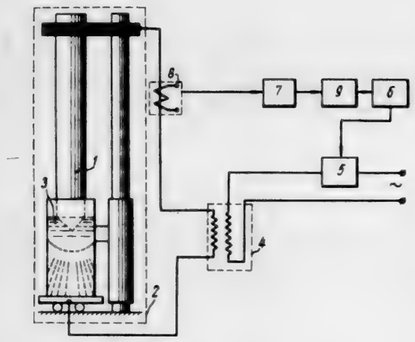
ERRATA

For Classes 13—9 thru 346—74 M see:
Patent Nos. 3,665,488 thru 3,665,513

3,665,488
INSTALLATION FOR ELECTROSLAG REMELTING OF CONSUMABLE ELECTRODES

Boris Evgentevich Paton; Boris Izrailevich Medovar; Oleg Petrovich Bondarenko; Jury Vadimovich Latash; Vitaly Mikhailovich Bagini, and Vladimir Grigorievich Shirshov, all of Kiev, U.S.S.R.

Original application June 8, 1967, Ser. No. 644,719, which is a continuation of Ser. No. 64,825, Aug. 18, 1970. Divided and this application Mar. 10, 1970, Ser. No. 23,112
Int. Cl. H05b *3/60*
U.S. Cl. 13—9 8 Claims



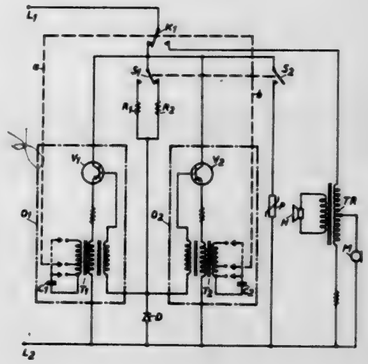
An installation for the electroslag remelting of consumable metal electrodes in a cooled mold, wherein a current supply means is provided to supply working electrical current to melt the electrode and wherein short impulses of current are impressed upon this working current. The amplitude and duration of the short current pulses are sufficient to effect positive breaking off of drops of the electrode metal during the formation of the drops prior to the time at which they would naturally drop.

3,665,489
TELEPHONE INSTRUMENT FOR VOICE FREQUENCY CHOICE OF NUMBER

Herman Josef Burghardt Vollmer, Vendelso, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed May 20, 1970, Ser. No. 39,096
Claims priority, application Sweden, June 6, 1969, 8033/69
Int. Cl. H04m *1/50*
U.S. Cl. 179—90 K 2 Claims

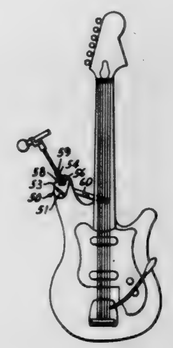
There is disclosed a voice frequency oscillator included in a telephone instrument for voice frequency signalling, wherein the frequency of the oscillator can be set to predetermined values by the influence of certain contacts. The oscillator includes a circuit which in calling state is connected in series with the line loop of the telephone instrument. This circuit determines, by voltage dividing, the operating point of the oscillator. The circuit comprises two parallel branches with different impedance values, which by a make-and-break contact can be alternatively connected to the line loop for providing two different values of current passing through the line for signalling two different states.



3,665,490
MICROPHONE ATTACHMENT FOR GUITARS AND SIMILAR STRINGED INSTRUMENTS

John Raymond Oskar, Crooks, S. Dak., assignor to Mike-Master, Inc., Sioux Falls, S. Dak.

Continuation-in-part of application Ser. No. 868,011, Oct. 21, 1969, now abandoned. This application Apr. 1, 1970, Ser. No. 24,494
Int. Cl. H04m *1/04*
U.S. Cl. 179—146 R 6 Claims

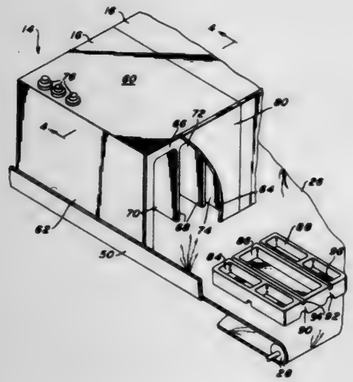


Guitars and similar plucked-string instruments are provided with a microphone-holding attachment at a corner adjacent the neck of the instrument. This frees a singer-player from dependence on a stationary microphone.

3,665,491
FOOD HEATING DEVICE

Willard Cooper, 379 Burwood Ave., Camden, N.J.

Filed Feb. 17, 1971, Ser. No. 116,094
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 8 Claims

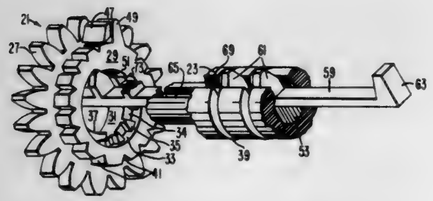


A microwave oven divided into a plurality of zones. Each zone is operative to generate a different quantity of heat energy. Food trays are provided. The trays are divided into a plurality of compartments. Each compartment is adapted to be aligned with one of the oven zones so that food disposed in that tray compartment is heated to a desired temperature.

3,665,492
REGISTERING MEANS PROVIDING SIMULTANEOUS STORAGE AND TRANSFER OF SEPARATE AMOUNTS

Osias Feldman, Paris, France, assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 24, 1970, Ser. No. 75,026
Claims priority, application France, Mar. 6, 1970, 7008178
Int. Cl. G06c 9/00
U.S. Cl. 235—60 MT 18 Claims

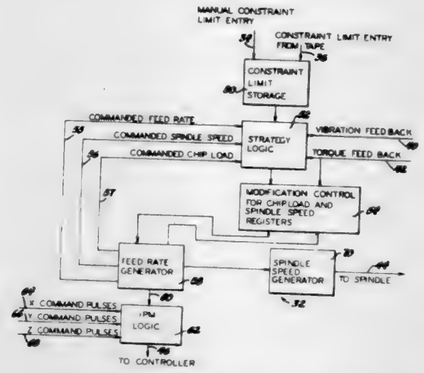


A plurality of ordinally arranged registering wheels are rotatably supported on a grooved shaft and are each comprised of a pinion member and a cooperating ring member, the pinion member being rotatable in unison with the ring member to thereby store a first amount, and rotatable independently of the ring member to transfer a second amount as between extraneous amount releasing and receiving means. Means are provided both for selectively recalling the stored amount from the ring members, while still retaining such amount thereon, and for either clearing the stored amount or substituting a different amount therefor.

3,665,493
ADAPTIVE NUMERICAL CONTROL SYSTEM FOR A MACHINE TOOL

Thomas L. Glowzewski, Warren, and Hymie Cutler, Detroit, both of Mich., assignors to The Bendix Corporation

Filed Mar. 30, 1970, Ser. No. 23,698
Int. Cl. G05b 13/02
U.S. Cl. 235—151.11 15 Claims

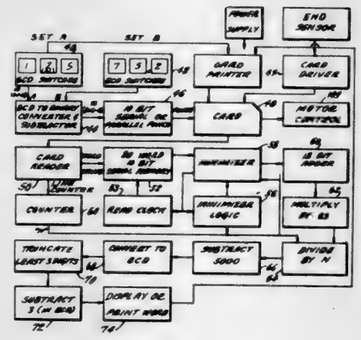


While the path of a milling machine cutter with respect to a workpiece is controlled from prerecorded information by a conventional numerical control system, the rate of feed of the cutter along its path and the rate of rotation of the cutter are controlled by an adaptive system. The system forms a servo loop about the actual cutting operation by sensing the torque and vibration of the cutter. Maximum and minimum limits of torque, vibration, spindle speed and feed rate, as well as variables which may be derived from these factors, are preset into the system. The adaptive control acts to optimize spindle speed and feed rate without violating any of these restraints.

3,665,494
GOLF COMPUTER

Joseph Baumoel, Jericho, L. I., N.Y., assignor to Controlotron Corporation, Farmingdale, L. I., N.Y.

Filed Mar. 2, 1970, Ser. No. 15,549
Int. Cl. G05b 1/00; G06f 7/38; G06k 1/02
U.S. Cl. 235—156 8 Claims

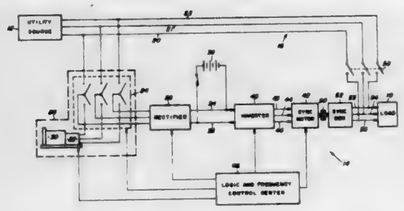


The unit computes the handicap of a golfer from information corresponding to golf score and course rating entered on a punchcard. The machine performs its function by reading the information stored on the card and by using solid-state and electro mechanical devices to derive the handicap defined by the United States Golf Association. This handicap may then be permanently recorded on the punchcard and may additionally actuate a display panel. One embodiment of the invention provides the handicap by direct computation, while a second embodiment establishes the handicap by compariaon with a memory table. Each arrangement, however, affords the advantages of almost instant computation, and with equal accuracy to that obtainable through pencil and paper computation.

3,665,495
NO BREAK POWER SYSTEM

Robert Carter, Richmond; Ralph A. Amos, Bon Aire, and Charles A. Gregory, Jr., Richmond, all of Va., assignors to Power Systems and Controls, Incorporated, Richmond, Va.

Filed June 1, 1970, Ser. No. 42,041
Int. Cl. H02j 9/00
U.S. Cl. 307—67 8 Claims

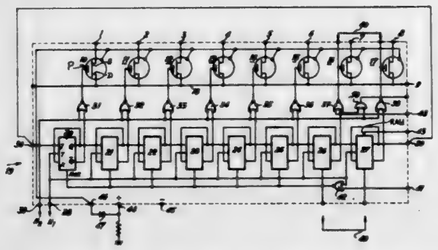


A standby power supply system is disclosed wherein a load is normally connected to and driven by the output of a synchronous generator. The generator is in turn driven by a synchronous motor energized by a three-phase oscillator controlled inverter which derives its power from a source of direct current. This direct current is provided by a rectified utility source during normal operation and by a standby power source when a fault occurs in the utility. The standby source is shown as a high capacity battery floating on the DC line, whereby it is charged by the utility, and is also immediately available for standby operation. The inverter oscillator is controlled to maintain phase and frequency synchronization between the load power and the utility during normal operation, but becomes free running during standby.

3,665,496
ELECTRICAL SIGNAL SAMPLING DEVICE

Jacques Donjon, Paris, France, assignor to Societe de Fabrication d'Instruments de Mesure (S.F.I.M.), Massy, France

Filed May 20, 1970, Ser. No. 39,690
Claims priority, application France, May 23, 1969, 6916900
Int. Cl. H03k 17/00
U.S. Cl. 307—251 5 Claims

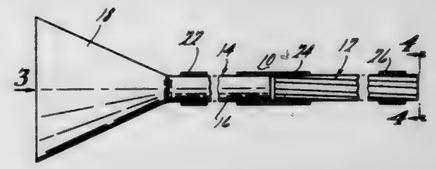


In a sampling device for receiving simultaneously several electrical signals at different inputs and successively sampling them in predetermined order, there is provided a priming gate for each input, the priming gates being controlled in succession by a ring counter such that the samples taken from each input appear in succession at a single output.

3,665,497
ELECTRON MULTIPLIER WITH PREAMPLIFIER

Bagdasar Deradorian; James Svenson, both of Detroit, and Raymond Nalepka, Farmington, all of Mich., assignors to The Bendix Corporation

Filed Dec. 18, 1969, Ser. No. 3,589
Int. Cl. H01j 39/16, 43/04, 43/18
U.S. Cl. 313—103 5 Claims

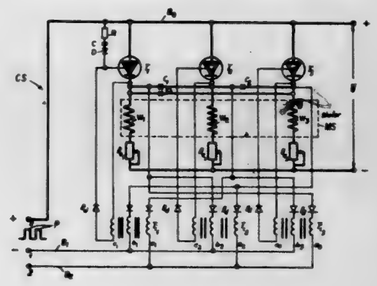


A spiraled electron multiplier assembly fabricated of six twisted channels fused into a solid bundle or array, the input section of the electron multiplier being provided with a flared input section formed of a straight channel portion and a flared input portion integrally formed therewith. The input section is assembled with a spiraled multiplier section by means of a collar-like or tab-like electrode for establishing a voltage potential at the output section of the flared section and the input to the multiplier section, the flared input section being slightly spaced from the spiraled electron multiplier.

3,665,498
SYSTEM FOR THREE-PHASE INDUCTION MOTOR

Arpad Kelemen, and Mircea Crivii, both of Cluj, Romania, assignors to Institutul Politehnic Cluj, Cluj, Romania

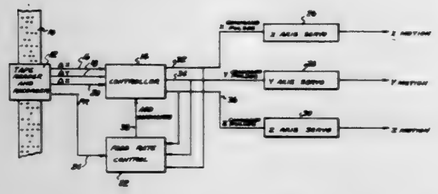
Filed Mar. 5, 1970, Ser. No. 16,746
Claims priority, application Romania, Mar. 7, 1969, 59296
Int. Cl. H02p 5/40
U.S. Cl. 318—227 6 Claims



The three phase windings of the stator of an induction motor are in series with respective thyristors connected across a source of direct current, the thyristors being capacitively interconnected in a lockout circuit whereby only one at a time can conduct. Connected in parallel with each phase winding is a circuit including the output of a generator of unipolar switching pulses and the primary of a transformer whose secondary lies in the input of the thyristor next in line whereby the latter is rendered conductive in response to a switching pulse traversing the previously conductive thyristor. By switching the pulse generator to a set of al-

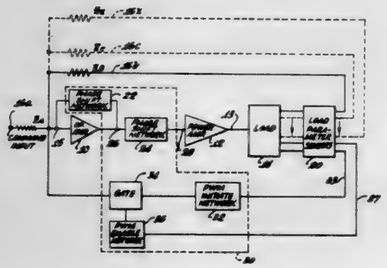
ternate transformer primaries connected to the thyristor outputs in a different order, the sense of motor rotation can be reversed.

3,665,499
FEEDRATE SEVVO CONTROL SYSTEM
Hymie Cutler, Detroit, Mich., assignor to The Bendix Corporation
Filed Mar. 30, 1970, Ser. No. 23,773
Int. Cl. G05b *19/24*
U.S. Cl. 318—571 **5 Claims**



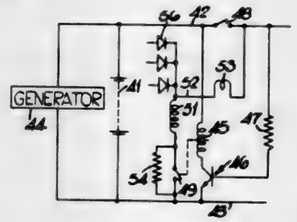
A numerical control system for a milling machine utilizes program tapes which include feedrate commands expressing the desired resultant rate of motion of the machine output member directly in inches per minute. The control system accepts this number and generates a pulse train having a rate proportional to the number by repeatedly adding the number into a register and generating the pulse train from the overflows from that register. This pulse train is provided to a circuit which generates a series of numerical values each equal to the square of the number of pulses received from the train at the time. The pulse commands to each of the individual axis servos are also provided to similar squaring circuits and the numerical values generated by the squaring circuits for these command pulse trains are summed and subtracted from numbers generated from the feedrate control pulse train. Control signals to the controller which generates the command pulse trains are provided so as to maintain an equality between the integrals of the two series of numbers, thereby commanding individual axis motions which will achieve a resultant motion in agreement with the feedrate command.

3,665,500
VARIABLE MODE FEEDBACK CONTROL SYSTEM
Martyn A. Lewis, Los Angeles, and Siegfried Domin, Woodland Hills, both of Calif., assignors to SLI Industries, Van Nuys, Calif.
Filed Apr. 1, 1970, Ser. No. 24,671
Int. Cl. G05b *11/18*
U.S. Cl. 318—596 **26 Claims**



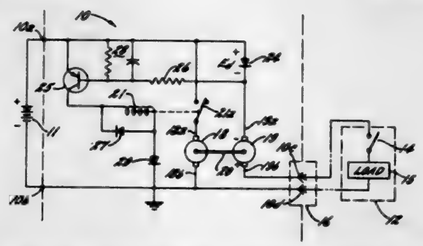
Apparatus selectively and automatically operable in either a linear or a pulse-width modulation mode. A controlled feedback loop in a basically linear system is automatically closed in response to threshold conditions of particular parameters of a moving inductance type load, the loop providing positive feedback in a range of frequencies determined by the phase shift characteristics of the load and additional phase shift circuits. The positive feedback results in a controlled oscillatory condition producing a pulse-width modulation mode for the system.

3,665,501
BATTERY CHARGING SYSTEMS FOR USE IN ROAD VEHICLES
Maurice James Wright, Harborne, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Continuation of application Ser. No. 630,041, Apr. 11, 1967, now abandoned. This application Feb. 8, 1971, Ser. No. 13,731
Int. Cl. H02j *7/14*
U.S. Cl. 320—039 **5 Claims**



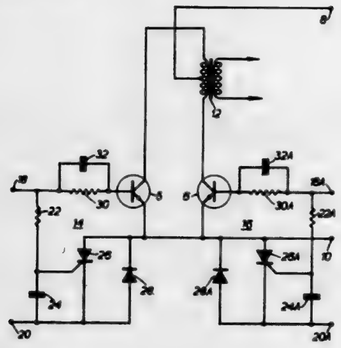
A battery charging system includes a generator for charging the battery, and a voltage regulator for controlling the output of the generator, the voltage regulator including a voltage sensing stage which senses the output voltage of the battery, and a control stage operable by said voltage sensitive stage for varying the current flow to the field winding of the generator to regulate the output voltage thereof, said control stage being connected to the battery through a series circuit including a resistor and the ignition switch of the vehicle, said voltage sensing stage being connected directly across the battery (i.e. not through the ignition switch) at least when the ignition switch is closed, and means being provided for effectively short-circuiting the series connection of said resistor and ignition switch when the generator produces an output.

3,665,502
ENERGY CONSERVING VOLTAGE CONVERTER
William A. Means, Rockford, Ill., assignor to Applied Motors, Inc., Rockford, Ill.
Filed May 27, 1971, Ser. No. 147,371
Int. Cl. H02m *7/64*
U.S. Cl. 321—28 **11 Claims**



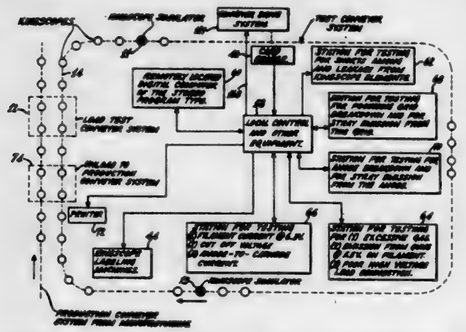
An electrical motor-generator converter drawing energy from a low voltage (e.g., 12 volts) battery to operate portable electric tools or the like rated for commercially standard utility voltages (e.g., 120 volts), characterized by the feature that when the portable tool switch is turned on or off the motor-generator is started or stopped, thereby avoiding dissipation of energy during those times when the power tool is not actually being used.

3,665,503
ELECTRICAL INVERTER CIRCUIT ARRANGEMENTS
Roger W. Wheaton, North Baddesley, England, assignor to Plessey Handel und Investments A.G., Zug, Switzerland
Filed Jan. 11, 1971, Ser. No. 105,517
Claims priority, application Great Britain, Jan. 9, 1970, 1,107/70
Int. Cl. H02m *7/48*
U.S. Cl. 321—45 R **7 Claims**



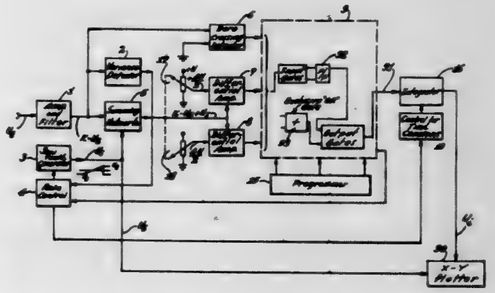
A transistor inverter circuit comprises two transistors which are switched on alternately via respective control circuits. Each control circuit provides a direct path for a TURN OFF pulse but incorporates in the turn on path a silicon controlled rectifier associated with a time delay circuit which delays the switching on of the silicon controlled rectifier after occurrence of the TURN ON pulse. Thus, each transistor receives a TURN OFF pulse immediately but the other transistor does not receive the TURN ON pulse until a time delay has lapsed. The time delay is sufficient to ensure that each transistor is fully switched off before the other is turned on.

3,665,504
CHECKING AN AUTOMATIC TESTING SYSTEM
Herbert William Silverman, Sudbury, Mass., assignor to RCA Corporation
Original application Aug. 22, 1967, Ser. No. 662,360, now Patent No. 3,541,440, dated Nov. 17, 1970. Divided and this application Mar. 12, 1970, Ser. No. 18,917
Int. Cl. G01r *31/22, 15/12*
U.S. Cl. 324—26 **3 Claims**



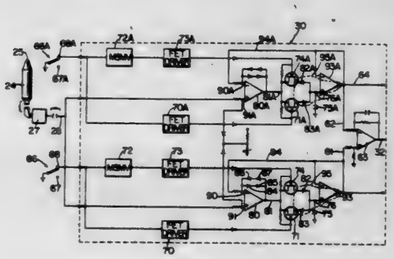
Apparatus which simulates a mass produced article, such as a color kinescope, and which is employed for the purpose of ascertaining not whether a manufactured article is within manufacturing specifications but instead whether a system which is automatically testing the mass produced articles is itself operating properly.

3,665,505
APPARATUS AND METHOD FOR MEASURING AND ANALYZING DYNAMIC PROCESSES
Hartmut Euer, and Guenter Pauli, both of Munich, Germany, assignors to Vereinigte Flugtechnische Werke Fokker GmbH, Bremen, Germany
Filed Apr. 22, 1970, Ser. No. 30,885
Claims priority, application Germany, Apr. 24, 1969, P 19 20 964.4
Int. Cl. G01r *23/16, 27/02*
U.S. Cl. 324—77 A **16 Claims**



Apparatus and method for analyzing dynamic processes represented by a particular time variable information signal within a range for amplitudes of the signal, wherein a signal analyzing amplitude band is defined and particular characteristic portions of the signal when occurring within the band are detected. By means of sweep signal the analyzing band is shifted across the amplitude range and the detected events are accumulated as statistical representation evaluation of the occurrence of the characteristic portions in dependence upon amplitude as represented by the sweep signal as defining the position of the analyzing band within the amplitude range.

3,665,506
ELECTRICAL APPARATUS AND GAGING DEVICE USING SAME
Norman R. Sanford, Dayton, Ohio, assignor to The Bendix Corporation
Filed Feb. 4, 1970, Ser. No. 8,571
Int. Cl. G01r *19/16, 1/00*
U.S. Cl. 324—103 P **16 Claims**



An electrical apparatus and gaging device using same wherein an electrical input signal is improved in quality and

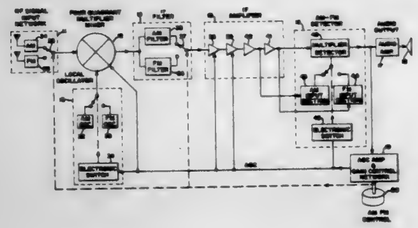
useability to provide a precision electrical output signal through the cooperating arrangement of an amplifier, a capacitor, and a pair of charging devices, wherein the first device of the pair is operatively connected between the output terminal of the amplifier and the output connection of the capacitor and allows only negative charging of the capacitor and the second device of such pair is operatively connected between such output terminal and output connection and allows only positive charging of the capacitor. One of the devices is energized for a predetermined short time interval and the other of the devices is energized for a substantially unlimited time interval with the devices cooperating with the amplifier during the predetermined time interval causing the voltage level at the output connection to be equal in magnitude to the voltage level of the input signal to define an initial voltage condition. The other charging device then cooperates with the amplifier to change the voltage level at the output connection only in one direction from its initial condition in direct proportion to the input signal and thereby provide the precision output signal at great speed and substantially without decay.

3,665,507

SIGNAL PROCESSOR FOR RECEPTION OF AMPLITUDE OR FREQUENCY MODULATED SIGNALS

William Pell, North Syracuse, N.Y., assignor to General Electric Company

Filed Jan. 4, 1971, Ser. No. 103,425
Int. Cl. H04b *1/06*
U.S. Cl. 325—315 **16 Claims**



A signal processor for the reception of amplitude or frequency modulated signals and the principal signal processing component of an AM-FM radio receiver is described. The processor principally comprises a multiplier-mixer, a wideband amplifier, and a multiplier detector which are operable in both AM and FM modes. The processor is switched from one mode to another by a manual control which converts the IF amplifier from AGC controlled linear amplification for AM to high gain limiting amplification for FM and selectively activates AM and FM signal inputs to the detector and appropriate AM and FM high frequency oscillators for the mixer. The processor is particularly adapted for integrated circuit fabrication techniques.

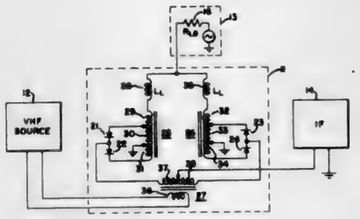
3,665,508

LINEAR DOUBLE BALANCED DIODE MIXER

Glenn B. Gawler, Liverpool, N.Y., assignor to General Electric Company

Filed Jan. 4, 1971, Ser. No. 103,633
Int. Cl. H04b *1/26*
U.S. Cl. 325—446 **9 Claims**

An improved double balanced diode mixer for high frequency operation is described. The mixer contains two series connected pairs of high frequency diodes operated in a modified bridge configuration. The diode series pairs are alternately switched on and off by a local source of high frequency oscillations. The high frequency signal being mixed is applied across the interconnections between the diodes in each series pair. An IF output signal resulting from the mixing process is derived at the output. Mutual isolation is provided between the diode series pairs in their coupling to the local source so that current flowing in one pair produces a minimum effect upon current flowing in the other pair.



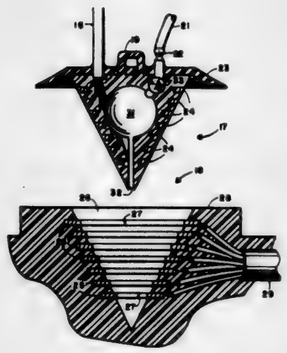
This provision generally lessens the adverse effects of the charge storage and other diode parasitics at high operating frequencies. The mixer is relatively free of spurious responses and undesired intermodulation products in the IF pass band and is suitable for use in a television receiver.

3,665,509

UNDERWATER ELECTRICAL CONNECTOR

James H. Elkins, Lynn Haven, Fla., assignor to The United States of America as represented by the Secretary of the Navy

Filed Mar. 22, 1971, Ser. No. 126,762
Int. Cl. H01r *13/54*
U.S. Cl. 339—12 V **10 Claims**



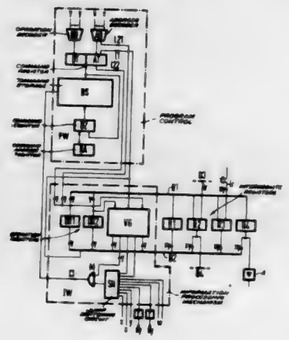
An electrical connector system for use at great depths beneath the surface of the sea is disclosed. A conical plug is disclosed as having spaced contact rings and a vacuum attachment chuck to seat the plug in a mating socket. A sealing ring provides watertight cooperation between the plug and socket in such a manner as to retain the plug in place by hydrostatic pressure.

3,665,510

PROGRAM CONTROLLED DATA PROCESSING INSTALLATION FOR SWITCHING A TELEPHONE EXCHANGE

Fritz Brandt, and Wolfram Ernst, Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 20, 1970, Ser. No. 21,315
Claims priority, application Germany, Mar. 21, 1969, P 19 14 575.6
Int. Cl. H04m *3/00*; **G06f** *9/00*
U.S. Cl. 340—172.5 **7 Claims**



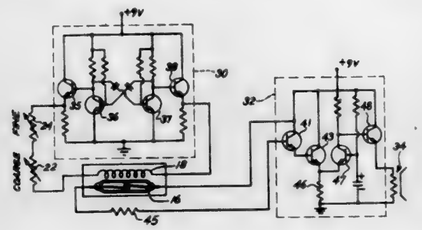
A program controlled data processing installation which is particularly useful with telecommunication exchange switching is described. The system includes an information processing mechanism controlled by a program control mechanism. The data processing installation is of the type which is capable of executing branching operations upon receipt of a jump command. The installation includes a jump switching network which forms and delivers the jump commands to the program control mechanism. In the jump switching network, internal unconditional jump information and conditional jump information is processed in the course of the execution of a program along with external jump information. The jump switching network includes a plurality of coupling members which are individually associated with the particular jump commands to be executed.

3,665,511

MAGNETIC DETECTION APPARATUS

John E. Wolf, Marengo, Ill., assignor to Superior Continental Corporation, Hickory, N.C.

Filed Mar. 2, 1970, Ser. No. 15,556
Int. Cl. G08b *13/00*
U.S. Cl. 340—258 D **3 Claims**



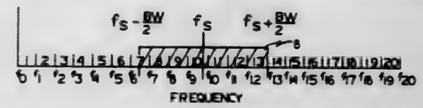
Detection apparatus for rapidly and accurately locating a hidden ferromagnetic object (such as a magnet buried in the earth to mark the location of underground equipment). The overlapping reeds in an evacuated reed switch capsule are set into motion by a fluctuating magnetic field. The strength of this fluctuating field is adjusted such that the two reeds nearly come into contact as they are deflected toward one another by the applied field. The presence of the additional, steady field created by a nearby ferrous object causes the reeds to actually make contact, thereby energizing a signalling device to indicate the location of the object.

3,665,512

METHOD AND APPARATUS FOR DETECTING THE FREQUENCY OF A REPETITIVE PULSE SIGNAL

Stanley Rylon Hall, Ellicott City, and Thomas Gilbert Nichols, Silver Spring, both of Md., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed June 1, 1970, Ser. No. 42,355
Int. Cl. G01r *23/02*
U.S. Cl. 343—18 E **29 Claims**



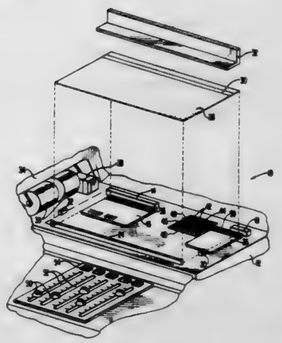
A method and apparatus for detecting the frequency of a repetitive pulse signal with greater selectivity than that of the sensor equipment utilized. The sensor is swept through a selected frequency band and a histogram generated of the frequency distribution of pulses detected by the sensor during the sweep. When the forming of the histogram is complete, an indication is generated of the upper and lower frequency in the selected frequency band in which a number of pulses exceeding a predetermined threshold were detected. The upper and lower frequency indications are then utilized to determine the desired frequency.

3,665,513

PASSIVE MAGNETIC TRANSFER OF DISCRETE MAGNETIC INFORMATION

Allen B. Benson, Rochester, Minn., and Elbert Troy Hatley, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,639
Int. Cl. G01d *15/12*; **G06k** *19/08*
U.S. Cl. 346—74 M **8 Claims**



A transaction record is prepared in both human and machine readable form by providing a card having both embossed data and magnetic data thereon and simultaneously imprinting the embossed data on a record card while transferring the magnetic data to a magnetizable portion of the record card. The magnetic data on the card is comprised of a plurality of discrete magnetic bits and is transferred to the magnetizable portion of the record card by subjecting the magnetic data and the magnetizable portion to a saturating prebiased D.C. field followed by a weaker D.C. transfer field.

DESIGNS

MAY 23, 1972

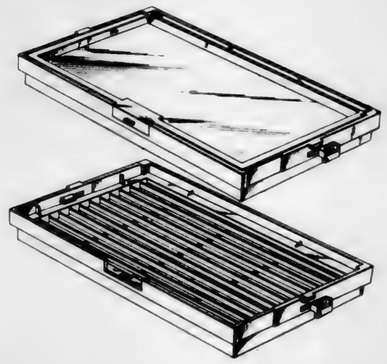
223,650
SASH
Melvin V. Zakaria, 23 Ogden Lane, Englishtown, N.J. 07726
Filed July 20, 1970, Ser. No. 24,016
Term of patent 3½ years
Int. Cl. D2—*07*
U.S. Cl. D2—385



223,651
TOOTHBRUSH
Lawrence Hermann, 180 West End Ave., New York, N.Y. 10025
Filed July 24, 1970, Ser. No. 24,111
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25



223,652
CASE FOR ART SUPPLIES
Martin A. Jaffe, 3001 Henry Hudson Parkway, Bronx, N.Y. 10463; George S. Northrop, 3200 Hickory St., Wantagh, N.Y. 11793; and Samuel Braun, 75 Greenhaven Road, Rye, N.Y. 10580
Filed Aug. 12, 1970, Ser. No. 24,445
Term of patent 3½ years
Int. Cl. D9—*03*
U.S. Cl. D9—189



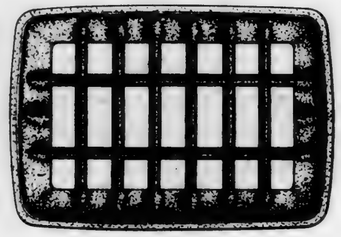
223,653
MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE
Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.
Filed Jan. 27, 1971, Ser. No. 110,353
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



223,654
MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE
Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.
Filed Jan. 27, 1971, Ser. No. 110,366
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



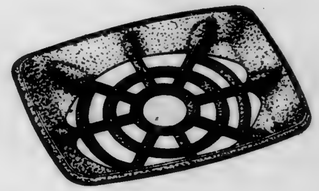
223,655
MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE
Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.
Filed Jan. 27, 1971, Ser. No. 110,367
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



223,656
MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE
Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.
Filed Jan. 27, 1971, Ser. No. 110,372
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



223,657
MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE
Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.
Filed Jan. 27, 1971, Ser. No. 110,373
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



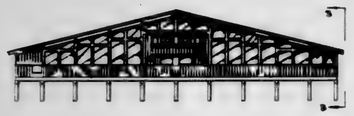
223,658
MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE
Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.
Filed Jan. 27, 1971, Ser. No. 110,374
Int. Cl. D9—*03*
Term of patent 14 years
U.S. Cl. D9—219



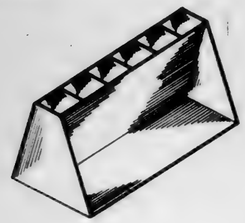
223,659
MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE
Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.
Filed Jan. 27, 1971, Ser. No. 110,378
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



223,660
BUILDING STRUCTURE
Glen C. Hancock, Sarasota, Fla., and Wilmer Terry Young, Charlotte, N.C., assignors to Shoney's South, Inc., Memphis, Tenn.
Filed Oct. 6, 1970, Ser. No. 25,358
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



223,661
PIPETTE STORAGE RACK
David E. Berg, 3326 S. 78th St., Omaha, Nebr. 68124
Filed Oct. 15, 1970, Ser. No. 25,499
Term of patent 14 years
Int. Cl. D24—*02*; D6—*99*
U.S. Cl. D16—1



223,662
FISHING LINE GUIDE
Thomas E. Coalson, 15182 Warwick Circle, Westminster, Calif. 92683
Filed May 28, 1970, Ser. No. 23,183
Term of patent 14 years
Int. Cl. D22—*08*
U.S. Cl. D22—24



223,663
NIGHTSTICK
Frank E. Bortzfield, L-14 Lake Lotawana, Lee's Summit, Mo. 64063
Filed Dec. 8, 1969, Ser. No. 20,406
Term of patent 14 years
Int. Cl. D22—*02*
U.S. Cl. D22—99



223,664
EARTH BAR
Kiyoo Tsunokawa, Hitachi, and Zennosuke Fukushima, Nishinomiya, Japan, assignors to Hitachi Cable, Ltd., Tokyo, and Japan Power Safety Device M.F.G. Co., Ltd., Osaka, Japan
Filed July 17, 1970, Ser. No. 24,013
Claims priority, application Japan Jan. 27, 1970
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1



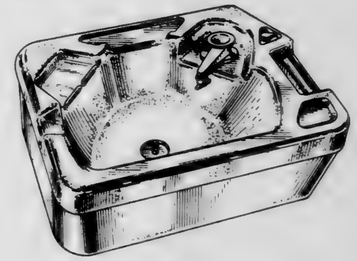
223,665
COATING FLAW DETECTOR
Charles W. Eisele, Warminster, Pa., assignor to H. C. Price Co., Bartlesville, Okla.
Filed Feb. 25, 1971, Ser. No. 119,066
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D26—1



223,666
COATING HOLIDAY DETECTOR
Charles W. Eisele, Warminster, Pa., assignor to H. C. Price Co., Bartlesville, Okla.
Filed Feb. 25, 1971, Ser. No. 119,068
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D26—1

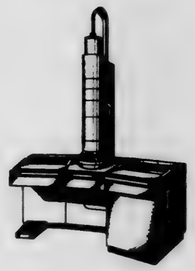


223,667
PORTABLE SINK UNIT
Michael J. DiPierro, Michael A. DiPierro, and Donald P. Mastrovito, Shrewsbury, Mass., assignors to Standard Oil Company, Chicago, Ill.
Filed Oct. 8, 1970, Ser. No. 25,378
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58

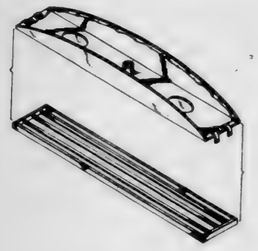


223,668
BATTERY CABLE CONNECTION POST
Theodore Ulrich, Copiague, N.Y., assignor to Svenska Ackumulator Aktiebolaget Jungner, Oskarshamm, Sweden
Filed Sept. 14, 1970, Ser. No. 24,959
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1

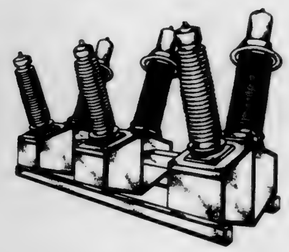
223,669
ELECTRON MICROSCOPE
Seiichi Nishino, Kazuyoshi Kato, and Hiroshi Akahori, Katsuta-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 13, 1970, Ser. No. 21,427
Term of patent 14 years
Int. Cl. D16—*08*
U.S. Cl. D26—5



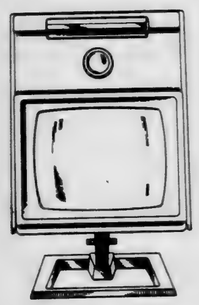
223,670
CAR SPEAKER CABINET
Glenn R. Kloster, 212 N. 30th Ave., Yakima, Wash. 98902
Filed Feb. 18, 1970, Ser. No. 21,486
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



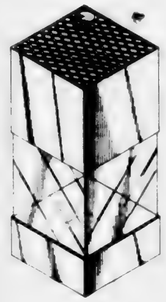
223,671
CIRCUIT BREAKER
William A. Forsty, Murrysville, Ronald W. Crookston, Trafford, and August U. Bertolino, Jeannette, Pa., assignors to Westinghouse Electric Corporation
Filed Sept. 10, 1970, Ser. No. 24,921
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



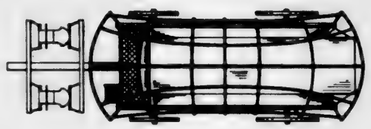
223,672
PICTURE TELEPHONE
Hans Sjöholm, Stockholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Nov. 3, 1970, Ser. No. 25,796
Claims priority, application Sweden May 4, 1970
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



223,673
AQUARIUM OR SIMILAR ARTICLE
Alberto W. Collie, Cedar Hill, Tex., assignor to Oceanology Systems Design, Richardson, Tex., composed of Alberto W. Collie, Vernon Porter, and David Blacknall, partners
Filed Nov. 10, 1970, Ser. No. 25,914
Term of patent 7 years
Int. Cl. D30—*02*
U.S. Cl. D30—6



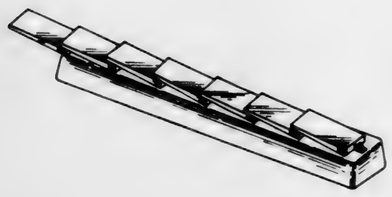
223,674
COVERED WAGON PLAYGROUND CLIMBER OR THE LIKE
Roland W. Johnson, Hastings, Nebr., assignor to American Play-World, Inc., Hastings, Nebr.
Filed July 27, 1970, Ser. No. 24,152
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5



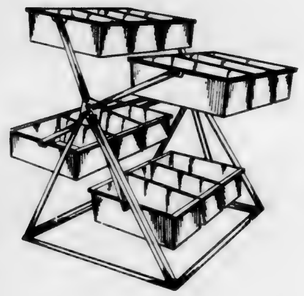
223,675
RIDABLE BOUNCING TOY
Peter Ian Raphael, 4 Betteymere Road, Cheadle Hulme, England
Filed Apr. 27, 1970, Ser. No. 22,672
Claims priority, application Great Britain Jan. 7, 1970
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

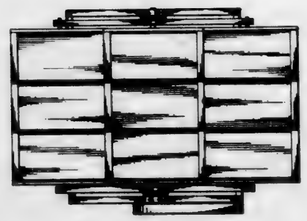


223,676
DOMINO-ACTION TOY OR SIMILAR ARTICLE
Harry Meth and Allen Greenberg, Cincinnati, Ohio, assignors to General Mills Fun Group, Inc., Minneapolis, Minn.
Continuation of abandoned design applications Ser. No. 15,586 and Ser. No. 15,587, both Jan. 31, 1969. This application Oct. 12, 1970, Ser. No. 25,449
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

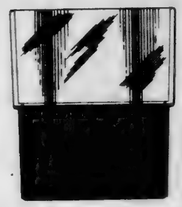


223,677
ROTATABLE PLANTER
Lloyd C. Wienert, 3606 S. 91st, Omaha, Nebr. 68124
Filed Sept. 4, 1970, Ser. No. 24,839
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D35—3





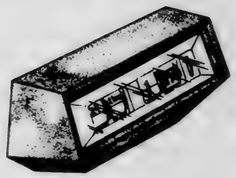
223,678
TUMBLER
James S. Adler, Chicago, and John T. Dolby, Evanston, Ill., assignors to Standard Oil Company, Chicago, Ill.
Filed July 31, 1969, Ser. No. 18,482
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D36—8



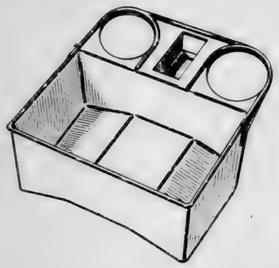
223,679
COTTON PICKING SPINDLE
Norman G. Hayward, Rte. 2, P.O. Box 1196, Manassas, Va. 22110
Filed Aug. 12, 1970, Ser. No. 24,436
Term of patent 14 years
Int. Cl. D8—*01*; D15—*03*
U.S. Cl. D40—1



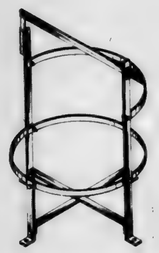
223,680
CALENDAR CLOCK OR SIMILAR ARTICLE
Riki Watanabe, Tokyo-to, Japan, assignor to Kabushiki Kaisha Koparu, Tokyo-to, Japan
Filed Oct. 16, 1970, Ser. No. 25,535
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7



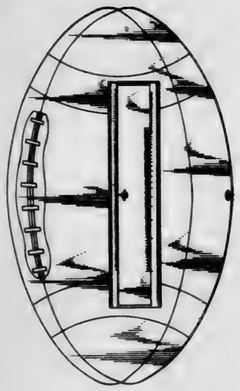
223,681
COMBINED REFUSE RECEPTACLE AND ARTICLE CARRIER FOR AUTOMOBILES OR THE LIKE
Wiley M. Whitaker, 227 Lexington Road, Asheboro, N.C. 27203
Filed Dec. 28, 1970, Ser. No. 26,658
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D49—32



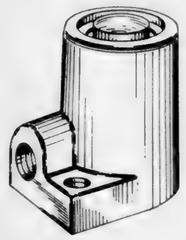
223,682
GARBAGE CAN HOLDER
John Aldape, 1300 Santa Paula, Boise, Idaho 83702
Filed Mar. 8, 1971, Ser. No. 122,293
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D49—30



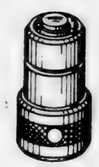
223,683
SLIDE RULE
Addison W. Learned III and Rosalie C. Learned, both of 88 Dorset Road, Holliston, Mass. 01746
Filed Aug. 5, 1970, Ser. No. 24,314
Term of patent 7 years
Int. Cl. D10—*99*
U.S. Cl. D52—6



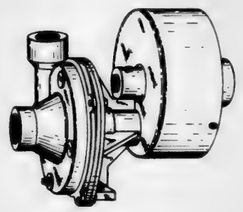
223,684
CAST BODY RAM
Alexander W. McPherson, 30012 Briarton, Farmington, Mich. 48024
Filed Aug. 11, 1970, Ser. No. 24,417
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1



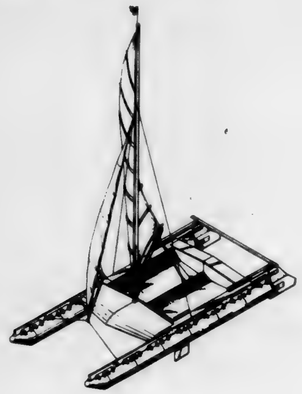
223,685
CYLINDRICAL BODY RAM
Alexander W. McPherson, 30012 Briarton, Farmington, Mich. 48024
Filed Aug. 11, 1970, Ser. No. 24,425
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1



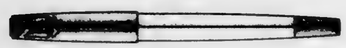
223,686
CENTRIFUGAL PUMP
Harry J. Sadler, St. Paul, and Ramon Pareja, Minneapolis, Minn., assignors to Hypro, Inc., St. Paul, Minn.
Filed Jan. 9, 1970, Ser. No. 20,859
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1



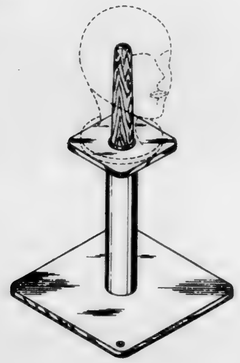
223,687
SAILBOAT
Gary Philip Wiederhold, 3952 Garfield Ave. S., Minneapolis, Minn. 55408
Filed Sept. 10, 1970, Ser. No. 24,943
Term of patent 3½ years
Int. Cl. D12—*06*
U.S. Cl. D71—1



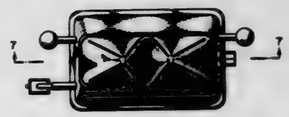
223,688
PEN CASING
Martin Schnur, Fort Lee, and Mel Appel, Livingston, N.J., assignors to Magic Marker Corporation, Glendale, N.Y.
Filed July 6, 1970, Ser. No. 23,829
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—17



223,689
WIG BLOCK STAND
Martin V. Forbes, 7614 Garden St., Houston, Tex. 77012
Filed July 28, 1970, Ser. No. 24,196
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D30—8

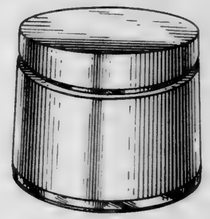


223,690
SPINAL CORD TREATING APPARATUS
Susumu Koizumi, 27–8 Kidacho, Neyagawa, Osaka, Japan
Filed June 8, 1970, Ser. No. 23,343
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1

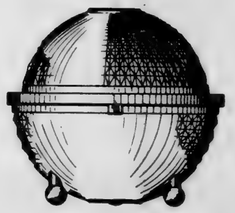




223,691
MAKEUP HEATER
Elizabeth Newman, Hollywood, Calif., assignor to The Petal Corporation
Filed Aug. 8, 1969, Ser. No. 18,602
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D86—10



223,692
JEWELRY CASE OR SIMILAR ARTICLE
Martin A. Jaffe, 3001 Henry Hudson Parkway, Bronx, N.Y. 10463; George S. Northrop, 3200 Hickory St., Wantagh, N.N.Y. 11793; and Samuel Braun, 75 Greenhaven Road, Rye, N.Y. 10580
Filed Aug. 12, 1970, Ser. No. 24,443
Term of patent 3½ years
Int. Cl. D3—*99*
U.S. Cl. D87—1



223,693
LIQUID DISPENSER
Yiu Dak Chi, Lowloon, Hong Kong, assignor to Forda Manufacturing Company Limited, Kowloon, Hong Kong
Filed Jan. 27, 1970, Ser. No. 21,100
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D94—3



223,694
BOOKMARK
Walter J. McKenna, 80—01 247th St., Bellerose, N.Y. 11426
Filed June 3, 1970, Ser. No. 23,271
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D97—2



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23D DAY OF MAY, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AAI Corporation: *See*—
Velazquez, Edward, 3,665,277.
Abbott Laboratories: *See*—
Knox, Kenneth H.; and Ries, Robert J., 3,664,338.
Swett, Leo Ralph; and Ratajczyk, James Daniel, 3,665,008.
Abe, Toshiro: *See*—
Kojima, Kiyoshi; and Abe, Toshiro,3,665,340.
Abegg, Jean-Louis: *See*—
Kalopissis, Gregorire; and Abegg, Jean-Louis,3,665,072.
Abex Corporation: *See*—
Novotny, Raymond J., 3,664,584.
Acello, Salvatore J., to Sprague Electric Company. Ceramic capacitor terminals. 3,665,267, Cl. 317-258.
Ackley, Richard H., to PPG Industries, Inc. Needled resin fibrous article. 3,664,909, Cl. 161-141.
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Kambayashi, Akira; Shun-ichi, Kawasaki; and Ehara, Takashi, to Nippon Kokan Kabushiki Kaisha. High tensile steel having high notch toughness. 3,664,830, Cl. 75-124.

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Lake, Connie. Bag closure. 3,664,575, Cl. 229-62.

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Le Gall, Jean Claude. Plural axes gyro-motor light-beam target tracking facility. 3,665,283, Cl. 318-649.000

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Linz, Peter Alois, to Moeller & Neumann GmbH. Drive for a roller bed mounted behind the cross- cut shears in a shearing line for metal plates. 3,664,662, Cl. 271-51.000

Lipp, James, to International Business Machines Corporation. Printing plate recording by direct exposure. 3,664,737, Cl. 355-18.000

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Liu, Shing-Gong, to United States of America, Atomic Energy Commission, mesne. Self-pulsed microwave oscillator. 3,665,339, Cl. 331-107.

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Love, Wesley. Thermomagnetic device. 3,664,881, Cl. 136-205.000

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Magnusson, Kjell I.; and Owarfort, Rune T. Device for imparting a rotational as well as a longitudinal movement to tubes or rods. 3,664,531, Cl. 214-339.

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Manasevit, Harold M., to North American Rockwell Corporation. Composite, method for growth of II b-VI a compounds on substrates, and process for making composition for the compounds. 3,664,866, Cl. 117-201.000

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Manville, George D. Dual arm attachment for drill press. 3,664,654, Cl. 269-9.000

Manzano, Alejandro C. Introduced in luminous publicity displays of continuous sash type. 3,664,050, Cl. 40-32.

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Martin, Otis M.; Kough, John K.; Miller, Silas M.; and Kough, Blair B., to Ditz Crane. Blowback seal and gauge for building exterior panels. 3,664,081, Cl. 52-540.

Martin, Ronald L., to Honeywell Inc. Changeover apparatus for a condition responsive device. 3,664,580, Cl. 236-44.000

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McCain, William B.; and Cosgrove, James F., to McCain Manufacturing Corporation. Caliper system for signature machines. 3,664,655, Cl. 270-56.

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Meyers, Robert E., to Bendix Corporation, The. Hydraulic brake pressure limiting device. 3,664,130, Cl. 60-54.5

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Silliman, Robert M., to Electronics Research, Inc. Omnidirectional tower supported antenna. 3,665,479, Cl. 343-726.

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Slagel, Robert C., to Ashland Oil, Inc. Acrylic aminimides and polymers thereof. 3,664,990, Cl. 260-85.500

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Small, Irwin A. Drill guide for mandibular staple and staple construction. 3,664,022, Cl. 32-2.000

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Spiess, Gustav, deceased (by Spiess-Guttinger, Lina Spiess, Peter Spiess, Marianne Spiess, Hansjorg Spiess, Walter; heirs), to Aktiengesellschaft Brown, Boveri & Cie. Arrangement for braking a three-phase motor driven hoist. 3,665,272, Cl. 318-204.

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Spieth, Rudolf. Device for measuring a cylindrical body. 3,664,692, Cl. 287-52.000

Spindt, Charles A.; and Heyaick, Louis N., to Stanford Research Institute. Field ionizer and field emission cathode structures and methods of production. 3,665,241, Cl. 313-351.000

Spire, Etienne; and Karinthi, Pierre, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges

Claude. Method nd apparatus for the treatment of molten metal. 3,664,652, Cl. 266-34.00a

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Staar, Theophiel Clement Jozef Lodewijk, to Staar, S.A. Tape cartridge apparatus including a silence responsive positioning control. 3,665,117, Cl. 179-100.1

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Stanzel, Victor. Jet propelled model vehicle. 3,664,056, Cl. 46-74.00a

Stark, Marvin; and Knippel, Willis H., to Pullman Incorporated. Covered hopper car with hatch cover means. 3,664,270, Cl. 105-377.

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Suzuki, Masaru, to Kabushiki-Kaisha Tokai Rika Denki Seisakuaho. Hazard warning switch for automotive vehicles. 3,665,130, Cl. 200-61.270

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Yasenchak, Richard W.; Schomer, Raymond A.; and Harper, Ernest V., to General Motors Corporation. Six-axis manipulator. 3,665,148, Cl. 219-125.

Yastrov, Henry, to Jerrold Electronics Corporation. Push-pull amplifier. 3,665,333, Cl. 330-53.

Yates, Kenneth P., to Union Oil Company of California. Apparatus for determining magnetic susceptibility in a controlled chemical and thermal environment. 3,665,297, Cl. 324-34.

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Yoshikawa, Yoshio; Kondo, Hiroshi; Sugio, Akitoshi; and Kato, Tomotake, to Mitsubishi Edogawa Kagaku Kabushiki Kaisha. Apparatus for treating a mixture. 3,664,035, Cl. 34-92.

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Yukami, Noboru; Otani, Hiroshi; and Kurokawa, Hideo, to Matsushita Electric Industrial Co., Ltd.Stress sensitive semiconductor element having an N^+PP^+ or P^+NN^+ junction. 3,665,264, Cl. 317-235.

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307 3,664,170
344 3,664,171
350 3,664,172
424 3,664,173
441 3,664,174

CLASS 73
1D 3,664,175
4R 3,664,176
17A 3,664,177
53 3,664,178
67.2 3,664,179
67.6 3,664,180
71.6 3,664,181
93 3,664,182
133 3,664,183
136A 3,664,184
136R 3,664,185
139 3,664,186
141A 3,664,187
150 3,664,188
185 3,664,189
194EM 3,664,191
194B 3,664,190
336.5 3,664,192
368 3,664,193
422GC 3,664,194
432R 3,664,195
517B 3,664,196

CLASS 74
1.5 3,664,197
3.54 3,664,198
5.22 3,664,200
5.6 3,664,199
6 3,664,201
18.1 3,664,202
55 3,664,203
219 3,664,204
224 3,664,205
230.17E 3,664,206
242.15 3,664,208
337.5 3,664,207
551.3 3,664,209
753 3,664,210

CLASS 75
.5R 3,664,824
10 3,664,825
50 3,664,826
51 3,664,827
73 3,664,828
108 3,664,829
124 3,664,830
166D 3,664,832
166R 3,664,831

CLASS 81
3R 3,664,211
52.5 3,664,212
91R 3,664,213
130 3,664,214

CLASS 82
2.5 3,664,215
38 3,664,216

CLASS 83
49 3,664,217
81 3,664,218
89 3,664,219
170 3,664,220
196 3,664,221
205 3,664,222
368 3,664,223

CLASS 84
1.01 3,664,224
3,665,088
3,665,089
1.03 3,665,090
1.26 3,665,091
351 3,665,092
484 3,664,225
487 3,665,093

CLASS 85
61 3,664,226

CLASS 90
1 3,664,227
11A 3,664,228
13.1 3,664,230
18 3,664,229

CLASS 91
36 3,664,232
290 3,664,233
363 3,664,234
387 3,664,235

CLASS 92
26 3,664,236
38 3,664,237

CLASS 93
8R 3,664,238
58.1 3,664,240
80 3,664,239

CLASS 94
10 3,664,241
22 3,664,242

CLASS 95
10CD 3,664,244
3,664,245
10C 3,664,243
3,664,246
11R 3,664,247
12.2 3,664,248
13 3,664,249
44C 3,664,250
59 3,664,251
62 3,664,252

CLASS 96
1 3,664,833
1.4 3,664,834
3 3,664,835
35 3,664,836
38.3 3,664,837
56 3,664,838
82 3,664,839
91 3,664,840
100 3,664,841
114.1 3,664,842
116 3,664,843

CLASS 98
36 3,664,253
3,664,254
115K 3,664,255

CLASS 99
18 3,664,844
57 3,664,845
83 3,664,846
3,664,847
3,664,848
107 3,664,849
157 3,664,850
163 3,664,851
425 3,664,256
427 3,664,257

CLASS 100
214 3,664,258

CLASS 101
99 3,664,259
132 3,664,260
177 3,664,261

CLASS 102
56 3,664,262
65.2 3,664,263
73R 3,664,264

CLASS 104
8 3,664,265
25 3,664,266
96 3,664,267
148SS 3,664,268

CLASS 105
199C 3,664,269
377 3,664,270

CLASS 106
1 3,664,852
56 3,664,853
90 3,664,854
212 3,664,855
278 3,664,856

CLASS 108
51 3,664,271
53 3,664,272
3,664,273
144 3,664,274
150 3,664,275

CLASS 109
29 3,664,276

CLASS 110
8A 3,664,277
8R 3,664,278

CLASS 111
80 3,664,279

CLASS 112
3R 3,664,280
20 3,664,281
103 3,664,288
121.15 3,664,282
3,664,283
152 3,664,284

CLASS 114
.5F 3,664,285
.5T 3,664,286
65A 3,664,287
67A 3,664,289

CLASS 115
20 3,664,290

CLASS 116
28 3,664,291
114 3,664,292

CLASS 117
2TC 3,664,869
17.5 3,664,857
36.8 3,664,858
46CG 3,664,859
47A 3,664,860
93.31 3,664,861
100B 3,664,862
119.8 3,664,864
160R 3,664,865
161KP 3,664,863
201 3,664,866
3,664,867
212 3,664,868

CLASS 118
5 3,664,293
7 3,664,294
9 3,664,295
246 3,664,296
627 3,664,297
637 3,664,298
3,664,299
3,664,300

CLASS 119
5 3,664,301
14.14 3,664,306
18 3,664,302
51 3,664,303
61 3,664,304
72 3,664,305

CLASS 122
1 3,664,307
149 3,664,308
336 3,664,309
379 3,664,310

CLASS 123
32EA 3,664,311
90.19 3,664,312
119B 3,664,314
119R 3,664,313
120 3,664,315
124R 3,664,316
139AL 3,664,318
139BG 3,664,317
140MC 3,664,319

CLASS 125
35 3,664,320

CLASS 126
9R 3,664,321
25A 3,664,322
42 3,664,323
113 3,664,324
121 3,664,325
200 3,664,326

CLASS 128
1.4 3,664,327
2B 3,664,328
2.1R 3,664,329
IE 3,664,330
24.2 3,664,332
51 3,664,331
52 3,664,333
57 3,664,334
146.6 3,664,335
158 3,664,336
194 3,664,337
214C 3,664,339
220 3,664,338
249 3,664,340
271 3,664,341
276 3,664,342
284 3,664,343
303.1 3,664,344
335 3,664,345
355 3,664,346
404 3,664,347

CLASS 130
27HF 3,664,349
27JT 3,664,348

CLASS 131
10A 3,664,350
110 3,664,351
264 3,664,352

CLASS 132
79G 3,664,353

CLASS 134
3 3,664,870
6 3,664,871
3,664,872
61 3,664,354
143 3,664,355

CLASS 136
86C 3,664,873
89 3,664,874
134R 3,664,875
160 3,664,876
171 3,664,877
178 3,664,878
182 3,664,879
205 3,664,880
3,664,881
234 3,664,882

CLASS 137
1 3,664,356
2 3,664,357
14 3,664,358
81 3,664,359
81.5 3,664,360
98 3,664,361
102 3,664,362
183 3,664,363
205 3,664,364
206 3,664,365
209 3,664,366
344 3,664,367
480 3,664,368
484.4 3,664,369
487.5 3,664,370
516.29 3,664,371
552 3,664,372
565 3,664,373
596.2 3,664,374
614.04 3,664,375
625.68 3,664,376
625.69 3,664,377
635 3,664,378

CLASS 138
143 3,664,379

CLASS 139
12 3,664,380
159 3,664,382
317 3,664,383
420 3,664,381

CLASS 140
92.94 3,664,384

CLASS 141
12 3,664,385
100 3,664,386
238 3,664,387
284 3,664,388

CLASS 143
6A 3,664,389
32N 3,664,391
32R 3,664,390

CLASS 144
117C 3,664,392
3,664,393
133R 3,664,394
209A 3,664,395

CLASS 146
78A 3,664,396
117R 3,664,397
129R 3,664,398

CLASS 148
6.14 3,664,885
6.15R 3,664,886
6.16 3,664,887
6.2 3,664,883
6.27 3,664,888
6.3 3,664,884
11.5A 3,664,890
11.5R 3,664,889
31.57 3,664,892
175 3,664,893
186 3,664,894
187 3,664,895
3,664,896

CLASS 149
38 3,664,897
41 3,664,898

CLASS 150
1.5R 3,664,399

CLASS 151
22 3,664,400

CLASS 153
209 3,664,402
330 3,664,403
361 3,664,404
375 3,664,405

CLASS 156
8 3,664,899
145 3,664,401
174 3,664,900
443 3,664,901
506 3,664,903
580 3,664,902

CLASS 161
50 3,664,904
59 3,664,905
68 3,664,906
89 3,664,907
113 3,664,908
141 3,664,909
147 3,664,910
160 3,664,911
161 3,664,912
164 3,664,915
167 3,664,913
173 3,664,914
3,664,916
3,664,917

CLASS 162
19 3,664,918
3,664,919

CLASS 164
161 3,664,406
165 3,664,407
241 3,664,408
260 3,664,409
303 3,664,410
312 3,664,411

CLASS 165
1 3,664,412
4 3,664,413
26 3,664,414

CLASS 166
.5 3,664,415
65 3,664,416
216 3,664,417
245 3,664,418
274 3,664,419
278 3,664,421
280 3,664,420
283 3,664,422
297 3,664,423
303 3,664,424
3,664,425
308 3,664,426
313 3,664,427

CLASS 168
4 3,664,428

CLASS 169
2R 3,664,429
23 3,664,430

CLASS 171
58 3,664,431

CLASS 172
19 3,664,432
450 3,664,433
536 3,664,434

CLASS 173
17 3,664,435
43 3,664,436

CLASS 174
65R 3,665,094
107 3,665,095
3,665,096

CLASS 175
5 3,664,437
6 3,664,438
85 3,664,439
206 3,664,440
215 3,664,441
231 3,664,442
293 3,664,443
323 3,664,444

CLASS 176
1 3,664,920
4 3,664,921
19R 3,664,922
40 3,664,923
78 3,664,924

CLASS 177
45 3,664,445

CLASS 178
6 3,665,097
6.6P 3,665,098
6.6R 3,665,100
3,665,101
6.7R 3,665,099
18 3,665,102
21 3,665,115
66R 3,665,103
69.5F 3,665,104

CLASS 179
1FS 3,665,106
1G 3,665,105
4 3,665,107
15BL 3,665,108
16E 3,665,109
18EA 3,665,110
37 3,665,116
81C 3,665,111
90B 3,665,113
90K 3,665,489
99 3,665,112
100.1VC 3,665,117
100.2S 3,665,118
100.2T 3,665,119
100.2Z 3,665,114
3,665,120
100.41K 3,665,123
107BC 3,665,122
1075 3,665,121
115.5DV 3,665,124
146R 3,665,490
170R 3,665,125

CLASS 180
5R 3,664,446
3,664,447
9.46 3,664,448
9.48 3,664,449
65R 3,664,450
70R 3,664,451
71 3,664,452
101 3,664,453
3,664,454

CLASS 181
33HC 3,664,455

CLASS 182
62.5 3,664,456
70 3,664,457
102 3,664,458
141 3,664,459
187 3,664,460

CLASS 184
6.16 3,664,461
7D 3,664,462

CLASS 188
1C 3,664,463
5 3,664,464
10 3,664,465
32 3,664,466
71.6 3,664,467
72.2 3,664,468
72.9 3,664,469

CLASS 192
3.57 3,664,470
4R 3,664,471
12R 3,664,472
21.5 3,664,473
56F 3,664,474

CLASS 194
51 3,664,475
58 3,664,476

CLASS 198
29 3,664,925
66A 3,664,926
141 3,664,927

CLASS 197
6.7 3,664,477
17 3,664,478
63 3,664,479
64 3,664,480
133R 3,664,481

CLASS 198
1 3,664,489
20 3,664,482
31AA 3,664,891
32 3,664,483
33AA 3,664,484
78 3,664,485
126 3,664,486
136 3,664,487
139 3,664,488
193 3,664,490
195 3,664,491

CLASS 200
5E 3,665,126
11TW 3,665,127
44 3,665,128
51.07 3,665,129
61.27 3,665,130
67B 3,665,131
83P 3,665,132
148A 3,665,134
148 3,665,133
163 3,665,135
166C 3,665,136
172A 3,665,137

CLASS 202
236 3,664,928

CLASS 203
10 3,664,929
37 3,664,930

CLASS 204
35N 3,664,932
38A 3,664,931
38S 3,664,933
58 3,664,934
67 3,664,935
73A 3,664,936
159.15 3,664,937
180R 3,664,938
3,664,939
3,664,940
181 3,664,941
192 3,664,942
3,664,943
212 3,664,944
228 3,664,945
243R 3,664,946
297R 3,664,947
298 3,664,948

CLASS 206
1R 3,664,492
44 3,664,494
45.14 3,664,493
63.2R 3,664,495
65C 3,664,496
3,664,497
65S 3,664,498

CLASS 208
65 3,664,949

CLASS 209
73 3,664,499
80.5 3,664,500
273 3,664,501
397 3,664,502
3,664,503

CLASS 210
35 3,664,950
44 3,664,951
83 3,664,504
242 3,664,505
282 3,664,506
323 3,664,507
391 3,664,509

CLASS 211
41 3,664,510
105.1 3,664,511
113 3,664,512
134 3,664,513
169 3,664,514

CLASS 213
39 3,664,515
46A 3,664,516

CLASS 214
1CM 3,664,517
1Q 3,664,518
6B 3,664,519
7 3,664,520
8.5GS 3,664,522
8.5K 3,664,521
16.1A 3,664,523
16.6 3,664,524
17D 3,664,525
83.1 3,664,526
138R 3,664,527
3,664,528
140 3,664,529
302 3,664,530
339 3,664,531
356 3,664,532
516 3,664,533
730 3,664,534

CLASS 215
11R 3,664,535
40 3,664,536

CLASS 219
8.5 3,665,138
10.43 3,665,139
10.55 3,665,140
3,665,141
3,665,142
3,665,491
69G 3,665,144
76 3,665,143
119 3,665,145
124 3,665,146
125 3,665,148
131WR 3,665,150
131R 3,665,147
3,665,149
149 3,665,151
253 3,665,152
279 3,665,153
301 3,665,154
333 3,665,156
335 3,665,155
384 3,665,157
421 3,665,158
497 3,665,159

CLASS 220
2.1R 3,664,537
4E 3,664,538
24 3,664,539
39R 3,664,540
42B 3,664,541
44R 3,664,542
54 3,664,543
60R 3,664,544

CLASS 221
176 3,664,545
259 3,664,547
279 3,664,546

CLASS 222
61 3,664,548
64 3,664,549
129.2 3,664,550
134 3,664,551
144.5 3,664,552
145 3,664,555
183 3,664,553
3,664,554
385 3,664,556
386 3,664,508
397 3,664,557

CLASS 224
1R 3,664,558
4E 3,664,559
5R 3,664,560

CLASS 226
21 3,664,561
76 3,664,562

CLASS 227
7 3,664,563
100 3,664,564
137 3,664,565

CLASS 228
3 3,664,566
3,664,567

CLASS 229
1.5B 3,664,568
10 3,664,569
23R 3,664,570
39B 3,664,571
40 3,664,572
3,664,573
44R 3,664,574
62 3,664,575

CLASS 232
43.2 3,664,576

CLASS 234
15 3,664,577

CLASS 235
60MT 3,665,492
61.1 3,665,160
61.11D 3,665,163
61.11E 3,665,164
61.7B 3,665,161
92EA 3,665,162
92FL 3,665,167
92T 3,665,165
101 3,664,578
150.1 3,665,172
150.2 3,665,168
151.11 3,665,170
3,665,493
151.3 3,665,169
152 3,665,171
153 3,665,173
3,665,174
3,665,175
156 3,665,494

CLASS 236
44 3,664,579
3,664,580
80 3,664,581
93 3,664,582

CLASS 238
5 3,664,583
349 3,664,584

CLASS 239
222.21 3,664,585
233 3,664,586
402.5 3,664,587
418 3,664,588
428.5 3,664,589
499 3,664,590
552 3,664,591

CLASS 240
1.3 3,665,176
9R 3,665,177
10.6 3,665,178
41.3 3,665,179

CLASS 241
60 3,664,593
73 3,664,592

CLASS 242
43 3,664,596
60 3,664,594
71.1 3,664,595
75.4 3,664,597
107.3 3,664,598
107.4 3,664,599
3,664,600
3,664,601
129 3,664,602
131 3,664,603
180 3,664,604
185 3,664,605
189 3,664,606
192 3,664,607
195 3,664,608
204 3,664,609
3,664,610
210 3,664,611

CLASS 244
42CD 3,664,612
53B 3,664,613
155R 3,664,614

CLASS 248
2 3,664,616
25 3,664,615
27 3,664,617
38 3,664,618
44 3,664,619
51 3,664,620
63 3,664,621
74R 3,664,622
95 3,664,623
188.7 3,664,624
221 3,664,625
223 3,664,626
224 3,664,627
246 3,664,628
350 3,664,629
445 3,664,630

CLASS 249
112 3,664,631

CLASS 250
43.5D 3,665,180
49.5PI 3,665,182
49.5ZC 3,665,181
49.5P 3,665,185
52 3,665,183
60 3,665,184
62 3,665,186
71.5R 3,665,192
83CD 3,665,194
83 3,665,193
83.3PD 3,665,197
83.3D 3,665,187
83.3H 3,665,190
3,665,196
83.3R 3,665,188
3,665,195
83.6R 3,665,189
84.5 3,664,960
86 3,665,191
106S 3,665,198
217R 3,665,200

218 3,665,201
237R 3,665,202

CLASS 251
101 3,664,632
294 3,664,633
333 3,664,634

CLASS 252
8.75 3,664,952
18 3,664,953
32.7E 3,664,954
47.5 3,664,955
49.6 3,664,956
3,664,957
54.6 3,664,958
63.7 3,664,959
99 3,664,961
125 3,664,962
316 3,664,963
364 3,664,964
408 3,664,965
430 3,664,966
431R 3,664,967
437 3,664,968
438 3,664,969
454 3,664,970
455R 3,664,971
3,664,972
3,664,973

CLASS 254
8B 3,664,635
93HP 3,664,636
190R 3,664,637

CLASS 256
32 3,664,739

CLASS 259
4 3,664,638
3,664,639
8 3,664,640
3,664,641
3,664,642
44 3,664,643
164 3,664,644
183 3,664,645

CLASS 260
2P 3,664,974
2.5AJ 3,664,975
2.5BD 3,664,976
4AR 3,664,977
5 3,664,978
18N 3,664,980
18S 3,664,997
22D 3,664,984
27 3,664,981
29.4 3,664,982
29.6HN 3,664,991
29.6H 3,664,987
29.7SQ 3,664,983
46.5R 3,664,985
75NK 3,664,979
78R 3,664,986
80.75 3,664,988
82.1 3,664,989
84.1 3,665,062
85.5R 3,664,990
89.5 3,664,992
3,664,993
112B 3,664,994
146T 3,664,995
156 3,664,996
210R 3,664,998
231A 3,664,999
233.3R 3,665,000
239A 3,665,001
239.9 3,665,002
243C 3,665,003
248N5 3,665,004
268BC 3,665,016
287R 3,665,005
289R 3,665,006
306.7 3,665,007
310R 3,665,008
310 3,665,009
326.3 3,665,010
3,665,011
3,665,012
343.2R 3,665,013
343.6 3,665,014
345.9 3,665,015
349 3,665,017
365 3,665,018
374 3,665,019
397.2 3,665,020
397.3 3,665,022
397.45 3,665,021
397.7 3,665,023
429.7 3,665,024
3,665,025
448.8R 3,665,026
3,665,027
462A 3,665,028
465E 3,665,029
488CD 3,665,030
507R 3,665,031
519 3,665,032
524R 3,665,033
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53	3,664,757	CLASS 417		16	3,664,776		3,665,077	99	3,664,786	214	3,664,797
104	3,664,758	45	3,664,767	117	3,664,778		3,665,078	109	3,664,787	326	3,664,798
121	3,664,759	197	3,664,768	131	3,664,777		3,665,079		3,664,788	389	3,664,799
170A	3,664,760	312	3,664,769	CLASS 434		CLASS 425			3,664,792	391	3,664,800
205	3,664,761	383	3,664,770	9	3,665,071	4	3,664,779	131	3,664,789	CLASS 431	
CLASS 416		410	3,664,771	70	3,665,072	66	3,664,780		3,664,790	3	3,664,802
156	3,664,762	486	3,664,772	79	3,665,073	68	3,664,781	156	3,664,791	69	3,664,803
157	3,664,763	507	3,664,773	248	3,665,074	71	3,664,782	186	3,664,793	183	3,664,804
224	3,664,764	560	3,664,774	272	3,665,075	78	3,664,784	192	3,664,794	CLASS 444	
241	3,664,765	566	3,664,775					208	3,664,795	1	3,665,487

CLASSIFICATION OF DESIGNS

D 2—	385	223,650			223,658			223,665	D34—	5	223,674		223,682	D74—	17	223,688
D 4—	25	223,651			223,659			223,666		15	223,675	32	223,681	D80—	8	223,689
D 9—	189	223,652	D13—	1	223,660			223,668			223,676	D52—	6 223,683	D83—	1	223,690
	219	223,653	D16—		223,661		5	223,669	D35—	3	223,677	D55—	1 223,684	D86—	10	223,691
		223,654	D22—	24	223,662		13	223,671	D36—	8	223,678		223,685	D87—	1	223,692
		223,655		99	223,663		14	223,670	D40—	1	223,679	D65—	223,686	D94—	3	223,693
		223,656	D23—	58	223,667			223,672	D49—	30	223,680	D71—	223,687	D97—	2	223,694
		223,657	D26—	1	223,664	D30—	6	223,673								

CLASSIFICATION OF PLANTS

P. —	35	3,182	P. —	65	3,187	P. —		3,192	P. —	79	3,183	P. —		3,194	P. —	86	3,196
P. —	36	3,193	P. —	74	3,189	P. —	78	3,191	P. —		3,185	P. —	80	3,184	P. —	88	3,186
P. —	57	3,188	P. —	77	3,190	P. —		3,195									

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Indiana	18	North Dakota	38	U.S. Army	58
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Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,664,346	3,664,256	3,664,665	3,665,164	3,664,463	3,664,329
3,664,387	3,664,259	3,664,666	3,665,167	3,664,601	3,664,333
3,664,969	3,664,271	3,664,668	3,665,192	3,664,604	3,664,546
3,665,146	3,664,287	3,664,677	3,665,194	3,664,633	3,664,768
3,665,451	3,664,289	3,664,684	3,665,196	3,664,648	3,664,772
2 : 3,664,334	3,664,294	3,664,688	3,665,197	3,664,756	3,665,108
3,664,829	3,664,305	3,664,689	3,665,209	3,664,975	3,665,227
3 : 3,664,620	3,664,313	3,664,696	3,665,211	3,665,429	3,665,285
4 : 3,664,053	3,664,318	3,664,709	3,665,215	3,665,431	3,665,303
3,664,234	3,664,332	3,664,731	3,665,226	9 : 3,664,016	3,665,367
3,664,389	3,664,339	3,664,744	3,665,236	3,664,099	3,665,386
3,664,683	3,664,361	3,664,755	3,665,241	3,664,231	3,665,509
3,664,893	3,664,369	3,664,757	3,665,247	3,664,301	13 : 3,663,991
3,664,904	3,664,374	3,664,786	3,665,250	3,664,344	3,664,030
3,665,266	3,664,376	3,664,808	3,665,258	3,664,377	3,664,223
3,665,329	3,664,414	3,664,809	3,665,260	3,664,397	3,664,274
3,665,342	3,664,417	3,664,820	3,665,278	3,664,445	3,664,327
3,665,343	3,664,419	3,664,837	3,665,282	3,664,538	3,664,464
3,665,415	3,664,430	3,664,856	3,665,294	3,664,549	3,664,568
3,665,438	3,664,432	3,664,866	3,665,297	3,664,656	3,664,573
5 : 3,664,023	3,664,446	3,664,867	3,665,310	3,664,760	3,664,574
3,664,238	3,664,455	3,664,880	3,665,317	3,664,811	3,665,379
3,664,448	3,664,459	3,664,889	3,665,326	3,664,873	14 : 3,664,825
6 : 3,663,965	3,664,479	3,664,896	3,665,327	3,664,890	16 : 3,664,070
3,663,967	3,664,492	3,664,910	3,665,337	3,664,922	17 : 3,663,963
3,663,980	3,664,499	3,664,913	3,665,356	3,664,924	3,663,964
3,663,988	3,664,504	3,664,921	3,665,358	3,665,061	3,664,027
3,663,990	3,664,514	3,664,923	3,665,374	3,665,131	3,664,058
3,664,002	3,664,515	3,664,928	3,665,394	3,665,217	3,664,062
3,664,007	3,664,519	3,664,939	3,665,397	3,665,245	3,664,063
3,664,018	3,664,536	3,664,940	3,665,404	3,665,336	3,664,068
3,664,021	3,664,550	3,664,971	3,665,405	3,665,348	3,664,088
3,664,029	3,664,552	3,664,972	3,665,417	3,665,373	3,664,107
3,664,032	3,664,557	3,664,973	3,665,419	3,665,381	3,664,177
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3,664,076	3,664,582	3,665,097	3,665,437	10 : 3,663,994	3,664,257
3,664,077	3,664,585	3,665,099	3,665,453	3,664,381	3,664,269
3,664,081	3,664,586	3,665,103	3,665,459	3,664,428	3,664,272
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3,664,132	3,664,590	3,665,114	3,665,473	3,664,823	3,664,322
3,664,133	3,664,597	3,665,118	3,665,478	3,664,906	3,664,323
3,664,136	3,664,598	3,665,120	3,665,483	3,664,915	3,664,338
3,664,141	3,664,611	3,665,138	3,665,500	3,664,986	3,664,379
3,664,144	3,664,622	3,665,140	3,665,513	3,665,009	3,664,385
3,664,170	3,664,626	3,665,142	8 : 3,663,972	11 : 3,664,185	3,664,434
3,664,171	3,664,628	3,665,145	3,664,006	3,665,469	3,664,457
3,664,199	3,664,629	3,665,151	3,664,042	3,665,481	3,664,466
3,664,249	3,664,653	3,665,152	3,664,043	12 : 3,664,052	3,664,471
3,664,255	3,664,654	3,665,161	3,664,097	3,664,312	3,664,484

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PATENT OFFICE NOTICES

Board of Appeals Decisions Rendered in the Month of April 1972

Examiner affirmed	115
Examiner affirmed in part	16
Examiner reversed	15
Total	146

Rule 283

Testimony Taken in Another Interference or Action

A discovery proceeding under the control of a U.S. District Court, ancillary to an interference proceeding, is now considered to be an "action" within the meaning of Rule 283. Accordingly, "pretrial depositions" taken in a discovery proceeding in accordance with the Federal Rules of Civil Procedure and under court control may be used in the interference as to which the discovery proceeding is ancillary, subject to all other provisions of Rule 283.

RICHARD A. WAHL,
Assistant Commissioner.

May 2, 1972.

Service of Court Papers on Commissioner of Patents

Those having occasion to serve on the Commissioner of Patents papers having to do with court proceedings are hereby reminded that proper service by mail may be effected only by mailing the papers to the Solicitor of the Patent Office as counsel for the Commissioner. Rule 5(b) of the Federal Rules of Civil Procedure provides in pertinent part:

> Whenever under these rules service is required or permitted to be made upon a party represented by an attorney the service shall be made upon the attorney unless service upon the party himself is ordered by the court. Service upon the attorney * * * shall be made by delivering a copy to him or by mailing it to him at his last known address * * *.

Rule 25(b) of the Federal Rules of Appellate Procedure similarly provides, "Service on a party represented by counsel shall be made on counsel." The clerk of the U.S. Court of Customs and Patent Appeals has stated that, inasmuch as the rules of the Court are not specific on the manner of service in patent cases, the procedure outlined herein has the Court's approval.

Accordingly, all service copies of papers filed in court proceedings in which the Commissioner of Patents is a party which are served by mail should be addressed:

"(Name of Solicitor), Solicitor
U.S. Patent Office
Washington, D.C. 20231."

S. WM. COCHRAN,
Solicitor.

Apr. 28, 1972.

United States District Court for the District of Columbia

RIPPLE TWIST MILLS, INC., Plaintiff
v.
INDUSTRIAL KNITTING CORPORATION, Defendant

Civil Action No. 791-72

ORDER OF PUBLICATION ON ABSENT DEFENDANT IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA

The object of this suit under the Patent Laws of The United States is to secure (1) an adjudication of invalidity of United States Letters Patent 3,513,668 granted May 26, 1970, (2) preliminary and permanent injunction against Defendant, its agents, servants, employees and attorneys enjoining them and each of them from asserting or threatening to assert the aforesaid Letters Patent against customers or potential customers of Plaintiff and restraining them and each of them from filing or prosecuting any civil action or action against Plaintiff and/or its customers for infringement of said Letters Patent, (3) costs and attorneys fees, and (4) such other and further relief as may to this Court appear to be just and equitable.

On motion of the Plaintiff, it is this 27th day of April 1972, ordered that the Defendant, INDUSTRIAL KNITTING CORPORATION, a Canadian corporation having a principal place of business at 500 Sauve Street W, Montreal, Quebec, Canada, cause its appearance to be entered herein on or before the fortieth day exclusive of Sundays and legal holidays, occurring after the day of the first publication of this order; otherwise the cause will be proceeded with as in case of default.

WILLIAM B. BRYANT,
Judge.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

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3,129,927, A. D. Mast, MIXING APPARATUS FOR FLUENT MATERIAL, filed Apr. 14, 1971, D.C., E.D. Pa. (Philadelphia), Doc. 71-878, *Feedmobile, Inc.* v. *Jacob F. Conrad, trading as Eastern Mobile Mills.* Consent judgment, plaintiff's patent is valid and has been infringed. Defendants permanently enjoined, Jan. 11, 1972.

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3,266,173, G. H. Sheridan, TRAINING APPARATUS, filed Oct. 8, 1971, D.C., N.D. Ind. (South Bend), Doc. 718160, *The Singer Company* v. *Visual Educom, Inc. and Electronic Associates, Inc.*

3,272,297, S. G. Bean, FEEDER OF NON-FLOWING MATERIAL, filed Feb. 3, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c322, *Food Packaging, Inc.* v. *U.S. Sugar Company, Inc., Frank E. Greene & Sons, Inc. and Continental Sugar Company, Inc.* Cause dismissed against defendant Frank E. Greene & Sons, Inc. without prejudice, Jan. 11, 1972.

3,322,515, Dittrich and Shepard, FLAME SPRAYING EXOTHERMICALLY REACTING INTERMETALLIC COMPOUND FORMING COMPOSITES, filed Jan. 17, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c126, *Metco, Inc.* v. *Metallising Company of America.*

3,330,406, R. H. Taub, COLLAPSIBLE DISPLAY BIN, filed Apr. 20, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c941, *Charles Kirshbaum and Ethel Taub* v. *GTE Sylvania Inc.* Order, cause dismissed with prejudice, July 28, 1971.

3,365,233, Uyeda and Fujioka, STACKING CHAIRS, filed Jan. 7, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72-42-RJK, *Samsonite Corporation* v. *McDowell-Craig Chair Co.*

3,385,649, C. M. Hicks, CANDLE PACKAGE AND METHOD OF MAKING CANDLE, filed Mar. 16, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c665, *Charles M. Hicks* v. *Chicago Candle Corporation.* Enter consent judgment, July 30, 1971.

3,426,580, F. J. Callahan, Jr., METHOD OF TESTING JOINTS IN PRESSURIZED FLUID LINES, filed Jan. 11, 1972, D.C. Minn. (Minneapolis), Doc. 4-72-C-20, *Nupro Company* v. *Guy Speaker Co., Inc., doing business as Fluid Products Co., also known as Guy Speaker Process Accessories Co., and Guy Speaker.*

3,512,807, H. J. Moran, MANIFOLD FOR INFLATABLE LIFE PRESERVERS AND THE LIKE, filed Oct. 27, 1970, D.C.N.J. (Newark), Doc. 1446-70, *Switlik Parachute Company, Inc.* v. *Halkey-Roberts Corporation.* Order of dismissal filed Jan. 19, 1972.

3,517,254, A. C. McNamara, Jr., CONTINUOUS LIGHTING SYSTEM FOR GASEOUS-DISCHARGE LAMPS WITH INCANDESCENT LIGHTS FOR STANDBY, filed Dec. 29, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c3128, *Esquire, Inc.* v. *Thomas Ind. Inc. and Litton Ind. Inc.*

3,521,550, Van Doorn, Pease, Colquett, Tinkler and Huguley, BALE STRAPPING APPARATUS, filed Jan. 12, 1972, D.C., E.D. Tex. (Sherman), Doc. 2048, *Lummus Industries, Inc.* v. *Hardwicke-Etter Company.*

Errata

On page 1205, second paragraph of the OFFICIAL GAZETTE, vol. 893, issued Dec. 28, 1971, reference to existing consent decision concerning Patent Number 3,293,663 was in error. Litigation of infringement of the Cronin Patent No. 3,293,663, is still pending.

Same paragraph, second line, "3,257,688" should be *3,257,668.*

Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,381,402, T. Ohfuji, PHOTOGRAPH MOUNTS AND METHOD FOR PRODUCING THE SAME, decided Jan. 4, 1972, Interference No. 97,031, claim 1.

Patent No. 3,353,789, F. J. Schay, CONTAINER MEANS HAVING PULL-OFF WALL MEANS, decided Nov. 29, 1971, Interference No. 97,003, claims 1, 7 and 8.

Patent No. 3,366,640, M. H. Sherlock and N. Sperber, ANILINO NICOTINIC ACID DERIVATIVES, decided Mar. 31, 1972, Interference No. 97,399, claims 1, 2 and 3.

Patent No. 3,471,465, G. Loew, PREPARATION OF CELLULAR POLYURETHANES IN THE PRESENCE OF TRIETHYLENE DIAMINE AND A SILOXANE-OXYALKYLENE BLOCK POLYMER, decided Mar. 30, 1972, Interference No. 97,507, claims 1–10.

Patent No. 3,514,715, W. F. Kosonocky, MULTILAYER, LIGHT-EMITTING SEMICONDUCTOR DEVICE, decided Mar. 31, 1972, Interference No. 97,672, claim 8.

Design Patent No. 214,108, R. Sulzberger, DISPLAY CABINET FOR EYEGLASS FRAMES OR THE LIKE, decided Sept. 28, 1971, Interference No. 96,990, sole claim.

Certificates of Correction for the Week of May 30, 1972

Re. 27,258	3,563,926	3,587,293	3,598,704
D. 214,555	3,567,190	3,588,283	3,598,934
D. 220,931	3,567,423	3,589,132	3,599,358
D. 222,786	3,567,836	3,589,221	3,599,677
2,914,193	3,568,153	3,589,733	3,599,765
3,308,916	3,569,860	3,589,831	3,601,152
3,357,363	3,571,548	3,590,182	3,601,252
3,384,029	3,571,680	3,591,092	3,603,348
3,407,255	3,575,526	3,591,362	3,603,399
3,450,436	3,576,146	3,592,216	3,604,267
3,480,136	3,576,821	3,592,218	3,604,508
3,504,828	3,576,855	3,592,490	3,604,850
3,510,378	3,576,873	3,593,144	3,607,042
3,513,114	3,577,024	3,593,312	3,607,232
3,516,788	3,577,640	3,593,346	3,607,397
3,523,115	3,582,364	3,593,427	3,608,385
3,532,711	3,585,181	3,594,186	3,608,728
3,539,361	3,585,274	3,595,242	3,610,004
3,543,622	3,585,288	3,595,272	3,610,943
3,545,499	3,585,797	3,595,446	3,611,484
3,547,297	3,586,113	3,595,716	3,612,681
3,547,825	3,586,438	3,595,880	3,612,696
3,551,885	3,586,922	3,596,665	3,614,276
3,552,694	3,587,274	3,596,752	3,614,473
3,614,550	3,621,101	3,627,189	3,632,680
3,614,650	3,621,127	3,627,388	3,632,654
3,614,812	3,621,256	3,627,416	3,632,716
3,614,888	3,621,307	3,627,527	3,632,769
3,615,177	3,621,528	3,627,555	3,632,788
3,615,291	3,621,679	3,627,573	3,632,789
3,615,537	3,622,221	3,627,574	3,632,903
3,615,941	3,622,456	3,627,614	3,633,098
3,616,220	3,622,462	3,627,752	3,633,214
3,616,239	3,622,659	3,627,810	3,633,255
3,616,424	3,622,675	3,627,833	3,633,353
3,616,697	3,622,709	3,627,855	3,633,371
3,617,052	3,622,843	3,628,027	3,633,540
3,617,170	3,622,883	3,628,057	3,633,578
3,617,221	3,623,093	3,628,060	3,633,921
3,617,319	3,623,366	3,628,468	3,633,954
3,617,373	3,623,433	3,628,472	3,634,080
3,617,378	3,623,590	3,628,519	3,634,104
3,617,582	3,623,817	3,628,524	3,634,120
3,617,536	3,623,978	3,628,753	3,634,230
3,617,548	3,624,002	3,628,944	3,634,306
3,617,643	3,624,033	3,629,027	3,634,364
3,617,666	3,624,057	3,629,296	3,634,406
3,617,767	3,624,100	3,629,431	3,634,562
3,617,802	3,624,126	3,629,434	3,634,709
3,617,855	3,624,127	3,629,501	3,634,714
3,617,911	3,624,153	3,629,618	3,635,090
3,617,928	3,624,283	3,629,619	3,635,292
3,617,939	3,624,315	3,629,633	3,635,372
3,617,955	3,624,378	3,629,739	3,635,429
3,618,285	3,624,554	3,629,954	3,635,567
3,618,573	3,624,590	3,630,368	3,635,866
3,618,793	3,624,703	3,630,472	3,635,884
3,619,056	3,624,773	3,630,596	3,636,091
3,619,078	3,625,054	3,630,676	3,636,394
3,619,080	3,625,068	3,630,880	3,637,564
3,619,165	3,625,164	3,630,966	3,637,585
3,619,399	3,625,376	3,630,989	3,637,795
3,619,418	3,625,534	3,630,999	3,638,394
3,619,691	3,625,655	3,631,020	3,638,443
3,620,335	3,625,718	3,631,070	3,638,466
3,620,646	3,625,797	3,631,140	3,638,667
3,620,708	3,625,815	3,631,155	3,638,737
3,620,709	3,625,855	3,631,169	3,638,951
3,620,726	3,625,964	3,631,223	3,640,442
3,620,918	3,625,968	3,631,261	3,641,059
3,620,964	3,626,004	3,631,589	3,641,101
3,620,985	3,626,184	3,631,666	3,641,421
3,621,005	3,626,190	3,631,782	3,642,005
3,621,006	3,626,270	3,631,839	3,642,558
3,621,012	3,626,299	3,631,973	3,643,542
3,621,032	3,626,486	3,632,042	3,644,634
3,621,035	3,626,588	3,632,363	3,646,975
3,621,059	3,626,843	3,632,376	
3,621,072	3,627,046	3,632,457	

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 16, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-18-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	3-03-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	3-01-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods: Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-09-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	9-21-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	2-11-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-12-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	4-19-71
PHYSICS, GROUP 260—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	3-01-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	1-19-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	3-23-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	3-01-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	2-12-71
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	5-21-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	3-18-71

Expiration of patents: The patents within the range of numbers indicated below expire during June 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 600, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 82nd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151:

Patents ..... Numbers 2,709,306 to 2,712,130, inclusive
Plant Patents ..... Numbers 1,396 to 1,403, inclusive

REISSUES

MAY 30, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,375
IMAGE RECEPTOR SHEETS CONTAINING ORGANIC SILVER SALTS AND METAL ION IMAGE

Gerhard W. R. Puerckhauer, St. Paul, Burt K. Sagawa, Minneapolis, and Bruce W. Wittnebel, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

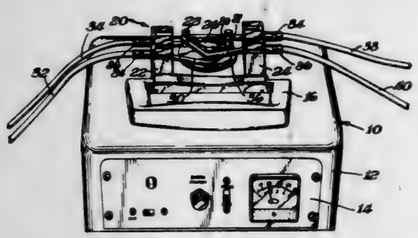
No Drawing. Original No. 3,460,946, dated Aug. 12, 1969, Ser. No. 524,843, Feb. 3, 1966. Application for reissue July 20, 1970, Ser. No. 56,641
Int. Cl. G03c *1/02*
U.S. Cl. 96—94 13 Claims

Metal ion image amplifiers, such as stannous stearate, are added to image [receptor] sheets containing organic silver salts *and reducing agents,* to provide improved image appearance and to conserve silver.

27,376
ROLLER PUMP HEADS

Robert E. Pickup, Norristown, Pa., assignor to Extracorporeal Medical Specialties, Inc.

Original No. 3,502,034, dated Mar. 24, 1970, Ser. No. 735,935, Aug. 20, 1968. Application for reissue Oct. 7, 1970, Ser. No. 78,726
Int. Cl. F04b *43/08, 43/12, 45/06*
U.S. Cl. 417—477 10 Claims



A roller pump of the type having one or more flexible tubular pumping chambers continuously and successively depressed uni-directionally by traveling pumping members wherein improved head arrangements are provided to facilitate replacement of the pumping tubes and removal of the pumping member rotor.

27,377
SYNTHESIS OF UREA

Eiji Otsuka, Fujisawa, and Toyoyasu Saida, Omiya, Japan, assignors to Mitsui Toatsu Chemicals Incorporated

Original No. 3,303,215, dated Feb. 7, 1967, Ser. No. 256,035, Feb. 4, 1963. Application for reissue Mar. 20, 1968, Ser. No. 719,784
Claims priority, application Japan, Mar. 9, 1962, 37/8,558
Int. Cl. C07c *127/00*
U.S. Cl. 260—555 A 11 Claims

A process for making urea wherein carbon dioxide is removed from a raw material gas containing N_2, H_2 and CO_2 by reacting it with ammonia to produce urea and a combined process for making urea and ammonia wherein the above-mentioned process is carried out and the resulting raw material gas containing N_2 and H_2 is subjected to ammonia synthesis conditions to form ammonia.

27,378
UNIVERSAL CARBURETOR-MANIFOLD ADAPTOR

Edwin E. Lohn, 231 S. Peck Drive, Los Angeles County, Calif. 90212

Original No. 3,366,145, dated Jan. 30, 1968, Ser. No. 465,442, June 21, 1965. Application for reissue June 24, 1970, Ser. No. 49,585
Int. Cl. F15d *1/04*
U.S. Cl. 138—39 6 Claims



[A thick substantially flat plate comprising an adapter body for interconnecting any of a variety of carburetor sizes to any of a variety of engine intake manifold sizes is disclosed. The plate or body defines a plurality of flow ports extending therethrough, which have a conical surface truncated at the flat surfaces of the plate, the conical axes of which converge centrally to intersect at a point removed from said body. Furthermore, the body defines a plurality of sets of quadrature spaces apertures, counter formed to define locking spaces on each side of the body.]

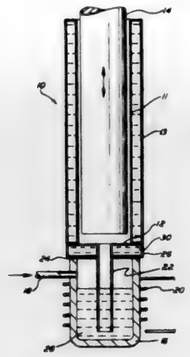
A plate comprising an adapter body for interconnecting any of a variety of carburetor sizes to any of a variety of engine intake manifold sizes is disclosed. The plate or body defines a plurality of flow parts extending therethrough which have a conical surface truncated at the flat surfaces of the plate. Furthermore, the body defines a plurality of sets of spaced apertures, counterformed to define locking spaces on each side of the body.

27,379
CONSUMABLE ELECTRODE FURNACE FOR ELECTROSLAG REFINING

Raymond John Roberts, Willingboro, N.J., and Geoffrey Hoyle, Sheffield, England, assignors to Consarc Corporation, Rancocas, N.J., and British Iron and Steel Research Association, London, England

Original No. 3,389,208, dated June 18, 1968, Ser. No. 636,117, May 4, 1967. Application for reissue Sept. 21, 1970, Ser. No. 73,800
Claims priority, application Great Britain, Dec. 9, 1966, 55,369/66
Int. Cl. H05b *3/60*
U.S. Cl. 13—9 5 Claims

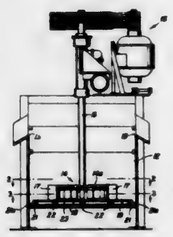
A consumable electrode furnace provided with a separate receptacle for molten slag and further provided with structure for introducing molten slag into the refining zone of the furnace. Slag is forced into the refining zone by the application of gas pressure into a vessel provided with a dip-tube communicating with the refining zone of the furnace.



27,380
FLOTATION MACHINE AND STATOR THEREFOR

Charles M. Anderson, Salt Lake City, Utah, assignor to The Galigher Company, Salt Lake City, Utah

Original No. 3,327,851, dated June 27, 1967, Ser. No. 427,639, Jan. 25, 1965. Application for reissue June 12, 1969, Ser. No. 4,551
(Filed under Rule 47(b) and 35 U.S.C. 118)
Int. Cl. B03d *1/18*
U.S. Cl. 209—169 9 Claims



A flotation stator comprising a bubble peeler structure having a multiplicity of spaced stator blades radiating from and defining an impeller-receiving space and a bottom plate supportive of said blades with an opening below said impeller-receiving space configurated as the horizontal cross section of the interior of a flotation machine tank but somewhat smaller. The bubble peeler structure may have blades substantially uniform in length and relatively short compared to conventional bubble peeler blades.

27,381
PREPARATION OF IMITATION SOUR CREAM

Lawrence Lewis Little, Creve Coeur, Mo., assignor to The Battelle Development Corporation, Columbus, Ohio

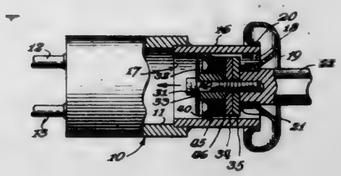
No Drawing. Original No. 3,391,002, dated July 2, 1968, Ser. No. 425,961, Jan. 15, 1965. Application for reissue Jan. 13, 1970, Ser. No. 2,677
Int. Cl. A23c *9/10*
U.S. Cl. 99—54 19 Claims

Sour cream type products are prepared without butterfat or cultures by mixing an edible protein with an edible non-dairy lipoid, chemical emulsifiers, and whey separation inhibitors (gums), then pasteurizing and homogenizing, thereafter cooling and then adding an edible acid.

27,382
PISTON ASSEMBLY FOR PUMP

Paul W. Schlosser, 4452 N. Avers Ave., Chicago, Ill. 60625

Original No. 3,391,646, dated July 9, 1968, Ser. No. 671,368, Sept. 28, 1967, which is a continuation-in-part of Ser. No. 590,429, Oct. 28, 1966. Application for reissue Dec. 4, 1969, Ser. No. 881,962
Int. Cl. F04b *21/00, 39/00;* F16j *15/50;* F01b *31/00*
U.S. Cl. 417—439 12 Claims

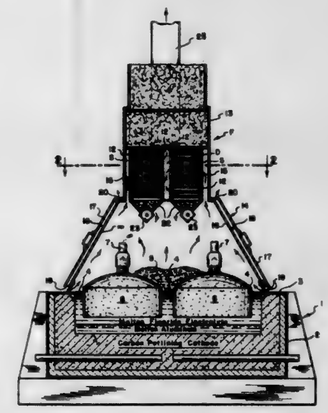


A piston, reciprocating in the cylinder of a piston pump, has an annular seal around its periphery with a fluid venting passage communicating opposite sides of the seal to equalize pressure on opposite sides of the seal during a suction stroke of the piston. Disc-shaped sealing means are located behind the seal for closing the venting passage during the pressure stroke of the piston.

27,383
PROCESS AND APPARATUS FOR FILTERING EFFLUENT PRODUCED FROM ALUMINUM REDUCTION CELLS

Arthur F. Johnson, 203 Creole Lane, Franklin Lakes, N.J. 07417

Original No. 3,470,075, dated Sept. 30, 1969, Ser. No. 614,294, Feb. 6, 1967. Application for reissue Oct. 24, 1969, Ser. No. 882,760
Int. Cl. C22d *3/12;* C22b *21/00*
U.S. Cl. 204—67 20 Claims



This invention comprises an apparatus associated with [an] *a metallurgical furnace such as a* aluminum reduc-

tion cell and a process for directing the hot gases, vapors and dust issuing from the [cell] *furnace* and passing them through a wall of pulverulent [alumina] *absorbent* supported between upright metal walls having a multiplicity of openings. [The] *In an aluminum reduction cell, the* wall of alumina which may contain some admixed activated alumina, provides a physicophysical fixture which entrains the dust, absorbs the fluoride vapors and gaseous compounds, absorbs the heat and returns the absorbed chemicals, dust and heat to the cell. The wall of alumina is preferably supplied from an upper feed hopper and as the wall of alumina moves downwardly it engages means which controls feeding the wall of alumina into the cell which also maintains the wall of alumina. The metal walls preferably have many spaced upwardly disposed baffles which prevent spillage of the alumina and intervening spaces through which the gases, vapors and dust pass into the alumina.

PLANT PATENTS

GRANTED MAY 30, 1972

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,197

FRUITLESS OLIVE TREE

Hudson T. Hartmann, Davis, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Apr. 27, 1970, Ser. No. 32,468

Int. Cl. A01h 5/03

U.S. Cl. Plt.—33 1 Claim

1. The new and distinct variety of olive tree (*Olea europaea L.*), useful for ornamental purposes, as herein described, characterized particularly as to novelty by its failure to bear fruits.

3,198

DISTINCT VARIETY OF APPLE TREE NAMED SPUREEROME

Henry W. Miller, Jr., Paw Paw, W. Va., assignor to Hill Top Orchards & Nurseries, Inc.

Filed Dec. 2, 1970, Ser. No. 94,635

Int. Cl. A01h 5/03

U.S. Cl. Plt.—34 1 Claim

1. A new and distinct variety of apple tree substantially as herein shown and described, characterized by: a compact spur type vegetable growth habit which promotes fruiting throughout the entire tree; fruit that is highly colored, the core of which is small with alternate bundles close to the core; buds in the leaf petiole axis which are large; a high percent of variability of said buds in the second year, forming a very dense, heavily spurred tree.

3,199

PEACH TREE

Lewis B. Sherrill, Bakersfield, Calif., assignor to Patterson & Hale, Bakersfield, Calif.

Filed Dec. 17, 1970, Ser. No. 99,329

Int. Cl. A01h 5/03

U.S. Cl. Plt.—43 1 Claim

A peach tree of medium size, medium vigor, spreading growth, vase form, hardy for California peach-producing areas, and a regular and very productive bearer of early ripening, large, uniform, globose, semi-clingstone fruit having firm yellow flesh and yellow skin overspread to a substantial extent with red.

3,200

WALNUT TREE

William Thornton Honeycutt, 2918 Baker Road, Modesto, Calif. 95351

Filed Dec. 24, 1970, Ser. No. 101,446

Int. Cl. A01h 5/03

U.S. Cl. Plt.—32 1 Claim

A large, vigorous, medium dense, English walnut tree having abundant foliage, large compound leaves with long petioles, and early leafing and flowering; the tree being a regular and heavy producer of large, light color, well distributed nuts in harvest approximately with the payne (unpatented), and the nuts—averaging better than two in the clusters—having unusually long stems, hulls which open freely and widely, and kernels which exceed fifty percent of the whole nut weight.

3,201

ALMOND TREE

Manuel S. Trinta, 706 Pomelo Ave., Patterson, Calif. 95363

Filed Jan. 8, 1971, Ser. No. 105,136

Int. Cl. A01h 5/03

U.S. Cl. Plt.—30 1 Claim

An almond tree, of medium size, which is vigorous, dense when young but more open when mature, upright to spreading, abundant of foliage with medium size leaves, and a regular and heavy producer of nuts well distributed on the tree; the nuts, which harvest easily and relatively early, being small, of very good quality, and averaging, by weight, forty-five to fifty percent kernel to nut, and with about forty kernels per ounce.

3,202

NECTARINE TREE

Frederic W. Anderson, Merced, Calif., assignor to Reedley Nursery, Inc., Reedley, Calif.

Filed Jan. 28, 1971, Ser. No. 110,674

Int. Cl. A01h 5/03

U.S. Cl. Plt.—41 1 Claim

A nectarine tree of medium size, medium vigor, spreading, and a very productive bearer of uniform, freestone fruit of medium size and symmetrical globose form; the fruit, which is late in harvest, having yellow skin substantially overspread with red, and yellow flesh with red streaked thereinto from the pit cavity.

3,203

ROSE PLANT

Walter E. Lammerts, Watsonville, Calif., assignor to Devor Nurseries, Inc., Livermore, Calif.

Filed Nov. 10, 1970, Ser No. 88,526

Int. Cl. A01h 5/00

U.S. Cl. Plt.—21 1 Claim

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a very upright and vigorous plant habit, large leathery and attractive dark green mature foliage, moderate sized buds and blooms which are usually borne in candelabra arrangement, said buds being of urn-shaped form and opening to high-centered blooms which show the stamens when the blooms reach a finishing wide-open stage, good flower petalage, with the petals having a heavy

substance, and a distinctive and attractive dark red flower color which is often striated with lighter and darker shades of red color.

3,284
KALANCHOE PLANT
James T. Irwin, Canyon, Tex., assignor to Irwin Greenhouses, Inc., Canyon, Tex.
Filed Nov. 27, 1970, Ser. No. 93,515
Int. Cl. A01h 5/00
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of kalanchoe plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a uniformly dwarf, spreading habit of growth, topped with numerous short-stemmed clusters of flowers, a highly self-branching and sturdy growing habit, a uniform blooming habit throughout the year, a distinctive and attractive rose pin flower color which blends well with the fern green foliage which has a wine colored etching on the reverse surface of the foliage and which is intensified under high light and cool weather conditions, long lasting qualities as a potted plant, an ability to initiate and develop flower buds during high night-time temperatures of summer when other varieties stall, and an ability to respond to photo-period changes, with consequent suitability for year around flowering.

PATENTS

GRANTED MAY 30, 1972

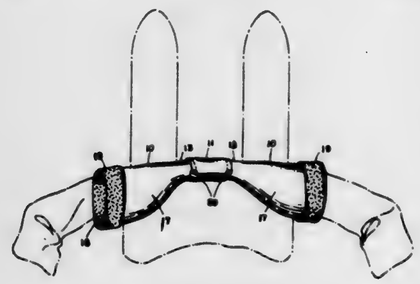
GENERAL AND MECHANICAL

3,665,514
LOW PROFILE SIZE ADJUSTABLE PROTECTIVE HELMET
Philip E. Durand, Hudson, Mass., assignor to The United States of America as represented by the Secretary of the Army
Filed Sept. 22, 1970, Ser. No. 74,348
Int. Cl. A42b 1/08
U.S. Cl. 2—3 R 9 Claims



A low profile protective helmet comprising a rigid shell lined with shock absorbing material, the shell being made up of separate front, center, and rear portions with the sides of the front and rear portions adjustably mounted in cantilever fashion on the sides of the center portion. The center portion is provided with a channel in its outer surface to receive the headband of a communications headset. The adjustable mounting enables the front and rear portions to be selectively mounted to provide a good fit over a range of head sizes and shapes. The front and rear edges of the center portion are provided with integral extensions which telescope with the adjacent edges of the front and rear portions to close the opening between the center portion and the front and rear portions throughout the range of adjustment. The shell may be formed of ballistic material or an outer shell of ballistic material may be worn over the helmet.

3,665,515
HANDLEBAR HAND PROTECTOR
John P. Sjostrom, Sr., Fox Lake, Ill., assignor to Cass Industries, Ltd., McHenry, Ill.
Filed Nov. 24, 1969, Ser. No. 879,323
Int. Cl. A41d 13/08
U.S. Cl. 2—17 10 Claims



A handlebar hand protector for use on snowmobiles, bicycles, motorcycles and other devices having similar handlebars, comprising two flexible sleeves each having a narrow end and a wide end, the narrow end having means for attachment to a handlebar running through an opening defined by the narrow end, and the wide end defining an opening allowing entry of a hand to grasp the handlebar within the sleeve.

3,665,516
ADJUSTABLE LENGTH GARMENT
Alice Orovan, Olcott Hotel, 27 West 72nd Street, New York, N.Y.
Filed July 30, 1970, Ser. No. 59,628
Int. Cl. A41d 1/14
U.S. Cl. 2—74 9 Claims



This garment construction, intended primarily for skirts, provides adjustment of the length of the garment. An outer portion of the skirt folds upward at its bottom edge and connects with lining material above it to form an inner portion of the skirt. The lower region of the lining can be lifted and attached, by detachable fastening means, to an upper region of the lining, and this rolls part of the outer portion around the lower edge so that the skirt becomes shorter. When the detachable fastening means are released, the parts fall back to their original positions with the fold or "hem" at a lower level.

3,665,517
ONE-PIECE OUTERWEAR WITH CUSHION
Sam M. Hyman, Manitowoc, Wis., assignor to S. M. Hyman Ltd., Manitowoc, Wis.
Filed June 10, 1970, Ser. No. 45,132
Int. Cl. A41d 3/00
U.S. Cl. 2—84 11 Claims

A cold weather garment constructed of an impervious outer shell which is attached to an inner layer of porous pile fabric, leaving air spaces for air flow between the layers. The garment is particularly adapted for winter sports which require the wearer to be seated and has, therefore, an air cushion fixed between the garment layers from the small of the back to mid-thigh. The cushion has air tubes and pockets in a pattern contoured to fit the form of the legs and seat of the wearer. The cushion is inflated through an extendable tube connecting to the cushion and stored in a side pocket of

the suit. A full length zipper extending from the neck down the front and along the inside of one leg, and a second zipper on the other leg facilitate removal of the garment. Also included is a hood with a knit face mask that can be retracted and stored within the hood when not desired to be positioned over the face.

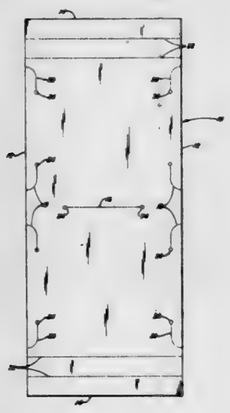


3,665,518

DISPOSABLE RAIN PONCHO

John L. Leadford, Pittsburgh, Pa., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Aug. 20, 1970, Ser. No. 65,493
Int. Cl. A41d *3/08, 3/04*
U.S. Cl. 2—88 8 Claims



A disposable rain poncho formed of thin plastic. The poncho consists of a large rectangle of the sheet material formed with various perforations to define a center slit for the user's head, ties along the sides, and two optional features of tear-offs at the ends to adjust length and holes at the ends of the various perforations to disperse stress.

3,665,519

SIMULATED NECKTIE KNOT

Jerry J. Calhoun, Sr., 393 Lewis Blvd., S.E., St. Petersburg, Fla.

Filed Nov. 17, 1969, Ser. No. 877,143
Int. Cl. A41d *25/02*
U.S. Cl. 2—150 1 Claim

A simulated knot formed of sheet material or of plastic formed in an injection molding machine, preferably covered and padded, is bent around to form a front portion visible as a simulated knot and rear portions, the edges of which terminate in spaced relation to provide a slot for the easy insertion of the ends of the necktie, the device being provided with means therein for gripping the tie to prevent the device from slipping downwardly along the ends of the tie.

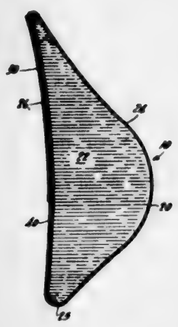


3,665,520

SURGICALLY IMPLANTABLE BREAST PROSTHESIS

Colette Perras, Lacombe, Montreal, and Jacques Papillon, St. Lambert, Montreal, both of Canada, assignors to Medical Engineering Corporation, Racine, Wis.

Filed Oct. 7, 1970, Ser. No. 78,863
Int. Cl. A61f *1/24*; A41c *3/10*
U.S. Cl. 3—36 12 Claims



A surgically implantable breast prosthesis formed from a flexible container having a front wall and a back wall; the front wall having an outer shape approximately that of the human breast and the back wall having a shape approximately that of the chest wall. The container includes a prolongation extending angularly outwardly toward the axilla region of the anatomy and overlying the pectoral muscle. The container is filled with a silicone gel and a fabric impregnated with the same material used to form the container is secured to the back wall to increase the rigidity of the back wall. A strip of Dacron felt is secured to the outer periphery of the back wall around the axilla prolongation and a small portion of the back wall of the container to support the prosthesis by tissue ingrowth into the Dacron felt.

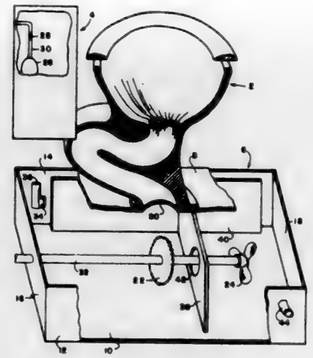
3,665,521

MARINE TOILET

George H. Cooke, P.O. Box 4552, Fort Lauderdale, Fla.

Filed Aug. 15, 1969, Ser. No. 850,520
Int. Cl. B02c *18/40, 18/14*
U.S. Cl. 4—10 4 Claims

A processing tank for a mobile water closet having a blade for masticating and grinding waste material, a propellor for generating a flow within the tank, and a plurality of partitions for creating a circulatory flow pattern to insure complete processing of the waste material by preventing accumulation of large solids within the tank. A chlorinating device is inserted in the flow pattern for proper chlorination of all waste material.

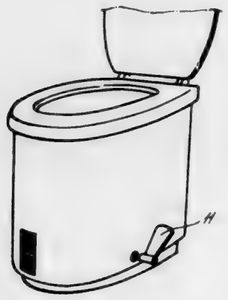


3,665,522

APPARATUS FOR COLLECTING SOLID OR LIQUID WASTES

Berat S. Backlund, Orebro; Goran P. A. Forslund, Nora Stad, and Eleon G. Eriksson, Nykoping, all of Sweden, assignors to Pactosan AB, Nora Stad, Sweden

Filed Nov. 17, 1969, Ser. No. 877,170
Int. Cl. A47k *11/02*
U.S. Cl. 4—142 3 Claims



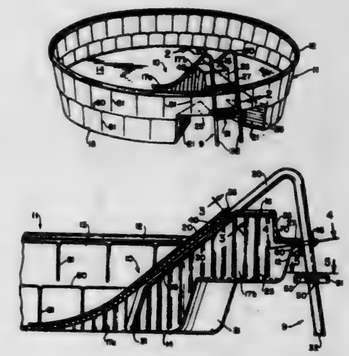
The present invention relates to an apparatus for collecting solid or liquid wastes, for example a closet or latrine, in which one end of a hose of thin, preferably tight, flexible material is passed down into a container, said hose end being sealed to form a hose bag structure adapted to receive the waste within the container, while the other end of the hose is passed over the upper edge of the container and stowed together with a considerable length of said hose in a storage space outside the container, to form a supply source from which the hose is fed successively into the container as the apparatus is used, and in which apparatus the container rests on a tubular support structure through which the hose is passed to a collecting vessel.

3,665,523

POOL STRUCTURE WITH BUILT-IN, EXTERNALLY SUPPORTED SLIDE

Archer Chase, Norfolk, Va., assignor to General Foam Plastics Corp., Norfolk, Va.

Filed Oct. 20, 1970, Ser. No. 82,474
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172 12 Claims



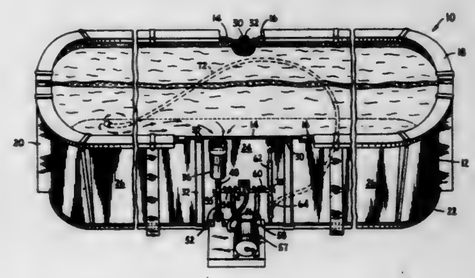
A molded tub-like structure, with a peripheral flange, having an integrally molded, but externally rail supported, sliding surface projecting well above the peripheral flange thereof is disclosed herein. The tub and sliding surface are unitarily formed of comparatively light-weight thermoplastic sheet material. The slide portion is reinforced and structurally supported by a truss including a pair of tubular parallel support members or rails, upon which inverted channel-like side edges of the sliding surface rest. The rails extend from beneath the sliding surface upwardly through openings formed in elevated portions thereof, and they then extend downwardly and outwardly of the structure forming hand rails for a step ladder leading up to the top of the elevated sliding surface. The truss includes a plurality of transverse cross bars, at least one of which advantageously may form a step or step support, providing additional support for the sliding surface.

3,665,524

ABOVE-THE-GROUND SWIMMING POOL

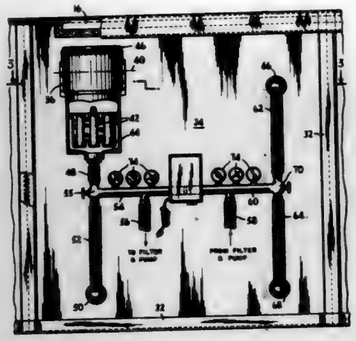
Frank Jannuzzi, Sr., 239 Maple Ave., North Plainfield, N.J.

Filed Mar. 3, 1971, Ser. No. 120,561
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.19 6 Claims



The wall of an above-the-ground swimming pool is constructed with a panel element that is interchangeable with

other panel elements, each of which has pre-formed openings



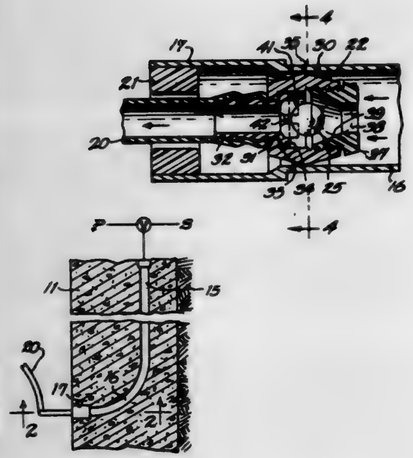
for receiving the components of one of a variety of pool cleaning systems.

3,665,525

AUTOMATICALLY EXTENSIBLE AND RETRACTABLE SWIMMING POOL CLEANER WITH HOUSING IN BOND BEAM

Herbert H. Howard, Woodland Hills, Calif., assignor to Marine Swimming Pool Equipment Co., North Hollywood, Calif.

Filed Jan. 11, 1971, Ser. No. 105,337
Int. Cl. E04h *3/20*
U.S. Cl. 4—172.15 **9 Claims**



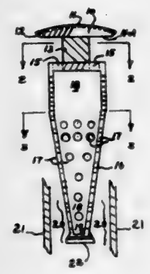
A pool cleaner of the type utilizing scouring jet hoses automatically extensible from tubular housings when subjected to pressurized water flow, and retractable in response to reversal from pressure to suction, wherein the housings are contained in the bond beam of the pool and connected to the pool by short radius bends, the rear ends of the hoses being pistons which are pivotally attached thereto so as to traverse said bends without binding therein.

3,665,526

COMBINED DRAINAGE STOP-VALVE CONICAL STRAINER DEVICE

Frank P. Hoffman, 1270 East 19th St., Brooklyn, N.Y.

Filed June 3, 1970, Ser. No. 43,097
Int. Cl. A47k *1/14*
U.S. Cl. 4—287 **1 Claim**



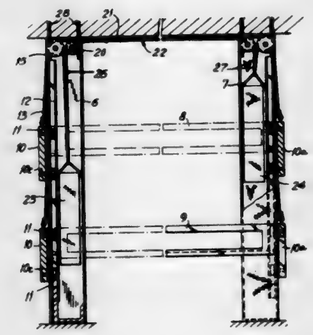
This invention relates to improvements in the art of conventional lavatory pop-up plumbing drain valves and comprises a removably disposed combined drainage stop-valve conical strainer configuration for drainage and seating, having baffle apertures in it's inclined wall permitting liquid waste water to pass, but preventing elongated solid waste objects from passing into the drainage system that could cause stoppage.

3,665,527

CONCEALABLE BEDS

Vincente Emo Gonzalez, Calle Balmes 351, Barcelona, Spain

Filed Sept. 29, 1969, Ser. No. 870,324
Claims priority, application Spain, Oct. 2, 1968, 358,735
Int. Cl. A47c *19/06*
U.S. Cl. 5—10 B **5 Claims**



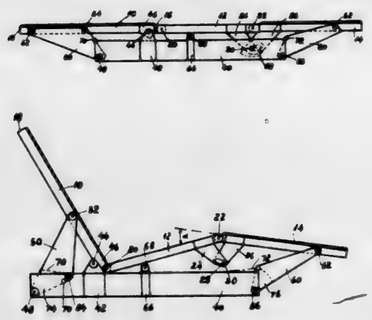
Structure for supporting a bed for movement between a position of non-use adjacent a ceiling of a room and a position of use adjacent a floor of a room. The structure includes hollow vertical columns extending between and fixed to the floor and ceiling of the room with the columns having outer walls directed away from each other and formed with elongated slots. Within the columns adjacent the slots are guides which communicate with the slots, and a pair of horizontal frame members which are adapted to carry a spring extend horizontally across the outer walls of the columns and carry guide members which extend through the slots into the guides within the columns to be guided thereby for vertical movement. A counterweight is freely movable vertically in one of the columns in the space therein which is not occupied by the guide, and a pair of cables extend from the counterweight upwardly around pulleys at the top of the columns to the opposed frame members which extend across the outer walls of the columns to be connected thereto, so that this one counterweight in one of the columns is connected through the cables to both of the frame members for counterbalancing the weight of the vertically movable bed. In the same way it is possible to connect a second counterweight in the other column through suitable cables over pulleys at the top of the columns to horizontal frame members of a second bed, these latter frame members being guided by the same columns and carrying a second spring which may be situated above or below the first spring.

3,665,528

ADJUSTABLE BED

Finn Andre Kjellberg; Svend E. N. Lemvig, and Bent I. Kjellberg, all of Ronne, Denmark, assignors to Trioteam A/S, Ronne, Denmark

Filed July 28, 1970, Ser. No. 58,770
Claims priority, application Denmark, Aug. 1, 1969, 4148
Int. Cl. A47c *3/32;* **A61g** *7/10*
U.S. Cl. 5—67 **6 Claims**



The invention relates to an adjustable bed having a bottom resting upon a tripartite, hinged frame, and being provided with means for adjusting the bottom from a neutral, horizontal position to an oblique position with the foot end elevated, and to a folded position, wherein the back-supporting part is oblique or vertical, the two other parts forming a reversed V, the adjustment means being designed so as to be operated by a single mechanism maneuvered by the person occupying the bed.

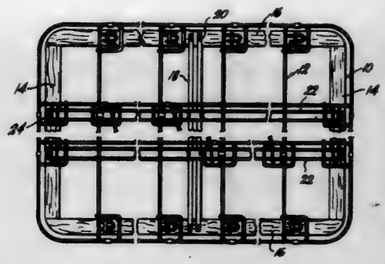
3,665,529

FRAME FOR BOX SPRING ASSEMBLY

Walter V. Slominski, Lexington, Ky., assignor to Hoover Ball and Bearing Company, Saline, Mich.

Filed July 21, 1970, Ser. No. 56,933
Int. Cl. A47c *23/02*
U.S. Cl. 5—264 **7 Claims**

A box spring frame having side and end rails made of wood and cross rails and a support bar made of sheet metal. The cross rails and the support bar have interlocking means formed out of the sheet metal which can be interconnected



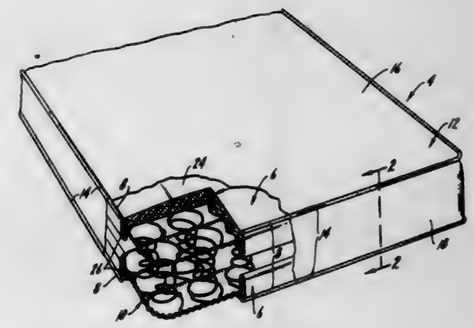
in a stressed condition as an incident to assembling the prefabricated parts.

3,665,530

MATTRESS TOPPER PAD

Ernest L. Basner, Littleton, Colo., assignor to Sealy, Inc., Chicago, Ill.

Filed June 8, 1970, Ser. No. 44,369
Int. Cl. A47c *25/00, 23/04*
U.S. Cl. 5—354 **22 Claims**



An improved topper pad for a mattress unit wherein the topper pad is positioned on an inner spring unit and has extending outwardly from its peripherial edge a preformed lip or welting encompassing the top portion of the topper pad. The inner spring unit is covered with ticking positioned on the topper pad so its edges abut the welting. A strip of trimming fabric covers the welting and overlaps the edges of the ticking panels, the trimming fabric and the ticking panels being sewn to the welting at its base, thus, constructing a mattress unit with an attractive border which looks like fabric-covered rope and which prevents shifting between the topper pad and the ticking panels.

3,665,531

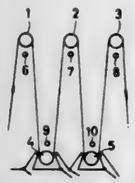
WASHING OF CONTAMINATED GUIDE-ROLL AND PREVENTION THEREFROM IN CLOTH TREATMENTS

Yoshikazu Sando, 122-6 Nishihoma, and Hiroshi Ishidoshiro, 469 Wakayre, both of Wakayama-ken, Japan
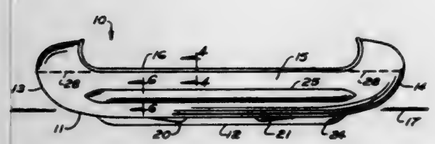
Original application May 16, 1967, Ser. No. 638,795, Pat. No. 3,593,353. Divided and this application Oct. 13, 1970, Ser. No. 80,404
Claims priority, application Japan, May 23, 1966, 41/32873; Nov. 22, 1966, 41/76606; Nov. 7, 1969, 44/102720. Divided
Int. Cl. B05c *11/00*
U.S. Cl. 8—151 **4 Claims**

A method of cleaning the surfaces of guiderolls used in treating and processing cloth is comprised of the steps of attaching lengths of guide cloths, which are provided with wip-

ing surfaces on both sides, to lengths of the cloth being processed so that the guide cloth and the cloth being processed are continuously passed over the guiderolls. Dampening at least one or both of the guide cloth and the guiderolls so that the guiderolls are wiped clean as the guide cloths pass over them. Preferably, the guiderolls are reversed from the normal direction of rotation to assist in the cleaning operation.



3,665,532
WATERCRAFT
Lawrence V. Simpson, 4110 Estateway Rd., Toledo, Ohio
Filed Mar. 27, 1970, Ser. No. 23,180
Int. Cl. B63b *35/00*
U.S. Cl. 9—1 R 9 Claims



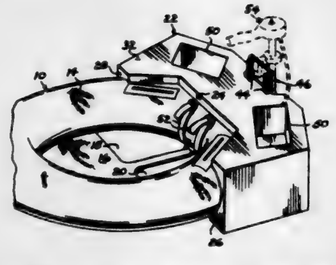
A watercraft for use in a water sport in which the craft is propelled by a passenger paddling with his hands. The watercraft has a generally flat bottom and is symmetrical, such that the passenger may face either end of the watercraft while paddling. Two pairs of stabilizing indentations are formed in the flat bottom, one pair for receiving the passenger's knees while kneeling and facing one end and the other pair for receiving the passenger's knees while kneeling and facing the other end. When the watercraft is canoe shaped and has upturned ends, it may be equipped with floatation such that it is difficult to swamp and is self-uprighting when swamped. The floatation includes a pair of elongated floats projecting from and extending along the sides of the canoe above the normal waterline and float means positioned in the upturned ends of the canoe and vertically spaced above the bottom of the canoe.

3,665,533
WATER CRAFT LAUNCHING AND REMOVAL MEANS
William W. Kleinau, 5100 Borland Rd., Los Angeles, Calif.
Filed Aug. 5, 1970, Ser. No. 61,343
Int. Cl. B63c *13/00*
U.S. Cl. 9—1 T 4 Claims

Broadly, the invention is directed to an easily fabricated, easily usable assemblage for the launching and removal of water craft. The major components of the apparatus comprise load bearing wheeled strut assemblies cooperable with coupling members disposed on the water craft, which strut members are easily detachable, and stored when not in use. In another embodiment of the invention, a kit assemblage is disclosed by which existing water craft may be modified in accordance with the practice of the invention.

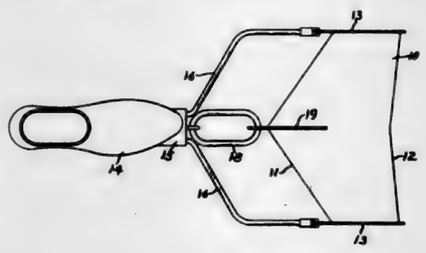


3,665,534
FISHING FLOAT MOTOR SUPPORT
Hubert L. McIntyre, 1406 E. Tonkawa, Tonkawa, Okla.
Filed June 11, 1970, Ser. No. 45,452
Int. Cl. B63h *7/08*
U.S. Cl. 9—2 A 2 Claims



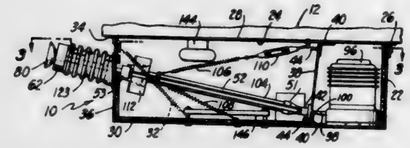
In a fishing float motor support, a framework reinforced polygonal-shaped generally horizontal buoyant body is provided with an arcuate recess nesting a peripheral portion of a conventional fishing float. Means on the body secures it to and maintains it in the plane of the fishing float. An upstanding transom, connected with body reinforcing framework, supports an outboard motor. Upwardly open sockets, formed in the body, support fishing equipment and a battery to provide electrical energy for the motor.

3,665,535
SWIM FIN
James B. Picken, 13103 E. 13th Place, Spokane, Wash.
Filed Aug. 13, 1970, Ser. No. 63,541
Int. Cl. A63c *31/10*
U.S. Cl. 9—304 13 Claims



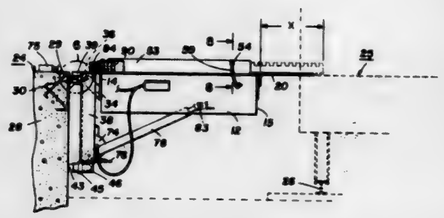
A swim fin having a rigid or flexible web pivotally mounted on a rigid frame extended forwardly from the toe of the user. The rigid web is pivoted intermediate its longitudinal ends. A flexible web is controlled with respect to longitudinal curvature. Both forms are limited in the extent of angular movement available.

3,665,536
LEVELING DEVICE
Harold G. Jackson, 3747 Fanwood Ave., Long Beach, Calif.
Filed May 11, 1970, Ser. No. 35,987
Int. Cl. B65g *11/00*
U.S. Cl. 14—71 6 Claims



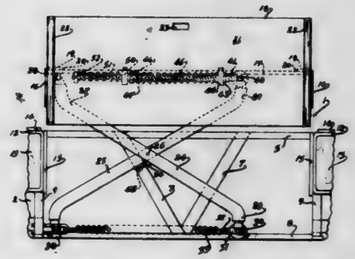
A leveling device for use in maintaining a relative position between two structures, one of which can be moved if the other is moved so as to maintain the same relative position between the two structures can be constructed so as to utilize a suction cup carried on the structure which can be moved in response to movement of the other structure. In such a device the suction cup is carried upon a movably mounted member so that when motion is transmitted to the member through the suction cup the member causes actuation of motion detection means. Such means are connected to the structure which can be moved so as to cause movement of this structure in response to movement of the other structure.

3,665,537
DOCK BOARD
Ernest Turner, Muskegon, Mich., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Apr. 7, 1970, Ser. No. 26,271
Int. Cl. B65g *11/00*
U.S. Cl. 14—71 10 Claims



A positionable dock board or gangway for service bridging the space separation between railway box-cars and a cargo shipping and/or receiving dock situated adjacent the railway track. The dock board unit hereof includes a platform securable to the dock facing with which it is to be used in a manner providing for pivotal platform movement between a horizontal service position and a vertical storage position. When in the vertical relation, the unit affords increased ease of longitudinal positioning for traversing between cars and precise locating at a car door. Transversely extending adjustable support arms enable accommodating variable spacing between dock and car while turnover plates at the free end have an adjustable pivot axis permitting greater angular offset and consequent ease of cargo handling in immediately adjacent car areas.

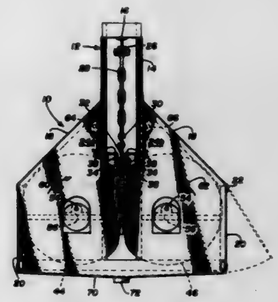
3,665,538
DOCKBOARD
Matthew Smith, West Allis, Wis., assignor to Kelley Company, Inc., Milwaukee, Wis.
Filed Aug. 1, 1969, Ser. No. 846,722
Int. Cl. B65g *11/00*
U.S. Cl. 14—71 16 Claims



A dockboard to span the gap between a loading dock and the bed of a carrier. The ramp of the dockboard is stored vertically along the front wall of the dock and the side edges of the ramp are pivotally connected to guide members which are movable in vertical guideways mounted on the front surface of the dock. The ramp is raised upwardly from its vertical storage position to a location generally above the height of the dock, pivoted to a generally horizontal position and then lowered downwardly to span the gap between the loading dock and the carrier.

The weight of the ramp is counterbalanced by a series of springs connected through a pair of scissors-type arms to the ramp. The combined force of the springs is slightly less than the weight of the ramp, so that the ramp is biased downwardly, and the springs are arranged so that the maximum spring force is exerted against the ramp when the ramp is initially moved up from its vertical storage position and a lesser spring force is applied to the ramp when the ramp has been elevated to an above dock position.

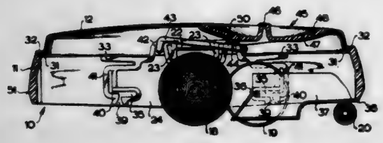
3,665,539
AUTOMATIC SHACKLE WASHER
Janus J. Dillon, Irving, Tex., assignor to Food Equipment, Inc., Dallas, Tex.
Filed Apr. 9, 1970, Ser. No. 26,892
Int. Cl. A46b *13/02*
U.S. Cl. 15—21 D 6 Claims



Shackles are transported by an overhead conveyor through a housing. A pair of motor rotated brushes are mounted on opposite sides of the housing along the path of travel of the shackles. The brushes comprise a plurality of flexible fibers extending from a center axis. When at rest, the flexible fibers

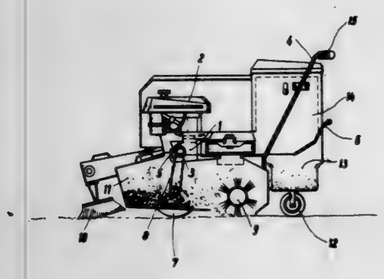
of the brushes tend to droop downwardly to form a clearance between the brushes so that the shackles may travel unimpeded between the brushes. When the brushes are rotated, the flexible fibers extend outwardly into contact with the shackles for cleaning thereof. Structure is provided to direct fluid upon the brushes and the shackles during operation of the system.

3,665,540
SWEEPER
Gunter Leifheit, and Johannes Liebocher, both of Nassau/Lahn, Germany, assignors to Leifheit International Gunter Leifheit KG, Nassau/Lahn, Germany
Filed Nov. 12, 1970, Ser. No. 88,765
Claims priority, application Germany, Nov. 15, 1969, P 19 57 576.9
Int. Cl. A47l *11/08*
U.S. Cl. 15—45 **27 Claims**



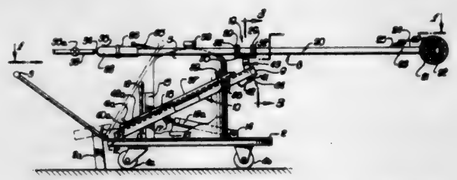
A carpet sweeper has a housing which includes a frame-shaped lower portion of readily formable and deformable material and having an upper and a lower open side. An upper cover portion of less readily deformable shape-retaining material overlies the upper open side and is connected with the lower portion in shape-retaining relationship. Wheels are provided in the lower portion and project partly through the lower open side to support the sweeper for movement on the surface and one or more brush holders are similarly mounted. Journal means is carried by the lower portion for rotatably journalling the wheels and the brush holder or rollers.

3,665,541
MOTOR-DRIVEN SWEEPING MACHINE
Dieter Frehe, Macon, France, assignor to Walter Gutbrod and Wolfgang Gutbrod, Bubingerhof, Bubingen, Saar, Germany
Filed June 12, 1970, Ser. No. 45,707
Claims priority, application Germany, Jan. 12, 1970, P 20 01 046.2
Int. Cl. E10h *1/02*; F16h *37/08*
U.S. Cl. 15—83 **4 Claims**



A motor-driven floor sweeping machine which has a sweeping mechanism having a shaft driving a change-speed gearing for a travel mechanism, the shaft extending axially relative to drive wheels and carrying a multiple-disc clutch.

3,665,542
PORTABLE POWER SCRUBBER WITH LEVERAGED PRESSURE FEATURE
Thomas G. Franzreb, Rolling Hills, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.
Filed Dec. 3, 1970, Ser. No. 94,762
Int. Cl. B64f *5/00*
U.S. Cl. 15—98 **6 Claims**



A portable scrubbing device for cleaning aircraft skin surfaces including on a carriage, a hand operated wand having a cleaning head and a handle at opposite ends, power driven brush means at the cleaning head, and means supporting the wand slidably intermediate its ends including structure mounting the wand for pivoted movement by an operator grasping the handle to variously apply the cleaning head to the surfaces to be cleaned.

3,665,543
TACKY MAT STACK
John J. Nappi, 80 Berkley Rd., Berlin, Conn.
Filed Nov. 19, 1970, Ser. No. 91,095
Int. Cl. A47l *23/22*
U.S. Cl. 15—215 **12 Claims**



An improved tacky mat stack is comprised of a plurality of superimposed tacky mat sheets each having a composite laminar construction consisting of a thin flexible support film forming an adhesive barrier surface on the bottom of the sheet, a reinforcing fibrous web coextensive with the support film and firmly secured thereto and a pressure-sensitive adhesive coating carried by the film, the adhesive coating being in secure engagement with the reinforcing fibrous web and forming a tread surface of the sheet. A corner pull tab extending to the edge of each sheet provides nonadhering engagement between super-imposed sheets and means for securely gripping the uppermost sheet for stripping it from the stack.

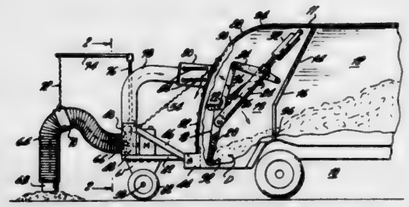
3,665,544
WINDSHIELD WIPER FOR VEHICLES
Kashira Sakamoto, 12, Tennocho-7-chome, Kariya, Japan
Filed Aug. 24, 1970, Ser. No. 66,294
Claims priority, application Japan, Dec. 27, 1970, 45/1167; 45/1168; Mar. 20, 1970, 45/23976; Mar. 23, 1970, 45/24292
Int. Cl. B60s *1/32*
U.S. Cl. 15—250.42 **6 Claims**



In a windshield wiper for vehicles, yoke members are directly fixed to an arm. At least one of the yoke members

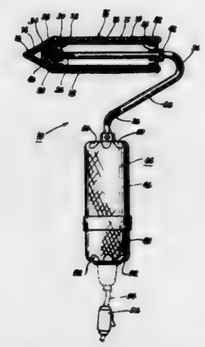
comprises two sections between which is loaded a spring so as to normally bias the two sections and therefore a blade toward the windshield. Alternatively, a spring may be loaded between the arm head and arm piece which may comprise two bar-shaped members. Even when the windshield is curved, the blade may be uniformly pressed against it. A number of pivotal connection members is reduced so that less noise is produced. Since a number of components is reduced, the assembly is much facilitated at less cost.

3,665,545
APPARATUS FOR COLLECTING DEBRIS
William Beekman, 66 Park View Rd., Elmsford, N.Y.
Filed June 4, 1970, Ser. No. 43,510
Int. Cl. A47l *5/36*
U.S. Cl. 15—314 **5 Claims**



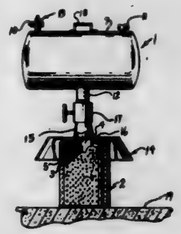
A truck, including a storage compartment and a hopper to the rear of the storage compartment, has a blower connected to the rear end of said truck for picking up debris and directing same into the storage compartment of said truck. A compacting mechanism is positioned in the hopper of said truck for transporting the debris from the hopper into the storage compartment and thereby compacting the debris in the storage compartment. A vent is provided at the top of the hopper for air pressure relief.

3,665,546
ELECTRICAL POLISHING APPARATUS
Edward R. Horeni, 2433 S. Pulaski Rd., Chicago, Ill.
Filed June 4, 1970, Ser. No. 43,520
Int. Cl. B60s *3/06*; A47l *5/26*
U.S. Cl. 15—383 **3 Claims**



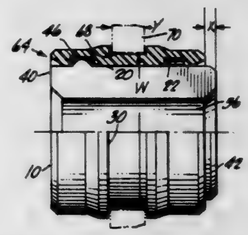
A hand-held polishing device of the type that can be used for polishing automobiles, in which the polishing member is generally cylindrical in shape with the cylindrical axis being the axis of rotation. A handle encloses an electric motor the rotational axis of which is substantially perpendicular to the rotational axis of the polishing member, and a flexible shaft couples the polishing member to the shaft of the electric motor.

3,665,547
FILTER CLEANING DEVICE
John F. Boylan, Route 1 Box 81, Ulysses, Kans.
Filed Aug. 27, 1970, Ser. No. 67,355
Int. Cl. B08b *5/02*
U.S. Cl. 15—406 **1 Claim**



A filter cleaning device for cleaning filters of porous material employed as air cleaners includes a pressure tank adapted to contain gaseous fluid under pressure and a flow conduit communicating with the tank and extending therefrom and having a baffle or shield mounted on the flow conduit and sized and shaped to engage the filter to be cleaned whereby the fluid under pressure is directed into an interior chamber of a filter upon actuating a control of the fluid thereby permitting flow of fluid under pressure from the tank into the filter to be cleaned and discharge of said fluid through the filter material in a direction opposite to the flow of air therethrough in normal operation of the filter.

3,665,548
CABLE FAIRLEAD ASSEMBLY
Kurt E. Mason, Fullerton, Calif., assignor to McDonnell Douglas Corporation
Filed Aug. 5, 1970, Ser. No. 61,053
Int. Cl. F16l *5/00*
U.S. Cl. 16—2 **8 Claims**



Cable fairlead assembly including an outer, retainer, sleeve element and an inner, diametrically divided, grommet element comprising two symmetrical tubular halves secured in position by the retainer to provide a cable passageway. The retainer element is a longitudinally slotted sleeve having a shaped outer surface to permit installation from either side of, and retention in, a panel hole of predetermined size. The inner surface of the retainer is shaped to accept and secure the two grommet halves in position when installed in the retainer from either end thereof.

3,665,549
DOOR CLOSER
Bert A. Quinn, 2419 North Pascal, St. Paul, Minn.
Filed Mar. 23, 1970, Ser. No. 21,578
Int. Cl. E05f *3/10*
U.S. Cl. 16—52 **5 Claims**

A hydraulic door closer cylinder having a closed end and an opposite open end, a piston slidably mounted in the

cylinder, a cooperating piston rod projecting axially outwardly through the open end, and mounting means for disposing the cylinder at an oblique angle to the horizontal and sloping upwardly from its closed end to its opposite end.

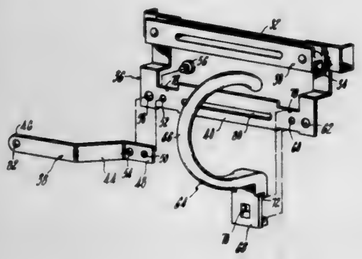


Structure in the cylinder supports a wiper element in encompassing sliding engagement with the piston rod, and disposable means engages the cylinder and piston to prevent leakage of liquid from the cylinder during shipment or storage.

3,665,550
MASTER CARRIER WITH AUTOMATICALLY ADJUSTABLE RING

Walter J. MacFarlane, Kensington, and Robert R. Russo, East Haven, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Oct. 30, 1970, Ser. No. 85,394
Int. Cl. A47h *15/00*
U.S. Cl. 16—93 **7 Claims**



A universal master carrier for a cafe transverse rod wherein an apertured drapery hanger is slidably mounted on a slotted flange portion of the master carrier disposed generally parallel to the trackway of the rod. The drapery hanger is provided with a recess which closely receives the flange portion and has a pair of opposed shoulders to maintain it mounted thereon. The flange portion has a necked down section for assembly of the drapery hanger and the drapery hook is inserted through the aperture of the drapery hanger and the slot of the flange portion to prevent the inadvertent disengagement of the drapery hanger from the master carrier. A reversible and removable overlap arm is also disclosed.

3,665,551
PAIR OF CARRYING HANDLES OF FLEXIBLE PLASTICS MATERIAL FOR CARRIER BAGS OF PLASTICS

Manfred Ender, St. Gallen, Switzerland, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany

Filed Dec. 21, 1970, Ser. No. 99,827
Claims priority, application Germany, Dec. 22, 1969, P 19 64 300.6
Int. Cl. A47h *95/02*
U.S. Cl. 16—110 **7 Claims**

The invention relates to a pair of carrying handles of flexible plastics material, preferably polyethylene, for carrier bags of plastics, paper or The like, in which each handle comprises a hand grip portion and a mounting strip that can be attached to a respective wall of the bag along the bag mouth,



one margin of each mounting strip being of substantially U section and disposed beyond the mouth when the mounting strip is so attached, the open sides of the U sections confronting one another in the finished bag.

3,665,552
SELF-CONTAINED FASTENER-CONCEALING HINGE LEAF

Anthony P. Toldo, Windsor, Ontario, Canada, and Robert E. Watson, Orchard Lake, Mich., assignors to Swedish Crucible Steel Company, Detroit, Mich.

Filed Feb. 2, 1970, Ser. No. 7,757
Int. Cl. E05d *11/00*
U.S. Cl. 16—148 **1 Claim**



A hinge leaf of synthetic plastic material, such as polyethylene or polypropylene, is provided with fastener holes to secure the hinge leaf to the toilet seat or lid or other hinge member, and also has a recess adjacent these holes. Formed integral with the hinge leaf so that it cannot be lost or misplaced and is always at hand is a fastener hole cover which swings downward to conceal the fastener holes and has a tongue or lug which fits snugly into the recess as a detent to hold the cover in place.

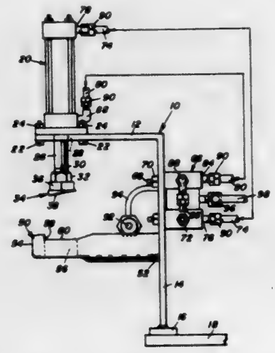
3,665,553
KEEL BONE EXTRACTOR FOR POULTRY PRODUCTS

George V. Colosky, Nampa, Idaho, assignor to Avi-Simplot, Inc., Nampa, Idaho

Filed Apr. 7, 1970, Ser. No. 26,378
Int. Cl. A22c *21/00*
U.S. Cl. 17—11 **1 Claim**

This disclosure relates to a method and apparatus for breaking and extracting the keel bone from various types of dressed poultry carcasses. The apparatus includes an air cylinder having a pressure foot attached to the end of the air cylinder piston rod, and an anvil for supporting a poultry carcass. The anvil has a slot which is to be positioned under the keel bone of the carcass being processed. The pressure foot is used to force the keel bone into the anvil slot and

cooperate with the side of the anvil to break the keel bone from the carcass. An extractor cup on the end of the anvil

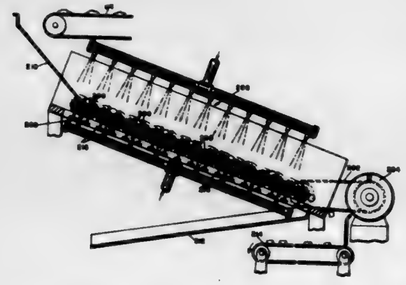


severs the keel bone from the carcass as the carcass is removed from the anvil.

3,665,554
METHOD OF EVISCERATING SHELLFISH

Richard T. Wenstrom, Hampton, Va., and Thomas S. Gorton, Jr., Cambridge, Mass., assignors to Slade Gorton & Co., Inc., Boston, Mass.

Original application July 17, 1967, Ser. No. 659,274, now Patent No. 3,528,124. Divided and this application Sept. 10, 1970, Ser. No. 71,118
Int. Cl. A22c *29/00*
U.S. Cl. 17—45 **5 Claims**



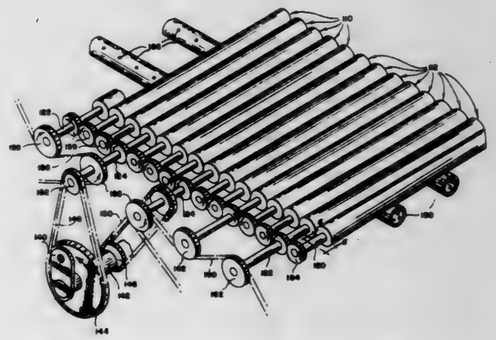
A method and apparatus for shucking raw uncooked unfrozen shellfish of the bivalve type which includes the method of opening the shells by shocking the shellfish, cleaning the viscera from the edible muscle of the shellfish and the apparatus for opening and cleaning the same.

3,665,555
SCALLOP PROCESSING

Elmer Dryden Willis, Williston, N.C., assignor to Willis Bros., Inc., Williston, N.C.

Original application May 27, 1968, Ser. No. 732,247, now Patent No. 3,562,855, dated Feb. 16, 1971. Divided and this application Mar. 11, 1970, Ser. No. 23,529
Int. Cl. A22c *29/00*
U.S. Cl. 17—53 **5 Claims**

A method and apparatus are provided for extracting the adductor muscle from scallops. Scallops are subjected to a heat shock and are then mechanically agitated to disengage the muscle and attached viscera from the shell. The muscle and viscera are removed from the shells and separated from unfragmented portions of the shells on a vibrating screen and are then contacted with water before being separated from small shell fragments by flotation in a brine solution. Viscera is removed from the muscles by pulling on the viscera while restraining movement of the muscles. The invention also includes a method and apparatus for removing viscera from the adductor muscle of shucked scallops. Scallop muscles and attached viscera are placed on the upper surface of an inclined path formed by a plurality of rollers. Viscera is pulled from

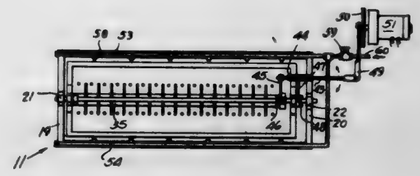


the scallop muscle and through the nip formed by adjacent rollers by rotating the upper portion of adjacent rollers towards each other. Detached viscera is cleaned from the rolls below the inclined path. Advance of scallop muscles down the path is controlled by intermittently rotating the upper portion of adjacent rollers away from each other to permit the lower of the adjacent rollers to advance the muscle down the path and by spraying a flow of fluid on at least some of the muscles on the path to affect their rate of movement down the path.

3,665,556
SHRIMP DEHEADING MACHINE

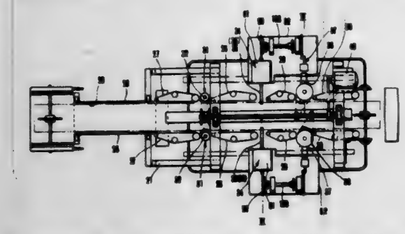
William J. Gruber, Box 904, Grand Isle, La.

Filed Dec. 11, 1970, Ser. No. 97,068
Int. Cl. A22c *29/00*
U.S. Cl. 17—71 **12 Claims**



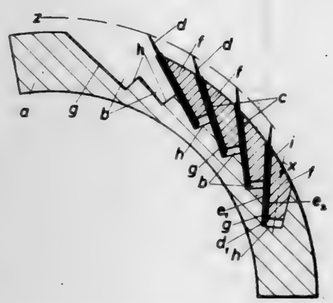
A shrimp deheading apparatus consisting of an arcuate rockable inclined trough having upstanding pins and a rocker bar carrying depending prongs which extend between the upstanding pins. The bar rocks coaxially with the trough and both are rocked simultaneously in opposite directions by a common motor. Water jets are applied to the interior of the trough. The spacing between the upstanding pins and the depending prongs is such that shrimp delivered into the trough are engaged simultaneously by the pins and prongs and are thereby bent in a manner to break the heads of the shrimp away from their edible body portions. The lower end of the trough is open to allow the deheaded shrimp to be washed into a receiving container.

3,665,557
APPARATUS FOR REMOVING RED MEAT FROM FISHES
Hideo Uekusa, Tokyo, Japan, assignor to Toyo Seikan Kaisha, Ltd., Tokyo, Japan
Filed Apr. 21, 1970, Ser. No. 30,446
Claims priority, application Japan, Apr. 24, 1970, 45/31650; Apr. 7, 1970, 45/29583
Int. Cl. A22c *25/14*
U.S. Cl. 17—61 8 Claims



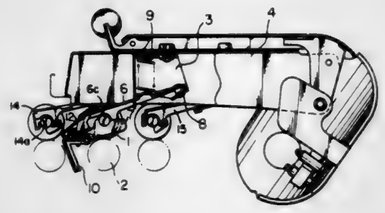
In apparatus for separating and removing the red meat from the white meat of a fish there are provided a conveyor for successively transferring sections of a fish which are prepared by longitudinally splitting the fish; a knife mechanism positioned along the conveyor and including a pair of opposing cutting blades and means for progressively varying the cutting angle and cutting depth of the cutting blades through the split sections in synchronism with the movement thereof so as to cause the cutting blades to cut through the interface between the red and white meat of the split sections throughout the length thereof; and a deep cutting mechanism positioned along the conveyor and including a pair of opposed rotary cutters perpendicular to the path of travel of the split sections and cam means for progressively varying the depth of cut of the rotary cutters through the split sections to position the outer ends of the rotary cutters at the deepest positions of the red meat throughout the length of the split sections.

3,665,558
MOUNTING ASSEMBLY FOR MOUNTING NEEDLE CARRIERS ON A COMB OF A COMBING MACHINE
Josef Egerer, Schwabach, Germany, assignor to Staedtler & Uhl, Schwabach (Bayern), Germany
Filed Feb. 5, 1970, Ser. No. 8,817
Claims priority, application Germany, Feb. 8, 1969, P 19 06 396.8
Int. Cl. D01g *19/10*
U.S. Cl. 19—234 14 Claims



Needle carriers are mounted on a holder and particularly on a holder segment of a round comb of a combing machine by providing on the holder abutment surfaces, one for each carrier. Wedges or cleats clamp the bases of the carriers against these abutment surfaces so that the carriers are releasably locked in position on the holder.

3,665,559
MECHANISM FOR SUPPORTING AN APRON DRAFT MECHANISM OF A SPINNING MACHINE
Nobugi Ooki, Fujisawa-shi, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 15, 1970, Ser. No. 3,081
Int. Cl. D01h *5/88*
U.S. Cl. 19—254 9 Claims



An improved supporting mechanism for supporting a weighting-arm type apron draft mechanism of a spinning frame. The apron draft mechanism is supported by a guide arm which is supported by a forwardly sloped bottom plate of a support secured to a common carrier arm in a three-dimensionally turnable condition together with a slidable condition toward a longitudinal direction of the guide arm.

3,665,560
PLASTIC STRING FASTENER HAVING DETACHABLE PARTS
John L. Bennett, Dayton, Ohio, and Charles P. Bonfiglio, Rochester, N.Y., assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 9, 1970, Ser. No. 96,487
Int. Cl. F16g *11/04*
U.S. Cl. 24—136 R 4 Claims

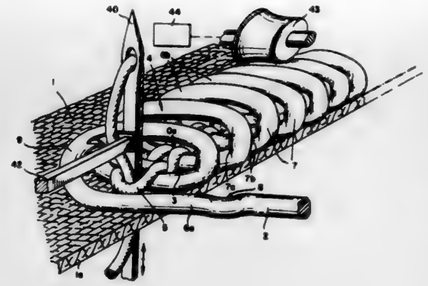


In a preferred form, a string fastener made of a plastic molded material has two detachable and mutually interlocking parts for securing the end strands of a string. A base forming one of the parts includes a center opening. The other part forms a key having a stem connected in axial alignment with the center opening by a frangible membrane which is broken when the stem is inserted into the center opening. A tongue extending from the stem is guided into clamping engagement with the end strands along the center opening whereupon the base and the key are mutually interlocked.

3,665,561
SLIDE FASTENER STRINGER
Helmut Heimberger, Grenzach, Germany, assignor to Opti-Holding AG, Glarus, Switzerland
Filed Nov. 27, 1970, Ser. No. 93,188
Claims priority, application Germany, Nov. 28, 1969, P 19 59 887.9
Int. Cl. A44b *19/12, 19/34*
U.S. Cl. 24—205.1 C 4 Claims

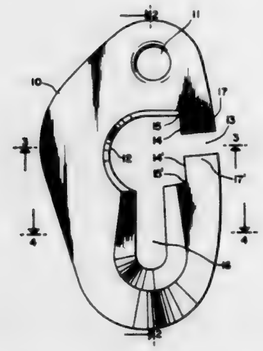
A slide fastener comprises a synthetic-resin monofilament formed into undulations or turns and attached by a chain stitch to the support tape at only the legs lying along this tape. These legs are embraced by the stitches which are in

part shielded by the remainder of the coupling element. The stitches may simultaneously form a filler cord and may be



locked in place by clamping of the shanks of the coupling element thereagainst.

3,665,562
HOOK HAVING KEYWAY AT BASE OF ARCUATE THROAT
Roger L. Gower, Rm. 302, 1911 Jefferson Davis Highway, Arlington, Va.
Filed Nov. 18, 1970, Ser. No. 90,735
Int. Cl. A43c *11/08*; A44b *13/00*
U.S. Cl. 24—230.5 5 Claims



This invention discloses a hook member having the combined features of a substantially arcuate throat to permit easy passage of chain therethrough and a keyway at the base of the throat for receipt of one link of a length of chain, to secure said chain against further passage through the hook.

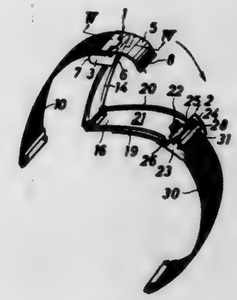
3,665,563
CLAMP
John H. Batts, Grand Rapids, Mich., assignor to John Thomas Batts, Inc., Zeeland, Mich.
Filed Mar. 10, 1970, Ser. No. 18,190
Int. Cl. A44b *21/00*
U.S. Cl. 24—258 10 Claims

This application discloses a one-piece, molded, plastic clamp having a pair of side or clamping members joined along one edge by a thin web of the plastic which serves as a hinge. The clamp is molded with the two clamping members arranged at approximately 180°, that is, in tandem in the same plane. One of the clamping members has an integral latch finger and the other clamping member has a integral keeper means which engages the latch to lock the clamping members together in clamping or closed position. Means are provided which form an endwise open passageway adjacent the hinge when the clamp is closed, through which a support-



ing rod can be inserted. The entire clamp is so designed that it can be molded as a complete product in a two-piece mold without the use of cams.

3,665,564
THREE-FOLD METAL FITTING FOR ADJUSTING STEPLESSLY THE LENGTH OF A WATCH BAND
Motoo Oka, Urawa, Japan, assignor to Kabushiki Kaisha Bambi, Tokyo, Japan
Filed June 2, 1970, Ser. No. 42,754
Int. Cl. A44c *5/18*
U.S. Cl. 24—265 8 Claims

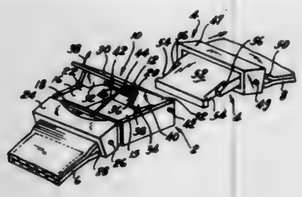


A three-fold metal fitting for a watch band capable of adjusting steplessly a length of the watch band, comprising an upper and a lower metal fittings, one strap and the other adjustable strap of the watch band being fixed thereto, respectively, and a first and a second foldable connecting plates pivotably mounted at each one end to each other and at each other end to the upper and the lower metal fittings, respectively, wherein the two metal fittings are constructed to come into contact with each other at a time of joining while the pivotably mounted portions of the foldable connecting plates being accomodated in the whole metal fitting, and fastening of the straps is carried out within the internal space defined by the upper and the lower metal fittings, especially the adjustable strap being optionally positioned by guiding it along the internal surface of the second foldable connecting plate fixed to the lower metal fitting.

3,665,565
CLASP FOR BRACELETS AND THE LIKE
Stanley Kruger, 223-46 56 Road, Bayside, N.Y.
Filed Aug. 31, 1970, Ser. No. 68,418
Int. Cl. A44c *5/18*
U.S. Cl. 24—265 15 Claims

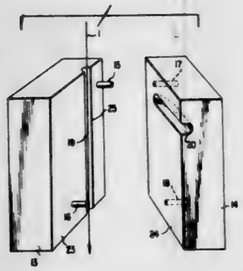
A clasp for securing together two objects, such as the two ends of a bracelet, comprises a housing and a connecting element adapted to be slid into the housing. The housing carries a catch which engages with the connecting element to retain the latter in the housing. The act of releasing the catch cams

the connecting element outwardly from its connected position, the connecting element nevertheless being frictionally



retained within the housing, from which it can be separated by a subsequent and separate action.

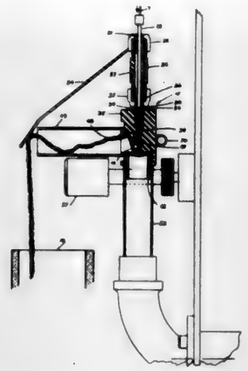
3,665,566
APPARATUS FOR THE MANUFACTURE OF TEXTURIZED THREADS
Gabriel Obayon, Lyon, France, assignor to Societe Rhodiaceta
Filed Feb. 12, 1970, Ser. No. 10,858
Claims priority, application France, Feb. 12, 1969, 6903310
Int. Cl. D02g 1/16
U.S. Cl. 28—1.4 **5 Claims**



An apparatus for the continuous high speed manufacture of texturized thermoplastic threads employing a fluid which apparatus comprises two assembled blocks of simple geometric form which blocks have therein two conduits in communication with each other. The first of the conduits is constituted by a longitudinal groove extending throughout the entire length of one side of one of the blocks and the second conduit constitutes a groove completely within one side of the other block so that when the blocks are assembled with the conduits facing each other the conduit in the second block is disposed at an angle to the first conduit.

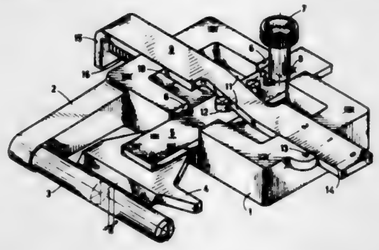
3,665,567
YARN REBOUND TEXTURING APPARATUS AND METHOD
Robert J. Clarkson, Winnsboro, S.C., assignor to Uniroyal, Inc., New York, N.Y.
Filed Apr. 23, 1970, Ser. No. 31,206
Int. Cl. D02g 1/16
U.S. Cl. 28—1.4 **40 Claims**

A thermoplastic yarn texturing machine and method is disclosed in which a yarn to be textured is hurled longitudinally by a heated fluid jet against a foraminous surface and rebounded therefrom in a continuous strand-like stream. The thus compressed yarn is collected without subjecting it to any



substantial longitudinal tension, then heated and subsequently cooled to heat set the crimp in the yarn, and finally it is wound-up.

3,665,568
THREAD GAUGING APPARATUS
Jakob Stapfer, Adliswil, Switzerland, assignor to Maschinenfabrik Schweiter AG, Horgen, Switzerland
Filed Jan. 15, 1971, Ser. No. 106,846
Claims priority, application Switzerland, Jan. 27, 1970, 1116/70
Int. Cl. D01h 13/22
U.S. Cl. 28—64 **8 Claims**

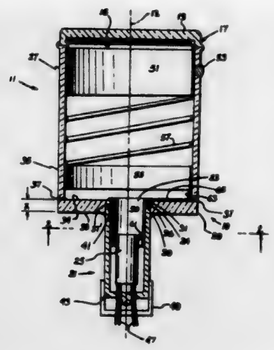


Thread is passed over a guide pin; a knife blade is spaced accurately by a predetermined distance from the guide pin, the distance determining the maximum size and gauge of the thread. To locate the distance, and provide for accurate placement of the knife blade, the blade is made movable in a path back and forth by a camming member which has a large distance of movement with respect to the movement of the knife blade, so that widely spaced markings can be used to easily identify the accurate position of the knife blade with respect to the pin.

3,665,569
METHOD AND APPARATUS FOR FABRICATING A CATHODE RAY TUBE ENVELOPE HAVING AN ANNULAR SHAPED REAR WINDOW
Chris F. Bossers, Seneca Falls, N.Y., assignor to Sylvania Electric Products Inc.
Original application Dec. 20, 1968, Ser. No. 785,647, now Patent No. 3,551,973. Divided and this application Aug. 6, 1970, Ser. No. 61,610
Int. Cl. H01j 9/18
U.S. Cl. 29—25.13 **8 Claims**

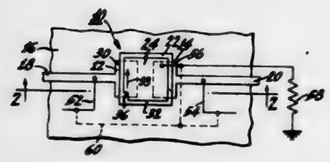
A method and apparatus for fabricating a rear-window cathode ray tube envelope having a longitudinal axis

therethrough. The envelope is formed by hermetically sealing a bulb portion and a tubular neck section to a substantially annular shaped optical access window oriented in substan-



tially symmetrical relationship to the longitudinal axis of the tube to provide a substantially annular viewing area for observing the electron impinged side of the screen.

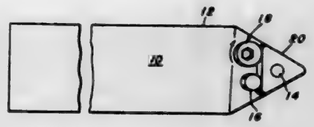
3,665,570
METHOD FOR MONITORING THE CAPACITANCE OF A CAPACITOR WHILE ADJUSTING ITS CAPACITANCE
Robert Lee Brooks, Indianapolis, Ind., assignor to RCA Corporation
Filed Apr. 7, 1970, Ser. No. 26,375
Int. Cl. H01g 13/00
U.S. Cl. 29—25.42 **5 Claims**



The capacitance of a planar capacitor, having a common plate separated from two bottom plates by a dielectric material, is monitored with an AC-capacitance bridge while the common plate is trimmed with an abrasive material until the capacitor acquires a desired value of capacitance. An electrostatic charge formed on the common plate by the trimming operation is discharged to ground via a high resistance path so as not to interfere with the monitoring operation. A pair of probes connected to monitoring apparatus and a probe for connecting the high resistance path to the common plate are physically connected to a common support for applying the probes to the capacitor simultaneously.

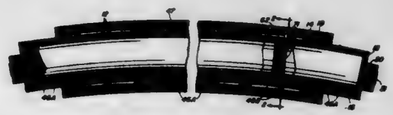
3,665,571
CUTTING INSERT HOLDER
Hubert J. Dupuis, Warren, Mich., assignor to Carmet Company, Pittsburgh, Pa.
Filed Apr. 27, 1970, Ser. No. 31,913
Int. Cl. B26d 1/00
U.S. Cl. 29—96 **1 Claim**

Described herein is a combination of a cutting insert and holder therefore. The novel holder includes a shank and an indexing post connected to the shank which can receive an indexable insert and means, such as a cam, to secure an in-



dexable insert, when positioned on the indexing post in cutting position.

3,665,572
ROLL WITH BEARING SUPPORT MEANS
J. Douglas Robertson, Taunton, Mass., assignor to Mount Hope Machinery Company, Taunton, Mass.
Continuation-in-part of application Ser. No. 875,865, Nov. 12, 1969, now abandoned. This application Oct. 16, 1970, Ser. No. 81,272
Int. Cl. B21b 13/02
U.S. Cl. 29—116 AD **21 Claims**



A roll having a curved stationary axle carries a series of bearings which rotatably mount a roller sleeve. The bearings, which have to fit the axle loosely, are held firmly in place by an axial stack of annular spacer collars and axially-compressible spring spacers, which apply a controlled compression. Optionally, deformable cushioning rings are compressed against the bearings by the collars. The cushioning rings may be made of a material which is either compressible or incompressible; the spacers have expansion chambers at their ends to accommodate deformation of the rings if these are incompressible.

3,665,573
METHOD OF FABRICATING A HEAT PIPE
Richard W. Werner, Danville; Everette E. Alexander, Dublin, and Irving J. Comstock, Livermore, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed May 18, 1970, Ser. No. 38,219
Int. Cl. B21d 53/02; B23p 15/26
U.S. Cl. 29—157.3 B **6 Claims**



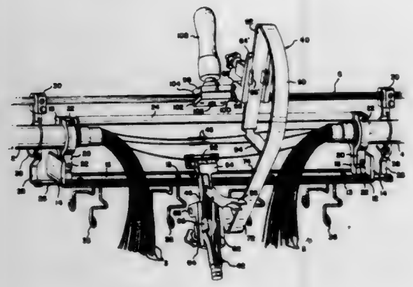
A tube is provided having a plurality of closely spaced very thin longitudinal fins projecting into its interior. The tube is particularly useful as a heat pipe, the capillaries defined between adjacent fins serving as a wicking structure for conveying a heat transfer working fluid from one region of the pipe to another by capillary pumping. Fabrication of the internally finned tube is accomplished by a sacrificial mandrel method.

3,665,574

TOOL HOLDER FOR CABLE SPLICING TOOL

Christopher Kingsley Brown; Carmen Achille Cea, and Thomas Parkison Warne, Jr., all of Winston-Salem, N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 19, 1970, Ser. No. 38,660
Int. Cl. H05k 3/32; H01r 43/04
U.S. Cl. 29—203 MW 6 Claims



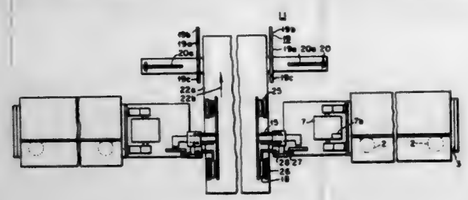
Tool Holder for Cable Splicing Tool has clamping means to clamp the holder to a messenger cable associated with the cable. Suspending arm is adjustably secured to the clamping means and has a length such that it will extend laterally or transversely of the cable axis past the cable. A second clamping means is provided on the end of the suspending arm which receives the cable splicing tool, adjustment of both the suspending arm and the tool being permitted in both a rotational sense and an axial sense so that any desired attitude of the tool can be achieved.

3,665,575

APPARATUS FOR INSERTING ELECTRODE RODS INTO POCKETS OF DOUBLE-WEB MATS FOR STORAGE BATTERIES

Josef Sucher, Hagen, and Oswald Segieth, Schwelm, both of Germany, assignors to Varta Aktiengesellschaft, Frankfurt am Main, Germany

Filed Nov. 5, 1970, Ser. No. 87,271
Claims priority, application Germany, Nov. 11, 1969, P 19 56 569.6
Int. Cl. H01m 37/00
U.S. Cl. 29—204 D 20 Claims



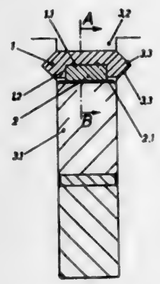
An apparatus for inserting contour rods into the pockets of double-web mats for storage-battery electrodes comprises a contour-rod magazine with dispensing means for releasing one rod at a time. A spreader device opens the pockets of the mat. Catch and guide means then engage the released rod and partially insert it into a pocket then spread open. Further transport means engage the partially inserted rod and completely shove it into the mat pocket. A control mechanism operates to actuate the above-mentioned component devices of the apparatus in the sequence described. Preferably two rod inserting apparatus are arranged on opposite sides of the double-web mat for simultaneously inserting respective contour rods from opposite sides into the pockets.

3,665,576

MEANS FOR SECURING THE COILS OF AN ELECTRIC MACHINE IN THE SLOTS OF THE IRON BODY THEREOF AND DEVICE FOR INTRODUCING THE MEANS IN THE SLOTS

Harald Nordmann, Viernheim/Bergstrasse, and Kurt Schmidt, Bensheim/Bergstrasse, both of Germany, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Sept. 18, 1970, Ser. No. 73,333
Claims priority, application Germany, Sept. 23, 1969, P 19 48 025.2
Int. Cl. H02k 15/06
U.S. Cl. 29—205 R 10 Claims



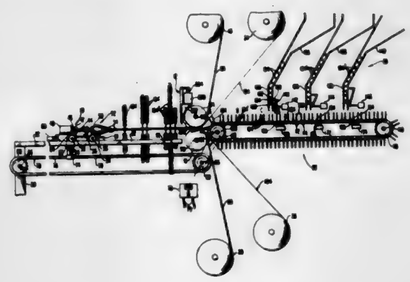
Coils are secured in the slots of the iron body of an electric machine by means of cooperating wedges which are pressed or moved into place by fluid pump means or by mechanical means.

3,665,577

APPARATUS FOR MANUFACTURING ARTIFICIAL SHRUBS

Percy Dieffenbach, Blakely, Pa., assignor to Masterpiece, Inc., Blakely, Pa.

Filed Oct. 21, 1970, Ser. No. 82,676
Int. Cl. B23p 19/04; B23g 7/10
U.S. Cl. 29—208 D 10 Claims



Laterally spaced endless conveyor chains carry slotted members on the individual links. Selected slots receive a varying number of shrub limbs of varying length which are in turn discharged into the nip between two stiffly flexible wires or they are removed from storage reels and intertwisted. A rotary chuck on a reciprocating carriage selectively grasps the ends of the wires and moves the same longitudinally in synchronism with the endless conveyor which discharges the limbs in between the wires. Rotating the chuck causes the wires to intertwist capturing the limbs at space locations defined by their position on the endless chain conveyors. After pulling and intertwisting the wires to a desired length up to 15 feet or more, the intertwisted wires are severed just behind the wire guide pulleys thereby producing a completely assembled shrub.

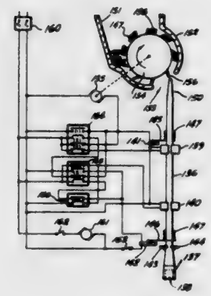
Narrow webs are simultaneously fed between the intertwisted wires and captured limbs to define the simulated trunk for the shrub. Actuators carried by the endless chain conveyors contact stationery microswitches to energize solenoids for respective gravity operated chutes controlling the feed of limbs which vary both in length and number into the slots.

3,665,578

O-RING MOUNTING MACHINE

Robert D. Jaquette, Charlotte, Mich., assignor to Air-Way Manufacturing Company, Olivet, Mich.

Filed May 18, 1970, Ser. No. 37,955
Int. Cl. B23q 7/10; B23p 19/02
U.S. Cl. 29—211 R 7 Claims



An apparatus is provided for mounting O-rings on male members such as pipe fittings, the apparatus comprising a substantially cylindrical mandrel of circular cross-section and of a diameter adapted to receive a supply of O-rings, and being flared at one end and having an axial chamber provided in said flared end adapted to receive the end of the male members. The mandrel is suitably mounted on a frame and is provided with a finger assembly which upon actuation receives an individual O-ring and moves it axially over the flared portion and causes it to be released therefrom and mounted onto the male member at a position provided therefor. Means is provided for automatically feeding O-rings over the small end of the mandrel while the apparatus is in operation.

3,665,579

PIPE TOOL

Robert Francis Jaeger, 7264 Edwards St., New Orleans, La., and Ernest Frederick King, Jr., 4212 Wichita St., Metairie, La.

Filed Oct. 24, 1969, Ser. No. 869,049
Int. Cl. B23d 19/04
U.S. Cl. 29—237 12 Claims

Pipe joining and disjoining tool which includes an operating lever having a yoke at one end. Another yoke is pivoted to the yoke on the operating lever, for mounting the tool on one of the pipes to be joined. A chain is secured to the other pipe, and extends upwardly through a passageway in the operating lever. To join the pipes, the chain is tautened and locked in a slot at the top of the operating lever, which is then swung downwardly to tightly draw the pipes together. For disjoining pipes, the tool includes a disjoining member having a third yoke which is mounted on the yoke on the operating lever and which can be pivotally moved away from the operating lever. The chain is pulled taut and is locked in a slot in the disjoining member, and the pipes are disjoined by swinging the operating lever in a direction opposite the direction of swinging for joining the pipes.

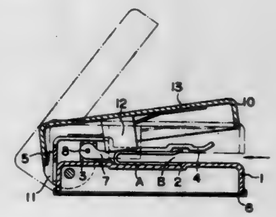


3,665,580

CLIP APPLICATOR

Saburo Mashita, Fujioka, Japan, assignor to Max Company Limited, Tokyo, Japan

Filed Mar. 19, 1970, Ser. No. 21,129
Claims priority, application Japan, Mar. 24, 1969, 44/26064
Int. Cl. B23p 11/00
U.S. Cl. 29—243.56 11 Claims



This invention relates to a clip applicator that can firmly fasten together sheets of paper and other matters to be clipped without causing damage thereto through a mechanical and continuous clipping operation. It consists of a base with a guide groove, which is capable of being loaded with a stick of clips, whereon there is attached a cover that guides the stick of clips. And to said base or cover is attached a handle fitted with a press plate that pushes the foremost piece of the stick of clips to separate said piece of clip from the stick and deform it by pressing for fastening. The mechanism of this clip applicator is that the handle, when pushed, sends the press plate into the bendable end of the stick of clips to separate a clip from the stick and deform it by pressure of the press plate, thus firmly fastening together, from the both sides, sheets of paper etc. inserted into the opening part of the clip.

3,665,581

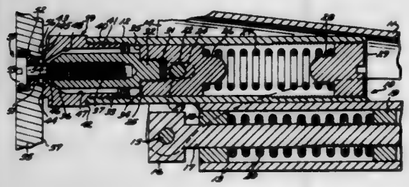
FLARING TOOL

Bulent Gulistan, Malibu, Calif., assignor to Deutsch Fastener Corp., Los Angeles, Calif.

Original application Nov. 29, 1968, Ser. No. 784,527, now Patent No. 3,561,093, which is a continuation-in-part of application Ser. No. 744,260, June 13, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 578,728, Sept. 12, 1966, now abandoned. Divided and this application July 29, 1970, Ser. No. 59,273
Int. Cl. B23p 11/00
U.S. Cl. 29—243.52 13 Claims

A flaring tool including a die adapted to engage the end of a sleeve and an element adapted to grip the shank of a

fastener extending through the sleeve, with a tension force being applied to the shank and an inward force being applied to the die through the actuation of a lever. The gripping element is slidable in a body, with the lever being pivotally mounted on one side of the body. A spacer may be provided to render the die inoperative so that the tool may be used to



force an interfering part into an opening in the workpiece without simultaneously bending the flange. Such a part may be a nut with a knurled exterior that becomes embedded in the workpiece to prevent the nut from rotating. A member may be substituted for the die to exert a pull on a fastener attached to the workpiece for accomplishing removal of the fastener.

3,665,582

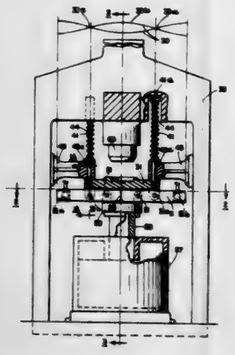
SONIC DRIVE FOR PRESS FITTING SYSTEM

Albert G. Bodine, 7877 Woodley Avenue, Van Nuys, Calif.

Continuation-in-part of application Ser. No. 423,771, Jan. 6, 1965, now Patent No. 3,581,027, which is a continuation of application Ser. No. 756,382, Aug. 21, 1958, now Patent No. 3,169,589. This application Oct. 1, 1969, Ser. No. 862,905

Int. Cl. B23p *19/04*

U.S. Cl. 29—252 **7 Claims**



An elastic beam member is vibrationally driven by orbiting-mass oscillator means so as to set up a standing wave pattern therein. Means are provided to support the beam at points therealong where nodes of the standing wave appear. The beam is coupled to members to be press fitted together at one or more points therealong lying between the node and antinode of the standing wave pattern, this point being chosen to provide an optimum impedance match between the beam and such members. Means are provided to mechanically urge the members together, while sonic energy is simultaneously applied to the interface therebetween to implement the press fitting action.

3,665,583

SUSPENSION CLIP STRUCTURE AND APPARATUS AND METHOD FOR SECURING SAME TO A WORK SURFACE

James F. Heiderman, York, Pa., assignor to Ladd Tool Company, Inc., Wilmington, Del.

Filed May 9, 1968, Ser. No. 727,985

Int. Cl. B25c *1/10*; B23q *3/16*; B23p *11/00*

U.S. Cl. 29—254 **15 Claims**



A clip structure to be secured to a work surface by a power actuated tool having a cylindrical barrel member from which a fastener element is driven, the clip structure including a center portion and a projecting retaining flange having spaced corners engaging the side wall of the barrel member at at least two peripheral points thereon having a chordal spacing less than the diameter of the barrel member, and including a projecting attachment flange engaging the barrel member side wall substantially oppositely from the engagement by the retaining flange to loosely retain the clip structure on the barrel member, the attachment flange including a leg portion extending outwardly from the barrel member for pre-assembly with a hanger wire that will not interfere with subsequent disposition of the clip structure on the barrel member. The center portion of the clip structure may be apertured to engage the tip end of the stud element extending outwardly from the barrel member of certain types of tools. Additionally, the tool may be provided with an extension element whereby the tool, with a clip structure placed thereon, may be manipulated to locate the clip structure against a ceiling and then actuated by a workman standing on the floor beneath the ceiling, the preassembled hanger wire depending vertically from the clip structure to form a plumb line providing vertical reference for aligning the tool therewith.

3,665,584

METHOD AND APPARATUS FOR MAKING FLEXIBLE STRIPS OF MATERIAL HAVING A PILE OF HOOK-SHAPED ELEMENTS

George H. Erb, Rutland, Vt., assignor to American Velcro, Inc.

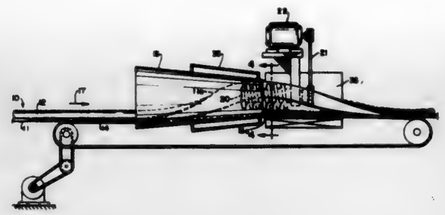
Filed Nov. 18, 1970, Ser. No. 90,710

Int. Cl. B21d *53/52*; B23p *13/04*

U.S. Cl. 29—410 **7 Claims**

A method is disclosed for making the hook or loop part of a separable hook and loop type fastener by bending a flexible base strip having a plurality of unbroken hook-shaped rails protruding from one surface thereof into a generally tubular form with the rails extending radially inwardly thereof; and

thereafter progressively subjecting spaced-apart cross-sectional segments of each rail alternately and periodically to a



rotational cutting action to transform each rail into a row of individually spaced-apart resilient hooks or loops.

3,665,585

COMPOSITE HEAVY-DUTY MECHANISM ELEMENT AND METHOD OF MAKING THE SAME

William M. Dunn, Farmington, and Myron C. Sarnes, Northville, both of Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Filed Dec. 4, 1970, Ser. No. 95,299

Int. Cl. B22f *3/12*

U.S. Cl. 29—420 **6 Claims**



A composite mechanism element, such as a bevel pinion (FIGS. 1 to 6 inclusive), or the inner race of a tapered roller bearing (FIGS. 7 to 10 inclusive and 16) has its working or load-bearing portion or portions composed of sintered powdered high-performance alloy while its supporting portion not subjected to concentrated or heavy loads, is made of a base metal, such as sintered powdered iron. The toothed outer load-bearing portion of the composite bevel pinion (FIG. 6) and the hollow frusto-conical inner supporting portion (FIGS. 10 to 15) are separately briquetted from high performance alloy powder and low performance metal powder respectively and separately sintered after which the low performance inner supporting portion is pressed into the high performance toothed outer portion so as to be inseparably secured thereto. In the inner race (FIG. 15) of the composite tapered roller bearing (FIG. 16) the low-performance and high-performance portions of the inner race are separately compacted in dies in a briquetting press to form briquettes which are separately sintered and thereafter are pressed together in an assembling operation which causes the high performance and low performance portions of each race to be inseparably secured to one another. The composite outer race is formed by arranging base metal powder and high performance alloy powder in abutting zones in an annular cavity of a briquetting press die and compressing them to form a composite briquette which is then sintered and afterward deformed in a forging die into its final annular shape. The resulting composite sintered powdered mechanism elements are of much lower material cost than corresponding mechanism elements formed of high performance alloy throughout yet perform satisfactorily and have sufficient strength and durability for most purposes. The tapered roller bearing races (FIG. 9) or the bevel pinion (FIG. 15) may be used as they are if of satisfactory density for their intended uses, or they may be further densified by being subjected to an additional hot forging operation with the article sintered thereafter if deemed necessary.

3,665,586

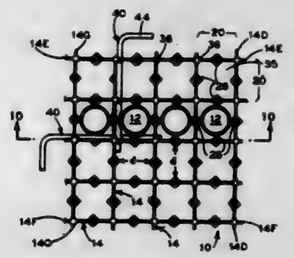
NUCLEAR FUEL ROD SUPPORTING ARRANGEMENTS

Felix S. Jabsen, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Nov. 7, 1968, Ser. No. 774,148

Int. Cl. G21c *21/00*

U.S. Cl. 29—428 **3 Claims**



A combination of a frame for holding a movable nuclear fuel bearing member in place within a nuclear reactor, wherein the frame includes at least one open-ended cell which forms a passageway within which the member may be held and resilient means for holding the member within the passageway; and means for temporarily enlarging the passageway to enable the member to be freely moved within the passageway. In addition, there is provided a method of assembling a nuclear fuel rod with a grid structure of the type which has resilient means for firmly supporting the fuel rod within a nuclear reactor, wherein the improvement comprises, temporarily deflecting the resilient means to allow the fuel rod to be moved within the grid structure without being fretted thereby.

3,665,587

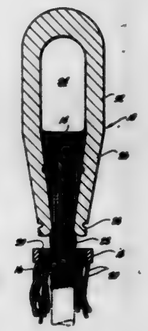
PROCESS FOR FABRICATING A DEAD END OF THE SPELTER SOCKET TYPE FOR WIRE CABLES

Randolph C. H. Michaelsen, Malibu, Calif., assignor to Global Marine Inc., Los Angeles, Calif.

Original application Dec. 5, 1968, Ser. No. 781,570, now Patent No. 3,568,265, dated Mar. 9, 1970. Divided and this application Mar. 13, 1970, Ser. No. 24,411

Int. Cl. B23p *25/00*

U.S. Cl. 29—461 **3 Claims**

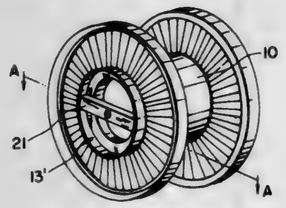


A collar having a plurality of wire strands is attached to a spelter socket after the latter is poured around a splayed end of a wire cable. The wires are braided around the wire cable to enhance the cable's fatigue life.

3,665,588
METHOD FOR MANUFACTURE OF WIRE REEL PROVIDED AT ITS ENDS WITH CORRUGATED FLANGES

Toru Mizuguchi; Mitsuo Fujita, and Yoshiaki Suzuki, all of Yokohama, Japan, assignors to The Furukawa Electric Company Limited and Toko-Kogyo-Kabushiki Kaisha

Filed Nov. 18, 1970, Ser. No. 90,697
Claims priority, application Japan, Nov. 19, 1969, 44/92155; 44/109294; Dec. 26, 1969, 44/122958
Int. Cl. B23p 21/00
U.S. Cl. 29—469 7 Claims

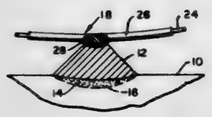


A method for manufacture of wire reel provided at its ends with corrugated flanges utilizing two pairs of rollers and a U-shaped annular body. A metal band is fed between one pair of rollers each having corrugations on its surface in parallel with its axis arranged perpendicular to the side edges of the metal band to form a corrugated band while one side edge of the corrugated band is fed between another pair of rollers each having a smooth surface to deform the corrugated side edge into a flat surface whereby to form an annular corrugated flange. The U-shaped annular body is provided at its one leg portion with an annular projection bent perpendicular thereto. The inner peripheral edge of the corrugated flange is clamped together with the two leg portions of the U-shaped annular body by a press and a drum is secured to the annular projection thus constructing a wire reel.

3,665,589
LEAD ATTACHMENT TO HIGH TEMPERATURE DEVICES

Richard Farrell, Lowell, Mass., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Oct. 23, 1969, Ser. No. 868,775
Int. Cl. B23k 31/02
U.S. Cl. 29—492 2 Claims

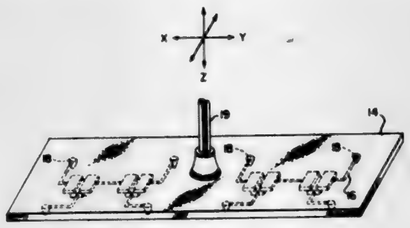


A technique for the attachment of leads to electronic devices which permits operation of the devices over a wide temperature range. The technique contemplates the use of core conductors having a thin coating of metal thereon whereby only a limited amount of coating material is available to form an alloy which bonds the core conductor to the device electrode, the electrode composition thus being effected only in the region adjacent the lead and the bond between the electrode and device being unaffected.

3,665,590
SEMICONDUCTOR FLIP-CHIP SOLDERING METHOD

John O. Percival, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Jan. 19, 1970, Ser. No. 3,955
Int. Cl. B23k 31/02, 35/38
U.S. Cl. 29—494 4 Claims

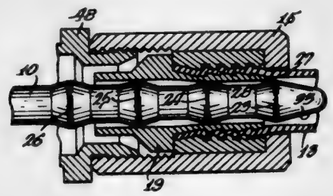


The present disclosure relates to a method of reliably soldering a semiconductor flip-chip to a semiconductor flip-chip package. A hot reducing gas is passed through a reducing gas guidance device onto surface oxidized solder which is upon the electrodes of the flip-chip, to melt the surface oxidized solder and to purify the surface oxidized solder. Simultaneously, the hot reducing gas is also passed through the reducing gas guidance device onto surface oxidized solder on bonding pads of the flip-chip package, to melt this surface oxidized solder and to purify this surface oxidized solder. Due to the purification of the surface oxidized solder of the electrodes and of the bonding pads, when the solder on the electrodes and of the bonding pads is brought together, the purified solder easily coalesces together. This method produces reliable electrical connections between a semiconductor flip-chip and a semiconductor flip-chip package.

3,665,591
METHOD OF MAKING UP AN EXPANDABLE INSERT FITTING

Leonard J. Kowal, Prospect Heights, Ill., assignor to Imperial-Eastman Corporation, Chicago, Ill.

Filed Jan. 2, 1970, Ser. No. 127
Int. Cl. B21d 39/00; B23p 11/02
U.S. Cl. 29—507 7 Claims

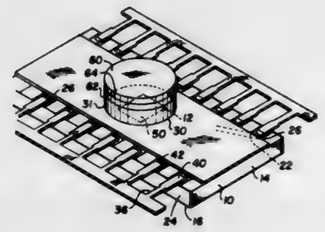


A method of making-up a fitting having a deformable insert adapted to be disposed coaxially within a tube end. The insert is expanded by a punch having spaced annular swaging portions of progressively increasing diameter whereby successive enlarging operations are effected as a result of an axial movement of the punch through the insert. The punch includes a shaft with the annular swaging portions being formed integrally with the shaft. The enlarging portions may be uniformly axially spaced to assure the action of only a single swaging portion on the insert at a given time.

3,665,592
CERAMIC PACKAGE FOR AN INTEGRATED CIRCUIT

Nick J. Apospors, Stamford, Conn., assignor to Vernitron Corporation, Great Neck, N.Y.

Filed Mar. 18, 1970, Ser. No. 20,713
Int. Cl. B01j 17/00; H01l 1/10
U.S. Cl. 29—588 3 Claims

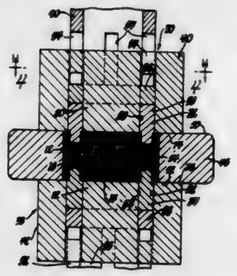


A ceramic package for an integrated circuit includes a ceramic plate having a central recess. A screened circuit pattern of spaced conductive stripes of molybdenum manganese is applied to the plate and fired to metallize it. A coating of aluminum oxide is applied over the plate and parts of the stripes and a ring of molybdenum manganese is placed on the coating to surround the recess and inner ends of the stripes. The ring is metalized and then a "Kovar" ring is brazed to the metalized ring. An integrated circuit chip is placed in the recess and covered by a cover hermetically bonded to the ring.

3,665,593
METHOD AND APPARATUS FOR MANUFACTURE OF A SQUIRREL CAGE ROTOR

Jack W. Savage, Centerville, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 7, 1970, Ser. No. 26,242
Int. Cl. H02k 15/02, 15/085
U.S. Cl. 29—598 3 Claims
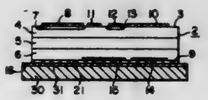


A method and apparatus is provided for manufacturing a squirrel cage winding assembly of a squirrel cage rotor from a pair of hollow cylindrical aluminum slugs wherein the pair of slugs are extruded into opposite ends of the winding slots of a rotor core. Conductor bars are formed in the slots by the extruded slug material and conductive end rings are formed integrally therewith by terminal portions of each slug.

3,665,594
METHOD OF JOINING A BODY OF SEMICONDUCTOR MATERIAL TO A CONTACT OR SUPPORT MEMBER

Kurt Raithel, Uttenreuth, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 6, 1969, Ser. No. 864,121
Claims priority, application Germany, Oct. 17, 1968, P 18 03 489.4
Int. Cl. B23k 31/02, 35/24
U.S. Cl. 29—590 6 Claims

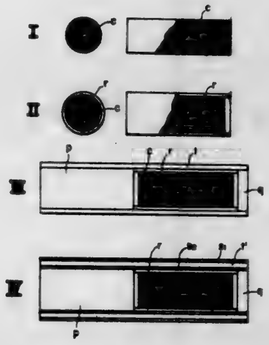


An aluminum coating is applied to a flat surface of a body of semiconductor material. The body having at least two zones or regions of different or opposite type conductivity exposed at the flat surface. A surface of a metal support or contact member which is to be joined to the aluminum coated surface of the semiconductor body is coated with a silicon-aluminum alloy. The two surfaces are then brought together and the surfaces heated to a temperature just above the silicon-aluminum eutectic whereby the body of semiconductor material is joined to support or contact.

3,665,595
METHOD OF MANUFACTURING SUPERCONDUCTIVE MATERIALS

Eihachiro Tanaka; Yutaka Onodera, both of Sendai; Takeji Fukuda, Kanuma; Tsutomu Yamashita, Sendai; Tetsuo Saito, Tokyo, and Shoji Kumia, Hitachi, all of Japan, assignors to The Research Institute for Iron, Steel and Other Metals of The Tohoku University, Sendai, Japan

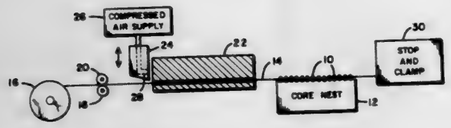
Filed Oct. 27, 1969, Ser. No. 869,719
Claims priority, application Japan, Oct. 31, 1968, 43/78863; Mar. 19, 1969, 44/20592; 44/20593; 44/20594
U.S. Cl. 29—599 6 Claims



Superconductive materials are manufactured by providing a laminated material by combining a material of Nb, V or Mo metal, or alloy or intermetallic compound thereof and a material of Sn, Al, Zr, Ti, Pb, Ge, V, Si, Ga, C or Au element or alloy thereof, winding the laminated material tightly into a coil, covering the coiled body with a shielding layer composed of Nb, Ta or Zr metal or alloy thereof or stainless steel, inserting the coil covered with the shielding layer into a sheath composed of Cu, Al, Ag, Au or Cd metal, or alloy or intermetallic compound thereof or stainless steel, subjecting said sheath enclosing said coil and said shielding layer to a

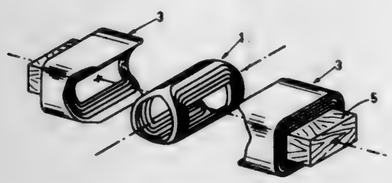
treatment for reducing a cross-sectional area of said coil and heat-treating thus treated coil. The laminated material may be inserted into the sheath together with a mechanically reinforcing material in order to improve the strength of the resulting superconductive materials.

3,665,596
MAGNETIC CORE WIRING MACHINE
Dixon A. Ford, Farmington, Utah, assignor to Sperry Rand Corporation, New York, N.Y.
Filed Jan. 20, 1970, Ser. No. 4,252
Int. Cl. H01f 7/06
U.S. Cl. 29—604 9 Claims



A machine for automatically inserting the drive conductors in a magnetic core memory array. The cores to be threaded are first located in a core nest to form an array of rows and columns of cores. The wires to be threaded through the apertures in the toroidal cores are automatically loaded into elongated channels or barrels and subsequently, a jet of compressed gas is applied to the ends of the wires in the barrels which forces the wires out of the barrels and through the core array.

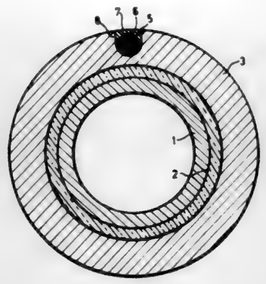
3,665,597
DEFLECTION COIL ASSEMBLY
Sing Liong Tan; Mathijs Willem Bartels, and Walter Wilhelmus Johannus Degger, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 25, 1970, Ser. No. 75,372
Claims priority, application Netherlands, Oct. 3, 1969, 6915054
Int. Cl. H01f 7/06
U.S. Cl. 29—605 4 Claims



Deflection coil pair for the color camera wound from insulated metal foil to a rectangular or trapezoidal block, which after baking is bored at right angles to the winding axis and machined to the desired tubular or hollow conical shape.

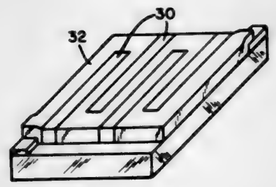
3,665,598
METHOD OF MAKING A HEATING BODY
Meindert Willem Brieko, Diepenbrockstraat 1, Schagen, Netherlands
Filed Dec. 17, 1970, Ser. No. 99,048
Int. Cl. H01v 11/00
U.S. Cl. 29—611 1 Claim

Electrical resistance heating conductor, surrounded by an electric insulating cylindric layer of borium nitride or beryllium oxide, coated off by outward heat dissipating liner. Between conductor, intermediate layer and outward liner are at all times shrinking fits sustained. Conductor and liner



consist of austanitic stainless steel, molybdenum, nickel, chromium, vanadium, rhenium, tungsten or its alloys.

3,665,599
METHOD OF MAKING REFRACTORY METAL CARBIDE THIN FILM RESISTORS
Andrew Herczog, Painted Post, N.Y., and Harold R. Smith, Denver, Colo., assignors to Corning Glass Works, Corning, N.Y.
Filed Apr. 27, 1970, Ser. No. 32,254
Int. Cl. H01c 7/00, 17/00
U.S. Cl. 29—620 20 Claims



The resistance value of a refractory metal carbide film resistor is adjusted and stabilized at any desired resistance value up to approximately 100 times the resistance value of the originally deposited film by heat treating the metal carbide film in an oxidizing atmosphere at temperatures above the anticipated operating range of the resistor. The heat treatment increases the resistance of the applied film by converting a layer of the exposed film to a non-conductive oxide.

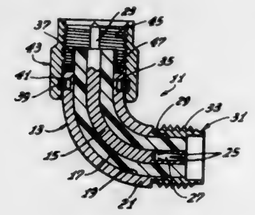
3,665,600
METHOD OF FORMING ELECTRICAL CONNECTORS
Bartley E. Hall, Newtown, Conn., assignor to Auto-Swage Products, Inc., Shelton, Conn.
Filed July 25, 1969, Ser. No. 845,024
Int. Cl. H02g 15/00
U.S. Cl. 29—629 10 Claims



A method is disclosed for forming electrical connectors in individual and strip form. The connector is formed from a

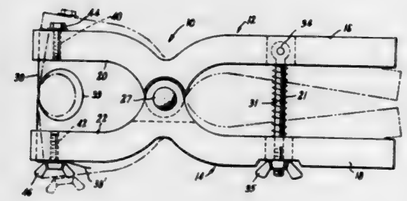
metal strip by punching from the strip two fingers which are integrally connected to the strip at the fingers' base. The fingers are bent about their bases so that they overlie the material of the strip. The strip is then tubulated so that the fingers extend into the hollow of the tubulated strip. The tubulated strip is shaped by a die swaging technique to form a top connector portion and a bottom nose portion. Waste material is removed to form a finished electrical connector.

3,665,601
METHOD OF MAKING A CONNECTOR
John G. Dunbabin, El Segundo, Calif., assignor to Connecting Devices, Inc., El Segundo, Calif.
Filed July 22, 1969, Ser. No. 843,459
Int. Cl. H02g 15/00
U.S. Cl. 29—629 15 Claims



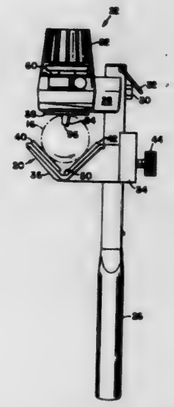
A method of making a connector comprising bending a tube to form a bend portion and forcing a plurality of balls through the passage in the tube to appropriately shape the cross section of the passage. An insulator and inner conductor are forced into the bent tube with the tube forming a die for shaping of the insulator and inner conductor.

3,665,602
HAND CUTTING TOOL
Hooshang Salahshourian, Fairfield, Conn., assignor to General Electric Company
Filed Mar. 15, 1971, Ser. No. 123,984
Int. Cl. B26b 27/00
U.S. Cl. 30—90.1 3 Claims



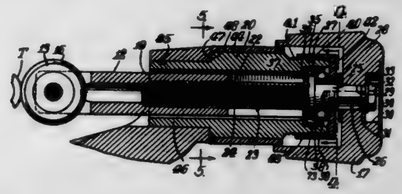
This invention relates to a hand cutting tool especially applicable for cutting a taped layer from an insulated cable. The cutting tool comprises a pair of elongated lever members pivotally connected to each other intermediate their ends. The lever members include a pair of handles at one end and arched upper and lower jaws at the other end opposite the handles. A spring wire having a looped portion therein is disposed between and connected to the upper and lower jaws.

3,665,603
CABLE STRIPPING TOOL
Robert A. Bilbrey, 21 Monte Vista, Orinda, Calif., and Robert V. Van Gelder, 2739B Fulton Street, Berkeley, Calif.
Filed Dec. 11, 1969, Ser. No. 884,278
Int. Cl. H02g 1/12
U.S. Cl. 30—90.7 12 Claims



A manually held and manually operated tool for stripping the insulation from large diameter electric cables. The tool includes a member for supporting a range of different diameter cables in the tool while permitting rotation of the tool relative to the cable. The tool includes an insulator cutting blade whose depth of cut may be selectively varied and whose angular disposition relative to the cable may be selectively changed so as to permit the cutting of a spiral track through the insulator without the application of any axial pressure and which likewise permits the ends of the track to be squared.

3,665,604
TUBE CUTTER
Leonard J. Kowal, Prospect Hights, Ill., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.
Original application Feb. 14, 1968, Ser. No. 705,541, now Patent No. 3,522,617. Divided and this application Feb. 16, 1970, Ser. No. 14,838
Int. Cl. B23d 21/08
U.S. Cl. 30—102 7 Claims



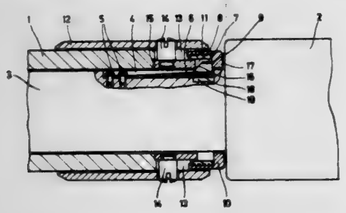
A tube cutter for manually cutting tubing by means of a cutting wheel forced against the outer wall of the tubing and moved circumferentially thereabout. The cutting wheel is mounted on a holder which is selectively movable forwardly and rearwardly by a manually operable handle to advance and retract the cutting wheel relative to the tube wall. The tube cutter includes a body portion carrying a deburring blade. The blade is pivotally mounted on the body for selective disposition in a retracted position juxtaposed to the body and a deburring position projecting outwardly of the body.

3,665,605
RAZOR-BLADE SCRAPER
Thomas F. Howerter, Fort Collins, Colo., assignor to Carol Company, Fort Collins, Colo.
Filed July 24, 1969, Ser. No. 844,278
Int. Cl. B27g *17/04*
U.S. Cl. 30—169 1 Claim



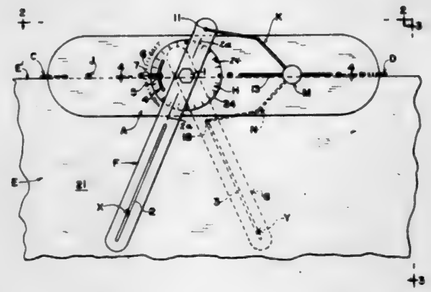
A single-edged razor blade, having an enlarged strip opposite its cutting edge, is received within a bi-furcated clamp so as to lie in a given plane with its cutting edge exposed. An elongated solid rod forms a rigid handle shaped to be grasped over one end portion by the hand of the user. The rod is affixed rigidly at its other end to the rear of the clamp so as to form an angle, between the axis of the handle and the plane of the blade in another plane that includes the axis and is normal to the blade plane, of an amount sufficient to accommodate the user's knuckles between the handle and a surface being scraped while the plane defined by the blade is positioned almost parallel to that surface.

3,665,606
COUPLING FOR THE CONNECTION OF A DENTAL HANDPIECE TO A POWER SOURCE
Martin Saupe, Mittelbiberach, Germany, assignor to Kaltenbach & Voigt, Biberach/Riss, Germany
Filed Apr. 2, 1969, Ser. No. 812,785
Claims priority, application Germany, Jan. 27, 1969, G 69 03 033.7
Int. Cl. A61c *1/08*
U.S. Cl. 32—26 9 Claims



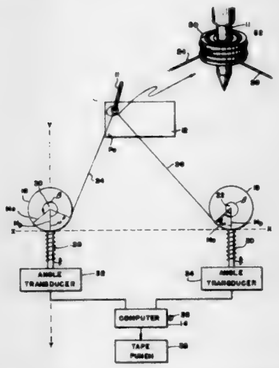
A sleeve of a dental handpiece is connected directly or via an intermediate sleeve to a drive motor by means of the engagement of a hook, mounted on an elastic arm secured to the motor, in an annular groove formed in the sleeve. The hook is selectively displaced from the groove to uncouple the sleeve and motor by axially displacing a shift member, externally mounted on the sleeve, which causes a sliding ring connected with the shift member to pass over the hook and displace the same from the groove against the opposition of the resilient arm.

3,665,607
FLIGHT LINE CONTINUATION PROJECTION DEVICE FOR AIR NAVIGATION
Kenneth D. Clark, 2029 Westover Drive, Pleasant Hill, Calif.
Filed Feb. 24, 1970, Ser. No. 13,527
Int. Cl. B43l *5/00*
U.S. Cl. 33—1 SD 7 Claims



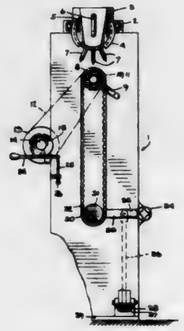
A sectional aeronautical chart has the geographical area bounded by the chart divided into two North and South areas, the South area being shown on one face of the chart and the North area being shown on the opposite chart face. Where a pilot wishes to plot his flying course from a point of departure on one face of the chart to a destination point on the opposite chart face, it is difficult to project the flight line continuation onto the opposite face of the chart and maintain the same angle. My device comprises two arms pivoted together and adapted to receive a sectional aeronautical chart therebetween with one arm overlying one chart face and the other arm overlying the other face and the pivot point contacting the chart edge which is a common border line between the two chart faces. Means is provided for simultaneously swinging the two arms in opposite directions about their common pivot so that the angle of the flight line depicted by the arm overlying one chart face will be continued onto the opposite chart face at the same angle by the other arm that overlies this face.

3,665,608
POSITION-LOCATING SYSTEM
Thomas C. Stockebrand, Boxboro, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed July 17, 1969, Ser. No. 842,582
Int. Cl. G01c *21/20*
U.S. Cl. 33—1 M 5 Claims



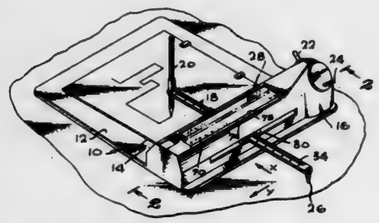
A stylus whose position is to be determined is attached to ends of two strings. The other ends of the strings are wrapped around and attached to a pair of spring-biased, rotatable drums. When the stylus is moved, one or both of the drums rotate to accommodate the change in length of the strings and the angular positions of the drums therefore correspond with the position of the stylus. The drum angles are measured by angle transducers whose outputs are processed by a computer to provide a reading of the stylus position.

3,665,609
APPARATUS FOR MAKING TIMING BELTS
Wilhelm Ganser, North-Rhine-Westphalia, Germany, assignor to Uniroyal Englebert Deutschland AG, Aachen, Germany
Filed Sept. 18, 1970, Ser. No. 73,416
Int. Cl. B43l *13/00*
U.S. Cl. 33—32 C 10 Claims



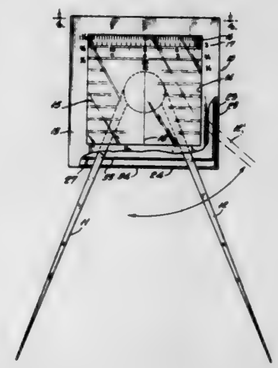
An apparatus is disclosed for the marking of toothed belts at predetermined distances along the belt and in fixed relationship to the belt teeth. A chucking and driving means for holding and positioning the belt to be marked is operably connected with a length measuring wheel so that they can be driven synchronously. The length measuring wheel has recesses corresponding to the points to be marked. A scanning means reads these markings and marking device marks the belts as indicated by the scanning means. The operation can be carried out automatically by means of a switching system working cooperatively with the length measuring wheel. Additional switches may be used to control the type of markings made on the belt blank.

3,665,610
X-Y PLOTTER TOY
Floyd E. Schlau, Palos Verdes Estates; Albert L. Anderson, Los Angeles; Eugene J. Kilroy, Jr., Inglewood, and Alcwyn Flicker, Carson, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 7, 1970, Ser. No. 95,662
Int. Cl. B43l *13/00*
U.S. Cl. 33—18 R 5 Claims



A toy which enables a child to draw pictures by remote manipulation of a writing instrument, including a frame for supporting a sheet of paper, a marker holder for holding a writing instrument over the paper, and a pair of knobs which can be turned by a child to move the holder in each of two perpendicular directions over the paper. The marker holder is mounted for sliding in the "X" direction on a carriage and the carriage is mounted to move in the "Y" direction on the frame. When a "Y" knob is turned by a child, it rotates a pulley which moves a cord that is attached to the carriage to move it in the "Y" position. When an "X" knob is turned, it rotates a square shaft, and a pinion rotatably mounted on the carriage and coupled to the shaft then moves a rack on the marker holder to slide it in the "X" direction. A program in the form of a strip with rows of letters and numbers defining "X" and "Y" locations to which the holder can be moved, defines a picture that can be drawn by a child.

3,665,611
MULTI-SCALE DRAWING INSTRUMENT
Oscar R. Avila, 98-25 64th Road, Forest Hills, N.Y.
Filed Feb. 5, 1970, Ser. No. 8,828
Int. Cl. G01b *5/00, 3/22*
U.S. Cl. 33—148 R 1 Claim

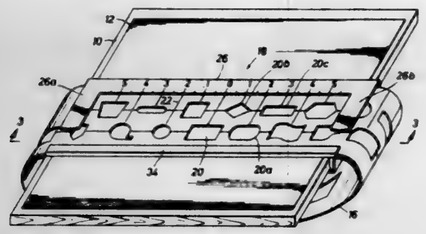


A multi-scale drawing instrument and more specifically dividers having a housing with a pair of elongated pointed members extending therefrom with the members movable one relative to the other, a movable strip of material within the housing and observable through a window therein, the strip being coupled to the members so that it will move relative to a center line an amount proportional to the angle between the members. The strip is provided with a plurality of sets of scales to provide among other measurements a direct reading of the distance between the two points on a scaled drawing when the ends of said members are positioned on said points.

3,665,612
CONTINUOUS TEMPLATE FLOW CHARTING APPARATUS AND METHOD
Daniel M. Albright, 107 Sycamore, Lake Jackson, Tex.
Filed Nov. 4, 1970, Ser. No. 86,742
Int. Cl. B44d *3/32*
U.S. Cl. 33—174 B 15 Claims

Apparatus is described for aid in drawing computer flow charts. The apparatus includes a template band formed in a closed loop with cutouts the flow chart symbols. The upper portion of the template band is held flat against the surface of a drawing board, the remaining loop of the template band encircling the drawing board. A guide mechanism holds the

bracket square with the drawing board. The template band can be moved horizontally through the bracket and vertically



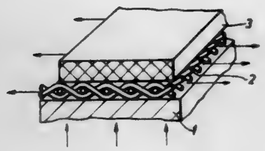
with the bracket to position cutouts at desired locations on the drawing surface.

3,665,613

METHOD OF AND APPARATUS FOR DRYING WET FILAMENT TOWS

Hans Alwin Erich Gieseke, deceased, late of Dormagen, Germany (by Ingrid Nora Hanaine Gieseke, heir); Alfred Nogaj, Dormagen, Germany; Josef Schiefer, Cologne, Germany, and Heinrich Rinkler, Dormagen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 13, 1970, Ser. No. 63,400
Claims priority, application Germany, Aug. 26, 1969, P 19 43 225.8
Int. Cl. F26b *3/00*
U.S. Cl. 34—9 24 Claims



Wet tows of filaments are dried on rotating drums at temperatures between 80° C. and 220° C. the surfaces of the drums having protuberances, for example in the form of wire fabric coverings, so that the vapors being formed between the two and the drum surface are able to escape through the interconnected cavities between the protuberances. Such drying of the tows imparts hardness to the handle of the fibers.

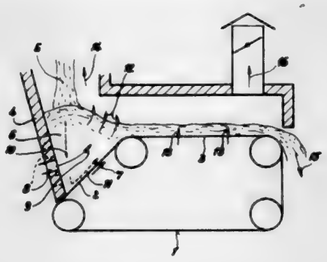
3,665,614

METHOD OF COOLING FRIED OR SINTERED MATERIAL

Horst Ritzman, Neubeckum; Otto Heinemann, and Wolf Goldmann, both of Ennigerloh, all of Germany, assignors to Polysius AG, Neubeckum, Germany

Continuation-in-part of application Ser. No. 846,520, July 31, 1969,. This application Feb. 10, 1971, Ser. No. 114,323
Claims priority, application Germany, Aug. 9, 1968, P 17 58 803.3; May 23, 1969, P 19 26 436.9
Int. Cl. F27d *15/02*
U.S. Cl. 34—20 4 Claims

The fired or sintered material is discharged into a trough between an inclined traveling hearth and a fixed wall until the trough is substantially filled with the material. A gaseous cooling medium is conducted continuously through the fixed wall into the material in the trough, and material is carried on the traveling hearth in an upwardly inclined direction out of the trough and then horizontally away from the trough, the speed at which material is carried on the traveling hearth and the rate at which hot material is discharged into the trough being such that the depth of the horizontally traveling material on the traveling hearth is substantially less than the depth of the material in the trough.

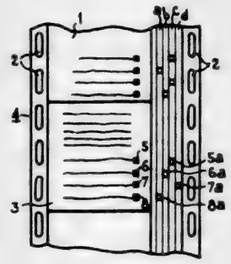


3,665,615

TEACHING MACHINE IN WHICH INSTRUCTION ITEMS ARE PROJECTED BY AN IMAGE PROJECTOR

Jacques Laplume, Gif-Sur-Yvette, France, assignor to Societe D'Etudes Techniques et D'Entreprises Generales (SODETEG), Le Plessis-Robinson, France

Filed Sept. 4, 1970, Ser. No. 69,739
Claims priority, application France, Sept. 9, 1969, 6930552
Int. Cl. G09b *7/08*
U.S. Cl. 35—9 A 14 Claims



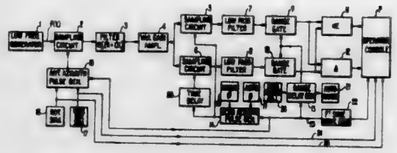
A strip film, carrying instruction items and questions with response indications thereon, and additionally, coded response code tracks (which are blocked from view of the student) is projected on a screen; the student is provided with a pointer having a photosensitive end, responding to the response items. A movable mask scans across both the response items and the response code track, and electrooptical transducers transmit the pulses upon scanning of a code position on this code track and the pulse from the photosensitive end to a logic circuit, which determines which code track has time-coincidence with the pulse from the photosensitive end. Subsequent indexing of the film to further instruction items (which may be entirely new instruction items or sub-items in further explanation in case the answer was wrong) is then controlled by the logic circuit decoding the coincidence of indication from a particular track and the photosensitive end.

3,665,616

SIMULATOR FOR MONOPULSE RADAR HAVING COHERENT DOPPLER FEATURES

Robert Bassard, Meudon; Pierre E. C. Stoll, Chaville, and Pierre H. Sedes, Aristide Briand, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 10, 1969, Ser. No. 883,922
Int. Cl. G09b *9/00*
U.S. Cl. 35—10.4 6 Claims



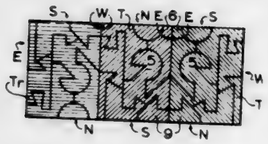
A device for simulating radar echo "video" signals as would be produced by a monopulse radar system having coherent pulse Doppler features. A low frequency signal is processed by multiple sampling, first by a pulse at the radar PRF which varies in time phase at the azimuth scan rate. Application of the resulting samples to a filter having an impulse response resembling the antenna beam pattern is followed by a controllable sampling to inject the dimensions of simulated echo angle and range. The result is realistic target signals which can be applied directly to a radar indicator for training of operators in the operation of monopulse tracking Doppler radar equipment.

3,665,617

DESIGN ELEMENTS FOR CREATING ARTISTIC COMPOSITIONS

Ina Gilbert, 265 Upper Highland Crescent, Willowdale, Toronto, Ontario, Canada

Filed Feb. 13, 1970, Ser. No. 11,054
Int. Cl. G09b *11/00*
U.S. Cl. 35—27 11 Claims



Tiles bearing identical designs comprised of separable components; the tiles being themselves assemblable in various combinations in which their designs merge to create a variety of continuous patterns; the design components of one tile being interchangeable with the corresponding components of the other tiles; some of the tile designs being reversals of others.

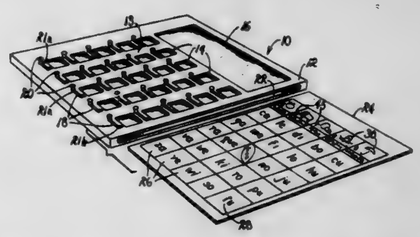
3,665,618

INSTRUCTIONAL GAME

Margaret K. Hahn, 3910 E. Belmont, Fresno, Calif.

Filed Aug. 17, 1970, Ser. No. 64,187
Int. Cl. G09b *17/00*
U.S. Cl. 35—35 H 19 Claims

An instructional game for use by "beginning readers" in promoting early perception of letter patterns, particularly those including a vowel. The game is characterized by a plurality of master boards, each including thereon a compilation of words selected from a defined class of words, each word having a letter pattern common to the class and an established phonetic value, a multiplicity of similarly configured game boards, each being adapted to receive therein a replaceable game card, a plurality of replaceable game cards, each bearing a partial list of words selected from a given master board and displayed in parallel rows, and a plurality of word markers associated with each of the game boards.



The game is played as words are chosen from a given master board, enunciated by a game director and simultaneously marked on game boards by a class of participants, through a digitation of the word markers, in order that a game winner be determined as the markers are by a winning participant grouped to conform to a predetermined pattern.

3,665,619

SKIER LEG SUPPORT

Brent E. Gray, Kent, Wash., assignor to Jet Stix, Inc., Enumclaw, Wash.

Filed Aug. 19, 1970, Ser. No. 65,179
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 AL 3 Claims



A leg support specifically designed for application to the back of the lower portion of a skier's leg. The leg support is fabricated of a rigid substance and is designed to be secured by a strap. The leg support overlaps the upper portion of the back of the ski boot whereby the stiffness of the back of the ski boot is transferred upwardly onto the skier's calf, adding strength to the skier's leg during "availment." The term "availment" refers to the technique of leaning back on the skis for acceleration.

3,665,620

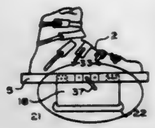
WALKING METHOD AND APPARATUS FOR SKI BOOTS

Maurice W. St. Clair, 1021 Sierra Dr., Menlo Park, Calif.

Filed July 1, 1970, Ser. No. 51,507
Int. Cl. A43b *3/10*
U.S. Cl. 36—7.5 7 Claims

A walking method and apparatus for ski boots is disclosed wherein a walking member is detachably affixed to the sole of the ski boot. The walking member has a sole portion for engaging the walking surface and an upper portion for supporting and being affixed to the sole of the ski boot. The walking member depends from the sole of the ski boot and is shaped to provide a forward rocking motion for the ski boot during the user's normal stride. The point of engagement of

the sole of the walking member with the walking surface is generally confined to a region below the ski boot and



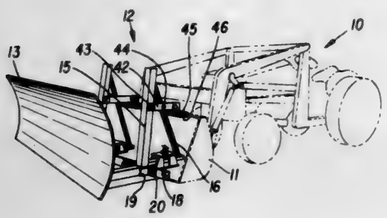
between the ball of the foot and the ankle to relieve walking stresses on the ankle of the user.

3,665,621
FOOTWEAR
Mario Masella, Germiston, South Africa, assignor to Ernest Colombo, Berario, Johannesburg, Transvaal Province, South Africa, a part interest
Filed July 6, 1970, Ser. No. 52,336
Claims priority, application South Africa, Feb. 23, 1970, 70/1162
Int. Cl. A43b 21/32
U.S. Cl. 36—37 4 Claims



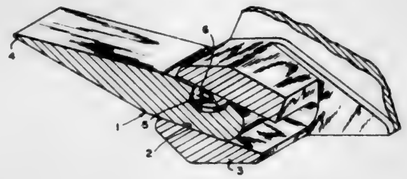
An article of footwear having a substantially inflexible heel supporting plate located inside the article and resiliently held above the heel portion of the sole thereof by a base plate which is located beneath the heel supporting plate and is secured to the forward edge of the latter the heel supporting plate being inclined upwardly from the forward edge thereof and the base plate being ribbed along its length.

3,665,622
CONVERTER BRACKET FOR A LIFT BUCKET
Ross H. Lamb, 1501 Colfox St., Benton Harbor, Mich.
Filed Mar. 16, 1970, Ser. No. 19,890
Int. Cl. E02f 3/62
U.S. Cl. 37—117.5 8 Claims



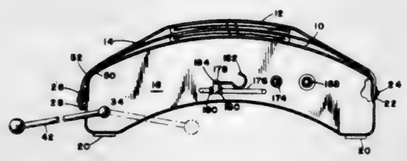
A converter bracket for a lift bucket carried by a mobile unit such as a tractor and enabling the attachment thereto of a working tool such as a scraper blade, fork lift, bush rake, snow plow, or the like, comprises a frame provided with a clamp means whereby said frame is removably affixed to the lower portion of the lift bucket. The frame is adapted to receive thereon the desired working tool.

3,665,623
TRENCHER TOOTH MOUNTING
Kenneth Murray White, Alberta, Canada, assignor to Western Rock Bit Company Limited, Calgary, Alberta, Canada
Filed Feb. 6, 1970, Ser. No. 9,274
Claims priority, application Canada, Mar. 21, 1969, 046,469
Int. Cl. E02f 9/28
U.S. Cl. 37—142 A 17 Claims



A trencher tooth is mounted by its shank in a pocket of a supporting member by means of a coiled spring arranged perpendicularly to the longitudinal direction of the tooth with its ends pressing against the tooth shank and the mounting pocket. The coiled spring preferably comprises a lockwasher received in a shallow recess in the tooth shank.

3,665,624
PORTABLE GARMENT PRESSING DEVICE
Charles D. Briddell, 335 Hill-N-Dale Dr., York, Pa.
Filed Aug. 21, 1970, Ser. No. 66,005
Int. Cl. A47j 51/00
U.S. Cl. 38—71 27 Claims

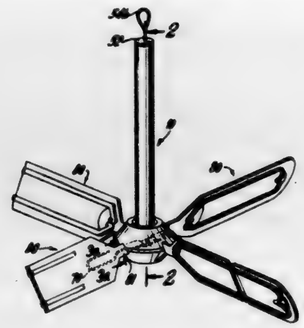


A portable garment pressing device comprising a base buck having a pressing surface against which the garment is placed for pressing and an elastic cover sheet adapted to extend over the garment and be stretched to conform to variations in thickness of the garment and hold the garment firmly against the buck while being pressed, either with or without the employment of heat. The device also may be used to store a garment in pressed condition by hanging the pressing device with the garment in it in depending manner in a storage space, such as a closet.

3,665,625
ROTATING ADVERTISING DISPLAY
Jerome A. Moss, 333 West End Ave., New York City, N.Y.
Filed Mar. 27, 1970, Ser. No. 23,345
Int. Cl. G09f 11/10
U.S. Cl. 40—33 16 Claims

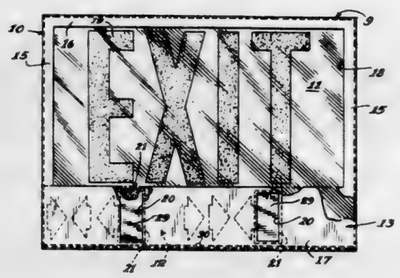
A slowly rotating knockdown advertising display simulates a fan and comprises removable and replaceable fan blade simulating members in form of advertising signs which can be read as the blades rotate. The device is powered by a battery

operated motor. The motor, in one form of the invention, is provided with an "on" and "off" switch. The display com-



prises components which can be easily shipped in knockdown condition and assembled upon delivery.

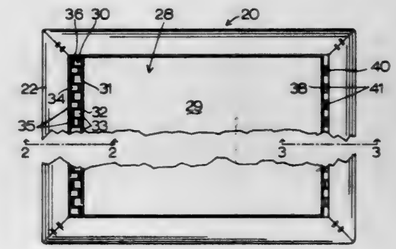
3,665,626
EXIT SIGN WITH ADJUSTABLE INDICIA
Alvin R. Lund, Carpentersville, and Jack Kaufman, Chicago, both of Ill., assignors to Markstone Manufacturing Company
Filed Mar. 3, 1970, Ser. No. 16,027
Int. Cl. G09f 13/06
U.S. Cl. 40—132 D 17 Claims



A visual indicator, such as an exit sign, having a display panel which is a closure for the front of a housing containing a light source. The panel includes means for providing both a first transmitting visual image such as the word "Exit," and an area for a second light transmitting visual image such as an arrow. A mask-like means is mounted on the panel for movement between a plurality of positions, and has a plurality of visually different images which can be selectively registered with the second image area providing different second images. The panel and mask-like means have releasable means, accessible only when the panel is at least partially removed from the housing, to fix the mask-like means in each of the plurality of positions.

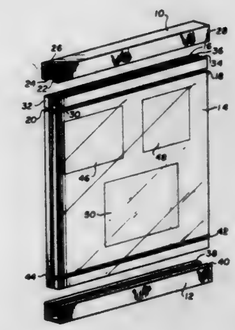
3,665,627
PICTURE FRAME
William Robert MacCluney, Route one Queen Ann Farm, Ashland City, Tenn.
Filed June 22, 1970, Ser. No. 48,080
Int. Cl. G09f 1/12
U.S. Cl. 40—152 4 Claims

A picture frame having an elongated abutment surface on at least one inner edge of the rear portion of the frame, and a backing member having an elongated elastic closure member



along one edge opposing and yieldably and releasably engaging the abutment surface, for holding a picture in the frame.

3,665,628
PICTURE HOLDER
Howard R. Dammond, 390 West End Ave., New York, N.Y.
Filed Mar. 2, 1970, Ser. No. 15,594
Int. Cl. G09f 1/12
U.S. Cl. 40—155 6 Claims

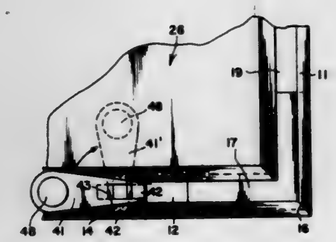


A picture holder comprising separate upper and lower clamping members and separate front and back picture retaining members. The front and back picture retaining members comprise means which cooperate with the clamping members to form the fully assembled picture frame. The upper and lower clamp members may be identical and the front and back picture retaining members may also be identical. In addition, spring means may be provided disposed within the upper and lower clamping members for providing additional picture retaining pressure to the front and back members.

3,665,629
CLIP FASTENED PICTURE FRAME ASSEMBLY
Frank Shore, 26 Lantern Rd., Hicksville, N.Y.
Filed Nov. 20, 1970, Ser. No. 91,282
Int. Cl. G09f 1/12
U.S. Cl. 40—156 9 Claims

A picture frame assembly formed of outer and inner frame parts, the inner frame parts being slidably or snap fastened

into the space in the outer frame parts and being interchangeable with inner frame parts of different shape and construction for serving the purpose of securing a wooden painting frame within the frame parts and at the same time utilizing clips for the securing of the picture mat assembly for the painting frame assembly within the frame parts. The frame parts are cut on a bias from long extruded members and are joined at their corners, the outer frame parts having rear grooves and the joining of the outer frame parts to include the inner frame parts being effected by corner plates

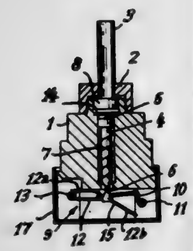


extending into the ends of the grooves at the corner joints thereof and the inner parts having square recesses for receiving the picture mount assembly or a painting and clips adapted to be turned fastened into the grooves on the back of the outer parts and turned to a location to overlie the back of the picture - mat assembly or painting frame to hold the same in the squared recesses of the inner frame parts. Clips having opposing projections to be turned into a T shaped slot, a picture surface engaging portion, a hanging wire loop portion and opening for attachment by a screw to a wooden frame.

3,665,630
STRIKER MECHANISM

Leonard Taylor, Newdigate, England, assignor to Smith & Wesson Pyrotechnics, Inc., Springfield, Mass.

Filed June 12, 1970, Ser. No. 45,703
Int. Cl. F42c 7/00
U.S. Cl. 42—12 3 Claims

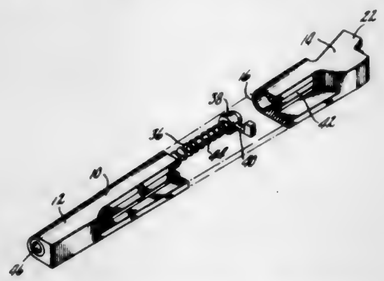


An improved striker mechanism for controlling contact of a firing pin with a percussion cap. In a first safe position the striker mechanism retains the firing pin in a safe condition out of contact with the percussion cap. In a second pin position the striker mechanism moves the firing pin to a cocked condition from which the pin is released for detonating the cap.

3,665,631
SELF CONTAINED MAGAZINE

Robert E. Domian, and Paul A. La Violette, both of Tolland New Haven, Conn., assignors to Colt's Inc., Hartford, Conn.

Filed Mar. 2, 1970, Ser. No. 15,404
Int. Cl. F41c 25/08
U.S. Cl. 42—17 7 Claims

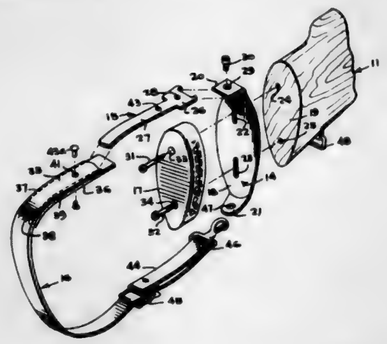


A magazine is mounted in a firearm which includes a feed throat. The magazine has an elongated housing made of a plastic material which includes front and rear portions and a continuous passage extending through the front portion into the rear portion. A magazine spring assembly having a follower is mounted within the housing to urge an aligned row of cartridges in the passage towards the rear portion. The rear portion includes two lower spaced walls which define a slot in communication with the passage for receiving a feed pawl attached to the feed throat. The rear portion further includes an opening communicating with the passage to permit loading of the magazine and feed pawl urged egress of the rearmost cartridge in the passage from the magazine into the feed throat. An extension in the rear portion is adapted to be received in a notch in the feed throat. The extension includes an abutment which contacts the rearmost cartridge to retain the cartridges in the magazine. A bolt, slideably mounted in the firearm, is movable to contact a cartridge positioned in the feed throat by the feed pawl and urge it into the chamber of the firearms.

3,665,632
FIREARM SHOULDER SUPPORT AND STRAP ATTACHMENT

Wade L. Ford, 30 W. 29th St., San Angelo, Tex.

Filed Nov. 25, 1969, Ser. No. 879,736
Int. Cl. F41c 23/00, 23/02
U.S. Cl. 42—71 R 9 Claims



An attachment for a firearm having a stock and a barrel, generally including a rigid support member secured to the stock and projecting rearwardly from the upper end of the stock, and a stray secured at one end thereof to the support member, and being attachable at the other end thereof to the underside of the stock.

3,665,633
FISHING APPARATUS

Leonard E. Scott, 824 Norfolk Ave., Westchester, Ill.

Filed June 24, 1970, Ser. No. 49,267
Int. Cl. A01k 87/00
U.S. Cl. 43—19.2 10 Claims

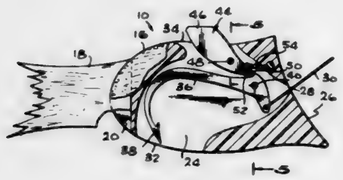


An apparatus having a holder for supporting and retaining one end of a fishing pole, the apparatus including a mechanism operative to drive the holder and impart thereto a particular cyclic swinging motion to the pole, the mechanism also producing at one part of the cycle a whipping action on the line at the free end of the pole.

3,665,634
FISH PLUG LURE

Roger C. Baud, Redwood City, Calif., assignor to Finizen Lures, Inc., Carson City, Nev.

Filed May 1, 1970, Ser. No. 33,697
Int. Cl. A01k 83/02
U.S. Cl. 43—35 13 Claims



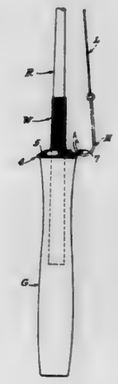
Fish lure having a body within which is pivoted a hook which can move from a fully-retracted position to an extended position. The leader extending from the fish tackle to the lure is secured to the hook in such a position that the hook is stressed by leader tension toward the extended position. Trigger means, actuatable by the fish, retains the hook in the retracted position until actuated. A resilient member urges the trigger means into the hook retention position. The body of the fish lure resembles fish bait and the trigger means resembles a natural fin thereon.

3,665,635
COMBINED FISHHOOK KEEPER AND WINDING CHECK

Fredrick W. Lumbard, Los Angeles, Calif., assignor to Milton J. Stevens, Glendale, Calif.

Filed Oct. 12, 1970, Ser. No. 79,939
Int. Cl. A01k 87/00
U.S. Cl. 43—25.2 4 Claims

A stretchable, washer-like item for disposition on the inner end of the hand grip of a fishing rod and having the dual purpose of checking the winding usually applied to a fishing rod where the same extends from the grip and which serves to impart a finished appearance to the rod at that point, and as

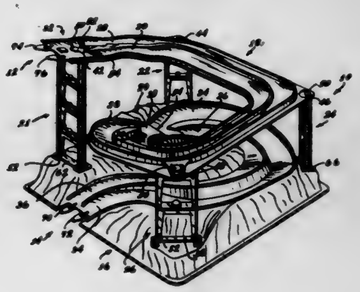


a keeper for the barbed fishhook on the end of the line of said rod.

3,665,636
HILL RACE TRACK

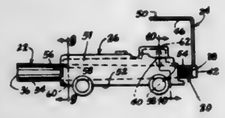
John T. Benson, Los Angeles, and Anthony D. Miller, Torrance, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed July 31, 1969, Ser. No. 846,317
Int. Cl. A63h 11/10
U.S. Cl. 46—1 K 5 Claims



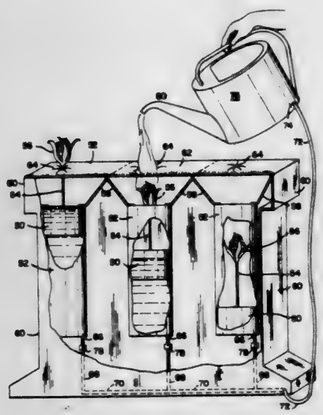
A roadway for toy vehicles which provides a tall, winding, mountain-like road with two parallel tracks, which can be stored in a box of limited height, comprising a rigid lower member forming lower portions of the tracks and a flexible upper member forming upper portions of the tracks. The upper member can be placed in a substantially flat configuration for storage, or can be placed in a largely helical configuration and supported on top of the lower member to form the upper portion of the roadway. A starting gate at the upper end of the roadway can be used to start a pair of vehicles, or can be swung out of the way to allow moving vehicles received from previous track regions to move into the mountain-like roadway without hindrance.

3,665,637
BUBBLE PIPE TOY
Irving Starr, 28 Bullitt Park Place, Columbus, Ohio
Filed Dec. 11, 1970, Ser. No. 97,092
Int. Cl. A63h 33/28
U.S. Cl. 46—6 11 Claims



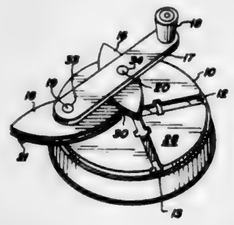
A bubble pipe toy for blowing bubbles. The bubble pipe is in the form of a tubular pipe having an upstanding chimney over which a ring element in the form of an L-shaped wand is fitted. The wand may be integrally formed on the pipe or in a preferred form has a square end receivable within a socket having a square opening to provide registry of the ring over the chimney. The pipe further receives toy figurines, such as in the shape of a locomotive or other toy, which is snapped or molded directly on the tubular pipe with the chimney fitting through the toy. The pipe is simply employed by dipping the ring element of the wand into a soapy solution and blowing through the pipe with air expelled through the chimney and forming bubbles from a soapy film over the ring element.

3,665,638
HYDRAULICALLY ACTUATED CHILDREN'S TOY
Elizabeth N. Weistrop, 505 Dolores Ave., Half Moon Bay, Calif.
Filed Jan. 27, 1971, Ser. No. 110,087
Int. Cl. A63h 29/08
U.S. Cl. 46—41 12 Claims



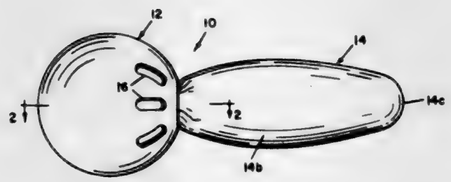
A hydraulically actuated children's toy to which the user adds a controlled amount of water or other fluid in order to produce a particular visual effect simulating a realistic phenomenon. The addition of fluid causes a float member to move a visual representation of a natural object between a concealed and a visible position. The float and the visual effect element are connected by conventional linkage appropriate to produce the required relative movement. The upward movement of the float in response to the rising level of supporting fluid causes the visual effect element either to appear from the interior of the toy or to disappear within it depending on the linkage. The fluid is contained within a closed hydraulic system wherein means are provided for returning the fluid to a portable container whereby the motion of the visual effect element is reversed. Specific embodiment disclosed are directed to devices simulating the growth of a plant from within a flower pot and the extinguishment of a fire within a building.

3,665,639
KINETIC AMUSEMENT DEVICE
William W. Knox, Concord, Ohio, assignor to Mag-Nif, Inc., Mentor, Ohio
Filed May 13, 1971, Ser. No. 142,698
Int. Cl. A63h 1/32
U.S. Cl. 46—47 3 Claims



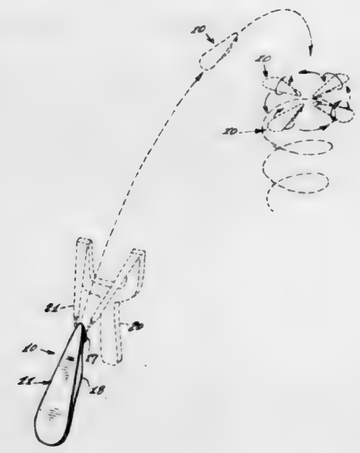
A self-contained kinetic amusement device having a circular base provided with a pair of slots which perpendicularly intersect at the center of the said circular base, a pair of horizontally and linearly slidable elements, and crank means connecting both of said elements, so that when said crank means is rotated said elements slide back and forth in their respective slots without blocking each other's sliding movement.

3,665,640
SELF-PROPELLED AERIAL TOYS
Norbert A. Kirk, 6912 North Ashland Ave., Chicago, Ill.
Filed Nov. 3, 1970, Ser. No. 86,502
Int. Cl. A63h 27/06
U.S. Cl. 46—74 R 4 Claims



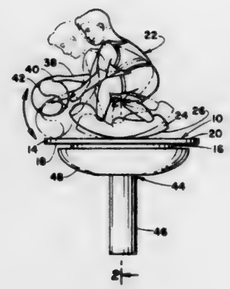
An elongated inflated baloon has its intermediate portion passing through and secured in an opening in the wall of a hollow body so that an inner end portion of the baloon is disposed inside the body and its outer end portion extends outwardly, while gas communication between the inner and outer portions is maintained through the intermediate portion of the inflated baloon. While the outer end portion is held by hand of a user, the baloon is introverted by finger pressure directed longitudinally inwardly against its outer end, thus increasing gas pressure inside the baloon and providing reaction force for its propulsion along with the body when the baloon is released.

3,665,641
SPIN DOWN
Clifford W. Henderson, 9804 Greenway Place, Shreveport, La.
Filed July 29, 1968, Ser. No. 748,484
Int. Cl. A63h 27/14
U.S. Cl. 46—81 2 Claims



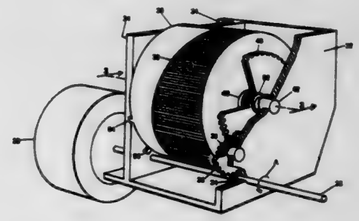
A toy comprising a airfoil launched from a sling shot type of launcher, the airfoil having a contour which will cause it to spin on its descent after having been projected into the air.

3,665,642
MECHANICAL SIMULATED ACTION TOY FIGURE
John I. Horner, 914 Electric Ave., Venice, Calif.
Filed July 2, 1970, Ser. No. 51,896
Int. Cl. A63h 13/18
U.S. Cl. 46—147 5 Claims



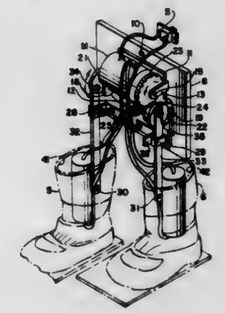
A base has an upper platform presenting a normally upwardly facing platform surface and a central rod-like handle projecting downwardly therefrom. A toy figure is horizontally pivotly mounted on said platform surface projecting upwardly therefrom and contacting said platform surface through upwardly and generally horizontally extending arcuate lower surfaces of shoes of said figure. A resilient fastener is secured between said platform and said figure generally centrally of said figure arcuate lower surface so that said figure will rock over said arcuate surface along said platform surface upon generally horizontal reversing movement of said platform through said handle. The resilient fastener between said platform and said figure may permit pivoting of said figure in multiple horizontal directions during said rocking and a ball secured to a hand of said figure may overly said platform surface and periodically contact said platform surface during said rocking.

3,665,643
TOY VEHICLE
Ronald B. Colgrove, 56679 Maple Hill Rd., South Wales, N.Y.
Filed Apr. 1, 1971, Ser. No. 130,342
Int. Cl. A63h 17/00
U.S. Cl. 46—206 14 Claims



A toy vehicle having one or more ground contacting elements such as wheels, an indicating drum movable in one direction in response to wheel movement, stops for limiting the movement of the drum and locking the wheels to simulate an empty fuel condition, a simulated fuel pump insertable into an opening in the vehicle for moving the indicating drum in an opposite direction without any movement of the wheels to simulate a fully fueled condition, whereby further movement of the vehicle in the one direction is permitted.

3,665,644
RUNNING DOLL OR THE LIKE
Fredric Thomas Rapp, 331 Wilson St., Syracuse, N.Y.
Filed Sept. 2, 1970, Ser. No. 68,936
Int. Cl. A63h 33/26
U.S. Cl. 46—245 10 Claims

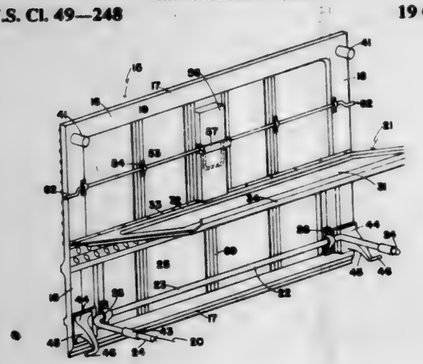


A running toy such as a doll or the like, including movable legs, motor means for moving said legs, and linkage means interconnecting said motor means and said legs for effecting movement of said legs in such a manner as to propel said doll or the like forwardly with a running motion. The legs of the doll or the like have feet thereon with an enlarged smooth bottom surface; and said motor, said linkage and said enlarged smooth bottom surface of said feet cause said doll or the like to run rapidly across the surface on which it is placed without the aid of external support means or the like.

3,665,645
DOOR ASSEMBLY FOR BAGGAGE COMPARTMENTS AND THE LIKE

Harry Zoltok, Winnipeg, Manitoba, Canada, assignor to Motor Coach Industries Limited, Winnipeg, Manitoba, Canada

Filed Jan. 4, 1971, Ser. No. 103,773
Int. Cl. E05d 15/00
U.S. Cl. 49—248 19 Claims

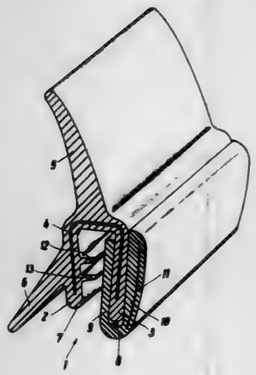


A planar door is held by a pantograph linkage and when it is closed, the lower catch engages and then the upper catch which pulls the door into a sealed relationship with the frame by an over center action.

3,665,646
SEALING STRIP

Gerd Niemanns, Viersen, Germany, assignor to Draftex GmbH, Viersen, Germany

Filed Mar. 9, 1970, Ser. No. 17,414
Claims priority, application Germany, July 29, 1969, P 19 39 169.6
Int. Cl. E06b 7/23
U.S. Cl. 49—490 6 Claims

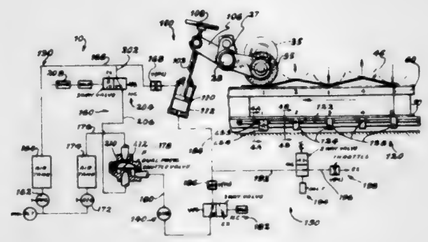


A U-shaped sealing strip adapted to be mounted on a support, especially for use in doors, trunk lids and the like of automobiles, comprising a firm sealing lip extending outwardly away from the apex portion of the U-shaped sealing strip, and a second sealing lip connected to and extending outwardly away from one leg of the U-shaped sealing strip in a direction away from the apex portion and extending beyond a plane which is perpendicular to the plane of symmetry of the U-shaped sealing strip and which passes through the edge of the end of one leg, the second sealing lip being adapted to sealingly rest against a member extending at an angle with respect to the support.

3,665,647
AUTOMATIC BUFF PRESSURE SETTING

James W. Weatherell, Olean, N.Y., assignor to Clair Mfg. Co., Inc., Olean, N.Y.

Filed Nov. 20, 1970, Ser. No. 91,398
Int. Cl. B24b 7/00, 1/00
U.S. Cl. 51—45 5 Claims

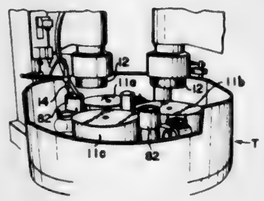


An improved control circuit for use in a surface finishing machine having a driven surface finishing roll is adapted to establish and maintain a desired working pressure relationship between the finishing roll and a workpiece.

3,665,648
GRINDING APPARATUS

Sadajiro Yamanaka, Chigasaki, Japan, assignor to Yugen Kaisha Yamanaka Seisakusho, Chigasaki-shi, Kanafawaken, Japan

Filed Sept. 28, 1970, Ser. No. 75,842
Claims priority, application Japan, Dec. 18, 1969, 44/101837
Int. Cl. B24b 17/00
U.S. Cl. 51—134 7 Claims

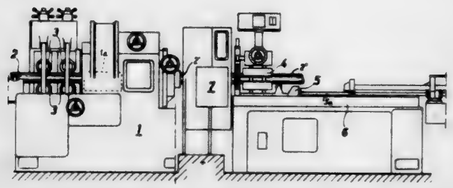


A grinding apparatus which is so constructed that three workholders are rotatably mounted on a turn table in equally spaced relation peripherally of said turn table to be intermittently shifted from one to another of three positions consisting of an inoperative position and a first and second working positions. Two grinding mechanisms are arranged exterior of said turn table adjacent said first and second working positions respectively. The table is operative in such a manner that a workpiece mounted on one of said workholders in said inoperative position is carried thereon to said first working position where it is roughly ground and then to said second working position where it is subjected to a finishing grinding and then back to said inoperative position to be removed from the apparatus, the intermittent rotation of said turn table being controlled by a detecting device which detects the amount of the workpiece ground by way of a master which is ground concurrently with said workpiece.

3,665,649
APPARATUS FOR GRINDING OF ROD-SHAPED WORKPIECES

Friedhelm Krejan; Ferdinand Besse, both of Mulheim-Ruhr; Hans Hufner, Essen-West; Franz Riedel, Solingen, and Rainer Holzmann, Dinslaken, all of Germany, assignors to Th. Kieserling & Albrecht, Solingen, Germany

Filed July 30, 1969, Ser. No. 846,201
Claims priority, application Germany, June 29, 1968, P 17 52 659.9
Int. Cl. B24b 21/00
U.S. Cl. 51—137 3 Claims

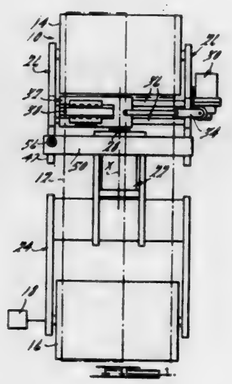


Grinding or polishing apparatus for rod-shaped metallic workpieces which issue from the rotary head of a shaving machine comprises a driven disk-shaped holder whose hub defines a passage for workpieces which leave the shaving head, an endless grinding or polishing belt which is adjustably mounted on the holder, and an electric motor which drives the belt and is mounted directly on the holder. The tensioning pulley for the belt is adjustable to enable the apparatus to treat workpieces of different diameters as well as to move the belt away from the path of cylindrical leading ends of successive workpieces.

3,665,650
ABRASIVE BELT CONTROL APPARATUS AND METHOD

Witold C. Przygocki, Southfield, Mich., assignor to Murray-Way Corporation, Birmingham, Mich.

Filed Oct. 22, 1969, Ser. No. 868,397
Int. Cl. B24b 21/00
U.S. Cl. 51—135 BT 15 Claims

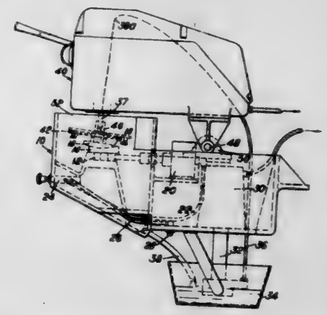


Apparatus and method for use with an endless abrasive belt operable to sense the position of the belt and to automatically oscillate the belt transversely in accordance with movement of a position sensor.

3,665,651
DEVICE FOR IMPARTING MOTION TO AN OPTICAL LENS

Stephen Jack Wylde, Croydon, England, assignor to J. L. S. Limited, Croydon, England

Filed Jan. 12, 1971, Ser. No. 105,813
Int. Cl. B24b 13/02
U.S. Cl. 51—160 11 Claims

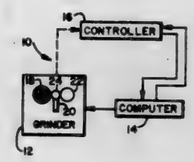


A device for imparting motion to an optical lens while the latter is held in contact with the working surface of a lens-grinding, smoothing or polishing tool, comprising a lens-holder mounted on a shaft which, at spaced-apart points along its length, passes through or is connected to at least two driven eccentric bearing assemblies of which one is of adjustable eccentricity and the other has two eccentrics driven at two speeds which are in selected ratios to each other so that the shaft is given a substantially uniform but substantially non-repeating motion by the said eccentric bearing assemblies.

3,665,652
GRINDING SYSTEM

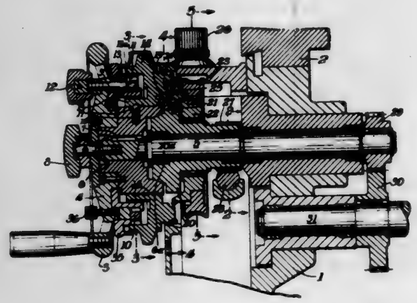
Bernard M. Gordon, Magnolia; Leopold Neumann, Lexington, and Ivan H. Kirsch, Hyde Park, all of Mass., assignors to Gordon Engineering Company, Wakefield, Mass.

Filed Oct. 21, 1970, Ser. No. 82,631
Int. Cl. B24b 49/70
U.S. Cl. 51—165.71 13 Claims



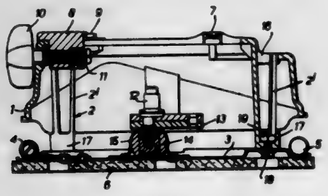
A grinder having a workpiece mounted thereon is operatively connected to a tracking analog to digital converter via a sensor unit. The analog to digital converter comprises a summing amplifier, a forward/backward counter, a gating control, and a digital to analog converter and defines a closed loop configuration. Signals at the output of the summing amplifier are applied to a peak detector which generates a signal representing the degree of out of round of the workpiece. Counting pulses generated by the counter are applied to a reset-delay via the gating control for generation of a signal indicating the rate of removal of material from the workpiece. Pulses representing the state of the counter are applied to a limit circuit which generates signals representing the amount of material removed from the workpiece.

3,665,653
FEED MECHANISM FOR MACHINE TOOL
Akiyoshi Kobayashi, Asahimachi, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Asahimachi, Kariya, Aichi Prefecture, Japan
Filed Jan. 19, 1971, Ser. No. 107,639
Claims priority, application Japan, Jan. 22, 1970, 45/6734
Int. Cl. B24b *49/00*
U.S. Cl. 51—165.81 7 Claims



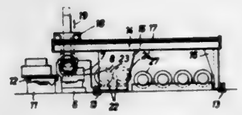
In the feed handle mechanism of a machine tool a handle is integrally fitted to a handle shaft. An operating member is rotatably and axially movably attached to the handle shaft. Clamping structure selectively secures the handle solidly to the operating member. A worm wheel is rotatably supported by the handle shaft, and a worm engaging the worm wheel is equipped at one end with an operator knob. Connecting structure connects the operating member to the worm wheel for fine feeding when the operating member is axially shifted in one direction. Dead stop structure is brought into play by shifting the operating member in the other axial direction to thereby control the rotation of the operating member. Switching between dead stop machining and fine feed machining is effected by axial shifting of the operating member.

3,665,654
HOUSINGS FOR POWER-DRIVEN ABRASIVE TOOLS
John Henry Flack, Ruislip, England, assignor to The Black and Decker Manufacturing Company, Towson, Md.
Filed Aug. 12, 1970, Ser. No. 63,216
Int. Cl. B24b *23/00*
U.S. Cl. 51—170 MT 6 Claims



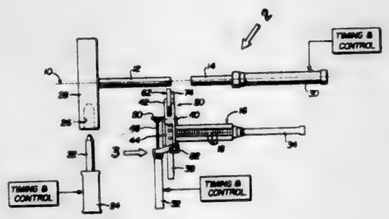
A housing adapted for rigid attachment to a portable tool having a rotary output shaft. A plurality of flexible posts are formed integral with the housing and have an abrasive backing plate attached thereto. Eccentric means on the backing plate is attachable to the output shaft and transmits motion to the backing plate.

3,665,655
DEVICE FOR AN AUTOMATIC EXCHANGE OF ROLLERS IN ROLLER POLISHING MACHINES AND THE LIKE
Ernst G. Klein, Siegen, and Artur Klein, Netphen, both of Germany, assignors to H. A. Waldrich GmbH, Siegen, Germany
Filed Apr. 24, 1970, Ser. No. 31,682
Claims priority, application Germany, Apr. 24, 1969, P 19 20 804.9
Int. Cl. B24b *47/20, 5/10*
U.S. Cl. 51—215 CP 7 Claims



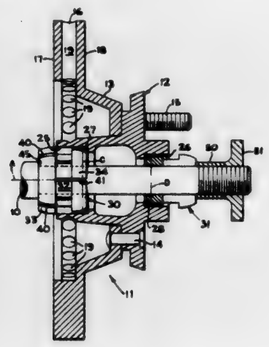
A device for the automatic exchange of rollers in roller polishing machines and the like is characterized by a movable frame located preferably outside of the plane of the machines and having a gripping device movable upon a fixed track for gripping and raising rollers from a stack, inserting a roller in the holders of a roller polishing machine and also for carrying out a reverse procedure. There is also provided a guide and/or an arresting device for making the gripping device axially parallel to the polishing machine, particularly as far as holders or drivers for roller pins at the mandrel stock are concerned.

3,665,656
WORKPIECE FEED MECHANISM
Edward M. Newsome, 25700 D'Hondt Court, Anchorville, Mich.
Filed Dec. 24, 1970, Ser. No. 101,353
Int. Cl. B24b *47/02*
U.S. Cl. 51—215 H 9 Claims



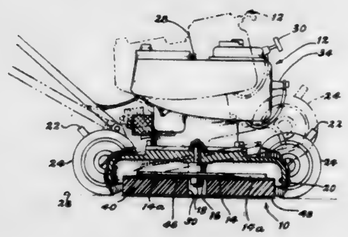
An automatic feed mechanism for conveying workpieces from a magazine to a position where they can be clamped between two rotatable spindles of a machine tool comprises a reciprocating workpiece carrier which moves radially relative to the spindle axis. In a first or loading position of the carrier, a workpiece retaining notch is aligned with the magazine to pick up a workpiece, and the carrier is movable forwardly toward a clamping position where the workpiece is placed into position between the temporarily axially separated spindles to be clamped therebetween. Means are also provided to assure that the workpiece and the machine tool are in a predetermined angular registry at the time of clamping.

3,665,657
APPARATUS FOR MOUNTING DISC BRAKE ROTORS DURING TRUING
Melvin H. Lill, Okemos, Mich., assignor to FMC Corporation, San Jose, Calif.
Filed July 22, 1970, Ser. No. 57,260
Int. Cl. B24b *41/06*
U.S. Cl. 51—236 4 Claims



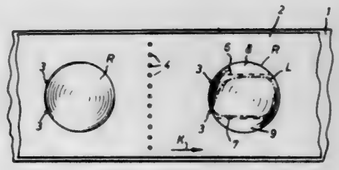
The mounting of a wheel hub on an arbor during truing of the disc brake rotor faces of the hub is accomplished with the aid of two special adapters. Each adapter has two contractible beveled crowned heads of different diameter to accommodate different size rotors. During truing, each end of the wheel hub is supported by the engagement of one crowned head of the adapter with the bearing cup in that end of the rotor. The adapters, which are contractible, are pressed into engagement with the arbor to take up all clearance between the arbor and the wheel hub.

3,665,658
DEVICE AND METHOD FOR SHARPENING ROTARY MOWER BLADES
David W. Warwick, 3640 Upper Mountain Rd., Sanborn, N.Y.
Filed Dec. 9, 1970, Ser. No. 96,565
Int. Cl. B24b *19/00*
U.S. Cl. 51—250 9 Claims



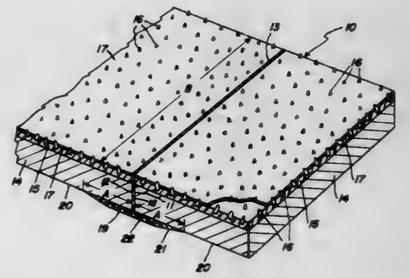
A rotary mower blade sharpener device formed substantially of a resiliently deformable material and characterized as having abrasive properties and friction gripping properties on opposing surfaces thereof. The opposing surface having friction gripping properties is adapted, when laid upon the ground or other expansive surface, to retard rotation of the device when the blade to be sharpened is subject to momentary rotations in surface engagement with the opposing surface having abrasive properties. The relative rotation of the blade with respect to the surface of the device having abrasive properties effects sharpening of the blade.

3,665,659
METHOD FOR THE PRODUCTION OF THE CIRCUMFERENCE OF A SPECTACLE LENS
Fritz Kotting, Sturzelberg, and Gotterlied Gas, Monheim, both of Germany, assignors to Firma Wernicke & Co., Dusseldorf-Eller, Jagerstr., Germany
Filed Oct. 1, 1969, Ser. No. 862,868
Int. Cl. B24b *1/02*
U.S. Cl. 51—323 4 Claims



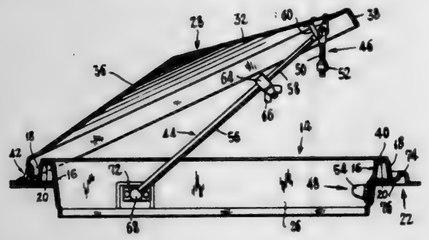
The invention relates to a method for the production of the circumference of a spectacle lens with cutting off the edge of the blank and grinding according to a template or a glass lens mount in order to obtain the final lens form. The subject of the invention is also an apparatus for carrying out this method.

3,665,660
COATED ABRASIVE BELT JOINT
John F. Malloy, Waterford; Nolan A. Curry, Troy, and Dirck J. Otton, Loudonville, all of N.Y., assignors to Norton Company, Troy, N.Y.
Continuation-in-part of application Ser. No. 823,105, May 8, 1969, now abandoned. This application Jan. 6, 1971, Ser. No. 104,309
Int. Cl. B24d *11/06*
U.S. Cl. 51—399 16 Claims



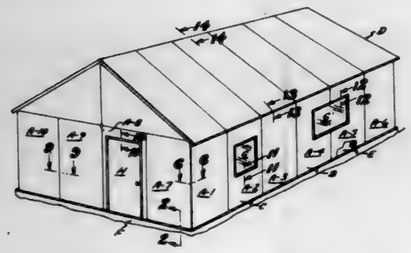
A coated abrasive material having a butt joint therein in which the abutted ends of the abrasive material are joined together by an initially thermoplastic, heat-hardened adhesive applied to the backside of the coated abrasive material adjacent the line of abutment and the adhesive layer is reinforced with a woven patch of a particular aromatic polyamide fiber which is placed on the backside so as to cross the abutment line. Adhesive fills the crack between the abutted coated abrasive ends and, moreover, forms a tapered surface from the backside of the coated abrasive material up to the outside surface of the reinforcing patch and preferably coats the exterior surface thereof.

3,665,661
ATTACHABLE PREFABRICATED HATCH
Frank S. Beckerer, 134 Far Horizon Dr., Easton, Conn.
Filed Nov. 10, 1969, Ser. No. 875,206
Int. Cl. E02d 29/12; E04b 7/18; E04f 19/08
U.S. Cl. 52—19 3 Claims



A prefabricated hatch construction for attachment over an opening in a wall or the like, comprising a rectangular reinforced plastic frame and a reinforced plastic cover hinged thereto. The frame is of channel-like cross section, including a depending inner skirt to extend through the wall opening and an outwardly extending peripheral flange to overlie and be secured to those portions of the wall which border the opening thereof. The flange has a reversely curved section providing for wind and rain deflection, and also constituting a springy-bearing for a sealing gasket which is engageable with the wall. The cover is crowned and has a depending peripheral flange which wedgingly engages the channel section of the frame to effect a tight seal. Adjustable telescopic struts provide for holding the cover in various open positions on the frame, and cooperable fastener devices lock the cover in its closed position.

3,665,662
STRUCTURAL MEMBER AND BUILDING EMBODYING SAME
Robert L. Timbrook, 9680 Corbin Ave., Northridge, Calif., and A. Lynn Castle, Box 914, Zephyr Cove, Nev.
Filed July 20, 1970, Ser. No. 56,363
Int. Cl. E04b 7/02
U.S. Cl. 52—92 15 Claims



A substantially rectangular prefabricated structural member that includes a core of rigid material that has two transversely aligned rectangular panels secured to opposite longitudinally extending surfaces thereof. The structural members when disposed side by side and situated between a foundation supported sill and an elongate plate situated vertically thereabove, cooperate to define a wall structure.

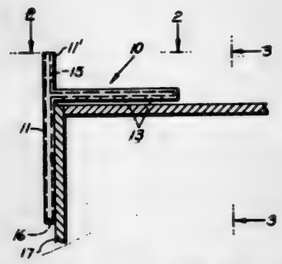
The panels are of greater height and width than the core with which they are associated, and cooperate with the core to define first and second horizontal channels that interlock with the sill and plate to hold the structural member in a fixed transverse position relative thereto. The panels on each structural member project outwardly from a first vertically extending side surface of the core to cooperate with said first side surface to define a third vertically extending channel.

A first vertically extending section of the core extends outwardly from the first and second panels, with this outwardly extending section having a second vertical side surface defined thereon. When the structural members are interlocked with a sill and plate and disposed side by side, the vertically extending section of one structural member is disposed within the third channel of the structural member situated adjacent thereto, and the structural members cooperating to provide a continuous vertically extending wall. Nails, staples or the like may be driven through the lower and upper longitudinal edge portions of the panels to firmly secure the same to the plate and sill, to prevent longitudinal movement of the structural members relative thereto.

The prefabricated structural members above described may be used to not only form the exterior walls of a building, but the interior partitions as well, and also the floor of the building. The panels may also be used to define the roof structure of the building if desired. The core is preferably a rigid material that has good heat and sound insulating qualities. Honeycomb material or other reticulated material, both with and without heat and sound insulating composition filling the voids therein, have been found satisfactory for use as cores. Structural members using such cores have been found by tests to have extremely high compression resistant qualities as well as being capable of withstanding exceptional high wind loading.

The exterior longitudinally extending surfaces of the structural members above described preferably have means included as an integral part thereof that permit stucco or other cementitious material to bond thereto when applied by conventional methods, and without the use of wire screen, mesh or the like.

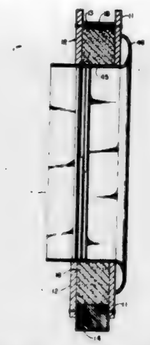
3,665,663
DRAINING TYPE GRAVEL GUARD
Frederick W. Scherer, 323 Arabella St., New Orleans, La.
Filed July 24, 1970, Ser. No. 57,936
Int. Cl. E04b 7/00
U.S. Cl. 52—95 1 Claim



A device which prevents water which drains under the gravel on roofs from causing rot and deterioration to the eaves and facial boards. This device allows the water to drain through perforations in its body so that the water will escape to the outside of the facial board. The device is one-piece in construction and has a multiple number of drainage openings for the water to seep into and out of the device, in order that a roof will be dry.

3,665,664
BUILDING PANEL AND STRUCTURE CONSTRUCTED THEREWITH
Cecil C. Watson, 1610 W. 42nd St., Richmond, Va.
Filed Mar. 20, 1970, Ser. No. 21,388
Int. Cl. E06b 1/04
U.S. Cl. 52—211 4 Claims

A building panel comprising spaced-apart inner and outer facing members having a foamed plastic material therebetween. The building panel including load-bearing surfaces along the top, bottom and side edges thereof, the load-bearing surfaces at the side edges of the panel adapted to engage with load-bearing surfaces on the next adjacent panel and to be secured thereto for retaining the panels in their



proper erected position. Some of the aforesaid panels being provided with openings to receive a door and/or window structure to thus provide a panel structure and arrangement of panels whereby a dwelling may be readily constructed with the aforesaid panels.

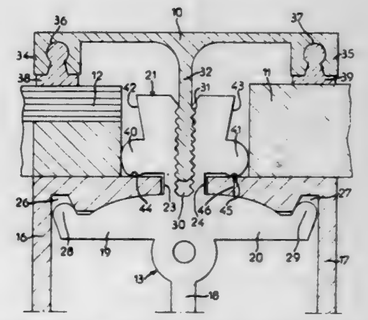
3,665,665
ASSEMBLY OF CONCRETE SUPPORT ELEMENTS
Rene Soum, Toulouse, France, assignor to Entreprise Guiraudie et Auffeve, Toulouse, France
Filed July 30, 1970, Ser. No. 59,450
Claims priority, application France, Feb. 9, 1970, 7006418
Int. Cl. E04b 1/00
U.S. Cl. 52—251 8 Claims

As assembly of concrete support elements joined at right angles to each other.

Each support element has a beveled end forming a joint plane between the two elements. Each bevel point is truncated and the truncation face carries a metal plate which is anchored to the truncation face by bass embedded in the mass of the support element. The two plates are tightened towards each other on their edge by tightening means incorporated therein.

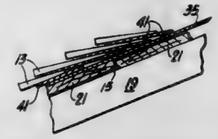
3,665,666
DEVICES FOR INTERCONNECTING PLATES
Andre Delcroix, 5, rue Pasteur, 59-Wattrelos, France
Filed Dec. 3, 1970, Ser. No. 94,930
Int. Cl. E04b 2/30, 2/60
U.S. Cl. 52—461 8 Claims

A device for interconnecting two adjacent spaced plates forming at least part of a wall, comprises a cover plate arranged on one side of the plates, a plurality of monobloc connectors arranged on the opposite side of the plates and a pair of channel members for each connector. The connectors are each in the form of a central member provided at each end with transverse flanges extending from opposite sides of the central member. The connectors each have a projection extending beyond the flanges into the space between the plates, the flanges and the projection defining between them a pair



of opposed grooves. Each groove receives a limb of a channel member. Each projection is formed with a slot which divides the projection into two parts and receives and holds a complementary shaped rib on the cover plate. The minimum width of each groove is less than the thickness of its respective limb so that when the limbs are arranged in the grooves, the two parts of the projection are urged towards each other to grip the rib.

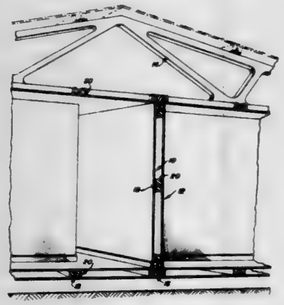
3,665,667
FIRE-RETARDANT WOOD ROOF ASSEMBLY
William J. Oberley, Monroeville, and John E. Daly, Pittsburgh, both of Pa., assignors to Koppers Company, Inc.
Continuation-in-part of application Ser. No. 741,625, July 1, 1968, now Patent No. 3,538,666. This application May 21, 1970, Ser. No. 39,489
Int. Cl. E04d 1/26, 1/36, 1/28
U.S. Cl. 52—556 7 Claims



A fire-retardant wood roof assembly is comprised of three layers; an outer layer of fire-retardant wooden shingles or shakes, an inner layer of wood or a subdeck that is formed of a plurality of adjacent wooden members, and a continuous interlayer of a series of sheets of steel foil. The sheets of steel foil nearest the upper longitudinal edge of each member of the inner layer extend over a portion of the top surface thereof, bend downwardly to conform to the upper longitudinal edge of each member, fill the space between each member and each next upper adjacent member, bend towards each next upper adjacent member to conform to the lower longitudinal edge of each next upper adjacent member and cover a portion of the bottom surface of each next upper adjacent member.

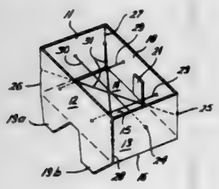
The series of sheets of steel foil protect the inner layer of wood from exposure to the flame and air, dissipate heat from the top surface of such members should the outer layer of fire-retardant shingles or shakes become exposed to flame, and seal the space between the adjacent wooden members. Consequently, ignition of the top surface of the inner layer of wood from a flame above the wood roof assembly is prevented.

3,665,668
CONSTRUCTION JOINT FOR BUILDINGS AND THE LIKE
Orville Lee Maddan, Jr., P.O. Box 141, Mary Esther, Fla.
Filed Mar. 3, 1970, Ser. No. 15,977
Int. Cl. E04c 1/10; E04b 2/32
U.S. Cl. 52—275 8 Claims



A construction joint in the nature of interengaging elongated male and female connectors utilized in interlooking all of the components of a prefabricated building including the structural members and partition units. The male component basically includes a wide base with a narrow rib projecting centrally therefrom along the length thereof. The female connector has a recess defined therein configured so as to closely receive both the rib and base of the male connector. Basic variations are provided for joining adjacent panels and interlocking with similarly configured enlarged male connector beams.

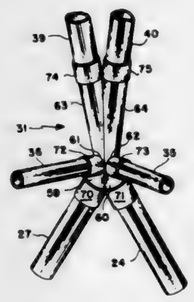
3,665,669
FOLDABLE CONSTRUCTION BLOCK
William C. Huber, Seabrook, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Sept. 18, 1970, Ser. No. 73,422
Int. Cl. E04c 1/10
U.S. Cl. 52—594 3 Claims



Apparatus and method of construction using foldable building blocks. A first embodiment of the apparatus includes an open top construction block foldable from a flat sheet of material to form a container having downwardly extending interlock tabs, with struts being provided between opposite vertical walls and diagonally opposed vertical joints to control horizontal expansion of the block when a solid material is placed therein. A second embodiment of the apparatus includes a closed top block foldable from a single sheet of material with interlock tabs extending downwardly from one side wall of the block and interlock tab receiving slots provided in the top of the block.

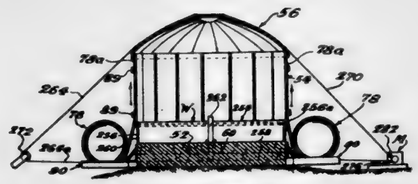
The method includes folding box-shaped containers with downwardly extending interlock tabs from flat sheets of material, filling the containers with available solid material and stacking the containers in courses in overlapping relationship so that the interlock tabs extend downwardly into similar containers in the underlying course.

3,665,670
LOW-MASS TRUSS STRUCTURE
Donald R. Rummler, Hampton, Va., assignor to The United States of America as represented by the Administration of the National Aeronautics and Space Administration
Filed Apr. 28, 1970, Ser. No. 32,664
Int. Cl. E04h 12/06, 12/10
U.S. Cl. 52—648 1 Claim



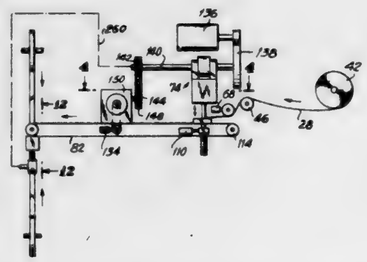
A low-mass truss structure wherein a plurality of angular disposed elongated thin-walled tubular segments are connected to a plurality of joint clusters formed of short tubular members to form a unitary truss structure.

3,665,671
METHOD OF ERECTING STORAGE STRUCTURES
Robert G. Ferris, Harvard, Ill., and Howard J. Ferris, Gulfport, Fla., assignors to Starline, Inc.
Original application Nov. 20, 1967, Ser. No. 684,366, now Patent No. 3,536,628, dated Sept. 29, 1970. Divided and this application July 2, 1970, Ser. No. 52,049
Int. Cl. E04g 23/06; B65d 7/00
U.S. Cl. 52—747 12 Claims



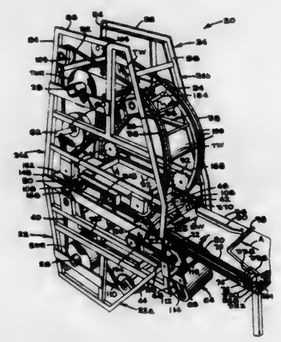
A method of erecting a permanent silo structure including the steps of assembling a plurality of transversely precurved, coiled wall members around the perimeter of a base, with the free ends of the wall members extending vertically upwardly and terminating in a common horizontal plane; inserting filler members between each of the wall members to create a sealed structure; assembling a roof to the free ends of the wall members; incrementally applying an upward force to unroll the coiled wall members to elevate the structure; and securing compressive members in vertically spaced positions around the perimeter of the wall members and filler members after each increment of upward force is applied.

3,665,672
METHOD AND APPARATUS FOR MANUFACTURING AND PACKING LANCETS
Irving A. Speelman, Roslyn Heights, N.Y., assignor to Propper Manufacturing Co., Inc.
Filed Jan. 5, 1970, Ser. No. 659
Int. Cl. B26d 5/22; B65b 63/00
U.S. Cl. 53—23 13 Claims



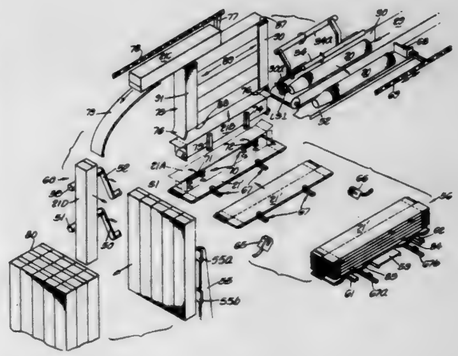
A method and apparatus for successively punching lancets from a strip of lancets and then packaging the lancets. In a precisely timed manner the strip is fed by an intermittent feed to a punch press where each of the successive lancets is precisely positioned to be punched from the strip. The punched lancets are successively received on a timing transfer belt which is intermittently driven in synchronism with the strip from which the lancets are punched. From the timing transfer belt the lancets are successively dropped onto a strip of adhesive paper which is to form part of a packaging for the lancets and which moves transversely with respect to the timing belt. A second strip of packaging paper is adhesively joined to the first strip to form with the latter sealed pockets in which the lancets are respectively situated, and these paper strips are cut between the pockets to form separate packages for the separate lancets.

3,665,673
PACKAGING MACHINE AND METHOD
Ronald J. Billett, Sunnyvale; Wilhelmus H. Holtkamp, Milpitas, and Veikko K. Viitanen, San Jose, all of Calif., assignors to FMC Corporation, San Jose, Calif.
Filed July 28, 1969, Ser. No. 845,361
Int. Cl. B65b 9/02
U.S. Cl. 53—30 8 Claims



Food products supported on trays, of the clear or opaque variety, are fed, either manually or automatically, between plastic webs which constitute an overwrap for the tray and a product carried thereby. The plastic webs follow paths which intersect and they are joined along a transverse line by heated sealing and cutting mechanisms. Tray supported products, for convenience called units, are fed toward and past the juncture of the webs, while the webs are unwound from their respective parent rolls, enveloping the unit to be packaged therebetween. Thereafter the longitudinal edges of the webs adjacent the unit are heat sealed and cut while simultaneously therewith the webs are transversely joined along transversely spaced lines adjacent the trailing end of the unit resulting in a hermetically sealed unit and joining of the web ends to provide a juncture for a subsequent package.

3,665,674
AUTOMATIC CARTONING MACHINE FOR GLUE END CARTON
Elbert L. Bivans, and August Kund, both of Glendale, Calif., assignors to Bivans Corporation, Los Angeles, Calif.
Filed Feb. 9, 1970, Ser. No. 9,738
Int. Cl. B65b 57/12, 5/06, 7/20
U.S. Cl. 53—74 20 Claims

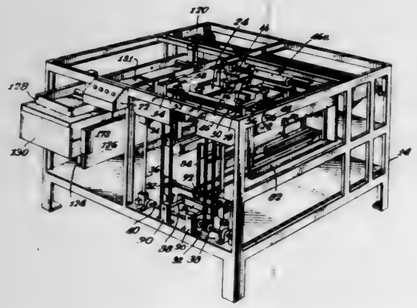


Automatic cartoning machine for glue end carton including twin cartoning units mounted in a common framework conveying side-by-side two stacks of cups or other articles, one stack for each unit. The units are similar, having their loading stations adjacent each other to receive the articles fed to them by the conveyer. Each unit has a plurality of cams making one complete revolution for one cycle of operation. Each cycle includes removing a collapsed carton from the bottom of a magazine, transferring it to a combined loading and squaring-up station where the stack of cups is loaded into the carton. The cycle is started by arrival of a stack of cups at a station which transfers the stack to a loading tray which holds the flaps open at the adjacent or outer end of the carton for easy insertion of the stack by a plunger. The cycle is terminated by one complete revolution of the cams. The minor flaps pass through a glue applicator on the way to that station. After the flaps are partially sealed at both ends of the carton, the carton is elevated to travel through a compression chute which completes the sealing of the flaps. The carton is then ejected in upright position to an accumulator. The accumulator operates in timed relation with the transfer of the cup stack from the conveyer to the loading tray, to prepare one cycle for starting at the succesful completion of the preceding cycle.

3,665,675
PACKAGING MACHINE

Richard H. Johnson, Arlington Heights, Ill., assignor to Stone Container Corporation, Chicago, Ill.

Filed Feb. 11, 1970, Ser. No. 10,584
Int. Cl. B65b 11/18
U.S. Cl. 53—223 6 Claims



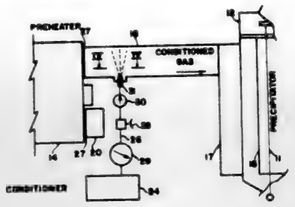
An automatic machine for forming a paperboard box from an integral blank, about the articles to be packaged. The machine has an infeed opening to an erection chamber over which is disposed the blank, carrying articles. A vertically movable vacuum assembly or elevator in the chamber is movable from an upper position past a plurality of surrounding forming rods and abutments to a lower position so as to cause the front, side and rear wall forming panels of the blank to be erected partially. The semi-erected blank is then moved toward the rear of the machine along a horizontal path past other folding members to fold top and side wall-forming panels downwardly. The partially erected box is then received by a carriage and moved laterally in the same horizontal plane toward an elongate compression section, during which movement the front-forming flap, also known as a corner-joining flap, is folded to complete assembly or erection of the box. At the end of the carriage travel, the completed box is pushed forwardly into the compression section for ejection through a discharge chute at the front end of the machine. Several completed packages are accumulated in the compression section and when the machine is operating one box is discharged or ejected from the chute as a completed box is pushed forward from the lateral carriage path. The rearward, lateral and forward movements of the partially and completely erected box are along a U-shaped path lying in a single horizontal plane. The discharge chute is provided with inwardly pressing side plates to firmly hold the side flaps against the side panels during the setting of the glue.

3,665,676
METHOD OF AND APPARATUS FOR CHEMICALLY CONDITIONING A PARTICLE-LADEN GAS STREAM

John L. McKewen, Cockeysville, Md., assignor to Koppers Company, Inc.

Filed Nov. 12, 1970, Ser. No. 88,581
Int. Cl. B03c 3/01
U.S. Cl. 55—4 11 Claims

A method of and apparatus for chemically conditioning a particle-laden gas stream to improve the collection characteristics of the entrained particles comprising the injection of a conditioner solution, preferably ammonium sulfate [$(NH_4)_2SO_4$], into the gas stream before the stream enters an electrostatic precipitator. The apparatus for injecting the solution includes an injection nozzle, inserted in a gas duct going to the precipitator, connected to a supply of the solution with a power supply and metering means for controlling the amount

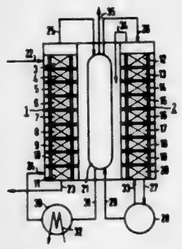


of solution injected in proportion to the amount of gas being conditioned.

3,665,677
METHOD AND DEVICE FOR ABSORBING GASES OR COMPONENTS OF GAS MIXTURES

Christian Koch, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Nov. 12, 1969, Ser. No. 875,954
Claims priority, application Germany, Nov. 13, 1968, P 18 08 623.2; Mar. 29, 1969, P 19 16 312.7
Int. Cl. B01d 19/00
U.S. Cl. 55—56 22 Claims



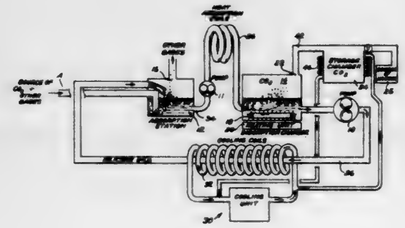
Method of absorbing gases or components of gas mixtures includes introducing from below the gas and a liquid solvent for absorbing the gas into at least one absorbing column having a plurality of vertically spaced filter plates formed of highly porous sintered material and provided with flow-through openings whereby absorption of the gas by the liquid solvent occurs partly within the pores of the filter plates, and passing the liquid solvent with the gas dissolved therein through at least one desorbing column having vertically spaced filter plates similar to those in the absorbing column for desorbing the gas from the liquid solvent.

3,665,678
METHOD OF RECOVERING CARBON DIOXIDE FROM A FLUID

Karl Kammermeyer, and Blase J. Sollami, both of Davenport, Iowa, assignors to The Bendix Corporation

Filed Sept. 14, 1970, Ser. No. 71,812
Int. Cl. B01d 53/16; C07f 7/02
U.S. Cl. 55—68 10 Claims

A method of recovering carbon dioxide from a gaseous fluid containing carbon dioxide and other gases mutually inert to each other. The gaseous fluid is passed through silicone oils in an absorption chamber at ambient or lower temperatures where the carbon dioxide is absorbed by the silicone oils. The silicone oils, laden with carbon dioxide, is then circulated through a series of coils in contact with a heat generating apparatus. After heat from the apparatus has been picked up, the silicone oils are then transported to a desorption chamber. In the desorption chamber the silicone oils laden with carbon dioxide is agitated and further heated. This agitation and heating along with a vacuum applied to the surface of the silicone oils in the desorption chamber causes the carbon dioxide to be given off as a gas. This gaseous carbon dioxide is transported to a storage chamber



through a conduit surrounded by cooling coils. The silicone oils are then recirculated by a pump through a conduit surrounded by cooling coils where the temperature of the silicone oils is again brought back to ambient or lower temperature before it again passes through the absorption chamber where the mixture of the silicone oils and carbon dioxide takes place.

3,665,679
ELECTROSTATIC AIR CLEANER

Bruce H. McLain; John P. Sallee, and Shirley B. Ashton, all of Nashville, Tenn., assignors to Air Control Industries, Inc.

Filed Jan. 28, 1970, Ser. No. 6,425
Int. Cl. B03c 3/47
U.S. Cl. 55—137 3 Claims

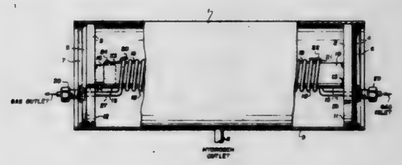


An electrostatic air cleaning device including alternately charged and grounded collector plates extending between a pair of opposed insulated supporting walls. The walls are provided with recesses supporting the charged collector plates staggered relative to the grounded collector plates. A charging conductor extends transversely of the collector plates to engage the projecting edges of one set of collector plates, and a grounding conductor extends transversely of the plates to engage the opposite edges of the other set of collector plates.

3,665,680
HYDROGEN DIFFUSION APPARATUS

Gustav Heuser, Union, N.J., assignor to Engelhard Minerals & Chemical Corporation

Filed Dec. 18, 1970, Ser. No. 99,466
Int. Cl. B01d 53/22
U.S. Cl. 55—158 4 Claims

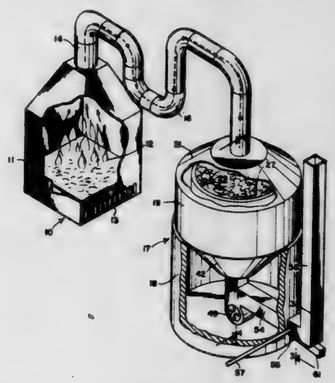


A hydrogen diffusion apparatus for the purification of hydrogen comprising a tubular housing having closure means at opposite ends thereof, an outlet means through the wall of the housing, an elongated support means located internally of and longitudinally of the housing and having opposite ends each mounted on one of the closure means, a non-porous hydrogen-permeable thin-walled metal tube in the form of an elongated coil coaxially mounted on the support means, opposite ends of the tube extending from the coil and each passing through the wall of one of the closure means, a metal strip member passing between the coil and the support longitudinally thereof and at one end attached thereto, the strip having hook-like members on opposite end portions thereof, the hook-like members embracing opposite ends of the coil, whereby the coil is permitted only limited movement on the support.

3,665,681
SMOKE CLEANING APPARATUS

Andrew H. Vitenko, 600 West 146th Street, Apt. 43, New York, N.Y.

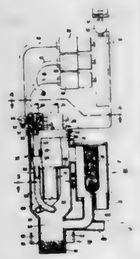
Filed Oct. 13, 1970, Ser. No. 80,321
Int. Cl. B01d 50/00
U.S. Cl. 55—260 4 Claims



A smoke cleaning apparatus has been provided for effecting the cleaning of the smoke particles from the smoke and the absorption of the gasses by water spray or pressure injected devices. The apparatus is formed of top and bottom parts, a mesh basket supported on the bottom part and a filter supporting ring disposed in the mesh basket and having vertically spaced inwardly extending flanges and a filtering mass unit having a tapered side surface fitting and conform-

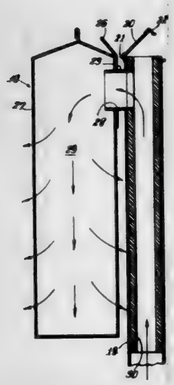
ing generally to the edges of the inwardly extending flanges of the ring to provide annular spaces about the filtering mass communicating with the tapered side face of the filtering mass to allow for entry and re-entry of the smoke into the filtering mass to provide for maximum use of the filtering material. A suction fan is provided in the bottom part for effecting generally the suction of the smoke through the filtering mass and in the outward conduit from the suction fan the water spray, or the water injected cylinder device is connected.

3,665,682
DENTAL EVACUATION APPARATUS
Anthony Ciavattoni; William Hammen, and Karl Helmur, all of Staten Island, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.
Filed Aug. 6, 1970, Ser. No. 62,242
Int. Cl. A61c *17/04*
U.S. Cl. 55—337 **8 Claims**



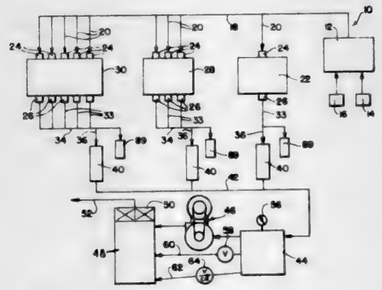
A dental evacuation unit has a plurality of evacuation devices, each of the devices being connected to a common separator by its respective debris conducting line, and each line having a venturi located therein. Gas supply means are provided for selectively directing a flow of gas through one of the venturis toward the separator, thus creating a suction at the selected device to carry entrained matter through the respective debris conducting line to the separator. Distributing means are provided for diverting a minor portion of the gas flow to each of the other venturis to create a minor suction at the other devices to prevent unfiltered gas within the separator from escaping through the other debris conducting line.

3,665,683
VACUUM CLEANER HAVING PRE-FILTER AND DUST BAG
Harold W. Schaefer, Bloomington, Ill., assignor to National Union Electric Corporation, Stamford, Conn.
Filed Sept. 29, 1969, Ser. No. 861,950
Int. Cl. B01d *46/02*
U.S. Cl. 55—372 **2 Claims**



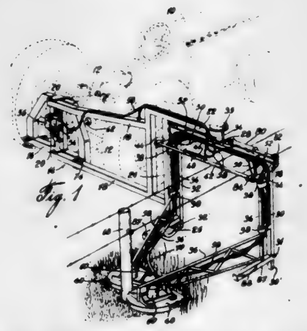
A pre-filter for a vacuum cleaner having a disposable filter bag collecting the dirt from the air stream passing through the cleaner. The pre-filter is located in the air stream of the vacuum cleaner before the stream reaches the disposable filter bag. The pre-filter comprises a fine dirt entrapping material the surface of which contacts and removes the fine dirt which tends to clog the filter bag and thus prevents the filter bag from becoming clogged by the fine dirt.

3,665,684
OIL MIST RECLASSIFYING SYSTEM
Norman O. White, 32860 Ardwich, Farmington, Mich.
Filed June 29, 1970, Ser. No. 50,390
Int. Cl. B01d *55/00*
U.S. Cl. 55—385 **26 Claims**



Oil mist is created by an oil mist generator, producing micro particles of oil in air by controlling the air pressure to a venturi of the mist producer, generating oil mist at a rate up to 2.5 or more cubic feet per minute. The oil mist rate is directly related to the bearing inches of spindle bearings, boring mill bearings, gear boxes, etc., requiring and served with lubricating oil mist. The system of this invention is designed to receive pressurized oil mist from the vent side of a bearing area, reclassify it into oil droplets, and collect such oil droplets for re-use or discard. A reclassifying valve in the pressurized oil mist system effects reclassification and accumulation of the micro particles of oil from the mist as a component of a vacuum system. The reclassifying valve provides constant visual confirmation of oil mist collection and signals the effective operation of the vacuum system with respect to the oil mist pressure in the valve.

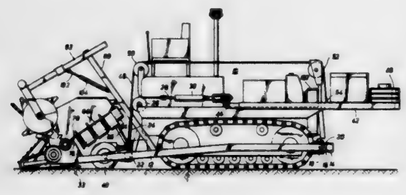
3,665,685
MOWING DEVICE FOR CUTTING VEGETATION ADJACENT A FENCE
Jean Allard, 2690 Desaulniers, St-Hyacinthe, Quebec, Canada
Filed July 6, 1970, Ser. No. 52,278
Int. Cl. A01d *35/26*
U.S. Cl. 56—10.4 **21 Claims**



A device for cutting vegetation on both sides of a fence, comprising, a chassis adapted to be pivotally mounted behind

a tractor so as to be pulled in various angular positions relative to the tractor, a frame having a reverse U-shape including a base and two pending legs, the said base being pivotally connected to the chassis about a substantially vertical axis, two L-shaped members having a vertical arm and a horizontal arm, each vertical arm is pivotally connected to each leg of the frame about a vertical axis, two lawn-mowers for cutting vegetation, each lawn-mower is rigidly secured at the end of each of the said horizontal arms, connection between said two members for biassing the two lawn-mowers towards each other, and a holder for resiliently restraining the movement of each mower relative to the frame.

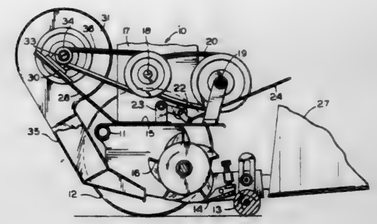
3,665,686
TWO ROW WINDOW HARVESTER
Richard A. Duncan, Thibodaux, La., assignor to The Thomson Machinery Company, Inc., Thibodaux, La.
Filed Aug. 14, 1969, Ser. No. 850,179
Int. Cl. A01d *45/10*
U.S. Cl. 56—11.3 **16 Claims**



Cane harvesting equipment is provided which comprises a tractor and means for supporting harvesting equipment on the tractor. The means for supporting the harvesting equipment includes a support member which is pivotally connected to the rear of the tractor and extending to the front thereof to permit raising and lowering its front portion carrying; the harvesting equipment and permit tilting from side to side. A cable is attached to the support in front of the pivotal attachment of the support to the tractor. The cable is hydraulically operated for lifting and lowering the front end portion of the support which carries the harvesting equipment. A second cable which is counterbalanced is also attached to this forward portion of the support. Preferably three or more wheels are pivotally mounted on the support for gauging the height of the cane cutting means. The gauge wheels are individually adjustable for height. An adjustably inclined pivotally mounted cane conveyor is mounted on the support behind cane pick-up means and adapted to move the cut cane laterally to the side of the harvester. A screw conveyor suspended for horizontal and vertical adjustment above the cane cutting means may be provided for moving the tops of cut cane in the same lateral direction that the cane is moved on the conveyor. Each of the several operating parts of the harvesting equipment supported on the front of the support is either mechanically or hydraulically operated. A single clutch drives both the hydraulic and mechanical equipment so that disengagement of the clutch stops both.

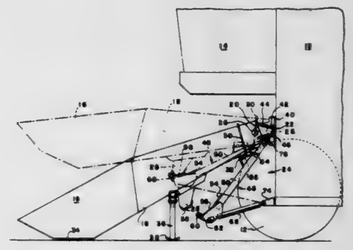
3,665,687
BLOWER ATTACHMENT FOR REEL TYPE LAWN MOWER
Jay T. Hatton, 5120 S.E. Johnson Creek Boulevard, Portland, Oreg.
Filed May 28, 1971, Ser. No. 147,786
Int. Cl. A01d *35/24*
U.S. Cl. 56—12.9 **4 Claims**

A reel type lawn mower has a blower mounted on a platform forwardly of the reel and an outlet adapted to discharge air transversely substantially along the full length of the reel, tangentially thereto, and generally parallel to the plane of the cutting blade. By this means, grass cut by the action of the



reel on the blade is blown rearwardly into a grass receiving basket disposed beneath the mower handle.

3,665,688
HARVESTER AND CONNECTOR FOR HEADER
Ronald T. Sheehan, Lancaster; Everett C. Cowan, Parksburg, and Myles Hyman, Lancaster, all of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed May 28, 1971, Ser. No. 147,935
Int. Cl. A01d *35/12*
U.S. Cl. 56—14.6 **7 Claims**

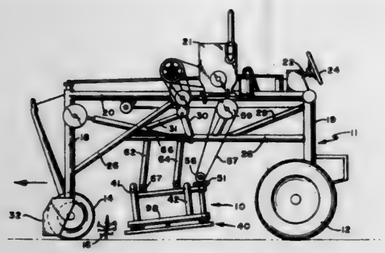


An agricultural harvester adapted to have a crop header and feeder housing unit connected thereto is provided with connector mechanism attached to the forward end of the harvester and includes clevises on the inlet end thereof to receive trunnions on opposite sides of the delivery end of the feeder housing. The legs of a hoisting yoke are pivotally connected to the harvester and the outer end of said yoke has upwardly opening seats to engage the lower ends of seating brackets on said feeder housing which, when the hoisting yoke is raised, elevate the outer end of said header and feeder housing in a manner to force the trunnions generally horizontally into full home position within said clevises for the connection of locking means which maintain said trunnions within said clevises.

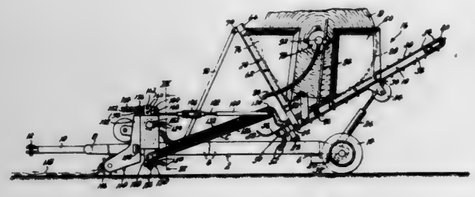
3,665,689
HARVESTER
Melvin K. Richardson, Clemson, S.C., assignor to Clemson University, Clemson, S.C.
Filed June 24, 1970, Ser. No. 49,259
Int. Cl. A01d *45/16*
U.S. Cl. 56—27.5 **5 Claims**

A harvester for removing pods from okra stalks or the like. A pair of endless chains are mounted on sprockets in a cutting unit supported by a mobile unit, the chains having plates with angular notches on their inner, meeting course.

Each pair of opposed plates close upon the stalk forming a ring around the same and the plates move upwardly on the stalk, and rearwardly, as the mobile unit moves forwardly thus removing the pods from the stalks.



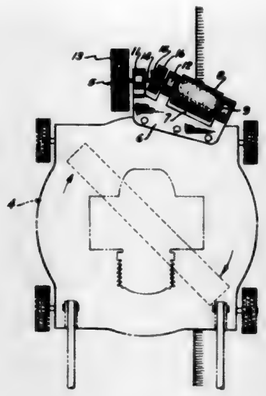
3,665,690
HAY BALING MACHINE
Louis Wenger, 1504 Lake View Drive, Sabetha, Kans.
Filed Feb. 8, 1971, Ser. No. 113,549
Int. Cl. A01d *39/00*
U.S. Cl. 56—341 **13 Claims**



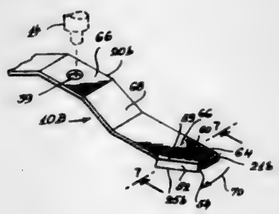
A hay baling machine consisting of a wheeled frame adapted to be towed, an upwardly opening V-shaped trough carried by said frame and comprising an inclined wall and a relatively angled platform, hay pick-up and transporting devices carried by said frame and operable to pick up hay from the ground and deposit it in said trough, a powered rotary spindle disposed in said trough parallel to the apex thereof and movable away from said apex, and powered conveyor chains carried by said platform and movable at right angles to the apex thereof, whereby hay desposited in said trough is wound on said spindle to form a cylindrical bale constantly rotated by said conveyor chains, said spindle being removable from said bale and said platform being pivotally movable to be inclined downwardly toward its free edge, whereby said bale may be discharged to the ground.

3,665,691
EDGING ATTACHMENT FOR ROTARY LAWN MOWERS
Allan H. Vaughan, 2 Larchmont Drive, Huntington, W. Va.
Filed Feb. 5, 1971, Ser. No. 113,011
Int. Cl. A01d *55/18*
U.S. Cl. 56—255 **5 Claims**

This invention consists of a horizontally disposed cylindrical wire brush that is located in an elongated U-shaped opening in a supporting plate which is suitably secured at an angle on the front end of a rotary lawn mower. The aforesaid wire brush is supported by a shaft whose ends project into two bearings mounted on the just-mentioned supporting plate. One end of the aforesaid shaft is provided with a gear, which is in mesh with a second gear that is secured to the outer end of a wheel supporting shaft which is also mounted on the supporting plate of this invention.



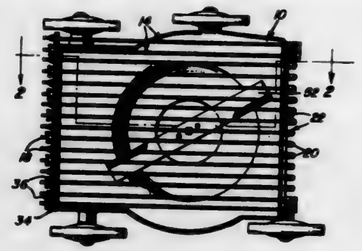
3,665,692
ROTARY MOWER HOLDER WITH EXPENDABLE BLADES
Benjamin F. Hughes, Route 1, Morris, Ala.
Filed Jan. 2, 1970, Ser. No. 263
Int. Cl. A01d *55/18*
U.S. Cl. 56—295 **1 Claim**



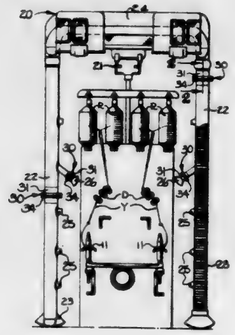
A blade and holder assembly for a power driven rotary type mower has a bar mountable on the shaft of the driving motor of the mower. Ends of the bar are bent on transverse axes to form flanges which define blade receiving channels with opposite end portions of the bar. Expendable blades have backs which removably engage in the channels. The blades are held in place by frictional engagement and centrifugal force of rotation of the bar. Supplementary retaining screws may be provided. Blades may have two cutting edges and may be reversible in the retaining flanges.

3,665,693
MOWER GUARD
Herbert R. Dacus, 1089 Madrid, Rockledge, Fla., and Harry V. Christner, 795 Newfound Harbour Drive, Merritt Island, Fla.
Filed Mar. 23, 1971, Ser. No. 127,280
Int. Cl. A01d
U.S. Cl. 56—320.1 **8 Claims**

A guard or safety shield comprising a plurality of laterally spaced parallel rods mounted beneath the rotary blade of a rotary lawn mower in a manner so as to define uninterrupted longitudinal grass paths. Each rod has the forward end thereof suspended from the overlying housing front wall by a narrow generally vertical member, these members acting to maintain the grass upright and guide the grass into the grass paths. The front wall of the mower has an elevated lower edge with the rotary blade being located at a heighth approximately midway between the lower edge of the front wall and the underlying guard rods.



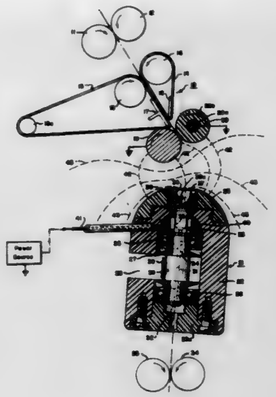
3,665,694
TRAVELING PNEUMATIC CLEANER WITH ELECTROSTATIC CHARGE REDUCING MEANS AND METHOD
Maynard Ford, Fitchburg, Mass., and Albert Davis, Mason, N.H., assignors to Parks-Cramer Company, Fitchburg, Mass.
Filed Dec. 4, 1970, Ser. No. 95,176
Int. Cl. D01h *11/00*; A47l *5/38*
U.S. Cl. 57—34 R **11 Claims**



The formation of textile materials into strands by a textile strand forming machine such as a spinning frame is facilitated by reduction of electrostatic charges produced in forming the strand, through the combination of a device, preferably a traveling pneumatic cleaner, which sequentially directs an air stream toward strands being formed and an electrical charging device for electrically charging the air stream.

3,665,695
TEXTILE MACHINE
Richard A. Amato, Bolton, Mass., assignor to Electrospin Corporation, Columbus, Ohio
Filed Aug. 25, 1970, Ser. No. 66,716
Int. Cl. D01h *1/12*
U.S. Cl. 57—58.91 **4 Claims**

An electrostatic spinning apparatus in which the electrostatic field through which textile fibers are caused to flow is enhanced, and has a stabilized configuration by minimizing the transient charge accumulation in the area adapted to receive the fibers and by mitigating air turbulence so as not to disrupt the desired flow path of the fibers.



3,665,696
YARN PACKAGING
Louis Gubinsky, Matthews, and Stephen D. Murphy, Charlotte, both of N.C., assignors to Celanese Corporation, New York, N.Y.
Filed Mar. 23, 1970, Ser. No. 21,902
Int. Cl. D01h *1/36*
U.S. Cl. 57—157 F **7 Claims**

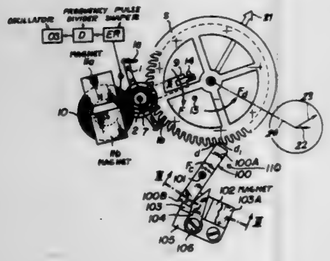


During a constant tension programmed spindle speed drawtwisting operation, decreased twist insertion below a minimum acceptable value is compensated for by passing the yarn through fluid jet interlacing means prior to take-up.

3,665,697
DRIVING MECHANISM FOR ELECTRONICALLY CONTROLLED TIMEPIECE
Peter Dome, 1249 Athenaz, Geneva, Switzerland, assignor to Societe Suisse Pour L'Industrie Horlogere S.A., Geneva, Switzerland
Filed Nov. 18, 1970, Ser. No. 90,573
Claims priority, application Switzerland, Nov. 20, 1969, 17281/69
Int. Cl. G04c *3/04*
U.S. Cl. 58—23 D **10 Claims**

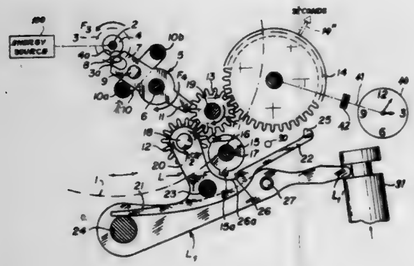
A ratchet wheel in the driving mechanism of a timepiece, having pointed teeth alternately engageable by a pair of dogs

on opposite ends of an electromagnetically impelled balance lever, coacts with a retaining pawl in the form of a bar or reed swingable about a fulcrum on a line perpendicular to the trailing flank of a tooth engaged by a transverse end face of the pawl. Upon a stepping of the ratchet wheel by the balance lever, the tooth immediately following the one



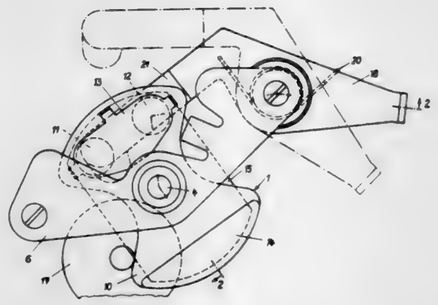
heretofore engaged by the pawl strikes a side face thereof with sufficient force to drive the end face of the pawl out of the orbit of the ratchet teeth, against a magnetic or elastic biasing force, so that this following tooth can move into the engagement position without further contact with the pawl until the latter returns to its blocking position.

3,665,698
ELECTROMECHANICAL CLOCKWORK WITH DECOUPLING MECHANISM
Peter Dome, 1249 Athenaz, Geneva, Switzerland, assignor to Fabrique D'Horlogerie Chs Tissot & Fils S.A., Le Locle, Switzerland
Filed Nov. 18, 1970, Ser. No. 90,572
Claims priority, application Switzerland, Nov. 22, 1969, 17353/69
Int. Cl. G04c *3/00*; G04b *27/06*
U.S. Cl. 58—23 10 Claims



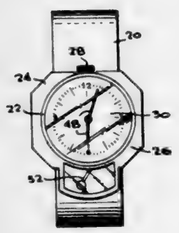
A continuously operating rocking member coacts with a pair of meshing pinions to step a gear train of a clockwork for a watch, one of the gears of this train being in mesh with the first pinion and being also positively coupled with the seconds hand of the watch incorporating the clockwork. Manual actuation of a release mechanism, preparatorily to the resetting of the watch hands, trips a lever which retracts the other pinion from the sweep of the drive member and also immobilizes the driven gear in mesh with the first pinion, enabling continued reciprocation of the rocking member during readjustment of the timepiece.

3,665,699
DEVICE FOR LOCKING AN ELECTRO-DYNAMICALLY MAINTAINED BALANCE/BALANCE-SPRING
Claude Challandes, Sonceboz, Switzerland, assignor to Centre Electronique Horlager SA, Neuchatel, Switzerland
Filed Mar. 22, 1971, Ser. No. 126,459
Claims priority, application Switzerland, May 22, 1970, 5657/70
Int. Cl. G04c *3/04*
U.S. Cl. 58—28 4 Claims



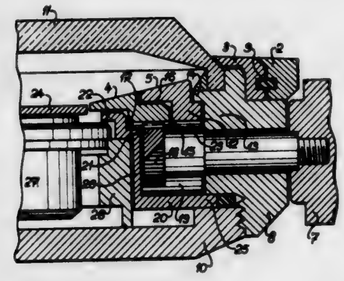
A balance locking device for an electro-dynamically maintained balance/balance-spring assembly comprises a stopping member movable between a first position in the immediate vicinity of the balance, and a second position spaced away from the balance. The balance carries at least one permanent magnet and a plate of soft magnetic material between which a soft magnetic part of the stopping member is located when the stopping member is in the first position, the magnetic forces set up locking the balance.

3,665,700
WATCH WITH ORNAMENTAL RUNNING INDICATOR
James S. Ditello, 44 Shore Drive, and Thomas J. Ditello, 43 Rhode Island Ave., both of Pittsfield, Mass.
Filed Aug. 10, 1970, Ser. No. 62,565
Int. Cl. G04b *45/00*
U.S. Cl. 58—57 6 Claims



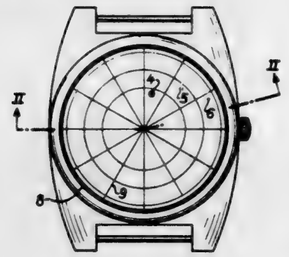
A wrist watch is provided with a case in which a radial casing extension houses a pendulum visible concurrently with and adjacent the face of the watch with the pendulum being connected to an extension of the pallet arbor of the watch to be oscillated during operation of the watch so that the pendulum provides a moving indication that the watch is operating and also provides an ornamental effect.

3,665,701
WATCH CASE WITH MULTIPLE INTERNAL AND EXTERNAL ROTATABLE DIALS
Georges Burdet, Damprichard, France, assignor to Ets. Meyer & Grandgirard S.A., Gambetta, Besancon, France
Filed Apr. 15, 1971, Ser. No. 134,261
Claims priority, application France, Apr. 21, 1970, 7014437
Int. Cl. G04b *39/00*
U.S. Cl. 58—91 10 Claims



A watch case comprises two adjacent annular graduated discs rotatably mounted inside a caseband. The discs are supported on an annular frame member including an upper flange for guiding the inner disc and a lower flange clamped between the caseband and a bottom.

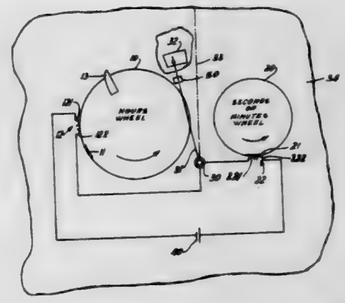
3,665,702
TIMEPIECES
Pierre Calame, Chapelle, Switzerland, assignor to Zodiac SA, Le Locle, Switzerland
Filed Dec. 4, 1970, Ser. No. 95,028
Claims priority, application Switzerland, Dec. 5, 1969, 18149
Int. Cl. G04b *19/00*
U.S. Cl. 58—126 A 2 Claims



A timepiece comprises a plurality of transparent discs coaxially mounted within a case, each disc carrying a reference mark, each mark indicating respectively, different units of time, the discs being rotatable beneath a cover glass having a graticule marked on a surface of the cover glass.

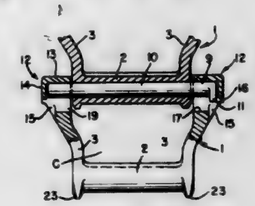
3,665,703
MEASURING AND INDICATING ARRANGEMENT
Claus Christian Coberg, Steinbach/Ts, Germany, assignor to Braun Aktiengesellschaft, Frankfurt/Main, Germany
Continuation-in-part of application Ser. No. 781,935, Dec. 6, 1968, now Patent No. 3,591,957. This application Mar. 9, 1971, Ser. No. 122,451
Claims priority, application Germany, Dec. 8, 1967, P 15 91 859.9
Int. Cl. G04b *47/06*; G04c *3/00*
U.S. Cl. 58—152 H 10 Claims

An arrangement for measuring the voltage of a battery to determine the state of charge of the battery when used to operate electrical timepieces. A pair of momentary contact switches are actuated by the hours wheel of the clock mechanism on the one hand, and by either the minutes wheel or the seconds wheel of the clock mechanism on the other hand, and when actuated in coincidence complete an electrical circuit which connects the battery with a voltage measur-



ing instrument. An indicating device associated with the instrument indicates the measurement taken and is held in place by a holding device, after the measurement has been completed. The indicating device becomes released and permitted to turn to its initial position prior to the instant when a subsequent measurement is to be taken.

3,665,704
DRAG CHAIN
Francis E. Trudeau, Chicago Heights, Ill., assignor to Portec, Inc., Chicago, Ill.
Filed June 16, 1969, Ser. No. 833,536
Int. Cl. F16g *13/06*
U.S. Cl. 59—85 5 Claims



A drag chain having a plurality of similar links pivotally connected by a lock pin joining the spaced apart side arms of one link to the cross bar of the next link. Retention of the positioned lock pin is assured by keeper heads at the ends of the side arms, shiftable from an access to a closed position.

3,665,705
THERMAL ENGINES
Edwin S. Christensen, 2203 North Santa Fe Avenue, Compton, Calif.
Filed Nov. 10, 1969, Ser. No. 875,088
Int. Cl. F03g *7/06*
U.S. Cl. 60—23 7 Claims



A thermal engine capable of converting heat directly into rotary motion and having only one prime moving part. A

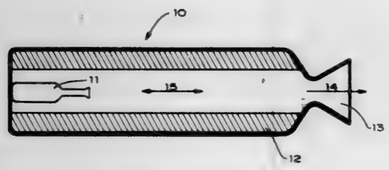
cylindrical rotor member is rotatably supported between trunnioned bearings so that longitudinal deformation of the rotor is limited to a predetermined direction. Heat is applied to the rotor offset from such direction and in attempting to deform in response to the applied heat, the rotor rotates about its longitudinal axis toward the direction where the trunnioned bearings permit such deformation. Once in this position, the heated portion cools and returns to a non-deformed state while a new portion of the rotor is deformed by the applied heat to thereby obtain continuous rotation.

3,665,706

IGNITER-ATTENUATOR DEVICE FOR ATTENUATING COMBUSTION INSTABILITY IN ROCKET MOTORS

Edward W. Price, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 22, 1970, Ser. No. 82,881
Int. Cl. F02k 9/04
U.S. Cl. 60—39.72 P **3 Claims**



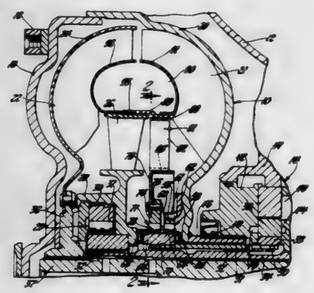
A device for attenuating oscillatory combustion in solid rocket motors which comprises an igniter-attenuator device attached at the forward end of a rocket motor combustion chamber so that oscillatory combustion is effectively attenuated.

3,665,707

VEHICULAR TRANSMISSION PUMP DRIVES

Erkki A. Koivunen, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 8, 1971, Ser. No. 122,041
Int. Cl. F16d 31/06, 33/00
U.S. Cl. 60—54 **4 Claims**



The pump in an automatic transmission is drivingly connected by one-way clutches to be driven by either the transmission converter's impeller or turbine, whichever is turning faster. The drive connection between the pump and the converter's turbine is provided by a drive member which extends through the converter's flow circuit and around the converter's stator in the converter's eye to connect to the turbine.

3,665,708

GAS GENERATION PROCESS USING METAL CARBONYLS AS ADDITIVES

William A. Duncan, and James A. Murfree, Jr., both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army

Filed Oct. 1, 1969, Ser. No. 863,757
Int. Cl. C06d 5/10
U.S. Cl. 60—220 **5 Claims**

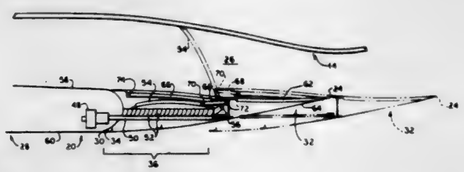
Metal carbonyls are utilized with an oxidizer and a monopropellant of the hydrazine type in a process of gas generation to obtain instantaneous ignition, to obtain very vigorous combustion of the monopropellant, and to increase the startability of the gas generator once it has cooled down from being shut off.

3,665,709

THRUST REVERSING APPARATUS

George E. Medawar, San Diego, and Leonard Holman, Imperial Beach, both of Calif., assignors to Rohr Corporation, Chula Vista, Calif.

Filed June 4, 1970, Ser. No. 43,470
Int. Cl. F02k 3/06
U.S. Cl. 60—226 A **4 Claims**



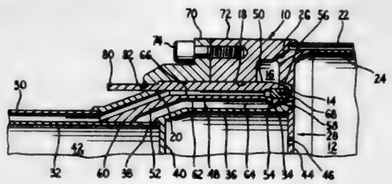
Fan jet engine has cowl surrounding engine and terminating in jet exhaust nozzle. Elongate shroud surrounds fan and engine to define annular passage for fan air terminating forward of exit end of nozzle. Aft portion of shroud is separate sleeve movable axially to define peripheral outflow gap for fan air. Ring of cascade sets occupies gap and carries blocker doors pivoted at their aft ends to swing into contact with engine cowl, blocking rearward flow of air and diverting it out through cascade ring. Sleeve encloses cascade ring and blocker doors in stowed position and is linked to doors to deploy them when sleeve moves rearward to deployed position. Linkage has lost motion so doors deploy only during last stage of deploying movement of sleeve.

3,665,710

FLUID INJECTORS

Joseph Ficon, Franklyn Lakes, N.J., and Joseph Clemente, Gaithersburg, Md., assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed Dec. 27, 1966, Ser. No. 605,008
Int. Cl. F02k 9/02
U.S. Cl. 60—258 **2 Claims**



A rocket motor fluid injector having internal fluid passages connecting to propellant sources and an additional passage

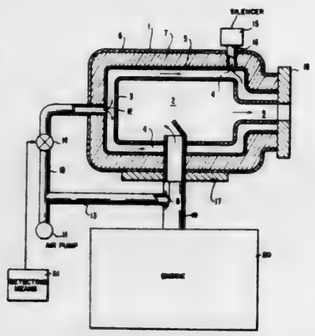
connected to a tank pressurizing gas source. A slidable pintle is also provided to throttle propellant flow while still permitting a constant gas flow into the rocket motor combustion chamber during throttling.

3,665,711

EXHAUST GAS PURIFYING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Takumi Muroki, Hiroshima, Japan, assignor to Toyo Kogyo Company Limited, Aki-gun, Hiroshima, Japan

Filed June 9, 1970, Ser. No. 44,847
Claims priority, application Japan, June 6, 1969, 44/54407
Int. Cl. F01n 3/10
U.S. Cl. 60—286 **4 Claims**



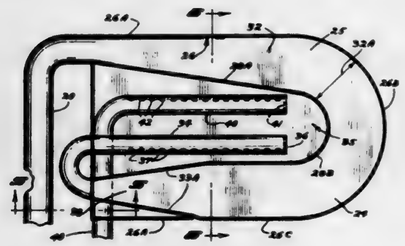
An exhaust gas purifying device disposed in the exhaust system of an internal combustion engine which device has an inner shell forming a reaction chamber for reburning the exhaust gas and an outer shell surrounding the space outside of the inner shell. An air pump driven by the engine cools the inner and outer shells by introducing cooling air into the space between the shells through an engine parameter controlled valve.

3,665,712

TWO-CYCLE ENGINE RESONANCE EXHAUST SYSTEM

William L. Tenney, Crystal Bay, Minn.

Filed Feb. 9, 1970, Ser. No. 9,507
Int. Cl. F02b 27/04; F01n 5/00
U.S. Cl. 60—314 **24 Claims**



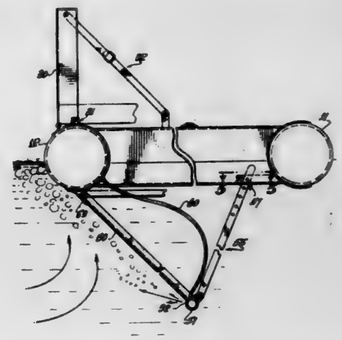
Two-cycle engine exhaust systems including a resonance chamber which has at least one change of direction or bend in the resonance chamber and which is used in combination with powered tools and vehicles, such as chain saws and snowmobiles. Bending the resonance chamber saves space and keeps the exhaust resonance chamber out of the way of an operator. The further improvement of including an additional silencing section located within the crook of the bend in the resonance chamber in combination with two-cycle engines, is also disclosed.

3,665,713

CONTAMINANT CONTAINMENT METHOD AND APPARATUS

Eric Rath, P.O. Box 226, La Jolla, Calif.

Filed June 18, 1970, Ser. No. 47,455
Int. Cl. E02b 15/04
U.S. Cl. 61—1 F **1 Claim**



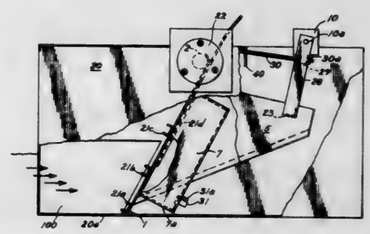
This is a method and apparatus for containment of contaminants on fluid surfaces, particularly such as oil spillages in ocean waters, wherein the use of a floating barrier with submerged shield segments carrying high pressure jets is utilized in interconnected, segmented form.

3,665,714

CANAL CHECK GATE

Mills E. Bunger, Wheatridge, Colo., assignor to William J. Laipple, Sturgeon Bay, Wis., a part interest

Filed Sept. 24, 1970, Ser. No. 75,112
Int. Cl. E02b 7/40
U.S. Cl. 61—23 **8 Claims**

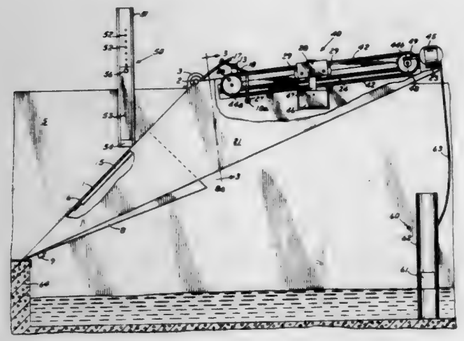


A pivotally mounted apertured plate gate swings automatically downward to restrict flow in a canal with increasing water flow and automatically swings upwardly as canal flow decreases so as to maintain a generally constant head downstream in the canal. The automatic action is accomplished through the cooperation, with the apertured plate, of a plate counterweight structure, valved tank for receiving water through the plate aperture, and a sliding blade gate controlling inflow through the plate aperture. Manual control is also possible.

3,665,715
CANAL CHECK GATE APPARATUS

Mills E. Bunger, 3850 Harlan, Wheatridge, Colo.

Filed Apr. 28, 1971, Ser. No. 138,199
Int. Cl. E02b 7/40
U.S. Cl. 61—25 9 Claims

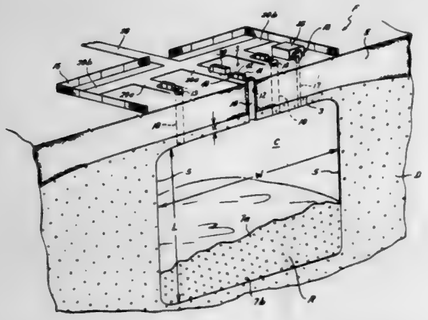


A pivotal canal gate swings downwardly to restrict flow in a canal with increasing water flow in the canal, and swings upwardly as canal flow decreases to maintain a generally constant head downstream of the gate. Apertures in the gate connect to a tank on the back of the gate, water flowing into the tank is drained downstream through a valve in the tank at a predetermined rate. A member slidably mounted on the gate and levered over a fixed fulcrum progressively opens or closes the apertures accordingly as the gate swings upwardly or downwardly. A selectively positionable counterweight on a moment arm extending from the back of the gate allows selected counterbalancing.

3,665,716
REFUSE DISPOSAL METHOD

Z. W. Rogers, P.O. 12247 Waldeman Drive, Houston, Tex., and William L. Kirk, P.O. Box 8702 Ruthby, Houston, Tex.

Filed Aug. 10, 1970, Ser. No. 62,334
Int. Cl. E02d
U.S. Cl. 61—35 7 Claims

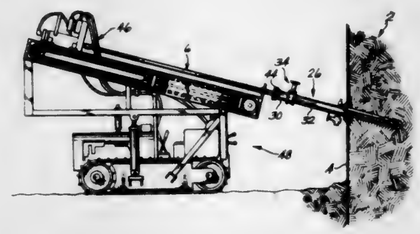


Refuse is collected, transported and then deposited in an impermeable cylindrical solution cavity formed within a subterranean rock salt formation. The air containing noxious odors and excess heat is extracted from the solution cavity purified and then released into the atmosphere.

3,665,717
METHOD AND APPARATUS FOR INSTALLING ELONGATED RODS IN UNSTABLE EARTH FORMATIONS

Gerald T. Sweeney, and Oliver E. Erdman, both of Tacoma, Wash., assignors to Soil Sampling Service, Inc., Puyallup, Wash.

Filed Jan. 14, 1971, Ser. No. 106,341
Int. Cl. E02d 5/74
U.S. Cl. 61—39 19 Claims

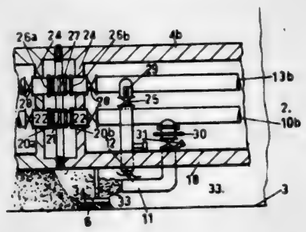


The method and apparatus are an improvement on the patentee's earlier method and apparatus for installing an elongated rod in an earth formation by the steps of installing a tubular casing in a tunnel in a face of the formation, inserting the rod in the casing, and then retracting the casing from the tunnel. According to the new method, they install and retract the casing through a liquid seal adjacent the face of the formation, and charge a liquid medium into the tunnel through the seal to pressurize the tunnel about the casing, and to retain the formation about the rod when the casing is retracted from the tunnel.

3,665,718
METHOD OF FILLING A SPACE UNDER A STRUCTURAL ELEMENT AND STRUCTURE THEREFOR

Albert Griffioen, Utrecht; Jan Hofmeijer, Rijswijk; Paul Cornelis Van Milligen, Roggekamp; Jorn Yding Tonnisen, Oegstgeest, and Jacobus Martinus Van Zanten, Utrecht, all of Netherlands, assignors to Combinatie Westerscheide v.o.f., Utrecht, Netherlands

Filed July 28, 1970, Ser. No. 58,775
Claims priority, application Netherlands, Mar. 31, 1970, 7004556
Int. Cl. E02d 29/00; E01g 3/00
U.S. Cl. 61—43 9 Claims

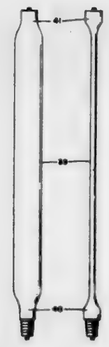


In a known method of filling a space under a structural element with sand, sand and water are supplied into said space through a suspension conduit communicating with a suction dredging installation, rolling on and guided by said structural element, extending above the water level and sucking sand from barges. This suction dredging installation obstructs the shipping and cannot be used at bad weather conditions and/or great depth. For avoiding the above disadvantages the invention provides a method in which the suspension is supplied through a suspension conduit fixed to the structural element, and extending from a junction side of said structural element.

3,665,719
APPARATUS FOR COUNTERSTRESSING IN SITU ROCK FOR SUPPORT OF UNDERGROUND OPENINGS

Jerry M. Whiting, Rifle, Colo., assignor to Atlantic Richfield Company

Original application May 28, 1969, Ser. No. 828,513, now Patent No. 3,568,450. Divided and this application July 27, 1970, Ser. No. 58,388
Int. Cl. E21d 21/00
U.S. Cl. 61—45 F 1 Claim



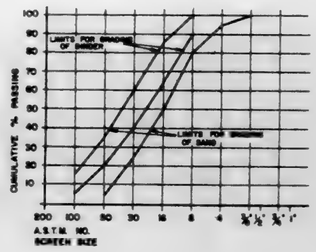
In rock surrounding an underground excavation which must have a man-made support system to ensure a required degree of structural stability and which is subjected to certain stress conditions, an inflatable device or rock jack is inserted into a drill hole or slot in the rock. The rock jack is inflated slightly by fluid pressure to take up any space between the jack and the in situ rock and is subsequently pressurized to the limit of its capability. High compressive force is transmitted to the rock, thus creating compressive stress in monolithic rock and increasing confinement of and friction between proximal blocks of rock which are separated by narrow fractures, tension cracks, joint planes or similar structural defects. Such action maintains or increases the natural capability of the rock to support itself and to remain stable by utilizing the inherent compressive strength of the rock.

3,665,720
METHOD OF STABILIZING SAND FOUNDATIONS UNDER BUILDING WORKS SUBMERGED IN WATER

Kaj Havn , Copenhagen, Denmark, assignor to Christiani & Nielsen A/S, Copenhagen, Denmark

Filed May 8, 1970, Ser. No. 35,688
Claims priority, application Denmark, Dec. 11, 1969, 6558/69
Int. Cl. E02d 3/12
U.S. Cl. 61—46 4 Claims

A method of stabilizing sand foundations under building works submerged in water including pumping in sand to which a small percentage of hydraulic binder is added under the building work, utilizing a grain-size distribution of the hydraulic binder adjusted to the grain-size distribution of the sand to avoid separation of the binder from the sand, wherein the hydraulic binder, by hydration, cements the sand grains

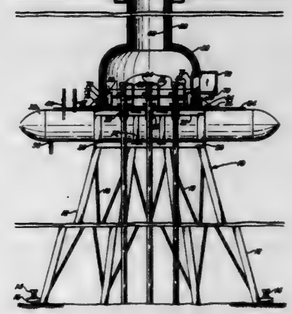


into a strong coherent conglomerate which will remain unaffected by earthquakes.

3,665,721
SUBMERGED WELL PLATFORM

Malcolm R. J. Wyllie, Allison Park, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 27, 1970, Ser. No. 40,924
Int. Cl. E02d 27/38; B63b 35/44
U.S. Cl. 61—46 6 Claims



A platform supports off-shore wellhead assemblies below the surface of the water at a depth adequate to eliminate danger from surface vessels or storms. Buoyancy tanks reduce the weight supported by the platform and thereby combine with the reduced weight above the ocean floor to reduce the cost of the platform. A seat is provided on the deck of the platform to receive and seal the lower end of a removable access tube that extends upwardly above the surface of the water to allow work at the wellhead to be performed at atmospheric pressure.

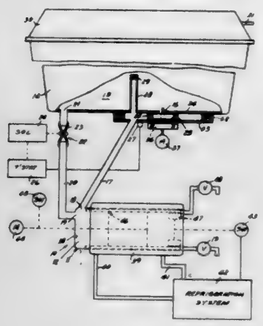
3,665,722
METHOD AND APPARATUS FOR MAKING A PARTIALLY FROZEN BEVERAGE

Richard T. Cornelius, Minneapolis, Minn., assignor to The Cornelius Company, Anoka, Minn.

Filed Sept. 29, 1970, Ser. No. 76,402
Int. Cl. F25c 7/10
U.S. Cl. 62—68 20 Claims

A method and apparatus by which liquid stored in a storage chamber passes through a filling line to a freezing chamber from which it is dispensed. The liquid in the storage chamber is continuously circulated by a circulation pump to

withdraw liquid therefrom and to return it through a standpipe having a restricted outlet. When the temperature in the storage chamber increases to a predetermined point, such temperature is sensed to cause a valve to open in a return



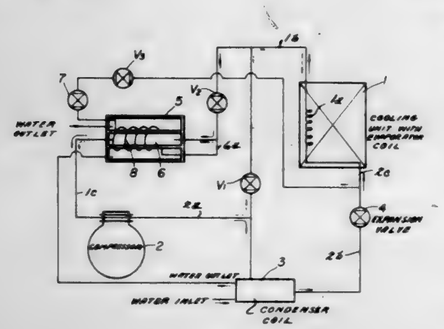
line that leads from the freezing chamber to the storage chamber whereby liquid in the storage chamber is partially replaced by refrigerated liquid which may include ice particles from the freezing chamber.

3,665,723

APPARATUS FOR DEFROSTING EVAPORATOR OF A REFRIGERATION UNIT

Teruhiko Okutsu, 1, 18 Higashi Maito-cho, Minami-ku, Yokohama, Japan

Filed Apr. 23, 1970, Ser. No. 31,249
Int. Cl. F25b *41/00*
U.S. Cl. 62—196 **1 Claim**



An apparatus is provided for defrosting the evaporator coils of a conventional refrigeration unit by passing hot compressed refrigerant gas to the evaporator coil prior to any cooling, condensing or expansion of the refrigerant gas. Thereafter the refrigerant gas is condensed, expanded and recompressed for recycle for the process and apparatus.

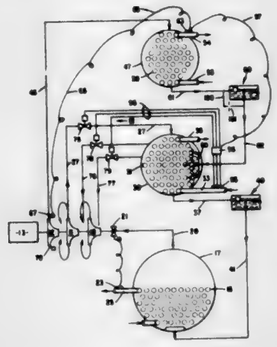
3,665,724

HEATING AND COOLING REFRIGERATION APPARATUS

Carl M. Anderson, and William T. Osborne, both of Syracuse, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed July 13, 1970, Ser. No. 54,176
Int. Cl. F25b *41/00*
U.S. Cl. 62—196 **7 Claims**

Refrigerant is passed from a stage other than the last stage of a multistage centrifugal compressor to a waste heat condenser for liquefying refrigerant and returning it to a cooling load evaporator. The latent heat of the refrigerant, along with the heat of compression, is rejected to the atmosphere as by a cooling tower and interconnecting water circuit. There is capacity control means for regulating refrigerant flow from the evaporator to the compressor in accordance with the cooling load imposed on the evaporator. A line is provided for passing refrigerant vapor from the last stage of the compressor to a second condenser, which serves as a heat exchanger for heating a medium for satisfying a heating load demand. A refrigerant line extends from the second condenser to the first condenser. The compressor includes flow



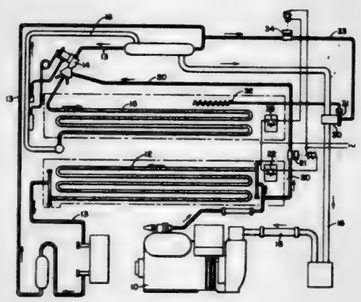
control means, as a diffuser sleeve valve, in the last stage operable to regulate the passage of refrigerant vapor to the second condenser in accordance to the heat load imposed thereon. A refrigerant vapor line including a flow control valve extends from the vapor area of the first condenser to the inlet of each stage of the compressor. The flow control valves are operated sequentially according to the pressure in the first condenser to provide a sufficient supply of refrigerant vapor for passage from the last compressor stage to the second condenser to satisfy the heat load impressed thereon.

3,665,725

CAPACITY CONTROL FOR COMPRESSION EXPANSION REFRIGERATION SYSTEMS

John W. Barlass, Excelsior, and Lowell B. Naley, St. Louis Park, both of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Jan. 18, 1971, Ser. No. 107,246
Int. Cl. F25b *41/00*
U.S. Cl. 62—196 **5 Claims**



A compression expansion refrigeration system is provided with a hot gas line to connect hot gas from the compressor

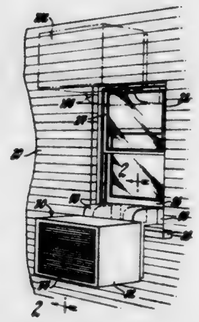
directly to the expansion coil for reducing its capacity and a servo operated suction pressure modulation valve is provided in the intake line to the compressor to vary the capacity of the system to obtain a controlled load temperature. Thermostatic control means disables the servo operated modulation valve in the open position and maintains closed a valve in the hot gas line to provide maximum capacity so long as the controlled temperature is above a predetermined amount above the desired controlled temperature and when the controlled temperature falls below the predetermined amount the valve in the hot gas line is opened to provide a direct step reduction in capacity and the suction modulation valve is activated to vary the lowered capacity to obtain the desired controlled load temperature.

3,665,726

AIR CONDITIONER WITH ROTATABLE SNORKEL

John J. Prestle, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 8, 1970, Ser. No. 44,338
Int. Cl. F25d *23/12*
U.S. Cl. 62—262 **1 Claim**



In the preferred form, a rectangular air conditioner is adapted to be mounted above, below or on either side of a window outside a building. It is provided with a snorkel type inlet and discharge duct capable of being connected to the air inlet and discharge of the air conditioner in at least four different orientations for communication through a portion of the window with a room inside the building. The electrical control unit may be provided on the room exposed portion of the snorkel duct and connected by conductors extending through the duct to the electrically powered units of the air conditioner.

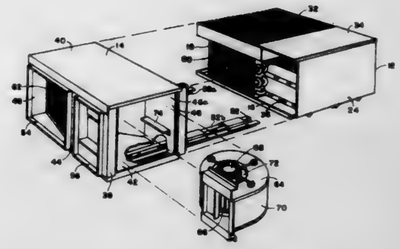
3,665,727

SECTIONALIZED SELF-CONTAINED AIR CONDITIONING UNIT

John C. Mather, Clarksville, Tenn., assignor to The Trane Company, La Crosse, Wis.

Filed Sept. 14, 1970, Ser. No. 71,991
Int. Cl. F25d *23/12*
U.S. Cl. 62—262 **7 Claims**

An air-cooled condenser section has its own support pan capable of supporting the components of the condenser section independently of the evaporator section. The evaporator has a subframe which extends outwardly therefrom for attachment in underlying relationship to the condenser section to thereby define a self-contained unitary air conditioning unit. The evaporator section has a recessed sidewall defining a channel for conducting cooling air to a portion of the condenser section embraced by the evaporator section. Vertically oriented compressor, heat exchangers, and blowers in



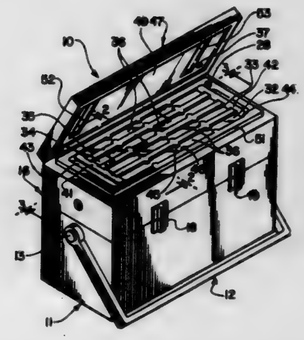
both evaporator and condenser sections permit the use of the same size bottoms, tops, and subframe for different size units.

3,665,728

PORTABLE ICE CUBE MAKER

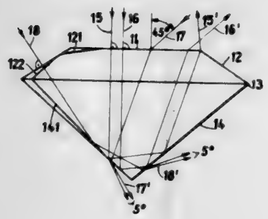
Daniel Stoller, 120 Dogwood Road, Roslyn, N.Y.

Filed Sept. 23, 1970, Ser. No. 74,732
Int. Cl. F25c *1/04*; F25d *3/08*
U.S. Cl. 62—320 **6 Claims**



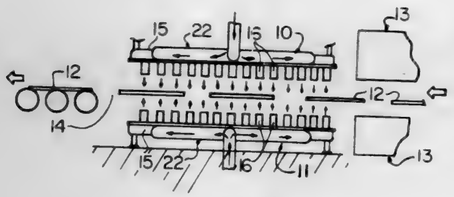
This invention provides for a portable ice cube maker, in which ice cubes are made in ice pockets provided in an insulated container having a cover and in which the ice pockets are accessable upon removing the cover, yet providing for an enclosed container space into which the ice cube pockets depend and a cover extendable over the top of the container and removable therefrom to provide access to the ice cube pockets for the addition of water or the removing of the ice cubes. An ice cube pulling extractor is provided having parrallel portions dependable into the bottoms of the ice cube pockets and transverse pull portions available at the opposite ends of the containers for effecting the pulling of the extractor and the ice cubes from the container. Refrigerant is admitted to the space within the container from a refrigerant bottle having a depressable shank extending from the neck of the bottle and the neck of the bottle extending through an opening either through the bottom of the container or through a cover thereof. A push rod is used in one form of the invention to depress the bottle shank and in the other form of the invention a shank is depressed by engaging the same with a ball valve device lying within the container space. Appropriate valves are provided for excess pressure and to prevent the admission of air into the casing and to effect the draining of the bottom of the casing.

3,665,729
CUT ORNAMENTAL GEM
Maximo Elbe, Hamburg, Germany, assignor to Colorant Schmuckstein GmbH, Harksheide, Bezirk Hamburg, Germany
Filed Mar. 31, 1970, Ser. No. 24,225
Claims priority, application Germany, Apr. 1, 1969, P 19 16 643.9
Int. Cl. A44c *17/00*
U.S. Cl. 63—32 15 Claims



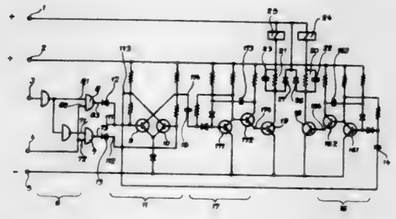
A diamond is cut to have optically cooperating first facets defining substantially the angle of dispersion so that light rays transmitted through the cooperating facets are dispersed. Second optically cooperating facets are also provided which define half the angle of dispersion so that reflected light impinges a facet at the angle of dispersion so that reflected light rays are also dispersed.

3,665,730
APPARATUS FOR SIMULTANEOUSLY SUPPORTING, COOLING AND SHAPING GLASS SHEET AND THE LIKE
Frederick D. Linzer, 1373 Foxwood Drive, Monroeville, Pa.
Filed June 11, 1970, Ser. No. 45,308
Int. Cl. C03b *27/00*
U.S. Cl. 65—182 A 15 Claims



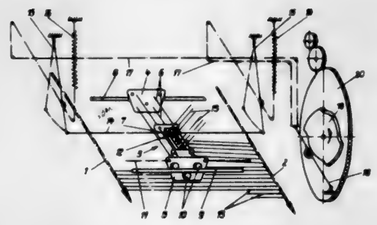
Apparatus for simultaneously supporting, cooling and shaping glass sheet and the like having heat transfer beds positioned beneath the glass sheet so that the glass sheets are supported by a gas flow through the heat transfer beds. Each heat transfer bed has manifolds for conveying a gas flow from a source to a parallel array of elongated members extending substantially transverse to the direction of travel of the glass sheet, and through cavities in said elongated members to be discharged through orifices along the length of the elongated member against the lower surface of said sheets to substantially uniformly support said sheets while cooling them. Said elongated bar members can also be contoured so that the glass sheet is gradually shaped to a desired curved shape as it is transported and cooled.

3,665,731
ELECTRICAL PATTERN MECHANISM FOR CIRCULAR KNITTING MACHINES
Gerhard Groezinger, Wurttemberg, Germany, assignor to Mayer & Cie, Talfingen (Wuerttemberg), Germany
Filed Jan. 21, 1970, Ser. No. 4,675
Claims priority, application Germany, Jan. 24, 1969, P 19 03 432.3
Int. Cl. D04b *15/78*
U.S. Cl. 66—50 R 2 Claims



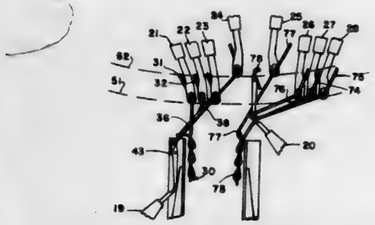
An electrical pattern mechanism for a circular knitting machine having a rotary needle cylinder and electromagnetically actuated adjusting components which act either directly on needles or on jacks and which are controlled by information derived from a program carrier. A bistable electronic sweep circuit has one or the other of its conditions determined by the information in the control signal derived from the program carrier. This sweep circuit has a pair of outputs connected through one of a pair of univibrators with one of a pair of electromagnetic windings. One of the univibrators is connected with one of these windings together with a time-limited current amplifier circuit.

3,665,732
FLAT WARP KNITTING MACHINES
Wolfgang Doring, Crimmitschau; Bertram Freusel, Karl-Marx-Stadt; Hans-Dieter Heutschel, Karl-Marx-Stadt; Heinz Kemter, Karl-Marx-Stadt; Werner Mickenautsch, Crimmitschau II, and Harry Schmidt, Werdau, all of Germany, assignors to VEB Wirkmaschinenbau Karl-Marx-Stadt, Karl-Marx-Stadt, Germany
Filed Aug. 6, 1970, Ser. No. 61,596
Int. Cl. D04b *23/06*
U.S. Cl. 66—84 17 Claims



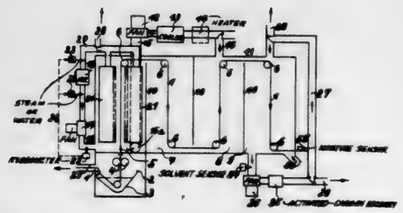
A flat warp knitting machine comprising two continuously driven endless transport chains provided with hooks, weft thread laying means, means for moving the weft thread laying means back and forth transversely to the transport chains for inserting weft threads alternately into the hooks of the two transport chains and means for moving the weft thread laying means at least partially in the direction of motion of the transport chains for the insertion of the weft threads into at least approximately opposite pairs of hooks so that the weft threads extend at least approximately at right angles to the transport chains.

3,665,733
APPARATUS AND METHOD FOR WARP KNITTING A SIMULATED WOVEN FABRIC
George E. Jackson, Charlestown, W. Va., assignor to Union Carbide Corporation, New York, N.Y.
Filed July 16, 1970, Ser. No. 55,490
Int. Cl. D04b *23/02*
U.S. Cl. 66—87 16 Claims



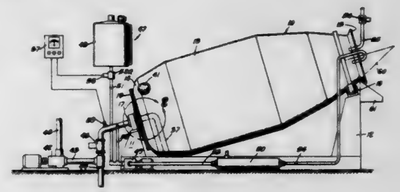
A simulated-weave, warp-knit fabric is produced on a warp knitting machine by using short latch, long shank needles combined with a high rise needle bar motion. A chopper bar is eliminated, thus freeing guide bar space while avoiding impact, dwell and delay. Either a high set chain stitch guide bar, or a needle bar timing control, may be used as a collision avoidance means. The short latch needles are wrapped in one course and different short latch needles wrapped in the next course to produce the weft appearance. There is a double guide bar stroke for each needle bar stroke, but the provision of two needle bars restores production rate to that of a one to one ratio.

3,665,734
APPARATUS FOR FINISHING FIBROUS MATERIAL
Paul Hauser, Seveso, Italy; Walter Pfister, Bichen, Switzerland; Hans Ulrich Stucki, Basel, Switzerland; Heinz Teuwen, Basel, Switzerland; Heinrich Fuhring, and Johannes Hellmut Sieber, both of Augsburg, Germany, assignors to Bohler & Weber KG-Maschinenfabrik-Augsburg, Hansburg, Germany
Original application June 4, 1965, Ser. No. 462,167, now abandoned. Divided and this application Sept. 15, 1969, Ser. No. 871,361
Claims priority, application Switzerland, June 5, 1964, 7363/64
Int. Cl. B05c *3/132*, *9/10*, *9/12*
U.S. Cl. 68—18. C 18 Claims



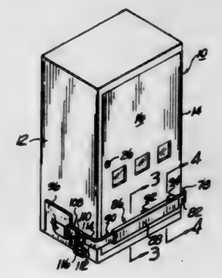
Fibrous material in web or filament form, to be dyed or otherwise chemically treated, is successively passed through a plurality of chambers including a treatment chamber in which it is subjected to the spray of a fluid, a drying chamber which may be subdivided into several compartments, and an intervening reaction chamber in which a controlled amount of moisture is added and which may be preceded by a preconditioning chamber provided with temperature-control means. Air is forcibly circulated, with the aid of a primary blower, from a location near the inlet end of the treatment chamber to a point of the drying chamber remote from the treatment chamber whereby this air passes through the interconnected chambers in counter-current to the treated material. Each chamber may also be provided with an individual secondary air path containing a blower for generating a flow which passes only through that chamber in counterflow to the treated material.

3,665,735
METHOD AND APPARATUS FOR THE BULK PROCESS OF HIDES OR THE LIKE
George A. Brennan, Fullerton, Calif., assignor to Challenge-Cook Bros., Incorporated, Industry, Calif.
Filed Aug. 19, 1970, Ser. No. 64,989
Int. Cl. C14c *15/00*
U.S. Cl. 69—30 17 Claims



Hides or similar sheet materials of a porous and absorbent nature are processed in a liquid bath contained within a drum mounted for rotation about an axis inclined from the horizontal. The drum includes a drainage chamber proximate a lower closed end and a processing chamber adjacent an upper open end. Drainage means extending into the drum along the drum axis are adapted to drain the liquid in the drum from the drainage chamber and liquid supply means are adapted to pass liquids into the drum whereby various baths having different chemical ingredients may be added and discharged during the process of the material. Spiral fins affixed to the inner wall of the drum and extending radially inward therefrom are adapted to work and treat the material maintained in the processing chamber when the drum is rotated in one direction and are adapted to move the material towards the open end when the drum is rotated in the other direction.

3,665,736
UNIVERSAL TELESCOPING LOCKING BAR FOR VENDING MACHINES
Joseph Wilson, Detroit, Mich., assignor to Joseph MacGreene, Detroit, Mich., a part interest
Filed Jan. 15, 1971, Ser. No. 106,769
Int. Cl. E05b *65/52*
U.S. Cl. 70—78 14 Claims



In a vending machine which as a front access door such as particularly a pop vending machine and in which the door is normally locked by a key lock, a safety lock bar is provided which extends across the front access door of the vending machine and over the key lock and is releasably and pivotally

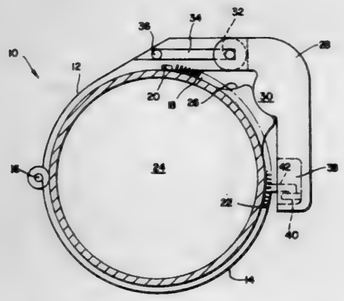
attached to the sides of the vending machine; the attachment of the lock bar is provided with invisible fasteners secured to the inside of the vending machine so as not to be accessible from the outside; the attachments are provided with apertured flanges to provide a means to secure the locking bar by means of a padlock or the like; and the locking bar is adjustable in length intermediate its ends to accomodate various widths of vending machines.

3,665,737
BURGLAR PROOF METHOD AND MEANS
Starling L. Reese, 821 East Ocean Boulevard, Long Beach, Calif.
Filed Aug. 5, 1970, Ser. No. 61,325
Int. Cl. E05b *47/00, 63/14*
U.S. Cl. 70—118 7 Claims



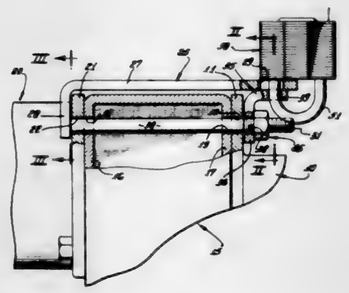
A lock mechanism forming part of a security system is mounted in a door or window and is completely concealed when the door or window is locked. The mechanism features a latch having a ferromagnetic portion and a nonferrous bolt in a nonferrous casing having a ledge defining an abutment. The latch is moved by the pull of an external magnet of predetermined strength movable along a predetermined path for locking and unlocking the door or window. The latch is maintained in locked position by engagement of its ferromagnetic portion with the abutment, which portion is disengaged from the abutment by the magnet.

3,665,738
IGNITION LOCK
Gerald F. Pescuma, Salem; Alphonse J. Durso, and Walter T. Brown, both of Lynn, all of Mass., assignors to General Products and Gear Co., Inc., Lynn, Mass.
Filed July 20, 1970, Ser. No. 56,480
Int. Cl. B60r *25/04*; E05b *13/00*; H01h *27/06*
U.S. Cl. 70—211 7 Claims



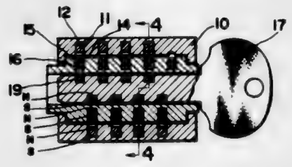
An ignition switch lock for automobiles which comprises an encircling band secured in an immovable manner to a steering column. A portion of the band comprises a pivotable blocking arm. When the blocking arm is in a closed or locked position, it engages the ignition switch and prevents entry of a key into the ignition switch. When the blocking arm is in an unlocked open position, a key may be freely inserted in the ignition switch.

3,665,739
ANTI-THEFT DEVICE
William E. Boll, 909 Tiller Way, Corona Del Mar, Calif.
Filed Jan. 18, 1971, Ser. No. 107,013
Int. Cl. E05b *65/12*
U.S. Cl. 70—237 6 Claims



An anti-theft device for releasably locking an internal combustion engine of a land vehicle to a mating transmission by substitution of the device for one of the conventional bolts which secure the transmission housing to the engine housing thus preventing the separation of the engine and transmission by the mere removal of the conventional bolts which secure these components together. The device is disclosed for use in releasably locking together the engine and transmission of a Volkswagen automobile.

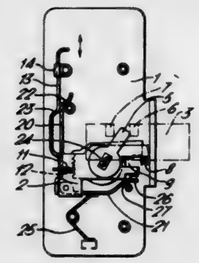
3,665,740
MAGNETIC PIN TUMBLER LOCK
Mitsumasa Taniyama, Osaka, Japan, assignor to Goal Company Limited, Osaka, Japan
Filed June 29, 1970, Ser. No. 50,397
Claims priority, application Japan, June 30, 1969, 44/51945; Aug. 23, 1969, 44/66616; Oct. 28, 1969, 44/86161; Jan. 17, 1970, 45/4721; May 19, 1970, 45/49269
Int. Cl. E05b *27/00, 47/00*
U.S. Cl. 70—276 2 Claims



An improved magnetic pin tumbler lock is controllable by magnetic attraction and repulsion in such a manner that the magnetic attraction or repulsion established due to the relative positions and polarity orientations of fixed magnetic pins placed in a plurality of pin bores arranged in line in the inside face of the lock cylinder, of movable magnetic pins slidably

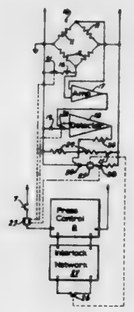
installed in pin bores to mate with the fixed magnetic pins, and of magnetic pieces provided in the key to be inserted through the key slot located at the center of the lock plug allow locking and unlocking of the lock. Non-magnetic pieces are associated with the movable magnetic pins and tread the shear line represented by a boundary line between the cylinder and the plug when the lock is locked.

3,665,741
SELF-CODIFYING LOCK
Einar Holst, Skogveien 6, 1450 Nesoddtangen, Norway
Filed Jan. 15, 1971, Ser. No. 106,723
Int. Cl. E05b *25/00, 63/00*
U.S. Cl. 70—384 2 Claims



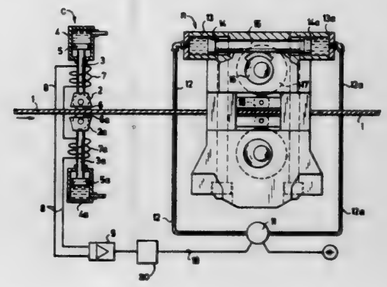
Self-codifying lock of the type comprising a plurality of tumblers in a tumbler pack which, on use of a key, are orientated so that a boss or finger on the bolt of the lock achieves passage in registered slots in the tumblers. A knife member constitutes a pivotal point by engaging in one of a plurality of the notches in the rear edge of each of the tumblers. The knife member consists of a flat plate or disc moved linearly by means of an operating member, whereby the knife member is guided in guides in a frame of the lock.

3,665,742
DETECTING MISSING OR DEFECTIVE CONNECTORS
Adolph E. Felt, and Joseph R. Maklary, both of Milwaukee, Wis., assignors to A. O. Smith Corporation, Milwaukee, Wis.
Filed Feb. 19, 1970, Ser. No. 12,582
Int. Cl. B21j *15/28*
U.S. Cl. 72—4 7 Claims



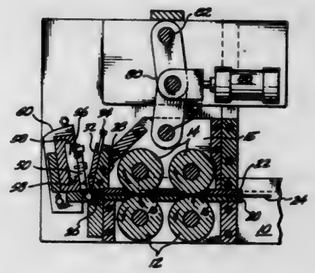
A strain gage bridge is fixed to the setting anvil of a rivet head-forming press and measures the force being applied on the rivets. The strain gage bridge when unbalanced by a calibrating resistor, provides a potential which is compared by a zero crossing detector to a potential representing the formation of a proper rivet. When the potential due to the force on the rivets exceeds the potential provided by the calibrating resistor, a switching circuit is energized to avoid a press lockout. Otherwise, the switching circuit locks the punch press to prohibit a new cycle from being initiated until the switching circuit is reset.

3,665,743
MEASURING AND CONTROL APPARATUS
Josef Frohling, Koenigshergerstrasse, Olpe, Germany
Filed Sept. 19, 1969, Ser. No. 859,342
Claims priority, application Germany, Sept. 23, 1969, P 17 98 305.0
Int. Cl. B21b *37/12*
U.S. Cl. 72—11 14 Claims



For controlling the processing of strip metal in for example a rolling mill, apparatus is provided ahead of the press to derive a signal in dependence on the thickness and hardness of the strip, this signal being used to control the rolling mill. The apparatus comprises two measuring heads which bear on the two sides of the strip with pressures sufficient to deform the material of the strip.

3,665,744
METHOD AND APPARATUS FOR MAKING SLEEVES
Clair M. Harter, 6406 South 143rd Street, Tukwila, Wash.
Filed May 21, 1970, Ser. No. 39,367
Int. Cl. B21f *11/00*
U.S. Cl. 72—129 6 Claims

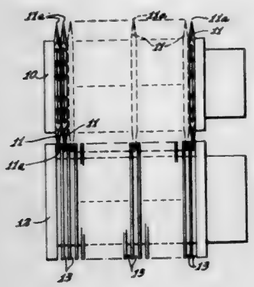


A method and apparatus is disclosed for the formation and production of circumferentially discontinuous thin-wall sleeves from a thin metallic strip.

3,665,745
PERFORATING APPARATUS AND PRODUCT

Walter R. H. Blon, Reading, England, assignor to Robert Blon and Company Limited, Reading, England

Filed May 4, 1970, Ser. No. 34,353
Int. Cl. B21d 28/12
U.S. Cl. 72—186 2 Claims

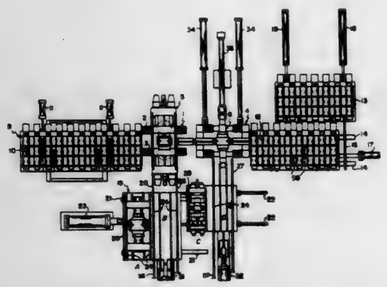


Improved apparatus for perforating strip or sheet material is provided at high perforating speeds and with an economy of material; and which may be used for the inexpensive production of perforated soft ductile metal strips for grills, acoustic devices, and the like, for example, to cover the openings of cabinets of radio receivers and other apparatus, as well as for use in filter tubes, acoustic strip ceilings, or other structural applications. The apparatus comprises a driven roller and a freely rotatable roller positioned so that a strip of soft ductile metal, such as aluminum, may be drawn between the roller surfaces as the driven roller is rotated. The driven roller is provided with rows of teeth, and the free roller has corresponding peripheral grooves, the combination being such that when the strip is fed between the rollers, the teeth of the driven roller penetrate the strip and form horizontal and longitudinal rows of slots, shallow elongated V-shaped depressions.

3,665,746
COMBINATION ROLLING MILL

Werner W. Elbe, McCandless Township, Allegheny County, Pa., assignor to Blaw-Knox Company

Filed Mar. 2, 1970, Ser. No. 15,326
Int. Cl. B21b 31/08
U.S. Cl. 72—239 16 Claims

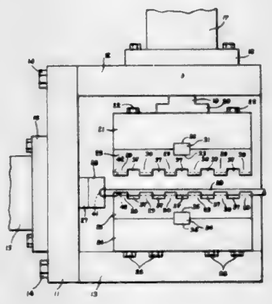


A cartridge loadable combination mill for rolling beam, structural or plate products. The combination mill includes a pair of cartridge or cartridge-like loaded mill stands, the first of which has a movable mill housing and the second of which is adaptable to being moved out of the mill line. The cartridges contain a pair of horizontal and vertical rolls that are aligned and adjusted prior to insertion into the mill stands through the mill housing windows. A four station cartridge transfer means having alternative stations simultaneously alignable with both mill stand windows is provided for supporting, positioning, and transferring work roll cartridges to the mill stands for insertion therein. A pair of movable table rolls with side guards adjustable to the maximum width of the first mill stand are movable either along the mill line or out of said line.

3,665,747
GRIPPING JAWS FOR COLD HEADING MACHINE

William Clyde Bickley, Corpus Christi, Tex., assignor to The Prescon Corporation

Filed May 4, 1970, Ser. No. 34,304
Int. Cl. B21d 11/04
U.S. Cl. 72—304 3 Claims



Gripping jaws in a machine for cold heading high tensile strength steel wire that is greasy, in which the gripping jaws have a plurality of projecting wire gripping portions arranged to engage the wire at spaced intervals along its length and are grooved to receive the wire, the one gripping jaw being stationary and the other being movable toward the stationary one by means of a hydraulic cylinder. The projecting gripping portions project so that longer and shorter gripping portions alternate along the length of the wire and the longer gripping portions on the one jaw are opposite the shorter gripping portions of the other jaw so as to slightly deflect the wire gripped by the jaws first in one direction and then in the opposite direction so as to cause a waviness or undulation in the wire when it is gripped, which is so slight that the wire is not permanently deformed. This prevents any slippage of the wire when the heading die is forming a button head on the wire, the heading movement of the die being endwise of the wire toward the gripping jaws. To grip a wire, approximately one-quarter inch in diameter, the variation in the projection of the gripping portions of the jaws is preferably only 0.005 inch.

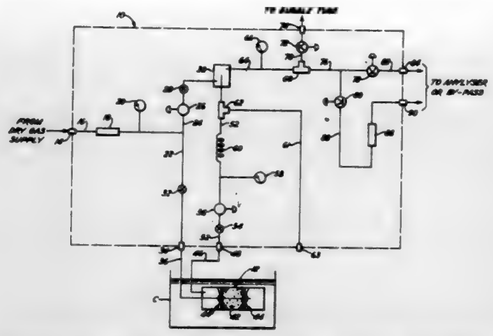
3,665,748
PORTABLE TRACE MOISTURE GENERATOR FOR CALIBRATION OF MOISTURE ANALYZERS

Richard T. Mator, Pittsburgh, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed July 2, 1970, Ser. No. 51,856
Int. Cl. G01m 19/00
U.S. Cl. 73—1 A 35 Claims

An improved calibrator for moisture analyzers is provided. A flow of clean dry carrier gas into two streams, one of which passes through an improved saturator bomb, wherein it is completely saturated with water, and then this saturated stream is mixed with the other dry stream to provide a controlled wet stream for calibration. A capillary restrictor is used to control one of the streams. The invention utilizes a

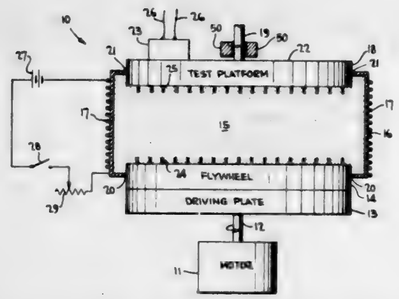
simple mathematical relationship for water concentration, means to vary each of the parameters in the relationship independently of the others, and means to simply determine values for the parameters, whichever are varied during a calibration.



3,665,749
SHOCK MACHINE

Morris Brenner, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army

Filed July 27, 1970, Ser. No. 58,440
Int. Cl. G01n 3/08
U.S. Cl. 73—12 6 Claims



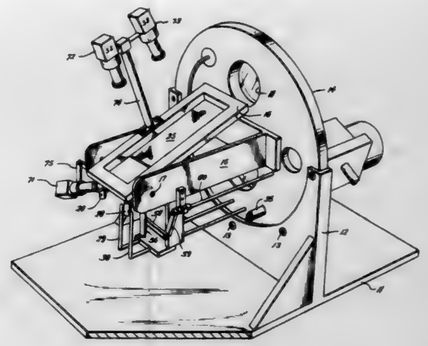
A shock machine using a variable viscosity medium. A magnetic fluid shock tester enables the application of programmed shock pulses without the use of an impact medium. A fluid, whose viscosity can be readily varied in a predetermined manner, is provided with a driving force to set the fluid into motion and this motion in turn is imparted to a test platform which contains the test object. Any sudden change in the viscosity of the fluid is transferred directly to the test item, thereby imparting the desired shock signature to the item. The effect of the shock on the item is then measured electronically or visually as desired.

3,665,750
BURN RATE TESTING APPARATUS

Frederick S. Dawn, Houston, and William L. Gill, Seabrook, both of Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Aug. 28, 1969, Ser. No. 853,641
Int. Cl. G01n 25/00
U.S. Cl. 73—15 R 11 Claims

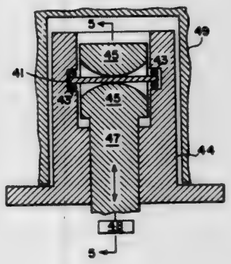
An apparatus for testing the burn rate between two spaced apart points on a sample of material. It includes an angularly adjustable support holder, an electrically ignited torch supplied with an independent supply of oxygen, a flame shutter between the torch and the sample holder and photocells positioned to sense ignition of the test material and the rate of burn between two spaced apart points on the material.



3,665,751
LOW-CYCLE FATIGUE TESTING MACHINE

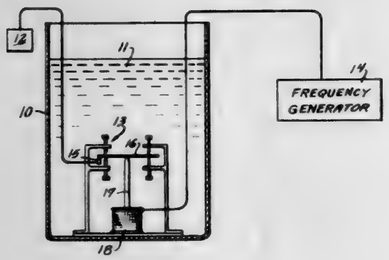
Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Christos Demogenes, 16050 Temecula Street, Pacific Palisades, Calif., and Connie E. Richard, 228 Stepney Street, Apt. 2, Inglewood, Calif.

Filed Aug. 4, 1970, Ser. No. 60,881
Int. Cl. G01n 3/20, 3/32
U.S. Cl. 73—15.6 8 Claims



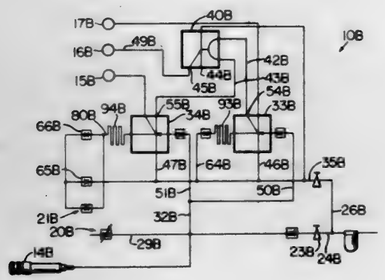
A low-cycle, fatigue tester which simulates cyclic thermal loading by the application of cyclic mechanical stresses and deformations. The specimen is heated to the critical (most conducive to failure) temperature of the structure under consideration, and then deformed cyclically by the two interconnected, opposing, convex jaws of a mandrel driven reciprocally by an oscillating ram. The cyclic wrapping of the specimen around the opposing jaws of the mandrel mechanically induces alternating compression and tension stresses in the surface of the specimen which simulate the thermal stresses that would be caused by a temperature gradient through the depth of the structure under consideration. The stress level is controlled by the radius of the mandrel. The frequency of the oscillation is representative of the frequency of the thermal cycle affecting the structure under consideration.

3,665,752
VIBRATION DENSITY METER COMPRISING NODAL CIRCLE SUPPORTED RESONANT DISK
Thomas C. Piper, Idaho Falls, Idaho, assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed June 9, 1970, Ser. No. 44,833
Int. Cl. G01n 9/00
U.S. Cl. 73—32 1 Claim



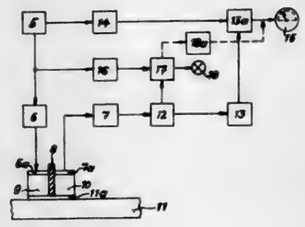
A disk supported only at the nodal circle of its simplest mode of vibration is driven at a resonant frequency by a magnetic force. The disk may be placed in a fluid and the density of the fluid can be determined by measuring the resonant frequency of the disk.

3,665,753
FLUID-OPERATED GAGE
John H. Walker, Kettering, Ohio, assignor to The Bendix Corporation
Continuation-in-part of application Ser. No. 793,270, Jan. 23, 1969, now Patent No. 3,577,766. This application Oct. 28, 1970, Ser. No. 84,834
Int. Cl. G01b 13/10
U.S. Cl. 73—37.9 22 Claims



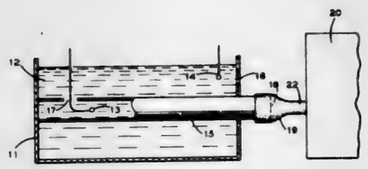
A fluid-operated gage is provided for determining acceptability of workpieces and such gage uses a pair of classifying devices to classify gaging signals into an acceptable range and indicators operatively connected to the classifying devices to indicate the character of each workpiece being checked. Limit control means is provided causing each classifying device to provide an oscillating signal to its associated indicator within a predetermined band once its limit is reached to enable precise setting of each classifying device.

3,665,754
APPARATUS TO PREVENT MISMEASURING OF WALL THICKNESS GAUGING BY ULTRASOUND
Herbert Krautkramer, and Joseph Krautkramer, both of Luxemburger Str. 449, Cologne, Germany
Filed Oct. 11, 1968, Ser. No. 766,795
Claims priority, application Germany, Nov. 29, 1967, P 16 23 214.7
Int. Cl. G01n 29/00
U.S. Cl. 73—67.8 R 5 Claims



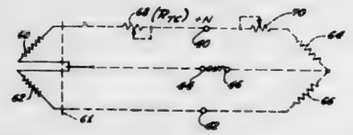
Method and apparatus are disclosed for preventing mismeasurement when gauging wall thickness by an ultrasonic pulse echo transit time method using separate transmitter and receiver probes. The pulse transit time, in the specimen plus a fixed known period of time is taken as the gauging value. Cross talk, i.e., an echo from the probe-to-specimen interface, is prevented from causing mismeasurements of thin wall specimens by providing an electronic gate which is opened during the cross talk time interval for receiving cross talk pulses having an amplitude over a predetermined lower threshold value to actuate a mismeasurement warning light or to prevent the gauge from indicating wall thickness.

3,665,755
METHOD FOR MEASURING RATE OF FLUID ABSORPTION OF PLASTER MOLDS
Wolfgang Krostewitz, Somerville, N.J., assignor to American Standard Inc., New York, N.Y.
Filed May 28, 1970, Ser. No. 41,435
Int. Cl. G01f 1/00
U.S. Cl. 73—73 10 Claims



A solid state device for measuring the water absorption ability of a plaster mold includes a water reservoir, a capillary member and a pair of thermistors, one of which is designed to measure temperature changes in response to water flow in the capillary member during the measuring process.

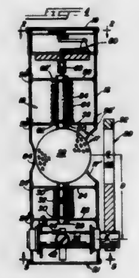
3,665,756
STRAIN GAUGE TEMPERATURE COMPENSATION SYSTEM
John D. Russell, Malibu, Calif., assignor to Microdot, Inc., South Pasadena, Calif.
Original application Oct. 18, 1965, Ser. No. 497,098, now Patent No. 3,448,607, dated June 10, 1969. Divided and this application Aug. 1, 1968, Ser. No. 765,725
Int. Cl. G01b 7/16; G01n 3/00
U.S. Cl. 73—88.5 11 Claims



This invention relates to a system for measuring strains in a member and providing an indication of such strains. The system includes at least one strain gauge connected in a bridge with other resistance members, preferably strain gauges, to compensate for temperature changes. The bridge is provided with characteristics to maintain a constant current from a source of constant voltage even when the member is subjected to a variable strain. The output voltage from the bridge provides an indication of such variations in strain.

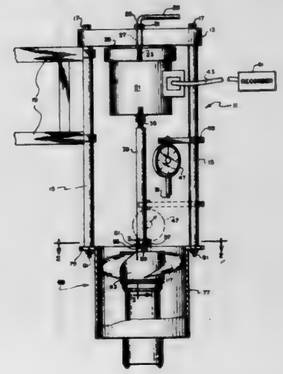
Preferably the resistors in the bridge constitute strain gauges which are connected to the member so that some of the strain gauges become stressed and others become strained when the member is stressed or strained. In one embodiment, one of the strain gauges becomes strained with changes in temperature but is not affected by stresses or strains in the member being measured. Additional resistors may also be included in the bridge to provide additional compensations for temperature changes.

3,665,757
COMBINED GOLF BALL CONCENTRICITY AND COMPRESSION TESTER
Charles R. Hoag, Glenview, Ill., assignor to International Recreation Products Inc., Skokie, Ill.
Filed Apr. 23, 1971, Ser. No. 136,713
Int. Cl. G01n 3/14
U.S. Cl. 73—94 3 Claims



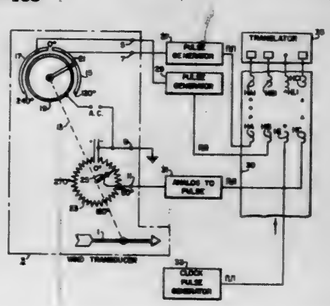
A gauge of lightweight tubular construction for checking the concentricity of a golf ball and the compression of the same having a lever for moving a first anvil a given distance against the ball, the ball moving against a second anvil registering the ball compression against a helical spring on a dial gauge, the handle of said lever being apertured as a go-no-go ring gauge for passage of the ball therethrough as a check on ball concentricity, combined with the direct insertion of the ball therefrom into position between the anvils of the ball compression test device in preparation for a check on ball compression.

3,665,758
DEVICE FOR MEASURING BEARING PRELOAD
Newton G. Tiller, Athens, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed July 16, 1970, Ser. No. 55,534
Int. Cl. G01l 5/00
U.S. Cl. 73—140 7 Claims



A device for measuring the thrust preload applied by spring washers against bearings mounted on the rotatable armature shaft of a high-speed motor. The assembly containing the motor is a ventilation fan assembly rigidly mounted on a frame opposite a load cell. The exposed end of the rotatable shaft is aligned with and coupled to a rod extending to the load cell. The load cell is forced away from the fan assembly enough to slightly displace the rotatable shaft axially and thereby apply additional pressure against the spring washer exerting the bearing preload. The amount of shaft displacement is read from a dial indicator and the load applied to the shaft is read from a recorder connected to the load cell. The bearing preload is computed from the force-displacement quantities.

3,665,759
WIND DIRECTION RECORDING SYSTEM
Thomas J. Daley, Raleigh, N.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 27, 1970, Ser. No. 40,831
Int. Cl. G01p 13/02
U.S. Cl. 73—188 7 Claims



A signal is developed that is proportional to the position of a wind-direction vane. The positions which may be occupied

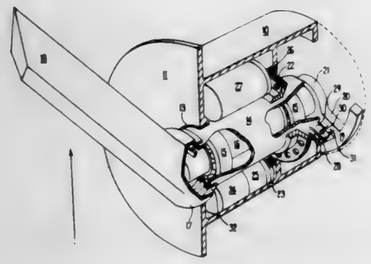
by the vane are divided into a plurality of sectors. Each of the sectors develops a signal when the vane is located in such sector. A time-interval signal also is generated at regular intervals. Each signal is recorded in a separate track of a recording medium such as magnetic tape. From these recorded signals the average wind direction during a time interval may be calculated.

3,665,760

AIRFLOW DIRECTION INDICATORS

Brian Edward Pitches, Balerno, and Robert Malcolm Stuart Murray, Edinburgh, both of Scotland, assignors to Ferranti, Limited, Hollinwood, Lancashire, England

Filed Dec. 14, 1970, Ser. No. 97,927
Claims priority, application Great Britain, Dec. 15, 1969, 60,918/69
Int. Cl. G01w 1/00
U.S. Cl. 73—188 4 Claims



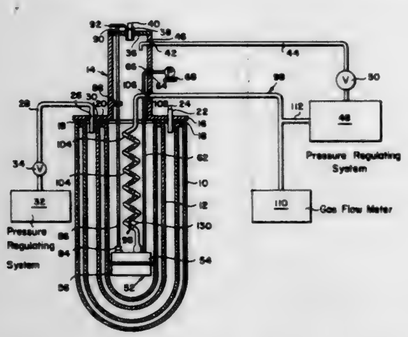
An airflow direction indicator has a hollow shaft mounted for sealed rotation into an enclosure and supporting an inner shaft carrying a vane which is located in the airstream. A seal is provided between the inner shaft and the hollow shaft which allows their relative rotation through a limited angle. A servo system is provided which operates to maintain the hollow shaft and the inner shaft within the limited angle relative to one another, and output means indicate the angular position of the hollow shaft relative to a datum position.

3,665,761

LIQUID VAPORIZATION CALORIMETER

William D. Gregory, Vienna, Va., assignor to Georgetown University, Washington, D.C.

Filed June 8, 1967, Ser. No. 644,703
Int. Cl. G01n 1/00
U.S. Cl. 73—190 17 Claims



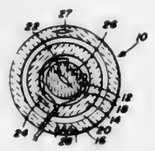
A calorimeter assembly comprising Dewar flask means, a sealed vacuum container positioned in the bottom of the Dewar flask means and a sealed sample holding container positioned in the vacuum container provided with sump means and a gas removal tube connected to the sump means; the gas removal tube extending toward the top of the Dewar flask means and having a portion located outside of the vacuum container which portion includes spiral windings, and means for introducing fluids into the Dewar flask means and said sample container and means for regulating pressure in the Dewar flask means and for measuring gas flow from the sample container. The invention also includes the method of measuring heat loss by use of the calorimeter assembly set out in which the volume of gas emitted from the gas removal tube is compared with that volume of gas emitted for a known heat input.

3,665,762

CALORIMETER

Steve R. Domen, Derwood, Md., assignor to The United States of America as represented by the Secretary of Health, Education and Welfare

Filed Nov. 4, 1969, Ser. No. 873,924
Int. Cl. G01k 17/00
U.S. Cl. 73—190 R 10 Claims



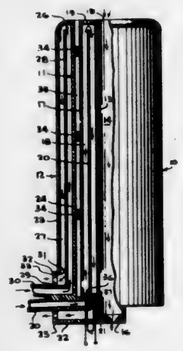
A heat loss compensated calorimeter wherein a core is surrounded by a jacket and the jacket is surrounded by a constant temperature, adiabatic or floating shield. The core and jacket have the same heat capacities, and thermistors having the same temperature coefficients are embedded in the core and jacket to compare the heat present, by means of a Wheatstone Bridge.

3,665,763

PROBE FOR DIAGNOSING HIGH TEMPERATURE GASES

Jerry Grey, 359 West 21st Street, New York, N.Y.

Filed Sept. 30, 1969, Ser. No. 862,247
Int. Cl. G01k 3/08, 13/02
U.S. Cl. 73—190 R 13 Claims



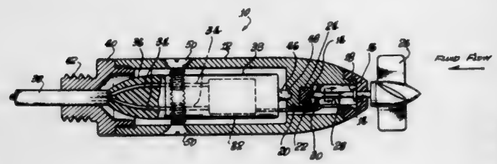
A probe for diagnosing the properties of a high temperature gas including a body having a first fluid passageway for receiving an aspirated gas sample therethrough, a second fluid passageway for circulating a coolant therethrough in heat transfer relation with the gas sample flowing through the first fluid passageway, and a third fluid passageway disposed between the second fluid passageway and the environment of the body for circulating a coolant therethrough, the coolant in the third fluid passageway thermally insulating coolant flowing in the second fluid passageway from the environment of the body. The passageways for the aspirated gas sample and the coolants are provided with orifices to provide a fixed flow rate ratio in the passageways, and a thermocouple is disposed in the second fluid passageway for measuring the temperature rise of the coolant flowing in heat transfer relation with the aspirated gas sample in the first fluid passageway.

3,665,764

PROPELLER TYPE VELOCITY INDICATOR

Paul C. Roberts, Pasadena, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 16, 1970, Ser. No. 89,963
Int. Cl. G01f 1/10
U.S. Cl. 73—231 5 Claims



A propeller type velocity indicator including a casing; a propeller shaft rotatably mounted through the casing with a portion of the shaft extending within the interior of the casing and a portion extending exterior of the casing; a propeller mounted on the exterior portion of the shaft; the interior portion of the propeller shaft having an irregularity; a needle mounted within the casing so as to engage the shaft and sense the irregularity thereof; and pickup means mounted within the casing and connected to the needle for converting vibrations of the needle into electrical signals.

3,665,765

BI-MATERIAL CONDITION SENSING MEANS

Victor J. Dube, West Allis; Paul E. Thoma, Milwaukee, and Jao Shiun Kao, Wauwatosa, all of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Apr. 11, 1968, Ser. No. 720,684
Int. Cl. G01m 19/10; G01k 5/62
U.S. Cl. 73—337 23 Claims



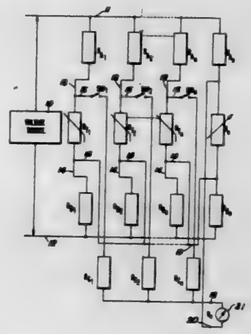
A bi-material temperature and/or humidity sensor including a circular disc which is mounted in fixed relation about the periphery. A flexible metal base member has a second material bonded to the center or to the outer portion to form a bi-material element. The second material is made of a substantially smaller area.

3,665,766

TEMPERATURE MEASURING APPARATUS

James Stewart Johnston, Bognor Regis, England, assignor to Rosemount Engineering Company Limited, Bognor Regis, England

Filed Oct. 27, 1969, Ser. No. 869,585
Claims priority, application Great Britain, Oct. 28, 1968, 50,985/68
Int. Cl. G01k 3/06
U.S. Cl. 73—342 15 Claims



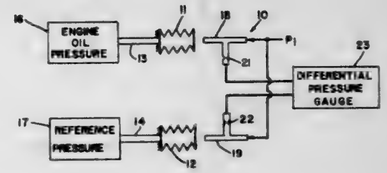
Apparatus for measuring the average temperature at a number of points comprises, at each sensing point, four terminal temperature responsive resistance elements. The current terminals of all the elements are connected in parallel constant current feed circuits. The voltage terminals of each element are connected, via a separate high impedance and switch for each element, to a voltage averaging circuit including datum voltage balancing means.

3,665,767

FLUIDIC PRESSURE INDICATOR

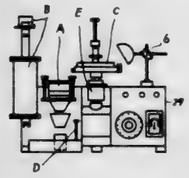
Horace B. Welk, Jr., Churchville, Pa., assignor to The United States of America as represented by the Secretary of the Navy

Filed Jan. 27, 1971, Ser. No. 110,202
Int. Cl. G01l 13/02
U.S. Cl. 73—407 R 8 Claims



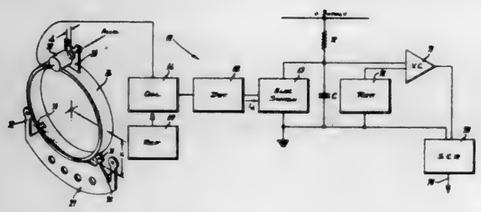
To form a fluidic pressure gauge a pair of back pressure sensor nozzles are mounted in gapped adjacency to the movable ends of respective bellows or diaphragms. One bellows is connected, for example, to communicate with the engine oil pressure while the other communicates with a suitable reference pressure. The output leg of each nozzle is connected to a differential pressure gauge. Another form of the invention yields a nonanalog indication when the oil pressure is outside a certain range. The ends of the bellows are connected together by a pivoting arm which operates a linearly movable slotted bar. An interruptable jet is mounted adjacent the slotted bar and connected to a fluidic logic gate whose outputs operate pneumatic indicators.

3,665,768
DEVICE OF MEASURING FLUID CHARACTERISTIC OF POWDERED OR GRANULAR MATERIALS
Masuo Hosokawa; Tohei Yokoyama, and Kiyoshi Urayama, all of Osaka, Japan, assignors to Kabushiki Kaisha Hosokawa Funtaikogaku Kenkyusho, Osaka, Japan
Filed Nov. 10, 1970, Ser. No. 88,460
Int. Cl. G01n 33/00
U.S. Cl. 73—432 R 1 Claim



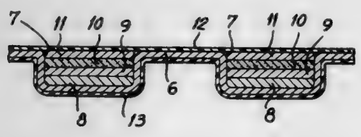
A device for measuring characteristics of powdered and granular materials which includes apparatus for measuring the angle-of-repose, cohesiveness, aerated bulk density, packed bulk density, angle-of-spatula, dispersability, and angle-of-fall.

3,665,769
ACCELERATION SWITCH
Harold D. Morris, Orinda, Calif., assignor to Systron-Donner Corporation, Concord, Calif.
Filed May 17, 1968, Ser. No. 730,125
Int. Cl. G01p 15/08
U.S. Cl. 73—517 18 Claims



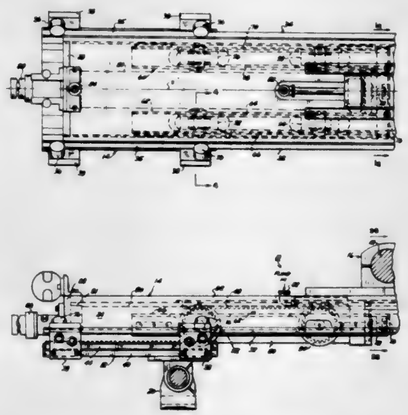
Acceleration switch having a mass and means for sensing when the position of the mass is shifted from a normal position under the force of acceleration and supplying an output signal after a predetermined period of time.

3,665,770
TEMPERATURE INDICATOR
Zsigmond Sagi, Parsippany, N.J., and Berel Weinstein, New York, N.Y., assignors to Bio-Medical Sciences, Inc., Fairfield, N.J.
Filed July 24, 1970, Ser. No. 58,001
Int. Cl. G01k 11/08, 11/16
U.S. Cl. 73—356 16 Claims



A thermometer is provided comprising a heat conductive carrier on which there are one or more temperature sensitive regions comprising temperature responsive substances having preselected and relatively precise points at which a temperature induced change in state will begin to occur. In multiple region systems, the regions are spaced apart and the substances are successively graduated with respect to the points. Included is a coloration or other indicator means and a material so positioned with respect to the temperature responsive substance and the indicator means as to be capable of incorporating or otherwise demonstrably responding to the indicator means as a result of the initiation of a temperature responsive change in the temperature responsive substance.

3,665,771
STROKE MULTIPLYING RETRACTOR MECHANISM
Leland F. Blatt, 24121 Mound Road, Warren, Mich.
Filed June 25, 1970, Ser. No. 49,862
Int. Cl. F16h 19/04
U.S. Cl. 74—29 5 Claims

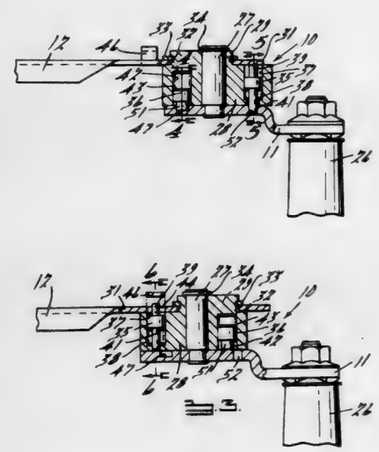


A retractor mechanism for an article handling or transfer apparatus is comprised of a stationary, longitudinal frame member, which slidingly supports a longitudinally movable carriage assembly, which normally carries the article handling implement. The carriage assembly is supported on spaced, parallel slideways and is moved by a gear and rack mechanism composed of a fixed rack attached to the stationary frame and a movable rack attached to and moving with the carriage assembly which are interconnected by at least one pinion gear. The pinion gear is supported in a carrier, which is connected to the piston rod of a fluid cylinder which provides a power actuation for longitudinal movement of the pinion carrier to drive the carriage assembly. The carriage driving rack and pinion mechanism, between the carriage and the supporting frame, is such that the piston stroke of the fluid cylinder acting on the pinion carrier to reciprocate the pinion carrier will be multiplied at least two times to move the carriage assembly a distance double the stroke of the fluid cylinder.

3,665,772
WINDSHIELD WIPER MOTOR LINK DEPRESSED PARK MECHANISM
Kenneth A. Beard, Ann Arbor; Theodore W. Daykin, Dearborn, and Gordon H. Jagger, Highland Park, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Sept. 11, 1970, Ser. No. 71,532
Int. Cl. F16h 21/40
U.S. Cl. 74—75 4 Claims

A windshield wiper drive mechanism that functions to park the windshield wiper arms and blades outside the normal run

pattern, i.e., in a depressed park position, by extending the effective wiper motor output arm radius. The effective output arm radius is controlled through a rotation sensitive,

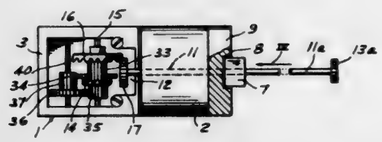


spring-loaded, double latch means carried on an eccentric interposed between the output arm and a driving link connected to the wiper arm linkage.

3,665,773
TRANSMISSION MEANS SUCH AS SPINDLE TAPES
Thomas Mitchell, Manchester, England, and Frederick Grossman, deceased, late of Manchester, England (by Doris Hindes, administrator), assignors to William Kenyon & Sons Limited
Continuation-in-part of application Ser. No. 447,943, Apr. 12, 1965, now abandoned, Continuation-in-part of application Ser. No. 561,287, June 28, 1966, now abandoned.
This application Aug. 13, 1968, Ser. No. 753,846
Claims priority, application Great Britain, Jan. 6, 1968, 935/68
Int. Cl. B32b 27/08, 27/34
U.S. Cl. 74—231 R 9 Claims

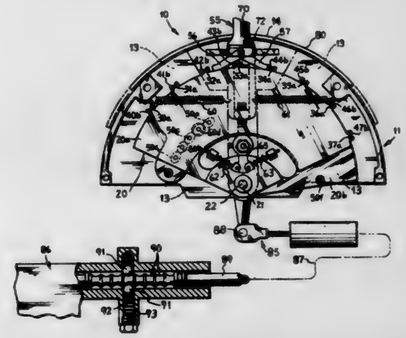
A transmission tape comprising a woven fabric the constituent yarns of which are selected from the group consisting of natural cellulose and nylon and mixtures of polyethylene terephthalate and cotton have been impregnated with an alkyl acrylate polymer and nylon of low melting point.

3,665,774
DRIVING ASSEMBLY
Gunter Bauhus, and Hans Schmidtchen, both of Nurnberg, Germany, assignors to Gebr. Buhler Nachfolger GmbH, Nurnberg, Germany
Filed Dec. 30, 1969, Ser. No. 889,283
Int. Cl. F16h 3/02, 1/20, 1/12
U.S. Cl. 74—325 11 Claims



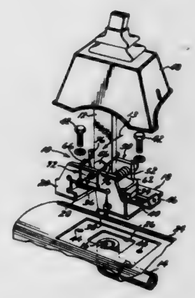
A driving assembly has a gearing and a motor the drive shaft of which can be selectively coupled with one of two or more input gears of the gearing thereby changing the ratio of transmission of the gearing. The motor is exchangeably mounted and may have two drive gears either one of which can be coupled to an input gear of the gearing.

3,665,775
RATCHET CONTROL MECHANISM
Kenneth G. Freeman, 2047 Bel Air Avenue, San Jose, Calif.
Filed Oct. 6, 1970, Ser. No. 78,393
Int. Cl. G05g 9/00
U.S. Cl. 74—473 R 13 Claims



A ratchet control mechanism in which a series of ratchet teeth are formed on the arcuate wall of a plate. The ratchet plate is mounted for rotary movement about an axis thereof. A handle with a pawl is mounted for movement about a pivot point spaced from the axis of the ratchet plate. The handle is spring loaded for return to its central position after each actuation thereof. The pawl engages, respectively and successively, the ratchet teeth to rotate the ratchet plate in one direction in a step-by-step incremental rotary movement in response to the actuation of the handle in one direction from the central position thereof and to rotate the ratchet plate in another direction in a step-by-step incremental rotary movement in response to the actuation of the handle in another direction from the central position thereof.

3,665,776
VEHICLE GEAR SHIFT MECHANISM
Stanley C. Hess, Temple City, Calif., assignor to Superior Industries, Inc., Van Nuys, Calif.
Filed Apr. 26, 1971, Ser. No. 137,210
Int. Cl. G05g 9/12
U.S. Cl. 74—473 P 2 Claims



A vehicle gear shift mechanism of the type in which a gearshift stick is carried by mounting brackets for pivotal

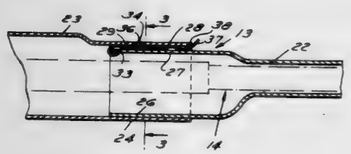
movement about both longitudinal and transverse axes, and in which the stick is preloaded or biased away from a generally upright position. An installation clip is provided to resist such bias and maintain the stick in the upright position necessary on installation to align the linkage ball of the stick with the shifting socket of the vehicle transmission gear actuating linkage. The clip is readily removable once installation of the shift mechanism is completed.

3,665,777
ENERGY ABSORBING STEERING COLUMN
Finn Benzon Jensen, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 15, 1969, Ser. No. 885,159
Int. Cl. B62d 1/18
U.S. Cl. 74—492 **1 Claim**



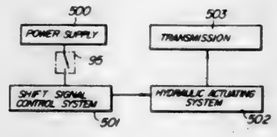
A steering column assembly including an energy absorbing outer jacket and a telescopically collapsible steering shaft. The shaft has a resilient friction member separating the inner and outer shaft components. The friction member is radially compressed between the two components to maintain the relative axial position of the shaft components and to prevent audible vibration between the components.

3,665,778
ENERGY ABSORBING STEERING COLUMN
William J. Bohan, Plymouth, and Hani N. Sarafa, Oak Park, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Sept. 2, 1970, Ser. No. 68,838
Int. Cl. B62d 1/18
U.S. Cl. 74—492 **7 Claims**



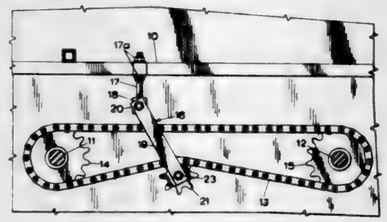
A telescopically collapsible shift tube for use in steering column assembly having an energy absorbing outer jacket. The tube has a resilient retainer positioned between adjoining portions of the inner and outer tube elements. The retainer is radially compressed between the two tube elements to maintain the relative axial position of the elements and to prevent audible vibrations between the elements.

3,665,779
AUTOMATIC SHIFT CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION
Takakazu Mori, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan
Filed June 23, 1970, Ser. No. 49,013
Claims priority, application Japan, Oct. 13, 1969, 44/81677
Int. Cl. B60k 21/00
U.S. Cl. 74—866 **14 Claims**



An automatic shift control system for a fluid controlled automatic transmission having a safety device for forcedly maintaining the hydraulic actuating circuit in the third speed position when the speed of the vehicle running at high speeds exceeds a predetermined setting so as to inhibit a downshift from third to second gear thereby to ensure safety and stable driving at high speeds.

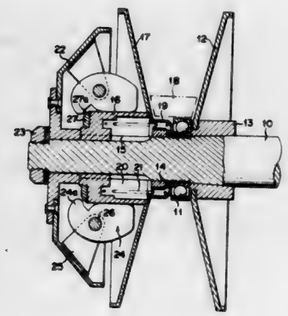
3,665,780
TENSIONING ASSEMBLIES FOR DRIVE CHAINS
John T. Lunenschloss, c/o Air-Lec Industries, Inc., 3300 Commercial Avenue, Madison, Wis.
Filed Oct. 9, 1970, Ser. No. 79,461
Int. Cl. F16h 7/08, 7/12
U.S. Cl. 74—242.9 **2 Claims**



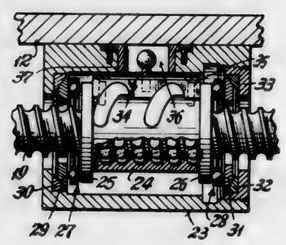
An idler sprocket assembly for keeping tension on the drive chain of a drive assembly. The device has a stationary but adjustable mounting bracket positioned between a drive shaft and a driven shaft. The drive chain runs over an idler sprocket carried on the end of a pivotally mounted swing arm for maintaining tension on the chain.

3,665,781
SHEAVE DRIVE TYPE AUTOMATIC TRANSMISSION DEVICE
Katsuhiko Kawamura, Hamakita, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Hamakita-shi, Japan
Filed Aug. 28, 1970, Ser. No. 67,692
Claims priority, application Japan, Sept. 1, 1969, 44/82452
Int. Cl. F16h 55/52
U.S. Cl. 74—230.17 **7 Claims**

A stationary conical sheave member is fixed on the output shaft of an engine to rotate therewith. A movable conical sheave member faces said stationary half pulley member and is made slidable in the direction of its axis. A weight is pivoted on the output shaft, to control the shifting of the movable conical sheave member by a pawl portion; the contact plane of the movable conical sheave member along which the pawl portion of the weight slides has a convex curvature in the direction in which the pawl portion of the weight slides along said contact plane, so as to vary the speed-torque characteristics of the sheave drive to match it to the speed-torque characteristics of internal combustion engines.



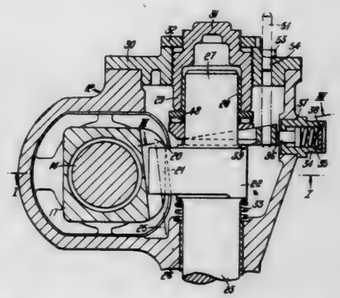
3,665,782
NUT SUPPORT TO ACCOMODATE MISALIGNMENT
Robert M. Loftus, Farmington, Conn., assignor to The Superior Electric Company, Bristol, Conn.
Filed Sept. 4, 1970, Ser. No. 69,792
Int. Cl. F16h 1/18, 55/22
U.S. Cl. 74—424.8 R **8 Claims**



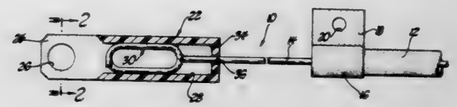
A support for containing a nut operating on a rotating threaded shaft where the nut is connected to a part mounted for linear movement essentially along the axis of the shaft and in which the support between the nut and the part accommodates misalignment between the shaft and the part without introducing dimensional error along the axis of the shaft.

3,665,783
STEERING GEAR ASSEMBLY
Guenther Arnold, Russelsheim, Germany, assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 18, 1971, Ser. No. 107,079
Claims priority, application Germany, Jan. 29, 1970, P 20 03 962.7
Int. Cl. B62d 1/20
U.S. Cl. 74—498 **8 Claims**

A steering gear assembly for a motor vehicle has a toothed rack meshing with a sector on a steering output shaft. A wedge member is biased into engagement with the output shaft to displace it in a sense tending to take up play between the teeth of the rack and the sector, which take up is greatest at a centered position of the steering output shaft.

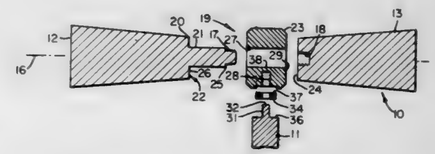


3,665,784
REMOTE CONTROL ASSEMBLY
William G. Bennett, Troy, Mich., assignor to Teleflex, Inc., North Wales, Pa.
Filed Oct. 8, 1970, Ser. No. 79,053
Int. Cl. F16c 1/22
U.S. Cl. 74—501 **17 Claims**



A motion transmitting remote control assembly including a conduit and a motion transmitting core element movably supported by the conduit. A terminal means is attached to one end of the core element and is adapted for attachment to a member to be controlled and normally moves with the core element but may move relative to the core element longitudinally of the core element in response to a predetermined force to automatically adjust the effective length of the core element. In one embodiment the core element has loops therein in frictional engagement with an organic polymeric terminal means and in another embodiment the core element has ratchet teeth on the end thereof in engagement with ratcheting teeth on the terminal means.

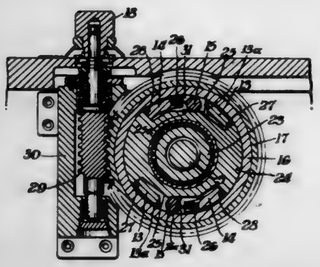
3,665,785
TRANSMISSION SHIFT LEVER HANDLE WITH AN ADJUSTABLE GRIP
Stephen W. Moal, 18953 Almond Road, Castro Valley, Calif.
Filed June 1, 1970, Ser. No. 42,192
Int. Cl. G05g 1/10
U.S. Cl. 74—543 **12 Claims**



A transmission shift lever handle has a cylindrical grip member defining a gripping surface about an axis. A coupling

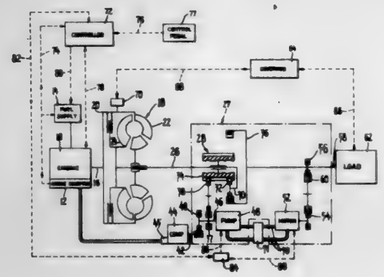
joins the grip member at its mid portion to a floor mounted shift lever of a transmission to form a T-joint. The grip member is joined to the lever by the coupling to revolve about its gripping axis while the lever is moved between various shift stations.

3,665,786
FEED MECHANISM FOR MACHINE TOOL
Akiyoshi Kobayashi, Kariya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya, Japan
Filed Jan. 19, 1971, Ser. No. 107,814
Claims priority, application Japan, Jan. 22, 1970, 45/6735
Int. Cl. F16h *35/00*
U.S. Cl. 74—625 4 Claims



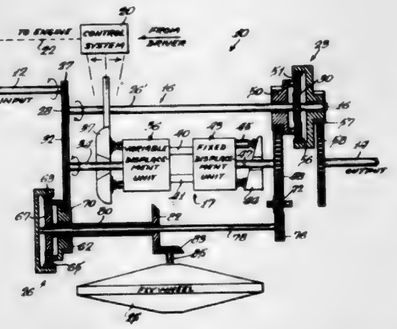
In the feed handle mechanism of a machine tool, a handle and a worm wheel are rotatably mounted on the handle shaft. A worm with an operating means at one end engages the worm wheel. The worm wheel is mutually rotatably fitted with a notched plate for transmitting the rotation. The space in the notch holds a rolling body which only transmits the rotation of the worm wheel to the rotation-transmitting plate. The notch also holds the transmitting member extending from the above mentioned handle and the transmitting member extending from the above mentioned handle shaft on both sides of the above mentioned rolling body.

3,665,787
POWER PLANT
William H. Wilkinson, Columbus, Ohio, assignor to Perkins Services N.V., Curacao, Netherlands Antilles
Filed July 24, 1970, Ser. No. 58,011
Int. Cl. F16h *37/06*; B60k *21/00*
U.S. Cl. 74—674 27 Claims



A power plant includes an internal combustion engine which drives a planetary differential through a lockable hydrostatic torque converter. One of the differential outputs drives a supercharging air compressor, while the other output drives the power plant load through a drive shaft. The two outputs are inter-connected by a variable displacement hydrostatic drive including a pump and a motor. Thus a split path drive through the hydrostatic leg and through the mechanical connection to the output is provided. A controller receives an engine speed signal, a manifold pressure signal and an engine speed setting and provides an output signal to control a variable fuel supply to the engine and another output signal for controlling adjustment of the hydrostatic pump and motor. A governor is responsive to the speed of the load to control lock-up of the torque converter. In operation at high load speeds, the hydrostatic drive leg is locked out, the compressor is idle, and the torque converter is locked up, yielding an overdrive ratio. Higher power demands caused by increases in power plant load will cause activation of the hydrostatic leg to vary the drive ratio and activate the compressor to increase engine power. Upon further increase of the load, the torque converter unlocks, enabling torque multiplication and maintenance of relatively high engine speed for high power output. The effect of this power plant is to provide reserve power in a usable range only, while maintaining engine speed in an optimum power range.

3,665,788
HYDROMECHANICAL STORING TRANSMISSION
Bengt E. Nyman, Rockford, Ill., assignor to Sundstrand Corporation
Filed Aug. 19, 1970, Ser. No. 65,199
Int. Cl. F16h *3/74*, *47/04*; G05g *15/00*
U.S. Cl. 74—751 10 Claims

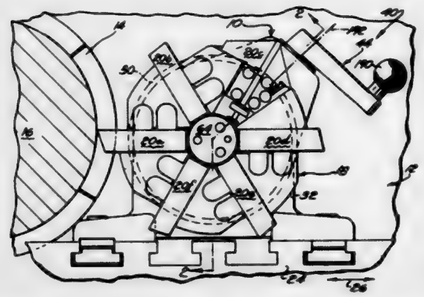


A regenerative transmission including split parallel power paths, one being mechanical and the other having an infinitely variable hydrostatic transmission with the power paths being combined by a differential at the transmission output that is constructed to produce a zero output when the hydrostatic drive rotates the differential elements in a subtracting or negative direction at a predetermined speed. The transmission input and the output from the hydrostatic drive are connected through a summing differential to drive a flywheel that stores energy under static conditions and regenerates energy by (1) providing assist torque to the output shaft during acceleration, and (2) absorbing energy normally delivered at the output shaft during deceleration to assist in transmission braking.

3,665,789
TURRET ASSEMBLY
John Fisher, Aurora, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio
Filed Mar. 9, 1970, Ser. No. 17,822
Int. Cl. B23b *29/30*
U.S. Cl. 74—813 L 12 Claims

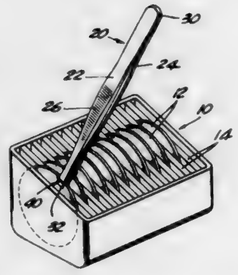
An improved machine tool turret assembly includes a turret for holding a plurality of tools. During machining operations the turret is held against rotation by a coupling. Upon

operation of the coupling to a disengaged condition by an actuator assembly, a reversible drive assembly is operable to rotate the turret in a selected one of two directions to move a desired tool to an operating position. The coupling is then re-engaged by operation of the actuator assembly. The actuator



assembly includes a wedge member which is moved by a cam to effect operation of the coupling between the engaged and disengaged conditions. When the coupling is engaged, a spring applies a biasing force to the wedge member to thereby urge surfaces of the coupling together with a constant clamping force.

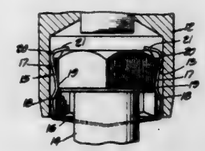
3,665,790
TWEEZERS
Price D. Jones, Manhattan Beach, Calif., assignor to Swiss American Precision Imports, Inc., El Segundo, Calif.
Filed July 20, 1970, Ser. No. 56,510
Int. Cl. B25b *9/02*
U.S. Cl. 81—43 2 Claims



The device is a tweezers or tool particularly constructed and adapted for picking up and handling thin fragile objects such as silicon wafers or the like. The noses or jaws of the tweezer parts or legs are particularly configurated for the purpose intended. The end parts or jaws of the tweezer legs are configurated to limit the inward movement of the wafer or other object between the jaws and also to limit the opening movement of the jaws. The invention embodies several different preferred configurations for accomplishing these purposes.

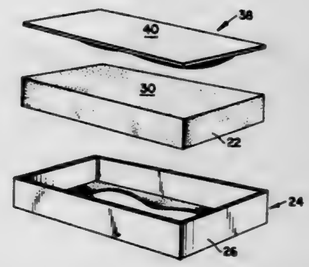
3,665,791
KEEPER FOR HEXAGONAL FASTENER WRENCHES
Harry A. Carr, 2934 El Caminito, La Crescenta, Calif.
Filed Jan. 21, 1971, Ser. No. 107,989
Int. Cl. B25b *13/58*
U.S. Cl. 81—125 12 Claims

A keeper accessory for use on a wrench head to hold a hexagonal fastener frictionally and firmly captive therein. The one piece accessory is particularly suitable for installation in any twelve point head without need for alterations or tools and fits a range of wrench head sizes by its inherent



ability to expand against the interior surfaces without interfering with the subsequent insertion of the fastener to be wrenched.

3,665,792
METHOD AND APARATUS FOR FORMING FOAM MATERIAL
James S. Bush, 901 Longridge Road, Oakland, Calif., and Robert S. Mason, 522 Sheldon, El Segundo, Calif.
Filed Feb. 20, 1970, Ser. No. 13,137
Int. Cl. B26d *7/08*
U.S. Cl. 83—1 2 Claims



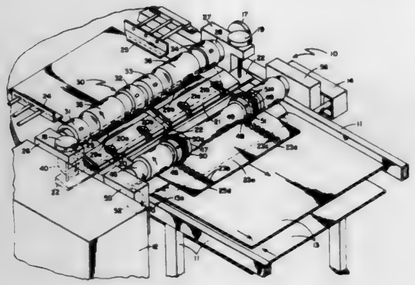
A method and apparatus for forming foam material, such as polyurethane or foam rubber, into any desired shape, including multi-curved objects, e.g. a contoured dress form. A mass of preformed foam material is forced through an opening having a peripheral configuration corresponding to that of the finished article. A die used to force the mass through the opening is of the general contour desired in the end article. After a portion of the original mass is forcibly urged through the opening, such extruded portion is sheared away from the remaining mass in the plane of the opening. After the shearing operation, the cut-away portion of the foam will assume the contours of the die, but in effect be a mirror image thereof.

In a second phase of the invention, the article produced in the manner above described is positioned over a die opening having a periphery smaller than the periphery of the article by some predetermined amount. The article is forced through such opening with a flat die which is caused to stop from the plane of the opening by the same amount. The extruded portion is again sheared away in the plane of the opening. After the shearing, the article remaining will have the same peripheral configuration and the same external contours, but will have a thickness corresponding to the aforesaid predetermined amount.

3,665,793
INNERSOLE FORMING STRIP
Robert M. Lehner, Golden Beach, Fla., assignor to Lyn-Flex Industries, Inc., Saco, Maine
Filed Jan. 23, 1970, Ser. No. 5,217
Int. Cl. B26d *9/00*
U.S. Cl. 83—2 4 Claims

An innersole forming strip from which innersoles can be prepared suitable for use in a wide variety of shoe styles and

sizes by transverse alternate direction die-cutting. The strip is

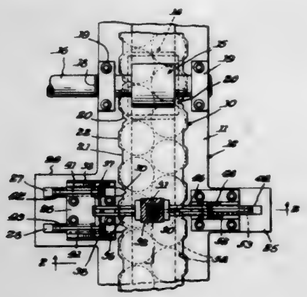


formed by skiving fiberboard on one surface with two bands spaced on either side of a non-thinned central band.

3,665,794
APPARATUS FOR POSITIONING SCROLL SHAPED METAL STRIPS

Chester M. Wilg, Lincolnwood, Ill., assignor to F. J. Littell Machine Company, Chicago, Ill.

Filed Mar. 23, 1970, Ser. No. 21,699
Int. Cl. B26d 5/20
U.S. Cl. 83—253 1 Claim



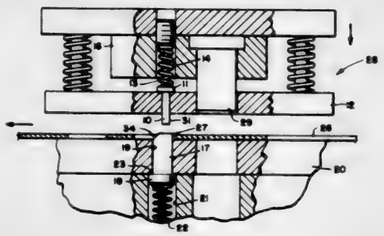
In the stamping of articles from scroll shaped strips, it is necessary that the strip be accurately positioned so as to precisely align the strip with respect to the stamping dies. The entire area of the articles must be stamped out of the material of the strip to insure its perfect shape. The invention contemplates novel and improved means for engaging the side edges of the scroll cut strip for the purpose of accurately positioning and aligning the strip with respect to the stamping dies. In one modification the side edges of the strip are provided with piloting notches.

3,665,795
TWO STAGE WORKSTOCK LOCATOR FOR PUNCH PRESSES

William J. Mayer, Hoffman Estates, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Dec. 15, 1969, Ser. No. 885,156
Int. Cl. B26d 7/16
U.S. Cl. 83—395 3 Claims

Workstock to be operated upon by a punch press is advanced into blocking engagement with a first locating device which is slidably mounted in the die of the punch press and which locates the workstock in a first position. When the punch press is operated a second locating device, positioned in the ram of the punch press, engages the first locating device and forces it beneath the bottom surface of the advancing stock. When the first locating device is depressed beneath the bottom surface of the workstock, the workstock partially advances over the first locating device and into engagement with the second locating device, which accurately locates it in a second and final position to be operated upon by the punch press. The bottom surface of the workstock

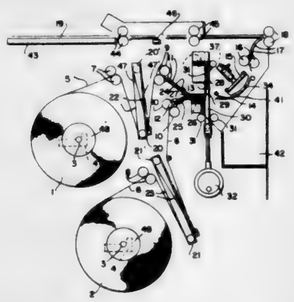


holds the first locating device out of blocking engagement with the workstock, and after the punching operation the workstock advances over the first locating device until the portion of the workstock which has just been blanked out by the punch is above the first locating device, at which time the first locating device rises to again block the advancing workstock and to initially locate it in the first position for the next punching operation.

3,665,796
APPARATUS FOR CUTTING A WEB OF MATERIAL

Horst Witte, Wiesbaden-Biebrich, Germany

Filed Oct. 22, 1970, Ser. No. 83,005
Claims priority, application Germany, Sept. 10, 1970, P 20 44 820.8
Int. Cl. B26d 7/14
U.S. Cl. 83—156 4 Claims

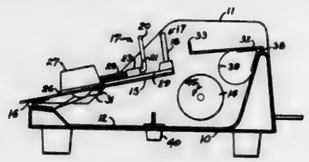


This invention relates to an improvement in an apparatus for cutting a web of material, the apparatus including supply means for the web of material, a first feeding means for feeding the web to a cutting means, a cutting means, and a second feeding means behind the cutting means, and the improvement comprising movable guide means for the web positioned between the cutting means and the second feeding means, said first feeding means being stationary and said second feeding means being in operation during a cutting operation.

3,665,797
RING CUTTING TOOL

George Henry Gilham, deceased, late of Hermiston, Oreg. (by Gay Maude Gilham, administratrix), and Wesley R. Door, Kennewick, Wash., assignors to USM Corporation, Boston, Mass.

Filed Aug. 24, 1970, Ser. No. 66,234
Int. Cl. B26d 7/06
U.S. Cl. 83—411 4 Claims

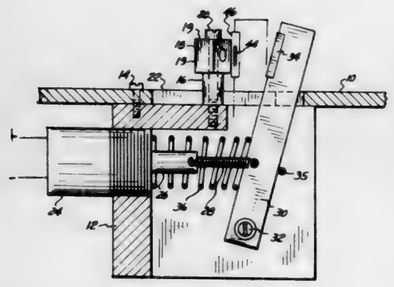


A supporting frame mounts an enclosed motor that drives a circular cutting disc. Mounted outward of the disc is a pivoted platform with a movable ring clamp indexed to facilitate the removal of a pre-selected section from a finger ring. Also provided is a pivotable shelf for facilitating the cutting of ring stock, ring sections and other jewelry details.

3,665,798
TAPE SEVERING DEVICE

Thomas J. Tapert, Birmingham, and James H. Current, Hazel Park, both of Mich., assignors to Apex Electrophysics, Inc., Troy, Mich.

Filed Nov. 2, 1970, Ser. No. 85,856
Int. Cl. B26d 5/08
U.S. Cl. 83—575 3 Claims



Tape cutting means comprising a stationary cutting edge and a movable anvil, particularly useful in severing sound recording and sound playback tape of the type commonly used in cassettes and cartridges, characterized by the fact that the cutting edge is one of 12 edges of a cube which may be mounted in one of several positions to present any one of its 12 edges to the anvil for tape severance.

3,665,799
ADJUSTABLE DRUM MALLETS

Fred D. Hinger, 357 Hilltop Avenue, Leonia, N.J.

Continuation of application Ser. No. 871,739, Sept. 11, 1969, now abandoned, which is a continuation of application Ser. No. 656,398, July 27, 1967. This application Nov. 23, 1970, Ser. No. 92,157
Int. Cl. G10d 3/16
U.S. Cl. 84—422 15 Claims

The drum mallets disclosed are adjustable, by the percussion player, as to weight and/or balance and/or head characteristics, so as to vary the "feel" of the mallet, and thus also the tonal effect obtainable when playing upon kettle-drums, snare-drums, and other percussion instruments; and, typically, the mallet has frictionally slidable, removable and replaceable, external balancing mass means, positionable to serve as the striking head of the mallet, whereby the adjustment as to balance, overall weight, head characteristics and tone production may be readily obtained. In some forms, the said mass means regularly serves as a removable and replaceable striking head; while in other forms, the mass means comprises one or more thin elongated tubes having a

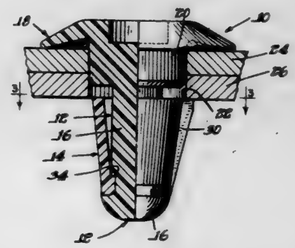


frictionally-gripping fit on an elongated mallet body, so as to be manually slidable thereon but tight enough to avoid dislodgment under normal playing action; and such a tubular member may be slidable to the head-end of the mallet to serve as a striking head or it may be slidable to a position to serve as a hand grip; and one or more such tubular members may be placed in various positions along the length of the mallet. The mallet body may also have a tapered element at the head-end to assure retention of mass members especially of enlarged-head types; and the disclosure further includes such heads embodying a relatively hard inner portion and a relatively soft outer covering.

3,665,800
SNAP-IN FASTENER AND APPARATUS FOR MOLDING SAME

Francis E. Ryder, Mt. Prospect, Ill., assignor to Value Engineered Components, Inc., Lake Zurich, Ill.

Filed Mar. 20, 1970, Ser. No. 21,444
Int. Cl. F16b 21/08
U.S. Cl. 85—5 8 Claims



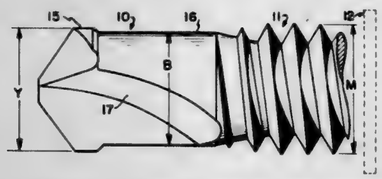
The present invention relates generally to improvements in fasteners adapted for snap insertion within a work aperture,

and more particularly to improvements in snap-fasteners of multi-piece form. The embodiment of the invention disclosed herein comprises a headed shank member and a sleeve member telescopically associated therewith. The sleeve member is secured in pre-determined spaced relation with respect to the work engaging side of the head and incorporates a laterally yieldable section to permit telescopic association thereof with a work aperture. The spacing of the sleeve with respect to the head is dependent upon a preselected lineal dimension of the shank, such dimension being determined by the thickness of the work to which the fastener is to be applied.

3,665,801
DRILL SCREW

Charles E. Gutshall, Ellwood City, Pa., assignor to Textron, Inc., Providence, R.I.

Filed Aug. 25, 1970, Ser. No. 66,795
Int. Cl. F16b *25/00, 35/00*
U.S. Cl. 85—41 5 Claims

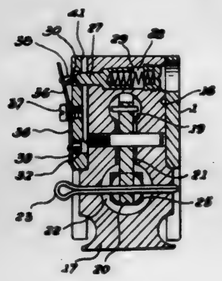


The drill screw comprises a drill tip, a threaded shank and a head. The drill tip is in two sections, the first of which is a pyramidal shaped entry section, and the second of which is a trailing section having a diameter less than the major diameter of the first section. The major diameter of the entry section is generally larger than or equal to the pitch diameter of the threaded section or where the major diameter of the entry section is smaller than the pitch diameter of the threads, a convolutely fluted section having a major diameter greater than the major diameter of the entry section but less than the major diameter of the threads is positioned adjacent the trailing section of the drill tip and intermediate the drill tip and the threads.

3,665,802
FIRING MECHANISM FOR EXPLOSIVELY ACTUATED TOOL

Robert Temple, Pittsburgh, Pa., assignor to Mine Safety Appliances Company

Filed Apr. 6, 1970, Ser. No. 25,643
Int. Cl. F41c *11/02*
U.S. Cl. 89—1 B 5 Claims

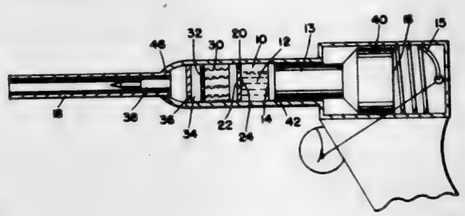


A breech block is mounted behind the breech in the frame of an explosively actuated tool and is movable transversely of the frame to an inoperative position exposing the rear end of the cartridge-receiving bore through the breech. A firing pin is supported by the block in line with the bore. Carried by the breech block for movement transversely thereof is a spring-pressed detent that normally projects into a hole in the frame beside the block to hold the block with its firing pin in operative position. The frame is provided with a second hole for receiving the detent when the block has been moved to its inoperative position. Manually operable means are mounted on the frame for pushing the detent out of either of the frame holes to permit it to be moved with the block to the other hole.

3,665,803
SILENT HAND WEAPON

Irving Forsten, West Orange, and William J. Buckley, Jr., Sparta, both of N.J., assignors to The United States of America as represented by the Secretary of the Army

Filed Dec. 3, 1969, Ser. No. 881,805
Int. Cl. F41f *1/00*
U.S. Cl. 89—7 7 Claims

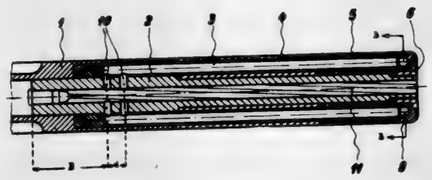


A hand held weapon having especial value in guerilla fighting and the like since the weapon is capable of discharging projectiles without visible or audible signals. The weapon is actuated by having hydrogen peroxide controllably contact a silver screen for decomposition of the peroxide into superheated steam and oxygen which rupture a burst disc before sending the projectile toward the target. The pressure behing the projectile is substantially constant for the entire length of the weapon's barrel.

3,665,804
SEMI-AUTOMATIC RAPID FIRING PISTOL WITH GAS ESCAPE OPENINGS IN THE BARREL WALL

Edwin Rohr, Wettingen, Switzerland, assignor to Hammerli AG, Lenzburg, Switzerland

Filed Oct. 24, 1969, Ser. No. 869,060
Claims priority, application Switzerland, Jan. 20, 1969, 1027/69
Int. Cl. F41c *21/18*
U.S. Cl. 89—14 C 3 Claims



A semi-automatic pistol having gas escape ports in the sides of the barrel wall immediately forward of the cartridge chamber, which ports permit gas to escape from the firing chamber. From these ports, the gas is conducted along a pair of elongated gas transfer passageways extending parallel to and disposed on either side of the barrel of the pistol. At the

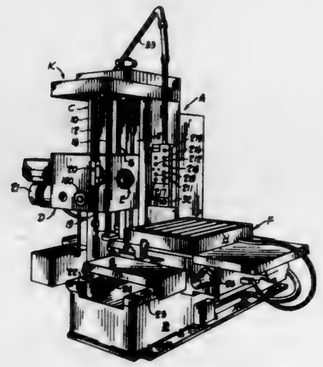
ends of the chambers opposite the aforementioned gas escape ports, and adjacent to the open end of the pistol barrel, these passageways terminate in gas exit ports open to the outside air, which ports extend upwardly and to either side at an acute angle to the vertical. The escape of gas from these ports by reaction tends to force the open end of the pistol barrel downwardly and thus counteracts the tendency of the barrel to move upwardly and to the left upon firing.

The tubular members forming the gas passageways are embedded in the pistol stock adjacent the firing chamber, and are retained therein by an annular jacket or cover which, in turn, is retained by a threaded retaining nut screwed into the end of the pistol barrel.

3,665,805
MACHINE TOOL

Heinz K. Weiß, Willoughby Hills, Ohio, assignor to The New Britain Machine Company, New Britain, Conn.

Filed Dec. 5, 1969, Ser. No. 882,502
Int. Cl. B23c *1/12*; B23p *39/14*
U.S. Cl. 90—14 15 Claims



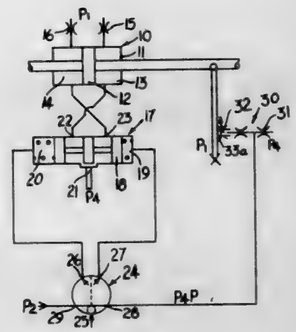
A machine tool including a vertically movable spindlehead member having an extensible and retractable tool spindle member, and a work-supporting compound slide assembly having two slide members movable in directions at right angles to one another in horizontal planes. All members are selectively movable in opposite directions along their respective paths of movement at feed and transverse rates by two variable speed motors, one connectable to the spindlehead or the tool spindle and the other to either of the two slide members of the work-supporting compound slide. The motors are connected to their respective tool and work-moving members through discrete transmissions of the continuously meshed gear type under the control of hydraulically actuated clutches. Spindle feed is alternatively provided from a spindle drive motor to correlate feed with spindle rotation. Brake discs selectively deflectable against fixed abutments and connected to rotatable parts will maintain selected tool and work-carrying members in fixed positions.

3,665,806
FLUID OPERATED SERVOMECHANISM

Ronald Alfred Heath, Harborne, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Sept. 17, 1969, Ser. No. 858,688
Claims priority, application Great Britain, Sept. 30, 1968, 46,267/68
Int. Cl. F15b *13/042, 13/16*
U.S. Cl. 91—52 9 Claims

A servomechanism in which a double-acting fluid operated device, as for example a piston and cylinder unit, is controlled by a fluidic circuit via a relay valve. The circuit comprises a fixed and a variable flow restrictor in series, with variable restrictor being controlled by the position of the double-acting device. A pressure signal applied to one of the restrictors generates between the restrictors one control

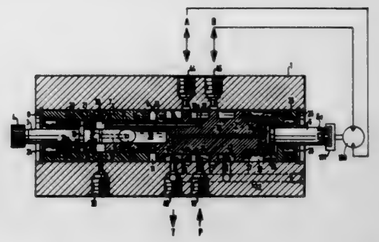


signal for a fluidic proportional amplifier. A second pressure signal forms the other control signal for the amplifier. Output signals from the amplifier serve to position the moving element of the relay valve and hence position the moving element of the double-acting device.

3,665,807
CONTROL VALVE ARRANGEMENT FOR A HYDRAULIC APPARATUS

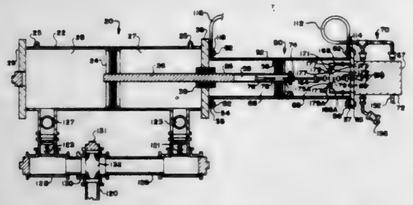
Reiner Bartholomaus, Lohr am Main, and Holger Krohn, Wombach, both of Germany, assignors to Indramat-Gesellschaft Fuer Industrie-Rationalisierung und Automatisierung GmbH, Lohr am Main, Germany

Filed Aug. 10, 1970, Ser. No. 62,326
Int. Cl. F15b *21/02*
U.S. Cl. 91—35 14 Claims



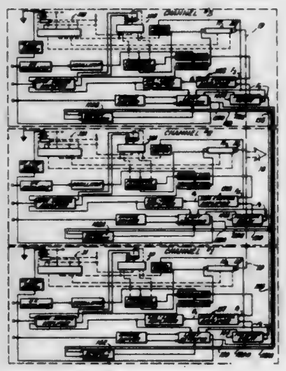
A hydraulic apparatus receives pressure fluid through a control valve having a valve slide which is rotatable by the hydraulic apparatus, and also axially movable between a closing position stopping the hydraulic apparatus, and an open position supplying fluid to the same so that it rotates. Pressure is exerted in chambers at the ends of the valve slide to hold the same balanced in the closing position. When a pressure differential between the chambers is produced by rotation of control means, the valve slide moves to the open position so that the hydraulic apparatus rotates, and also drives the valve slide in synchronism with the control means so that the valve slide remains in the open position until rotation of the control means is stopped. As a result, the hydraulic apparatus rotates only when the control means rotates.

3,665,808
PUMPING SYSTEM FOR LIQUID HYDROCARBONS AND THE LIKE
Walter H. Vestal, 820 Silver Avenue, Greensboro, N.C.
Filed Oct. 7, 1970, Ser. No. 78,820
Int. Cl. F01l *15/16, 31/02*; F04b *17/00, 35/00*
U.S. Cl. 91—272 5 Claims



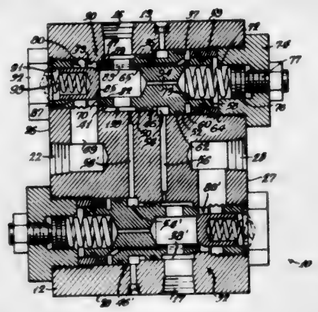
Gasoline or other liquid hydrocarbons are safely, rapidly, and economically pumped from a storage tank to one or more metering dispensers in a vehicle service station by a system including a high-speed air motor compactly arranged in axial alignment with a pump and a motor operating valve assembly of novel construction. The motor is powered by compressed air from a standard source such as found in virtually all vehicle service stations. The air is treated before introduction into the motor and its valve assembly to prevent freeze-jamming of the components during their operation at the high speeds necessary for the attainment of commercially acceptable pumping volumes or gallons per minute. An expansion chamber is preferably provided in series with the discharge line of the pump to dampen the pulsating flow therefrom and thus insure relatively uniform flow of liquid to the metering dispenser.

3,665,809
MULTIPLE CHANNEL REDUNDANT CONTROL SYSTEM
Colin Graham Walker, Chomedy, Laval; Edward John Leadbeater, Montreal; Ralph Fredrick Darlington, Lachine; Edmond Michael Traczyk, Val Morin, Quebec, all of Canada, and Charles A. Kubilos, Oxnard, Calif., assignors to Abex Corporation, New York, N.Y.
Filed Aug. 19, 1970, Ser. No. 65,104
Int. Cl. F15b *9/03, 9/09*
U.S. Cl. 91—363 A 12 Claims



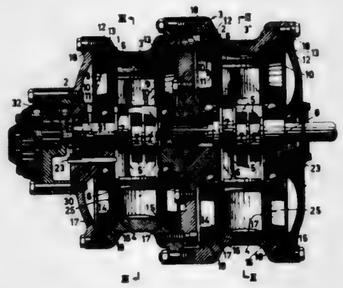
A multiple channel redundant electro-hydraulic servo system for controlling an aircraft guidance element. This system is redundant so that upon failure of one or more channels of the system, the remaining active channels still maintain control of the guidance element with a minimum of transient shift during shutdown of the failed channel.

3,665,810
DIFFERENTIAL PRESSURE HOLDING VALVE
John T. Parrett, Benton Harbor, Mich., assignor to Koehring Company
Filed Jan. 14, 1970, Ser. No. 2,826
Int. Cl. F15b *13/042*
U.S. Cl. 91—420 12 Claims



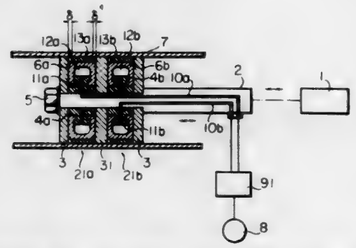
A holding valve for selectively preventing discharge flow from a hydraulic motor, the valve being biased to a closed position against the force of fluid tending to discharge from one side of the motor by discharge fluid acting on a piston formed integrally with the holding valve in addition to a spring also tending to close the valve, there also being provided an opposing pilot piston area on the holding valve which when pressurized opens the valve permitting discharge flow from the associated hydraulic motor.

3,665,811
ROTARY MACHINE
Gilbert Van Avermaete, 111 chemin des Espagnols, Arlon, Belgium
Filed July 1, 1969, Ser. No. 838,096
Claims priority, application Belgium, July 3, 1968, 60,537; June 24, 1969, 75,801
Int. Cl. F01b *1/06*
U.S. Cl. 91—492 11 Claims



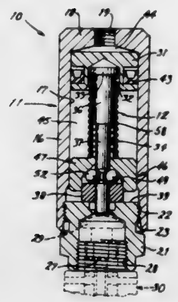
A rotary machine such as a motor, a turbine, a pump, a compressor or the like comprises a rotor in a stator, the rotor being provided with at least one cylindrical chamber, the axis thereof being at right angles to the rotor axis; a piston in the chamber and mounted on the crank pin of a crank-shaft carried by the stator, the rotor being apertured in order to permit the passage and the rotation of the crank-shaft; sealing members on the rotor and the stator comprising at least one annular groove fitted in the stator on either side of the chamber, corresponding annular ribs on the rotor so that one rib engages each of the said grooves and plates fastened in the stator and mounted across the annular groove in order to seal off the latter, the free rim of such plates being cut out in order to allow for the passage of the annular rib provided on the rotor and engaging the said groove.

3,665,812
APPARATUS FOR CONTROLLING RECTILINEAR MOTION
Yoshiaki Hashimoto, Nagoya, and Masatosi Hayakawa, Komaki, both of Japan, assignors to Chukyo Electric Co., Ltd., Komaki-shi, Aichi-ken, Japan
Filed June 22, 1970, Ser. No. 48,262
Claims priority, application Japan, July 1, 1969, 44/51500; July 18, 1969, 44/56430
Int. Cl. F15b *15/22*; B65h *59/10*
U.S. Cl. 92—24 3 Claims



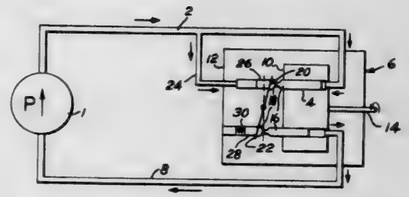
An apparatus for controlling rectilinear motion supplying fluid to the interior of a certain substance performing rectilinear motion along the guide, to expand the elastic body mounted on the substance, causing the elastic body to engage frictionally with the guide, whereby to make the substance stop abruptly, start or stop slowly, vary the speed, move steppingly, and perform clutch action.

3,665,813
SNAP OPERATOR FOR PRESSURE FLUID VALVE
Stanley M. Loveless, Oshtemo, Mich., assignor to General Gas Light Company, Kalamazoo, Mich.
Filed Feb. 24, 1970, Ser. No. 13,306
Int. Cl. F15b *15/26, 21/10*
U.S. Cl. 92—30 4 Claims



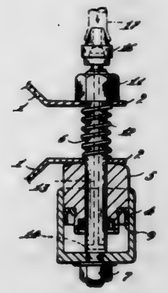
An automatically resettable, fluid-actuated, snap-acting operating device for controlling an external device, such as a spool valve assembly, particularly in response to a slow or erratic building pilot pressure. The operating device includes a housing having a chamber in which is slideably positioned a piston having a piston rod extending from the housing for actuating an external device. A detent mechanism is disposed for engagement with the piston rod for normally maintaining the piston in one end position. Pressurized fluid supplied to one end of the chamber causes the detent mechanism to snap out of engagement with the piston rod for permitting the piston and piston rod to move rapidly away from said one end position for causing actuation of the external device. A spring is positioned within the chamber between the piston and the detent mechanism for returning the piston to said one end position and for causing the detent mechanism to automatically re-engage the piston rod after the pressurized fluid has been vented from the chamber.

3,665,814
HYDRAULIC MOTOR CONTROL
Jay H. Ankeny, West Des Moines, Iowa, assignor to Delavan Manufacturing Company
Filed Aug. 20, 1970, Ser. No. 65,636
Int. Cl. F01b *3/00*
U.S. Cl. 92—71 2 Claims



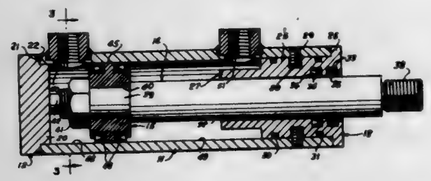
A hydraulic motor control wherein the cam plate of a hydraulic motor is selectively tilted by a hydraulic control piston which communicates with the high pressure fluid supply conduit of the motor. When the motor load is increased, the control piston will increase the tilt of the cam plate in response to an increase in the fluid pressure in the supply conduit and the torque of the motor will increase by an amount substantially greater than the increase in the fluid pressure in the supply conduit.

3,665,815
FLUID-OPERATED DEVICE
Edwin Ralph McIntier, Madison, Conn., assignor to Richard G. Sweitzer, Madison, Conn.
Filed Mar. 16, 1970, Ser. No. 19,880
Int. Cl. F01b *31/00*
U.S. Cl. 92—107 3 Claims



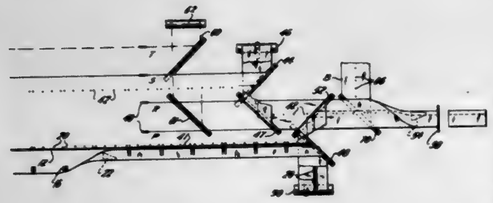
A device comprising a cylinder, a piston in the cylinder, a rod extending through the piston, the rod being fast to one end of the cylinder and projecting through the other end of the cylinder, the piston being slidable on the rod, a head on the outer end of the rod, the cylinder having a fluid inlet in said first end to force the piston toward said head so as to clamp an article between the piston and head, and a spring for retracting the piston when fluid pressure is stopped, the spring surrounding said rod between the piston and head and said inlet extending through the rod.

3,665,816
POWER CYLINDER CONSTRUCTION
James C. Caudle, 4712 Deville, Fort Worth, Tex.
Filed Nov. 10, 1970, Ser. No. 88,294
Int. Cl. F16j 15/18
U.S. Cl. 92—168 5 Claims



A double-acting power cylinder for use with hydraulic fluid or air includes a barrel having a cylindrical bore closed at one end by a fixed end cap, and at the other end by an end cap having a cylindrical body received in the bore, and retained in the bore by screws extending through the body into the end cap. The removable end cap includes a piston rod passage and a suitable seal for the piston rod. An annular piston is fixed to a reduced diameter end of the piston rod which includes an integral extension for limiting movement of the piston toward the fixed end cap. The removable end cap includes a boss for limiting piston movement in the opposite direction of reciprocation.

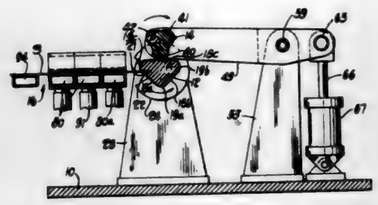
3,665,817
FORMING MULTIPLE PAGE PAMPHLET
Robert E. Katz, Livingston, and Frederick Grainger, North Plainfield, both of N.J., assignors to said Katz, by said Grainger
Filed Mar. 12, 1971, Ser. No. 123,543
Int. Cl. B31b 1/00
U.S. Cl. 93—61 R 10 Claims



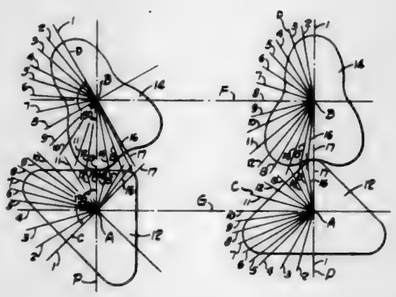
Forming additional pages in envelope containing pamphlet from wider web or side fed additional ribbon.

3,665,818
METHOD AND APPARATUS FOR CONVOLUTELY WINDING TUBES OF IRREGULAR SHAPES
Paul W. Stump, North Olmsted, and Heinz J. Bierstedt, Seven Hills, both of Ohio, assignors to Clevepak Corporation, Cleveland, Ohio
Filed Jan. 8, 1971, Ser. No. 104,996
Int. Cl. B31c 1/08; B31b 1/62, 1/64
U.S. Cl. 93—81 R 8 Claims

Multi-ply tubular members of non-circular cross-sectional shape are convolutely wound of sheet material on a mandrel of the desired non-circular shape. High bond strength is obtained by continuously pressing the sheet against the mandrel and wound plies during winding. For this purpose a presser roll of non-circular cross-sectional shape is biased against the mandrel and wound plies and rotated in timed relationship with the mandrel. The presser roll is shaped so that the combined distance from the axis of the presser roll to its surface and from the axis of the mandrel to its surface, in a plane passing through the axis of each, remains constant during winding.



3,665,819
METHOD AND APPARATUS FOR CONVOLUTELY WINDING TUBES OF IRREGULAR SHAPES
Roland C. Gardner, Bay Village, Ohio, assignor to Clevepak Corporation, Cleveland, Ohio
Filed Jan. 8, 1971, Ser. No. 104,997
Int. Cl. B31c 1/08; B31b 1/62, 1/64
U.S. Cl. 93—81 R 11 Claims

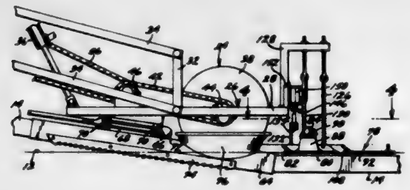


Multi-ply tubular members of non-circular cross sectional shape are convolutely wound of sheet material on a mandrel of the desired non-circular shape. Improved high bond strength is obtained by continuously pressing the sheet against the mandrel and wound plies during winding and by maintaining the sheet under tension as it is wound. A presser roll, biased against the mandrel and wound plies, is irregularly shaped to follow the contour of the mandrel and wound sheet without oscillation. The presser roll is rotated at an angular velocity that varies relative to that of the mandrel, in accordance with the change in the radii of the mandrel and roll at the pressure line between the two, to establish equal surface velocities. Movement of the unwound portion of the sheet during winding is resisted by a vacuum table on which the sheet is supported. Quick-setting adhesives are applied to the sheet just prior to winding by a spray system or quasi-spray system.

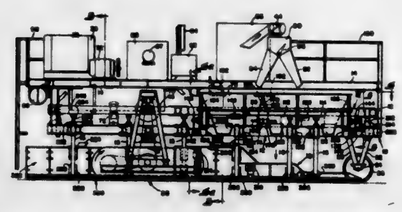
3,665,820
CONCRETE CONSOLIDATING AND SMOOTHING MEANS FOR INSERTER APPARATUS
Donald W. Rasmussen, Downey, Calif., assignor to Edoco Technical Products, Inc., Long Beach, Calif.
Filed Dec. 21, 1970, Ser. No. 100,226
Int. Cl. E01c 19/00
U.S. Cl. 94—39 8 Claims

A concrete consolidating and smoothing means for inserter apparatus of the type which is movable over an expanse of plastic concrete and which includes inserter means to embed an elongated strip of joint material in the concrete at a predetermined depth. The consolidating and smoothing means comprises a first pan which is adapted to ride upon the surface of the concrete in trailing relation to the inserter means, and further comprises a second pan having a trailing portion adapted to ride upon the surface of the concrete in trailing relation to the first pan for smoothing the concrete surface. Vibration means are coupled to the first pan for vibrating the concrete to consolidate the concrete about the embedded strip, and the rate of vibration is adjustable. The first pan can be vibrated at a relatively high rate to effect good consolidation without affecting the capability of the second pan to achieve smoothing. The second pan is preferably mounted to the first pan by vibration isolation means so that vibration of the first pan is generally isolated from the second pan. The second pan preferably includes lateral portions extending along opposite sides of the first pan to confine any relatively fluid concrete produced by vibration of the first pan and prevent it from flowing away, as would be the case on a slope. The relative lack of vibration of the second pan enables it to be used as the level sensor for coupling to the control means which controls the vertical position of the joint insertion means.

The movements of the first pan induced by the type of vibration means utilized causes the pan to travel in first and upward and forward direction, followed by downward and rearward movement and impact with the concrete surface. The pan thus has a stepping or creeping action rather than a dragging or sliding action upon the concrete surface. The consolidating action is enhanced by provision of variable rate vibration means upon the inserter means also.

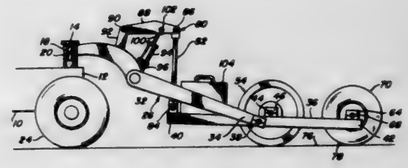


3,665,821
CONTINUOUS CURB-FORMING MACHINE
Robert Walker, Shaker Heights, Ohio, assignor to Medusa Portland Cement Company, Cleveland Heights, Ohio
Filed Aug. 17, 1970, Ser. No. 64,251
Int. Cl. E01c 19/48
U.S. Cl. 94—46 6 Claims



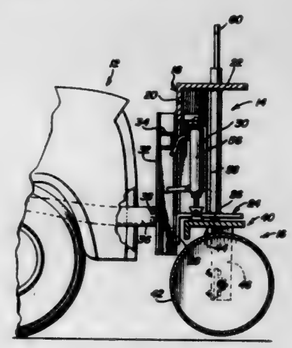
There is provided a curb-casting machine particularly useful in continuously casting high column concrete forms and which is characterized by a novel multistaged open-ended slip-form. The slip-form is carried upon a movable frame which is desirably, although not essentially, adjustable, which is in turn supported on a carrying frame. Locomotive means are provided for moving the carrying frame along a surface on which the casting is being laid.

3,665,822
MATERIALS WORKING MACHINE
Donald C. Speer, Glendale, Ariz., assignor to D. C. Speer Construction Co.
Filed May 20, 1970, Ser. No. 39,111
Int. Cl. E01c 19/26
U.S. Cl. 94—50 R 3 Claims



A materials working machine adapted to compact various materials on roadways, parking lots, soil fills or the like wherein a first structure is pivoted in cantilever relation to a towing vehicle on a subtantially vertical axis; a link means having forward end portions pivotally connected to said first structure; a roller frame pivotally connected with rearward portions of said link means, a materials working roller pivotally mounted on said roller frame and having a peripheral portion adapted to bear on the ground, transport wheels carried by a rearward portion of said roller frame; and elevating means adapted to raise and lower the forward portion of said roller frame alternately to cause said materials working roller to bear on the ground or to elevate it above the ground so as to carry said roller frame on said transport wheels; which transport wheels are adapted to function selectively as pneumatic rollers.

3,665,823
ROLLER-ATTACHMENT FOR VEHICLES
Clarence E. Chaney, 907 Louis Lane, Kingsville, Md., and Wendell L. Haddox, Jarrettsville, Md.
Filed Oct. 27, 1970, Ser. No. 84,420
Int. Cl. E01c 19/26
U.S. Cl. 94—50 R 8 Claims

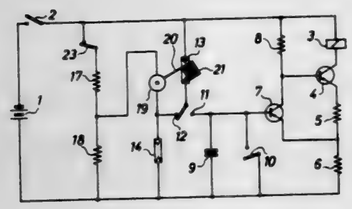


A road patching implement in the nature of a roller attachment mountable on the front of a self-propelled vehicle. The attachment includes a roller vertically adjustable so as to transfer the weight of the forward portion of the vehicle thereto. The roller is mounted on a roller frame which is in turn vertically adjustable relative to a mounting frame. The mounting frame is releasably fixed to the vehicle. The roller is stabilized relative to the mounting frame and guided during the vertical adjustment relative thereto by means of elongated guide tubes or sleeves on the mounting frame which slidably receive elongated guide rods fixed to the roller frame. The selective vertical adjustment of the roller and roller frame is effected by power means.

3,665,824
PHOTOGRAPHIC APPARATUS WITH AUTOMATIC EXPOSURE CONTROL

Karl Wagner, Ottobrunn, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 31, 1970, Ser. No. 59,999
Claims priority, application Germany, Aug. 6, 1969, P 19 39 950.9
Int. Cl. G03b 7/08, 9/62
U.S. Cl. 95—10 CT 10 Claims

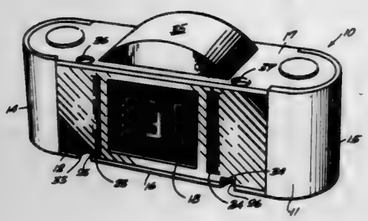


The difference in voltages across two photoconductors, one exposed to direct scene light and the other to scene light that has passed through the camera objective, drives a moving-coil instrument, the pointer of which controls a movable mask that more and more shields the second photoconductor until the voltages across the two photoconductors are approximately equal. A capacitor then charges through the second photoconductor to a voltage that closes the shutter.

3,665,825
FILM FONT CASSETTE

Murray Friedel, North Miami Beach, Fla., assignor to Visual Graphics Corporation

Filed Apr. 17, 1970, Ser. No. 29,402
Int. Cl. B41b 17/26
U.S. Cl. 95—4.5 7 Claims

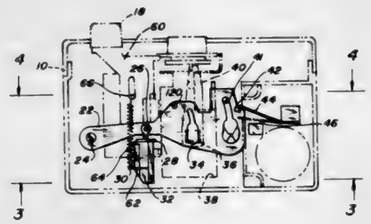


A film font cassette for optically projecting, selectively, film font images for use in phototypographic composition equipment is described. A film strip having type character images printed in fonts of the type is rollably supported between a pair of reels within each side of the cassette and moveable past a central projection window. The reels include gear means at the bottom of the cassette interengageable with reel-turning mechanism in the equipment with which the cassette is to be used for selectively moving a film image into projecting position within the cassette projection window. Guide mechanism within the cassette and cooperative with indexing means on the equipment with which the cassette is to be used effects precise registration of the film and its image to be projected with the optical system of the equipment.

3,665,826
SOLENOID-ACTUATED MASK FOR AUTOMATIC EXPOSURE CONTROL FOR CAMERAS

Zvi Y. Karpol, Bronx, N.Y., assignor to Keystone Division-Berkey Photo, Paramus, N.J.

Filed Jan. 19, 1971, Ser. No. 107,816
Int. Cl. G03b 7/08, 9/58, 9/10
U.S. Cl. 95—10 CD 13 Claims

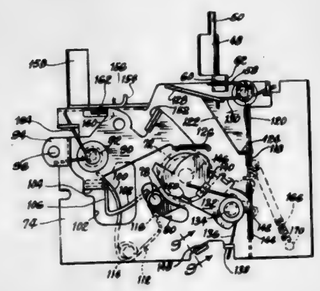


This invention pertains to a camera mechanism in which the aperture and shutter are automatically set by means of a light sensor whose output is connected to an electrical circuit disposed to actuate a solenoid or holding relay which is operatively engaged to a pivotal arm having a mask portion with contoured apertures movable in front of both the aperture and light sensor. This arm is frictionally retained upon a pivot pin and is moved from an "at-rest" condition to a determined exposure condition by means of the solenoid as it is moved by the shutter release lever. The mask arm in its normal or "at-rest" condition is disposed in the maximum open condition to provide a maximum exposure to the film when the shutter is actuated. During the movement of the release lever the mask arm is moved by means of the holding action of the actuated moving solenoid until a correct setting of aperture and shutter has been achieved as ascertained by the light sensor output. When this setting is reached the current to the solenoid is cut off, releasing the holding action of the solenoid to the mask arm. This arm, after it is released, and because of the friction at the pivot pin, is caused to stop at this correct setting.

3,665,827
FLASH LAMP ACTUATING STRUCTURE

George Irwin, Highland Park, Ill., assignor to Imperial Camera Corp., Chicago, Ill.

Filed Nov. 25, 1970, Ser. No. 92,568
Int. Cl. G03b 15/04
U.S. Cl. 95—11.5 R 11 Claims



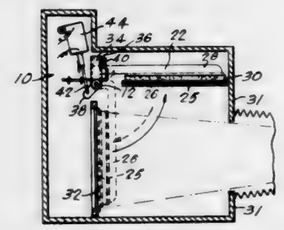
A flash lamp actuating structure for a camera having means for holding a length of film, film advancing means, and a shutter means for exposing successive frames of film. The shutter means includes at least one movable plate having

an opening for registering with a camera lens opening when the plate is moved during shutter operation. A flash bulb of the type which will operate in response to impact imparted by a spring loaded finger is adapted to flash in the course of film exposure. The spring loaded finger is engaged for impact movement by a push bar which is normally retained against movement. During an initial stage of shutter actuation, a spring means is wound whereby energy is stored in the spring means. A push bar actuating member is adapted to be operated by this spring means, and this operation occurs at a later stage of the shutter actuation when the means for retaining the push bar is moved out of the way. The spring energy is released rapidly whereby the push bar will be driven with sufficient force and speed into engagement with the flash lamp impact finger. The push bar also defines means for engaging the shutter plate whereby the film exposure is dependent upon the movement of the push bar.

3,665,828
BACKGROUND PHOTOGRAPHY

Josef Reiter, 175 Sherbrooke Street West, Montreal, Quebec, Canada

Filed June 1, 1970, Ser. No. 42,337
Int. Cl. G03b 15/10
U.S. Cl. 95—11 R 13 Claims



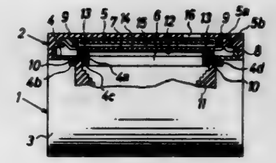
A camera including a device for mounting a transparency therein for movement from an operative position in intimate contact with the film to be exposed and an inoperative position clear of the film. A photographic method or system including double exposing the film with the first exposure being made with a transparency in intimate contact with the film by backlighting the object to be photographed to silhouette the object on the film and to expose the transparency onto the film except for the area silhouetted and then removing the transparency and moving a substantially nonreflecting backdrop into position behind the object and frontlighting the object for the second exposure. Where larger backgrounds are required, a reflecting mask having an opening through which the object to be photographed is viewed, is used and during the first exposure the object is backlit and light is reflected from the mask into the camera to expose the film through substantially all of the area covered by the transparency with the exception of the area silhouetted by the object to be photographed.

3,665,829
CONTAINER FOR PHOTOGRAPHIC FILM

Johann Putscher, Munich; Josef Gerach, Unterhaching; Otto Wiedemann, Starnberg, and Alfred Winkler, Munich, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 12, 1970, Ser. No. 45,874
Claims priority, application Germany, June 19, 1969, P 19 31 117.2; Aug. 13, 1969, P 19 41 101.9
Int. Cl. G03b 1/48, 17/26, 19/04
U.S. Cl. 95—31 CA 7 Claims

A container for photographic film has a hollow web connecting a film-supplying chamber with a film-collecting chamber. The front wall of the web has a window which exposes one film frame at a time and such frame is held at a fixed distance from the picture-taking objective of the camera by locating surfaces provided on pins forming part of the rear wall of the web or of a plate which is mounted in the web behind the exposed film frame. The pins extend through

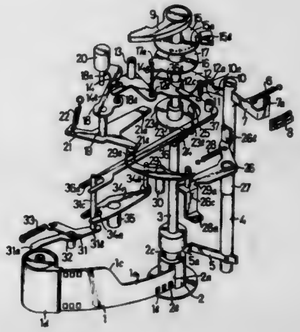


openings of the front wall of the web and abut against a stop in the camera body. The plate is biased forwardly by springs installed in a recess of the rear wall and has legs which engage abutments of the front wall to arrest the plate in its foremost position when the container is withdrawn from the camera body.

3,665,830
FILM TRANSPORT MECHANISM

Keisuke Maeda, Sumie-Higashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 17, 1970, Ser. No. 64,429
Claims priority, application Japan, Aug. 10, 1970, 45/60892
Int. Cl. G03b 1/06, 1/62
U.S. Cl. 95—31 FL 6 Claims



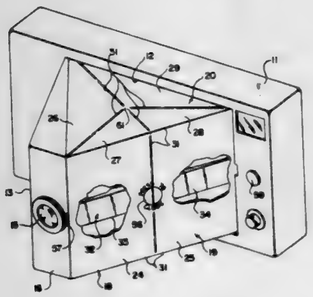
In operative relation with a film counter, a detection mechanism detects film transport from the starting position to the first photographic position, the mechanism further being adapted to detect whether or not the film is being wound up on a take-up spool. The detection mechanism is associated with a release button locking mechanism and a film transport blocking mechanism so that until a predetermined amount of film has been wound up on the take-up spool, the film can be advanced without releasing the shutter. Upon detecting the winding of a predetermined amount of the film, the film transport blocking mechanism blocks the film winding operation and the release button is freed from locking. In operative relationship with subsequent shutter release and film winding operation, normal release button locking and film transport blocking operations are effected. Also mounted in the camera in operative relationship with the above mechanisms in another detection mechanism to be actuated upon detecting the loading of a film magazine, the magazine detection mechanism being so adapted that when a film magazine is not loaded the film transport blocking mechanism and the release button locking mechanism are al-

lowed to function in operative relationship with film winding and shutter release operations and that upon detecting loading of the magazine, the magazine detection mechanism frees the film winding mechanism, permitting the foregoing mechanisms to operate accurately.

3,665,831
FOLDING CAMERA

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,468
Int. Cl. G03b 17/04
U.S. Cl. 95—39 6 Claims

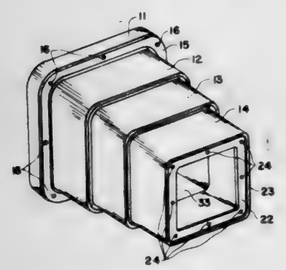


A folding camera is provided with a lens support door hinged at one end to the camera housing and supporting the camera lens at its opposite end. A novel two-piece strut connects the door to the housing and is located inside a following bellows. The strut is spring biased toward an extended locked condition at which it accurately and positively holds the door in a predetermined open position to locate the lens in proper operative relation to the camera film. Finger pressure applied to an indicated spot on the flexible bellows releases the extended strut to allow the door to be closed.

3,665,832
MOLDED PLASTIC BELLOWS

Donald M. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 1, 1970, Ser. No. 33,678
Int. Cl. G03b 17/04
U.S. Cl. 95—39 10 Claims



A one-piece molded plastic bellows particularly suited for use in a photographic camera comprises a plurality of relatively rigid telescoping sleeves joined in lighttight relation to one another by integral flexible membranes which define the relative positions of the sleeves when the bellows is extended.

3,665,833
DELAYED SHUTTER RELEASE MECHANISM FOR PHOTOGRAPHIC APPARATUS

Manfred Muller, Donnerschlagen, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 23, 1971, Ser. No. 136,845
Claims priority, application Germany, Apr. 24, 1970, P 20 19 908.0
Int. Cl. G03b 9/64
U.S. Cl. 95—53.3 22 Claims

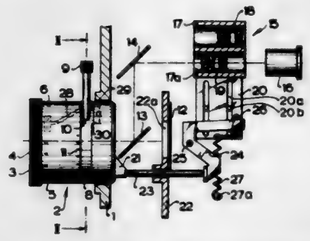


A delayed shutter release mechanism for use with cameras wherein the shutter is actuated in response to completion of an electric circuit has two terminals which are connectable to separate contacts of a switch in the body of the camera. The two terminals are electrically connected with each other in response to pivoting of one of two levers into contact with the other lever. The levers have followers which track a rotary cam having several equidistant flanks. The followers are located at one side of a flank when the release mechanism is ready for use, namely, when a spring motor stores sufficient energy to rotate the cam in response to actuation of a trigger. The levers remain out of contact with each other while a flank of the cam moves toward and past one of the followers. The one follower is then caused to change its angular position and to place the respective lever into contact with the other lever. The levers remain in contact during the interval which elapses while the flank of the cam moves between the two followers. The distance between the two followers is adjustable to thereby change the length of the interval during which the two levers contact each other.

3,665,834
MOTION PICTURE CAMERA WITH ZOOM LENS

Richard Loewe, Stuttgart-Feuerbach, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart-Untertuerkheim, Germany

Filed Aug. 12, 1970, Ser. No. 63,097
Claims priority, application Germany, Aug. 16, 1969, P 19 41 789.1
Int. Cl. G03b 3/00, 13/16, 13/26
U.S. Cl. 95—44 R 10 Claims



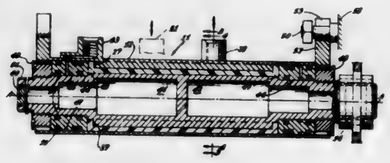
A motion picture camera wherein the lever which is movable to change the focal length of the zoom lens controls a

carriage which moves a system of magnifying lenses into registry with the eyepiece of the through-the-lens viewfinder so that the user can see a greatly enlarged portion of the image prior to and during manipulation of the focusing ring. The lever places the magnifying lenses into registry with the eyepiece of when the zoom lens is adjusted for maximum focal length. A leaf spring in the lens mount biases the lever to a position in which the lever permits movement of the magnifying lenses out of registry with the eyepiece and places a second system of lenses into registry with the eyepiece. The second system of lenses does not appreciably magnify the viewed image.

3,665,835
FLUID TYPE ROTARY ACTUATOR

Charles E. Oates, Los Angeles, Calif., assignor to Northrop Corporation, Beverly Hills, Calif.

Filed Aug. 14, 1969, Ser. No. 850,270
Int. Cl. F01c 9/00
U.S. Cl. 92—121 3 Claims

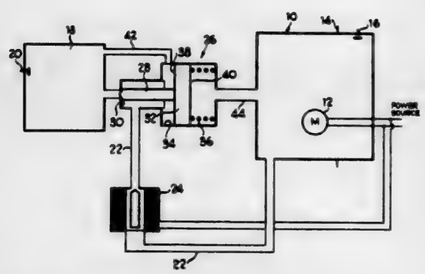


A fluid-type rotary actuator usable in installations where weight and space are prime considerations. The actuator having packing gland assemblies secured to and rotating with the output shaft of the actuator thereby eliminating stepped construction of the wall defining the actuator's chamber thus insuring the fluid pressure acting to impart rotation to the actuator will be applied at a location resulting in maximum torque. The actuator also includes a floating feature resulting in isolation of substantially all radial loads acting on the actuator.

3,665,836
ATMOSPHERE SUPPLY SYSTEM FOR MOTORS

Emil A. Kublak, Novelty, Ohio, assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 24, 1969, Ser. No. 879,066
Int. Cl. B64d 13/04
U.S. Cl. 98—1.5 3 Claims

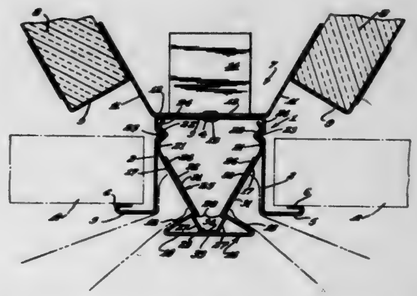


System for maintaining an atmosphere at a desired pressure in a shell containing a motor, the shell being subjected to conditions such that leakage of atmosphere and reduction in pressure may occur.

3,665,837
LINEAL AIR DIFFUSER BAR

Glenn F. Balfanz, Jr., Western Springs, Ill., assignor to Chicago Metallic Corporation, Chicago, Ill.

Filed May 13, 1970, Ser. No. 36,946
Int. Cl. F24f 13/06
U.S. Cl. 98—40 D 18 Claims

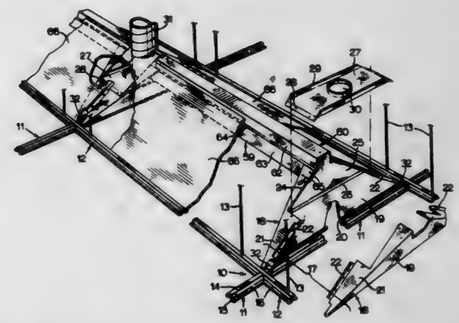


An air diffusing assembly for use in a suspended ceiling system employing a plurality of ceiling panels, comprising an inverted channel-shaped structure having means along the sidewalls thereof for supporting ceiling panels, the intermediate connecting portion of the channel structure having openings therein for the supply of air to the channel interior, and provided with means engageable with a supply duct for supplying air thereto, such assembly having an air diffuser member, of generally V-shape in transverse cross-section, disposed in the channel member with the side walls thereof downwardly converging, at least one of such sidewalls having openings therein for the passage of air therethrough, and a damper member cooperable with the air diffuser member and having a sidewall slidable along the inner face of the air diffuser member to selectively vary the effective size of the openings in said diffuser sidewall for controlling air flow therethrough.

3,665,838
AIR CHAMBER ASSEMBLY

Charles G. Shepherd, Oakville, Ontario, Canada, assignor to Wilson Lighting Limited, Toronto, Ontario, Canada

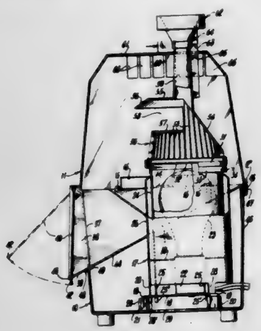
Filed Jan. 29, 1970, Ser. No. 6,673
Int. Cl. F24f 11/02, 13/06
U.S. Cl. 98—40 DL 17 Claims



An air chamber assembly including two adjacently disposed fluorescent lighting units mounted in the ceiling of, for example, a commercial office or school, the assembly comprising an air chamber which is located within a space

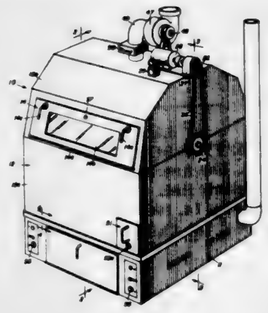
between the two lighting units and which is defined by a hollow air chamber casing, or air boot. The casing is formed with a ventilation air inlet duct through which air having the desired temperature and humidity may be supplied to the interior of the casing from a suitably located source of such air within the associated building. The assembly also comprises a support beam which is of inverted channel form in cross-section and which has a web portion, depending parallel limb portions, and outwardly directed flange portions projecting from the longitudinal edges of the limb portions of the beam remote from the web portion in a plane parallel to the plane containing the web portion. In certain embodiments of the invention, heat-fusible plates, rods or bodies are disposed between the web portion or the flange portions of the beam and the air chamber casing, thereby to maintain an edge portion of the casing a pre-determined spaced distance from the beam. In an alternative embodiment of the invention, heat-fusible strips are provided, each strip being secured to a portion of the casing which is pivotally mounted relative to the remainder of the casing, and to said remainder of the casing. Movement of the pivotal portions of the casing is thus prevented except on fusion of the heat-fusible strips, the pivotal portions of the casing each having an edge which is disposed in supported contact with the beam to maintain the above-mentioned edge portion of the casing at said pre-determined distance from the beam except on pivotal movement of the pivotal portions of the casing. The pre-determined spaced distance between the above-mentioned edge portion of the casing and the beam defines a ventilation air outlet duct through which ventilation air may flow from the interior of the casing to the room space or the like below the assembly, the casing being urged under gravity in the downward direction to cause this edge portion of the casing to enter into air-tight sealing contact with the flange portions of the beam on fusion of the heat-fusible plates, rods, bodies or strips.

3,665,839
POPCORN POPPER
Robert Gottlieb, 185 West End Avenue, New York, N.Y.
Filed Mar. 25, 1970, Ser. No. 22,415
Int. Cl. A23l 1/18
U.S. Cl. 99—238.6 **7 Claims**



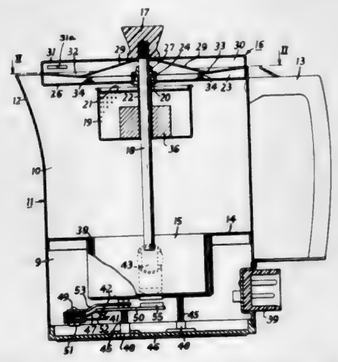
A popcorn popper having an outer housing, heating means within the housing and a cage assembly extending upwardly from the heating means with a tubular portion of the assembly extending through the upper wall of the housing, the cage having an open portion and an inclined deflector opposite the open portion so that corn to be popped which is introduced through the tubular portion will upon popping be deflected by the deflector through the open portion of the cage and retained within that portion of the outer housing surrounding the heating means. The outer housing also includes an inclined bottom portion and a hinged closure which can be opened to remove the popped corn.

3,665,840
BROILER INCLUDING COOKING PLATE
Johnny O. Horany, P.O. Box 3334, Enid, Okla.
Filed Sept. 9, 1970, Ser. No. 70,785
Int. Cl. A23b 1/04
U.S. Cl. 99—261 **3 Claims**



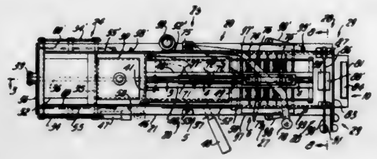
A broiler for meats and the like has a bottom heat supply compartment and an oven compartment thereabove. The heating compartment has a top plate totally closing off the compartment from the oven thereabove. The oven has a rotisserie driven by a motor, and there are easily-removable meat carrying shelf-like members on the rotisserie. There is an access door in the oven and this operates a switch in a power supply circuit to an exhaust fan that is operated when the access door is open. Towards the bottom of a side wall of the oven there is an access passageway in which is received a box-like element with an apertured top portion and having an electric heating element to burn smoke creating chips. A thermostat element in the oven is connected to a heating means in the heating compartment to control the temperature in the oven.

3,665,841
BEVERAGE MAKER
Graham George Hardy, Stoke-on-Trent, and Leonard Kenneth Morgan Masters, Newcastle-under-Hyme, both of England, assignors to Russell Hobbs Limited, Alperton, England
Filed May 13, 1970, Ser. No. 36,895
Claims priority, application Great Britain, June 11, 1969, 29,597/69
Int. Cl. A47j 31/00
U.S. Cl. 99—281 **12 Claims**



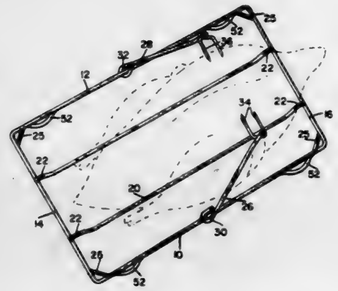
A receptacle for tea leaves, coffee grounds or the like is releasably supported in the upper part of an electrically heated vessel by holding means until liquid in the vessel boils, whereupon a heat-responsive device, in response to heating by vapor from the boiling liquid, will effect the release of the receptacle so that it falls to a lower position where the liquid can flow into it. The descent of the receptacle also effects the interruption of the supply circuit of the heating means of the vessel.

3,665,842
TOASTING APPARATUS
Aniceto R. Visitacion, 705 West 179th Street, New York, N.Y.
Filed Sept. 17, 1970, Ser. No. 72,986
Int. Cl. A47j 37/08
U.S. Cl. 99—332 **12 Claims**



An apparatus for toasting slices of bread constituting a hopper, feeder means for feeding the bread slices to a heated toasting section, operating means for moving the toasted slices from the toasting section to a buttering device and then to cutter means, and delivery means for depositing the toasted cut slices onto a tray or the like.

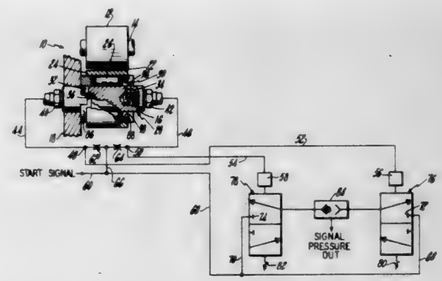
3,665,843
ROASTING RACK
Raymond D. Moore, 56 Eagle Road, Worcester, Mass.
Filed Nov. 19, 1970, Ser. No. 90,895
Int. Cl. A47j 37/04
U.S. Cl. 99—419 **3 Claims**



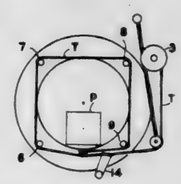
A roasting rack comprising a rectangular open wire frame, a roast piercing point and support therefor slidably arranged on each of the longer sides of the rack; the supports for the points being in some cases adjustable in length to accommodate different sizes of roasts.

3,665,844
ZERO ROTATION SENSOR FOR DRIVE ASSEMBLY IDLER
Robert P. Clark, Cheshire, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed June 8, 1970, Ser. No. 44,380
Int. Cl. B65b 13/18
U.S. Cl. 100—4 **8 Claims**

Apparatus for use in a material handling machine and including drive means and an idler for maintaining material being driven by the drive means in engagement therewith, the idler being rotatable responsive to movement of the material, and a zero rotation sensor in the idler for detecting when the idler stops rotating for indicating a motionless condition of the material.



3,665,845
BANDING MEANS
Floyd A. Lyon, Brookville, N.Y., assignor to Halm Instrument Co., Inc., Glen Head, N.Y.
Filed Oct. 12, 1970, Ser. No. 80,071
Int. Cl. B65b 13/12
U.S. Cl. 100—27 **4 Claims**



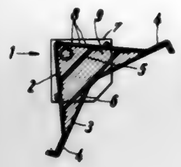
A banding machine having an encircling means mounting four retractable fingers. The encircling means encircles a banding station which is adapted to receive a package. A clamp on said ring grips the end of the banding tape and the fingers form the tape around the banding station with no strain on the tape caused by snubbing action around the article. The fingers are then retracted and the slack in the tape is taken up and the tape is snugly wrapped around the package and sealed.

The normal timing cycle is cut in half in production runs since a package may be inserted while the tape is being fed around the fingers.

3,665,846
PROTECTIVE SHIELD FOR USE AT THE BITE OF ROLLERS FOR PAPER AND TEXTILE CALENDERS
Jurgen Schlunke, Krefeld, Germany
Filed Jan. 11, 1971, Ser. No. 105,218
Int. Cl. B30b 3/04
U.S. Cl. 100—162 **6 Claims**

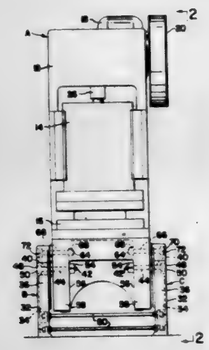
A protective shield for use at the bite of rollers of paper and textile calenders, which consists of a hollow longitudinal

member of triangular cross section formed by angle-shaped plate means connected to each other, said hollow longitu-



dinal member containing a filling of hard foam synthetic material.

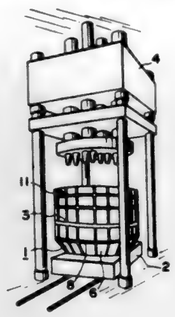
3,665,847
PRESS FRAME
Robert A. Heirigel, and Roderick K. Ward, both of Hastings, Mich., assignors to Gulf & Western Industrial Products Company, Grand Rapids, Mich.
Filed Jan. 14, 1971, Ser. No. 106,408
Int. Cl. B30b *15/28*
U.S. Cl. 100—231 18 Claims



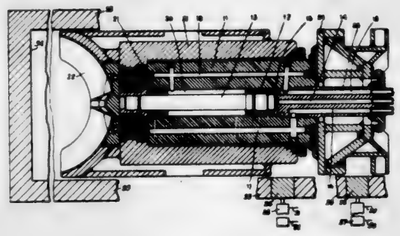
A press frame includes spaced-apart legs having inner surfaces facing one another. Tie rods are releasably attached to the legs for holding the legs together. The connection between the legs and the tie rod is located entirely on the inner surfaces of the legs so that no projections appear on the outer surfaces of the legs.

3,665,848
APPARATUS FOR COMPRESSING SCRAP INTO A BLOCK AND CONVEYING THE SAME
Kenji Kimura; Kousuke Watando, and Osamu Kadota, all of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 12, 1970, Ser. No. 88,518
Claims priority, application Japan, Sept. 19, 1970, 45/81828
Int. Cl. B30b *15/32*
U.S. Cl. 100—218 8 Claims

An apparatus for use in compressing and conveying scrap metal or other blocks which includes a supporting chain comprising a plurality of segment chains releasably connected to each other by connecting pieces at both ends, a open ended tubular member forming press side walls and acting as a block carrier, and a base support provided with a groove for receiving the supporting chain. The supporting chain is secured to the bottom edge of the tubular member, and the tubular member is removably mounted on the support to receive the scrap which is pressed when the tubular member is mounted on the support. Upon removal of the tubular member, the supporting chain releasably supports the pressed block.



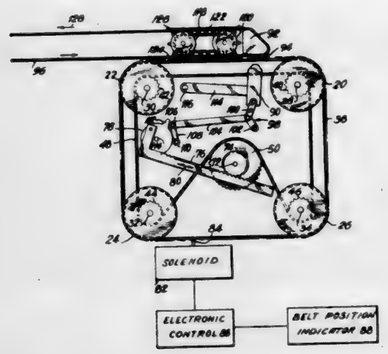
3,665,849
HORIZONTAL PRESS FOR COMPACTING SCRAP METAL
Angelo Murare, via Val Chiampo, Montorso, and Giovanni Busi, via Kossuth 12, Brescia, both of Italy
Filed Mar. 9, 1970, Ser. No. 17,502
Claims priority, application Italy, Mar. 13, 1969, 61536 A/69
Int. Cl. B30b *5/00*
U.S. Cl. 100—245 2 Claims



A hydraulically actuated horizontal press for compacting scrap metal which comprises an elongated chamber for loading, a movable cylinder with a base element connected thereto through a movable piston. The compression occurs in stages by advancing under pressure first the movable cylinder and then the base element thereof. Removable blocking keys are arranged longitudinally throughout the chamber and are activated to immobilize either the cylinder or the base element after each advance.

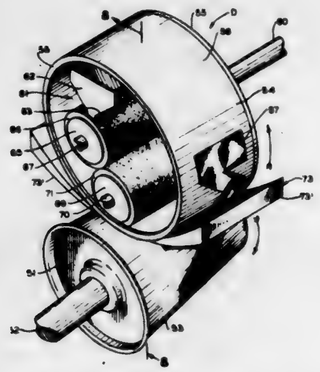
3,665,850
SELECTIVE BELT PRINTING APPARATUS FOR PRINTING A LINE AT A TIME
Ralph Berger, McLean, Va., and Howard Satterlee, Madeira Beach, Fla., assignors to New England Merchants National Bank, Boston, Mass.
Filed Aug. 25, 1969, Ser. No. 852,697
Int. Cl. B41j *9/38, 1/20*
U.S. Cl. 101—93 C 13 Claims

Printing apparatus is provided in which an entire line of print is printed at one time and wherein a sheet of paper is advanced past a printing station so that a series of lines of printing can be successively printed thereon. The printing is effected in a plurality of parallel columns, with which are aligned a like number of belts on which are located the print characters. These belts are driven by one or more drums in repetitive cycles. In each cycle each of the belts is brought to a halt with the desired character at the printing line in the printing station and when a line of print has been thusly compiled, a single hammer unit drives the characters against a



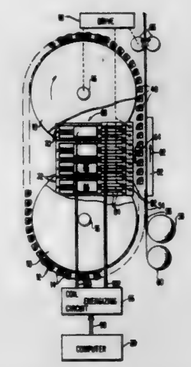
ribbon to print the line on the paper. The belts are then returned to an initial position of rest in preparation for the next succeeding cycle for the next succeeding line of print. The print hammer may be actuated from the same source of power which drives the drum or drums and there may be related to this source of power a stepping device which steps the paper through the printing station.

3,665,851
ELECTROSTATIC SCREEN PROCESS PRINTING
James W. Edwards, Creve Coeur; Harry J. Larrigan, St. Louis, and Shelly W. Mays, Jr., St. Louis, all of Mo., assignors to Electrostatic Printing Corporation of America, San Francisco, Calif.
Filed July 19, 1965, Ser. No. 472,829
Int. Cl. B41f *17/18*
U.S. Cl. 101—114 36 Claims



1. The method of electrostatically screen process printing articles which have a central axis and an annular surface of revolution about said central axis, with a screen which has a curvilinear surface and can be arcuately shifted about an axis of movement, said screen also being curved with respect to said axis; said method comprising establishing an electrostatic field between said screen and said article, establishing an axis of rotation of said article concentric with its central axis and in a position so that a line of closest approach to said screen is parallel to the curvilinear surface of said screen, rotating said article about its central axis so that the annular surface to receive the ink tangentially approaches, forms an instantaneous elemental line of closest approach and tangentially departs from the screen, arcuately shifting said screen about its axis of shifting movement in timed relation to the rotation of the article so that the curvilinear surface of the screen passes through the elemental line of closest approach, and feeding a quantity of electroscopic ink to said screen in a substantially thin flat line only along the elemental line of closest approach where relative movement exists between the surface of the screen and the thin flat line, said thin flat line being substantially equal to the dimension of the screen which is transverse to the direction of movement of said screen and occupying a small dimensional area of the screen in the direction of movement of the screen, and where the ink is passed through opened areas and propelled by said electrostatic field, thereby causing printing to occur only along the elemental line of closest approach to the screen.

3,665,852
HIGH SPEED FRONT IMPACT PRINTER
Richard H. Harrington, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 19, 1970, Ser. No. 3,664
Int. Cl. B41j *1/20, 5/30*
U.S. Cl. 101—93 C 14 Claims

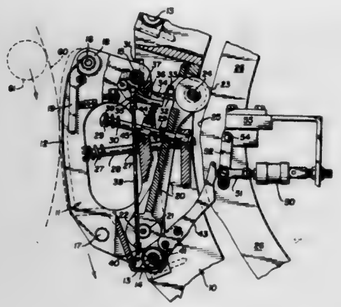


A closed loop chain or train rotates continuously to move, along parallel paths, individual, laterally flexed, type carriers between a paper which moves continuously in the opposite direction and laterally shiftable latches. One end of a selected type carrier is momentarily arrested to deflect the type into contact with the moving paper for imprinting.

3,665,853
CONTINUOUS PRINTER AND SKIP-PRINT MECHANISM
Ruben J. Hartmeister, Golden, and John Hardy Maytag, Denver, both of Colo., assignors to Coors Porcelain Company, Golden, Colo.
Filed Nov. 17, 1969, Ser. No. 877,279
Int. Cl. B41f *13/36, 17/22*
U.S. Cl. 101—247 8 Claims

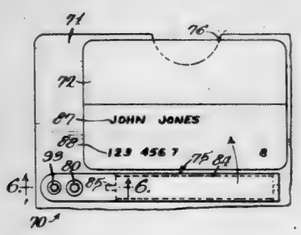
A continuous printer and skip-print mechanism comprising a plurality of blanket holder segments on a rotated drum successively movable into and out of printing position, a stationary cam, a cam follower on each segment, and operative connections including a withdrawable bridge member between the cam follower and each blanket holder segment for moving the segment into printing position. An air cylinder or other suitable mechanism responsive to the malfunction

signal actuates a pivotally mounted trigger and connecting rod which are part of skip-print means for withdrawing the bridging member from the operative connections between the cam follower and each blanket holder segment, thereby



producing a gap in the operative connections and preventing movement of the segment into printing position when malfunction occurs, without interrupting subsequent printing operations.

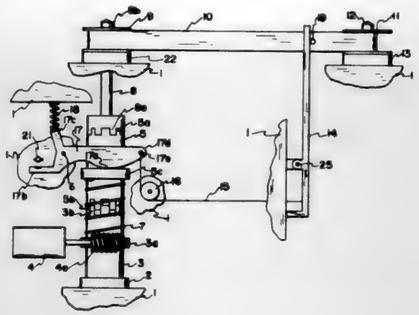
3,665,854
IMPRINTER INCLUDING TAPERED ROLLER TRAVELING IN AN ARCUATE PATH
Robert J. Maziarka, 1837 W. Grand Avenue, Niles, Ill.
Filed Feb. 25, 1970, Ser. No. 13,983
Int. Cl. B41f *3/20*
U.S. Cl. 101—269 **1 Claim**



A portable imprinter that provides impressions on a pressure sensitive billing form from a credit card including a support for aligning the credit card in a predetermined direction and for holding the billing form in position, there being provided a pivotally mounted roller platen that rolls across the credit card indicia with a swinging action, with the roller having a taper thereon to minimize slippage, there being also provided a spring biased ball assembly for urging the free end of the platen downwardly toward the support and the credit card indicia to improve the imprinting quality.

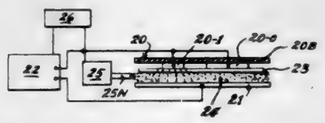
3,665,855
SPRING-RETURNED POWER DRIVEN RIBBON
Christian Nikoloff, Concord, Calif., assignor to SCM Corporation
Filed Apr. 24, 1970, Ser. No. 31,652
Int. Cl. B41f *31/16*
U.S. Cl. 101—336 **5 Claims**

A spiral spring coupled to a first spool is wound when ribbon from that spool is pulled onto a second spool by operation of a disengageable drive mechanism. When a predetermined amount of ribbon has been paid out, an eyelet on the ribbon trips a lever disengaging the drive mechanism and the spiral spring unwinds. The unwinding of the spring simultaneously causes the paid-out ribbon to be taken up on the first



spool. The cycle repeats when the drive mechanism is recoupled to the second spool.

3,665,856
PRINTING METHOD USING ELECTRIC THROUGH-FIELD TO INDELIBLY LODGE PARTICLES
William C. Heller, Jr., 3521 North Shepard Avenue, Milwaukee, Wis.
Continuation of application Ser. No. 626,248, Mar. 27, 1967, now abandoned. This application Feb. 24, 1970, Ser. No. 14,718
Int. Cl. B41m *5/00*
U.S. Cl. 101—426 **13 Claims**

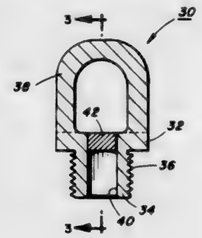


A printing method and apparatus is disclosed employing an electric through-field for effecting deposit of electroscopic particles on an electrically insulating particle receiving material. The through-field is controlled by a field plate disposed adjacent the particle receiving material to establish a force on the electroscopic particles capable of driving the particles into permanently lodged engagement in the interstices of the particle receiving material. The field plates may be of a letterpress type or may be an array of individual field poles controlled concurrently or sequentially.

3,665,857
BASE EJECTING ORDNANCE PROJECTILE
Spencer I. Radnich, Webster, N.Y.; Samuel Davelman, Succasuna, N.J.; Paul S. Symonds, Wharton, N.J., and Willis H. Taylor, Clifton, N.J., assignors to The United States of America as represented by the Secretary of the Army
Filed Nov. 23, 1970, Ser. No. 91,897
Int. Cl. F42b *9/00*
U.S. Cl. 102—1 R **11 Claims**

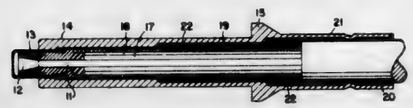
This disclosure is directed to a safety lifting plug for a base ejecting projectile which includes a cavity-defining body and at least one opening in the body for receiving the plug. The safety lifting plug is disclosed as including a top, a base means depending from the top which is receivable and rigidly engageable within the one opening, a lifting bar secured to the top, passage means formed in the plug through the top and the base means, and sealing means disposed in the passage means, which sealing means is manufactured from a

material the melting point of which is less than the "expelling charge reaction temperature" of expelling charge material to be carried by the projectile. Thus, where a projectile is provided with a safety lifting plug according to the invention, the experience of high environmental temperatures thereby, which temperatures are in excess of the "expelling charge



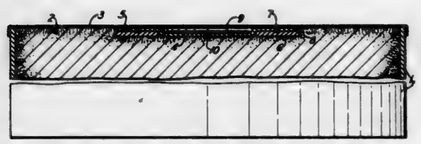
reaction temperature" thereby creating a possibility of a catastrophic event, causes the sealing material of the safety plug to melt thereby communicating the interior of the projectile with the atmosphere so as to allow the expelling charge gases to escape thereby to preclude the generation of undesired pressures within the projectile.

3,665,858
DETONATING FUZE
Bruce Travor, Holland, Pa., assignor to The United States of America as represented by the Secretary of the Army
Continuation-in-part of application Ser. No. 770,962, Oct. 28, 1968, now abandoned. This application Sept. 22, 1970, Ser. No. 74,486
Int. Cl. F42b *19/08*
U.S. Cl. 102—27 R **4 Claims**



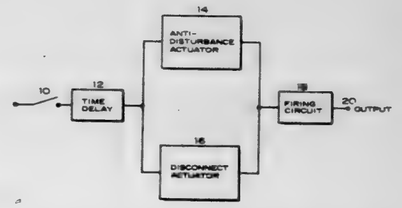
A high-low temperature shock-wave propagating fuze having a braided fiberglass lining overlying a radially exploding mild detonating cord. An abrasive resistant, flexible nonmetallic covering surrounds the lining and contains radial explosion and debris thereof without rupture between temperatures of −100° F. and +400° F.

3,665,859
PRIMING DEVICE
Allen S. Caples, Baltimore, Md., assignor to Catalyst Research Corporation, Baltimore, Md.
Filed May 25, 1970, Ser. No. 40,156
Int. Cl. F42c *19/10*
U.S. Cl. 102—45 **4 Claims**



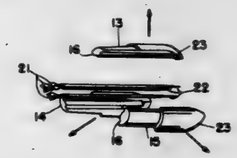
A priming device inside of a chamber includes a flat ring, in which is disposed a shallow cup that is encircled by an integral flange overlapping one side of the ring, to which one side of the flange is secured. The bottom of the cup has a hole through it and the cup contains pyrotechnic material. The opposite side of the flange is secured to a thin metal wall of the chamber. The material in the cup is detonated by striking the thin wall to bend it into the cup so that it will press against the pyrotechnic material.

3,665,860
DETECTOR
Gaylon L. West, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Dec. 24, 1970, Ser. No. 101,216
Int. Cl. F42b *9/08, 23/26*
U.S. Cl. 102—70.2 **4 Claims**



A detector having an electronic arming delay timer, an antidisturbance firing mechanism, and a disconnect firing mechanism, wherein either firing mechanism is capable of causing detonation of a squib.

3,665,861
AMMUNITION
Howard Jaslow, Smithtown, N.Y., assignor to The United States of America as represented by the Secretary of the Army
Filed Oct. 17, 1968, Ser. No. 768,979
Int. Cl. F42b *13/16*
U.S. Cl. 102—93 **2 Claims**



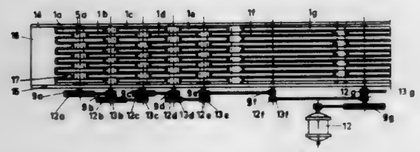
A sabot and sub-caliber projectile weapon having a plurality of individual sabot segments, each segment having a pair of parting surfaces and an intermediate internal surface. The internal surfaces define a sabot internal chamber in fluid communication with pressure gas when developed in environmental gun barrel.

3,665,862
CASELESS ROCKET CONTAINING SILANE POLYMER
George A. Lane, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Mar. 8, 1962, Ser. No. 179,511
Int. Cl. F42b *1/00;* **C06d** *5/00*
U.S. Cl. 102—103 **11 Claims**

1. A caseless rocket comprising an elongated solid propellant mass consisting essentially of an oxygen-containing oxidizer selected from the group consisting of inorganic and organic perchlorates and nitrates intermixed with a silane

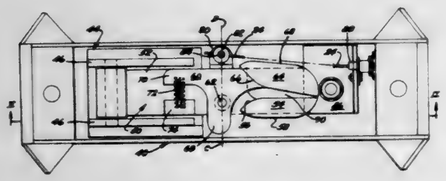
polymer selected from the group consisting of polydimethylsilane, polymethyl-hydrogensilane, polydihydrogensilane, copolymers and mixtures thereof reacted with a cross-linking agent for said silane polymer which solidifies and sets said silane polymer thereby to form a solid mass, the surface of said solid propellant mass being coated with a light weight coating having a maximum burning rate of less than 1 percent of that of said solid propellant mass on all sides other than one end.

3,665,863
VARIABLE SPEED CONVEYOR USING BELTS
Pierre Patin, 58, rue de Sevres, 92 Boulogne-sur-Seine, France
Filed Dec. 14, 1970, Ser. No. 97,926
Claims priority, application France, Jan. 5, 1970, 7000148
Int. Cl. A63g *1/00*; B65g *37/00*
U.S. Cl. 104—25 3 Claims



A variable speed conveyor or moving sidewalk has rows of spaced non-cylindrical support elements with belts supported thereon and driven at successively variable speeds from row to row. The belts provide plane moving paths and are driven by pinions on a drive shaft for each row. Spacers are arranged between belts and between support elements below the upper surface of the belts to fill gaps between the rows of support elements.

3,665,864
SENSOR FOR IN-FLOOR CONVEYORS
Jorgen S. Bildsoe, Royal Oak, Mich., assignor to Rapistan Incorporated, Grand Rapids, Mich.
Filed Mar. 31, 1970, Ser. No. 24,080
Int. Cl. B61j *3/04*
U.S. Cl. 104—88 6 Claims

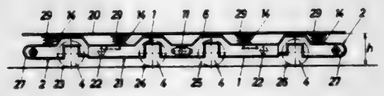


A sensor for use in an in-floor truck-towing conveyor switching mechanism, the sensor utilizing two cooperating jaws which together are engaged by a selector pin pulled between the jaws by the truck on which it is mounted. One of the jaws is fixed and the other is pivoted for movement toward and away from the fixed jaw under the influence of the pin. Pivotal movement of the movable jaw causes a cable connected to the switch plate or responder to be pulled, actuating the responder so as to switch the truck to a spur or branch track. The jaws of the sensor are biased to project above the floor. Both of the jaws are horizontally pivotable so as to depress under the floor when engaged by an object other than the selector pin, such as a vehicle wheel, thereby preventing accidental actuation of the responder.

ERRATUM

For Class 104—130 see:
Patent No. 3,666,050

3,665,865
LOW-PLATFORM RAILWAY CAR BOGIE
Friedrich Pelz, Vienna, Austria, assignor to Simmering-Graz-Pauker Aktiengesellschaft fur Maschinen-Kessel und Waggenbau, Vienna, Austria
Filed May 27, 1970, Ser. No. 40,917
Claims priority, application Austria, May 27, 1969, 4,990/69
Int. Cl. B61f *3/10*, *5/18*, *5/52*
U.S. Cl. 105—183 3 Claims



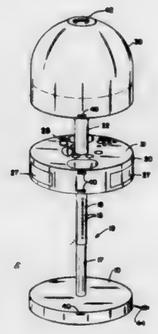
A rail vehicle which comprises a bogie, in which at least three wheel axles are mounted in a frame consisting of a main frame section and at least one additional frame section, which is mounted at the end of the main frame section for a vertical pivotal movement. The main frame section comprises a main crossbeam, which is provided with a bogie or king pin and is connected at least at one end to the side member of the frame by means which enable a pivotal movement of the two side members of the main frame section relative to each other.

3,665,866
METHOD AND APPARATUS FOR HANDLING ARTICLES IN TRANSIT
Wayne L. Swanson, 4525 Grand Avenue South, Minneapolis, Minn.
Continuation-in-part of application Ser. No. 579,712, Sept. 15, 1966, now abandoned. This application Aug. 31, 1970, Ser. No. 68,588
Int. Cl. B61d *45/00*; B60p *7/16*; B65j *1/24*
U.S. Cl. 105—369 A 9 Claims



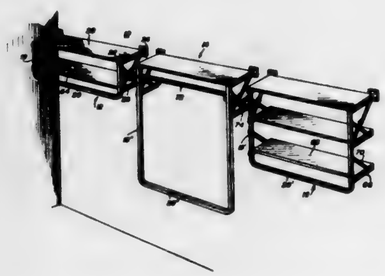
A vehicle body is disclosed having a floor and a pair of upstanding support members spaced apart in the direction of travel of the vehicle. Bands of strapping material are extended longitudinally in the body and have their opposite ends secured to the upstanding support members at points spaced above the floor, so that intermediate portions of the bands rest on the floor and their end portions slope upwardly toward the support members. A unitized load is placed on the intermediate portions of the bands and is spaced from the support members by the sloping band end portions, whereby upon impact the load may ride up the strap members to absorb impact energy.

3,665,867
COLLAPSIBLE UTILITY TABLE
Sharon L. Carlson, and Jenny M. Salado, both of 4809 Atherton Avenue 021, San Jose, Calif.
Filed Feb. 16, 1971, Ser. No. 115,628
Int. Cl. A47b *85/00*
U.S. Cl. 108—25 10 Claims



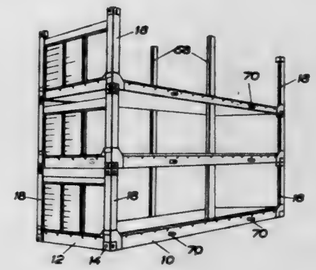
A collapsible utility table is disclosed which comprises a tubular member, a table top member providing a working surface mounted at one end of the tubular member, a cover member of given volume and a base member. The tubular member extends normally to the working surface and is wholly receivable within the volume of the cover member. The cover member includes means for detachably supporting the cover member on the free end of the tubular member. The base member includes means wholly receivable within the tubular member for detachably supporting the tubular member above the base member. Catch means for detachably supporting the cover member and table top member are described.

3,665,868
CLOTHES POLE AND SHELF COMBINATION
Oscar E. Kaeslin, 1444 S. W. 27th Court, Fort Lauderdale, Fla.
Filed Nov. 17, 1969, Ser. No. 877,231
Int. Cl. A47b *41/04*; A47h *1/00*
U.S. Cl. 108—29 1 Claim



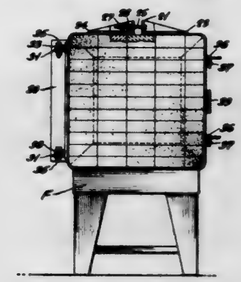
Shelf and hanger assemblies suspended on a wall having pairs of posts interconnected by hanger poles and spaced from the wall by bars abutting the wall below upper shelf supports. Pivotally extensible links provided with hanger notches interconnect the posts of adjacent shelf and hanger assemblies when laterally spaced on the wall.

3,665,869
LOAD-CARRYING BODIES
Theodore Howe, 17 Heyhouses Lane, St. Annes, Lancashire, England
Filed June 27, 1969, Ser. No. 870,156
Claims priority, application Great Britain, Aug. 2, 1968, 36,891/68
Int. Cl. B65d *19/18*
U.S. Cl. 108—53 9 Claims



A load carrying body having foldable corner posts has a bottom platform with a longitudinally extending trough for transporting coils of wire and rod, and a plurality of support members are pivoted at opposite sides along the trough for movement between positions where they form continuations of the inclined sides of the trough and positions within the trough to form part of the platform top surface.

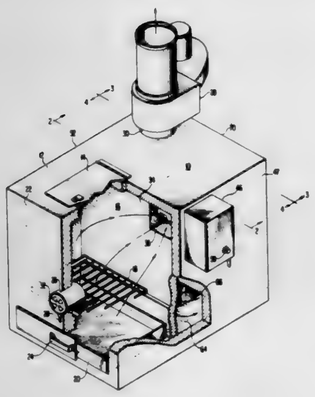
3,665,870
PREFABRICATED AND PRESTRESSED MODULAR FURNACE UNITS
Stephen Lewicki, Orchard Lane, Wallingford, Pa.
Filed Aug. 21, 1970, Ser. No. 65,817
Int. Cl. F23m *5/00*
U.S. Cl. 110—1 A 17 Claims



A prefabricated modular furnace unit built up of a plurality of longitudinally extending refractory brick elements to form a substantially closed perimetric figure in cross section. The bricks have juxtaposed mitered edges free of any mortar between them to permit them to move relatively to each other in radial directions in response to temperature variations. A spring-loaded sheath of high tensile strength on the exterior of the bricks maintains the unit in integrated compressed condition at all times while permitting expansion in response to thermal variations. The cross sections of the modular units may vary and the units of the same cross section may be combined to any length. The modular units may be closed at the ends thereof with either fixed or movable end closures of sheathed firebrick assemblies. Also, their thermal efficiency may be increased by providing bodies of

insulating material between the bricks and sheaths. The modular units lend themselves to continuous car-type muffle furnaces, or ovens, by providing a gap in the perimeter of the firebricks, which are compressed at their juxtaposed edges by suitable spring-loaded sheathing to permit the travel of the furnace conveyor components at said gap relative to the main fixed portion of the furnace housing.

3,665,871
INCINERATOR TYPE ENVIRONMENTAL CONTROL SYSTEM
William H. Schwartz, Jr., and Billy D. Maxwell, both of Gary, Ind., assignors to Environmental Corporation
Filed June 17, 1970, Ser. No. 46,937
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 C 20 Claims

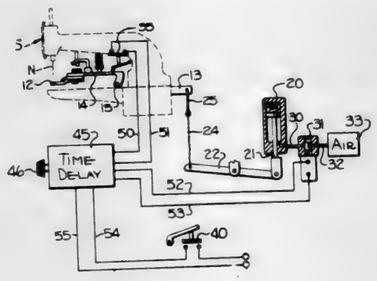


A relatively small and compact system for cleaning and purifying products of combustion resulting from incineration of waste materials including smoke and particles suspended therein as well as gases produced thereby wherein all of the products of combustion are forced from a first burning chamber into a balanced flow system including a second burning chamber having a burner flame completely enveloping the input thereto for incinerating the smoke etc. to a substantially clean, hot exhaust gas.

The extremely hot exhaust gases are fed into a temperature reduction labyrinth having several direction changes while maintaining the constant volumetric flow therethrough and finally through a scrubbing stage including a water bath, a series of water sprays and an output baffle while still maintaining the constant volumetric flow for completely removing any other products remaining in the exhaust gases thereby reducing air pollution to substantially a zero level.

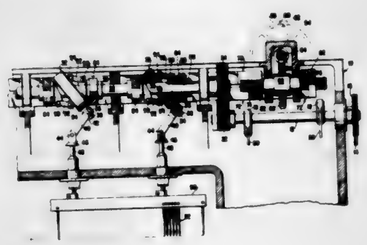
3,665,872
CYCLE CONTROL MEANS FOR SEWING MACHINES
Howard A. Hodgins, Newark, Del., assignor to Enterprise Machine and Development Corp., New Castle County, Del.
Filed Sept. 21, 1970, Ser. No. 73,704
Int. Cl. D05b *69/20*
U.S. Cl. 112—67 4 Claims

A time delay is provided between the end of one sewing cycle and the beginning of the next sewing cycle to provide a sufficient delay between sewing cycles that the operator can reposition the article being sewn. The time delay may be adjusted to suit the skill of the operator and a machine-



operated switch automatically energizes a time delay relay upon the completion of a sewing cycle.

3,665,873
ADJUSTABLE STROKE MECHANISM FOR TUFTING MACHINES
Bernard H. Wittler, Roosville, Ga., assignor to The Singer Company, New York, N.Y.
Filed July 17, 1970, Ser. No. 55,866
Int. Cl. D05c *15/20*
U.S. Cl. 112—79 A 11 Claims

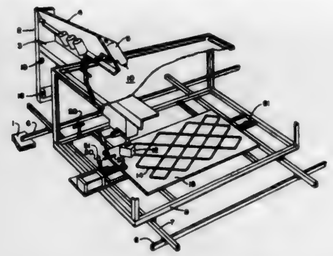


This disclosure relates to tufting machines and, in particular, to an adjustable stroke mechanism for the needle mechanism of said machine which includes a nutating motion device for driving the needle mechanism and control means for varying the movement of the nutating motion device for changing the stroke of said needle mechanism.

3,665,874
DRIFT COMPENSATING MEANS FOR A QUILTING MACHINE
David R. Cash, Louisville, Ky., assignor to James Cash Machine Co., Louisville, Ky.
Filed Dec. 29, 1970, Ser. No. 102,405
Int. Cl. D05b *11/00, 35/00*
U.S. Cl. 112—118 12 Claims

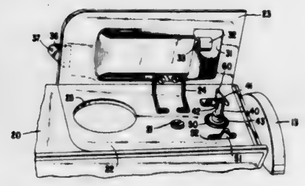
In a quilting machine — of the type wherein a frame-mounted follower drives a carriage-mounted guide-track to move a carriage-mounted quilt assembly along a given path reproducing a given sewing line design while frame-mounted sewing means sews that design into the quilt — a drift correcting means is provided for shifting the track-supporting carriage relative to the track in the direction necessary, and

in an amount sufficient, to correct or compensate for the pull-induced drift of the quilt assembly [relative to the car-



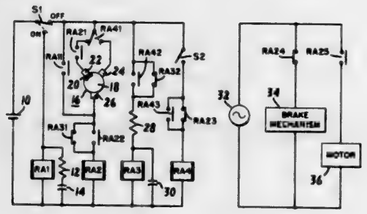
riage on which it is mounted] and thereby make the beginning and end points of the line of sewing coincide.

3,665,875
COVER FOR SEWING MACHINE BOBBIN WINDER
Louis J. Bantor, Edison, N.J., assignor to The Singer Company, New York, N.Y.
Filed Jan. 7, 1971, Ser. No. 104,711
Int. Cl. B65h *54/18*
U.S. Cl. 112—218 A 3 Claims



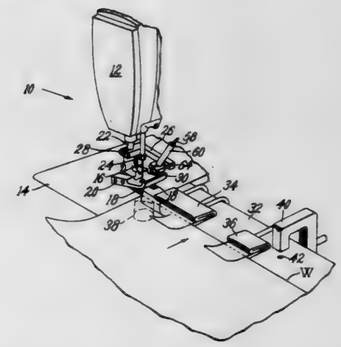
A bobbin winder for a sewing machine with portions including a bobbin accommodating spindle projecting exteriorly of a sewing machine casing and cooperating with a hinged lid having a spool pin supporting standard which is formed with an interior cavity overlying the exteriorly projecting portions of the bobbin winder in the closed position of the bed.

3,665,876
CONTROL DEVICE FOR FIXED POINT STOP MECHANISM FOR SEWING NEEDLE
Takanori Kobayashi, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 4, 1970, Ser. No. 86,693
Claims priority, application Japan, Nov. 6, 1969, 44/88988
Int. Cl. D05b *69/22*
U.S. Cl. 112—219 A 2 Claims



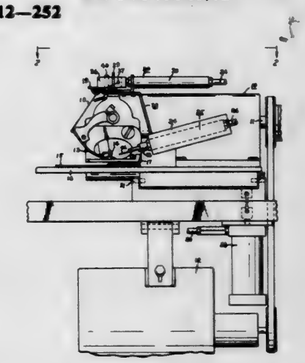
The control device for fixed point stop mechanism employs several relays having a time delay element capable of putting a position detector which it to stop a sewing needle at a predetermined position in its active state only when required. When not required the position detector is put in inactive state by the relays.

3,665,877
WORK FEEDING MEANS FOR SEWING MACHINES
Francis A. Wickers, Beverly; David W. France, West Newbury, and Ronald C. Mason, Hamilton, all of Mass., assignors to USM Corporation, Boston, Mass.
Filed Sept. 14, 1970, Ser. No. 71,647
Int. Cl. D05b *29/00*
U.S. Cl. 112—235 5 Claims



For enabling a presser foot more effectively to cooperate with work feeding means such as a conventional dog, an auxiliary presser engageable with the presser foot is automatically actuated, at least for an initial portion of a sewing run, to cause the work to be uniformly fed to the needle of a sewing machine. The auxiliary pressure is attachable to most sewing machines and, while operable on single ply work, is likely to have particular advantage in feeding irregular or bulky items such as hems, binding, trimming or the like.

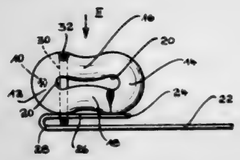
3,665,878
THREAD TRIMMER FOR BLIND STITCH SEWING MACHINE
John Koschoff, Centralia; Kenneth C. Haas, Mohnton, and Robert F. Pettit, Reading, all of Pa., assignors to Teledyne, Inc., Los Angeles, Calif.
Filed Dec. 18, 1970, Ser. No. 99,590
Int. Cl. D05b *65/02*
U.S. Cl. 112—252 10 Claims



A thread trimmer for a blind stitch sewing machine used in conjunction with a needle positioning mechanism, the thread

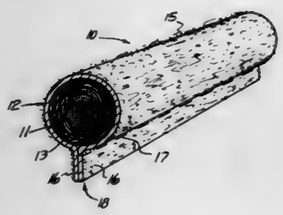
trimmer utilizing a reciprocating thread puller/clamp and reciprocating cutter blade simultaneously actuated by the pistons of single acting air cylinders under the control of a foot operated electrical switch, the thread puller/clamp completing its function prior to actual severance of the thread by the cutter. The sewing machine bed plate is automatically dropped by an air cylinder just after trimming completion to clear the bed and permit insertion of new work for stitching, the air cylinder being also actuated by the foot operated electrical switch. Control circuitry interconnects the thread trimmer and needle positioning mechanism to insure that neither trimming nor needle positioning can take place during normal stitching, that trimming cannot take place during needle positioning, and that trimming cannot take place unless the sewing machine needle and looper are in particular positions.

3,665,879
METHOD OF MAKING A SLIDING CLASP FASTENER
Hans-Ulrich Sohr, D 5408 Nassau am Lahn, Scheubachweg Haus Woffenschied, Germany
Filed Feb. 16, 1970, Ser. No. 11,617
Claims priority, application Germany, Feb. 18, 1969, P 19 08 068.3; P 19 08 069.4
Int. Cl. D05b *3/12*
U.S. Cl. 112—265 18 Claims



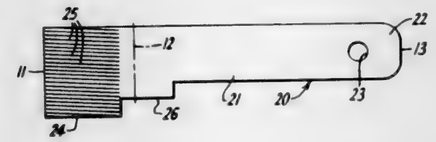
The invention relates to a sliding clasp fastener of the concealed element type comprising series of coupling elements which are, on one side each, sewn on a carrier tape and consist of a thermo-plastics filament wound in the form of a modified helix, as well as carrier tape, which is folded back on itself on the side which is remote from the series of coupling elements.

3,665,880
UPHOLSTERY EDGE ROLL
Jere B. Ambrose, Birmingham, Mich., assignor to Northern Fibre Products Company, Birmingham, Mich.
Filed Aug. 14, 1970, Ser. No. 63,756
Int. Cl. B32b *7/08*
U.S. Cl. 112—417 1 Claim



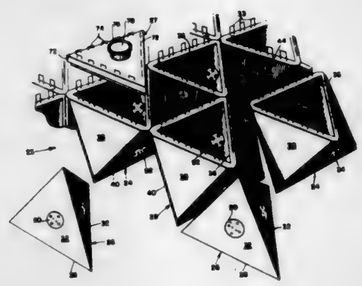
An edge roll formed of an elongated core made of soft paper folded and compressed into a generally cylindrical cross-sectional shape, and a wrapper formed of a narrow ribbon of greater width than the circumference of the core, and made of a thin, non-woven, hairy, synthetic plastic yarn fabric, with the wrapper closely surrounding the core and having its opposite long edge portions bent into face to face contact and extending radially to the core, with a line of stitches arranged parallel to and closely adjacent to the core, securing said edge portions together to form an attaching flange.

3,665,881
SPRING BLADES FOR CONTACT ARMS AND THE METHOD FOR MAKING THE SAME
Claude V. Koch, Two Rivers, and Donald G. Storms, Manitowoc, both of Wis., assignors to AMF Incorporated
Filed July 27, 1970, Ser. No. 58,610
Int. Cl. B21d *53/00*
U.S. Cl. 113—119 6 Claims



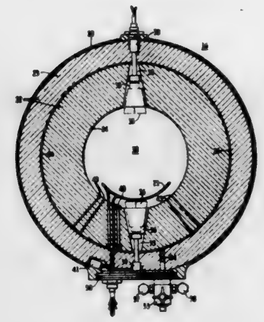
The disclosure is directed to a method of fabricating spring contact arm blades. A sheet of material is annealed on one side and thereafter deformed to provide screw threads. The sheet is cut to provide strips of the desired blade size and the deformed annealed portion is rolled to form a threaded tubular terminal portion.

3,665,882
BUOYANT STRUCTURE
Tancho D. Georgiev, 78 Hawthorne Avenue, Newton, Mass., and Robert M. Scanzani, 182 Bridge Street, Beverly, Mass.
Filed Mar. 16, 1970, Ser. No. 19,928
Int. Cl. B63b *35/00, 35/44*
U.S. Cl. 114—0.5 F 22 Claims



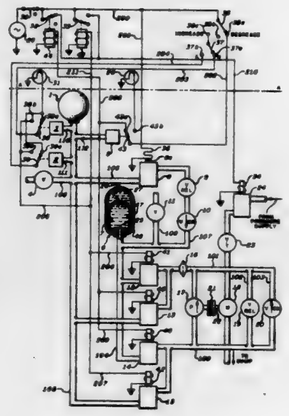
A buoyant structure suitable for use as a floating island of very large dimensions, e.g. an airport, and constructed of polyhedral modules fastened one to another. Some of these modules can be hollow to form a base having compartments suitable for housing mechanical systems, offices or the like. A particularly advantageous structure is formed of adjoined octahedral and tetrahedral modules with one side of each of these modules defining a lower plane, and one face of each octahedron defining the upper plane to which a platform is integrally fastened.

3,665,883
FLOTATION APPARATUS
George Sege, Potomac, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 7, 1970, Ser. No. 26,231
Int. Cl. B63g *8/00*
U.S. Cl. 114—16 E 9 Claims



A spherical pressure vessel, to add buoyancy to a submersible vehicle, is designed to withstand a fraction of the maximum ambient sea pressure to be encountered. The sphere is filled with a pressurized gas and as the vehicle descends the gas is heated to increase its pressure in proportion to the absolute temperature. As the submersible ascends, the gas is cooled to decrease its pressure. The heating and cooling of the gas are so controlled that the difference between the internal gas pressure and the external pressure of the ambient sea is always within a broad safe range. Pressurization of the sphere before a descent allows attainment of a certain depth without the requirement for heating the gas.

3,665,884
SUBMERSIBLE VEHICLE BUOYANCY CONTROL
Roy H. J. A. Gustafson, Sea Cliff, N.Y., assignor to Sperry Rand Corporation
Filed Sept. 18, 1970, Ser. No. 73,276
Int. Cl. B63g *8/00*
U.S. Cl. 114—16 E 11 Claims



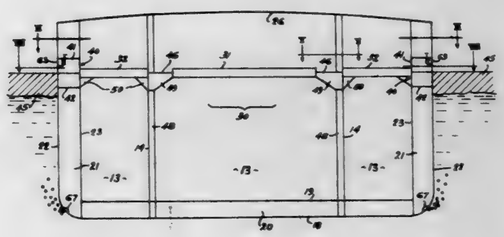
A fail-safe electro-hydraulic control system varies the buoyancy of a submersible vehicle to facilitate variation of the vehicle's operating depth by independent propulsion apparatus. A closed-loop hydraulic circuit determines the proper degree of water ballast storage, simultaneously storing energy in a pressure tank for direct rapid fail-safe restoration of buoyancy to the vehicle in the vent of a system failure.

3,665,885
CATAMARAN
Arthur Javes, Norwalk, Conn., assignor to Sea and Air Inc., Norwalk, Conn.
Filed Nov. 2, 1970, Ser. No. 86,037
Int. Cl. B63b *1/10*
U.S. Cl. 114—61 10 Claims



The catamaran has a pair of aligned spaced integrally formed hulls advantageously configured to allow the hulls to pass through the water with relatively little resistance during heavy weather and when a heavy load is being carried by the catamaran. Each of the hulls has a lower bow curving progressively upwardly toward the heads of the hulls and terminating below the top of the hulls. An upper bow advantageously extends above and beyond the lower bow and an upwardly extending downwardly facing generally flat chine is formed between the upper and lower bows. The hulls are bridged and supported in fixed relative positions by a plurality of releasably mounted deck panels forming a flat deck surface providing a convenient working area for pollution control equipment and workers. Releasable fasteners connect the light weight hulls to the flat deck panels and connect the adjacent panels to form a rigid flat deck.

3,665,886
SHIP CONSTRUCTION
William H. Germain, 20180 Lakeshore Road, Baie D'Urfe, Quebec, Canada
Filed Feb. 25, 1970, Ser. No. 14,076
Int. Cl. B63b *25/02*
U.S. Cl. 114—73 5 Claims



A hull of the bulk carrier type is strengthened for arctic service by beams extending along each side of the cargo carrying portion of the vessel approximately at the load water line. Struts extend transversely across the hull at spaced in-

tervals to interconnect the beams and resist external ice pressures. The beams are also used as ducts to convey heated water for heating the hull in the vicinity of the water line. Some of this heated water can be discharged down the outside of the hull from a location somewhat above the load water line.

3,665,887

APPARATUS FOR FEEDING A CABLE THROUGH AN APERTURE IN A BULKHEAD SEPARATING TWO LIQUIDS AT DIFFERENT PRESSURES

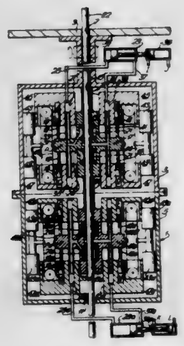
Nicolas Worthing, London, England, assignor to Harland Simon Limited, Bletchley Buckinghamshire, England

Filed June 11, 1970, Ser. No. 45,424

Claims priority, application Great Britain, June 11, 1969, 29,538/69

Int. Cl. B21b *33/035, 33/126*

U.S. Cl. 114—221 **12 Claims**



Apparatus for forcing an insulated cable through an aperture in a bulkhead separating two fluids at different pressures comprising a pair of independently reciprocatable elements, means to cause said elements selectively to grip the cable and at the same time to form a seal around the cable, the arrangement being such that while one element grips and moves the cable in the required direction through the bulkhead, the other element is returning with its grip released to take up a position ready to grip the cable again and to continue its movement before the said one element releases the cable to return to begin another cycle, and means surrounding and in sealing engagement with the elements, said means being in sealing engagement around said aperture to separate the fluid from the other fluid.

3,665,888

HORIZONTAL LIQUID PHASE CRYSTAL GROWTH APPARATUS

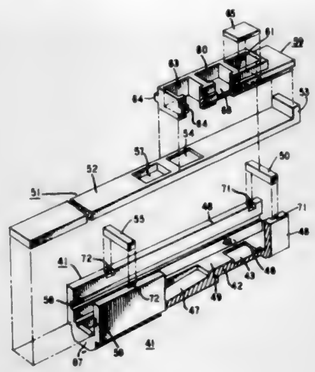
Arpad Albert Bergh, Murray Hill, and Carl Ralph Paola, Westfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 16, 1970, Ser. No. 19,878

Int. Cl. B05c *3/02*

U.S. Cl. 118—58 **4 Claims**

A horizontal liquid phase crystal growth apparatus which incorporates a heat sink means is described. The apparatus includes a boat for housing a melt which is in contact with a slider used for accommodating a source material. The slider, in turn, is in contact with a pedestal used for holding a substrate. The melt and the substrate are isolated from one another at different stages of the growth process by means of the slider. In operation, the boat is heated to a growth temperature and the slider is then moved so as to effect saturation of the melt with the source material. The slider is then moved again to contact the substrate with the source-saturated melt. Growth is then initiated from a convection-free melt by cooling the pedestal and, thus, the substrate by means of a heat sink which establishes a thermal gradient along the vertical axis of the container.



3,665,889

STENCILS FOR PRODUCING COMPOSITE DISPLAY

Anita Wagenvoord, 308 East 94th Street, New York, N.Y.

Filed Jan. 18, 1971, Ser. No. 107,320

Int. Cl. B05c *15/04*

U.S. Cl. 118—505 **10 Claims**

A series of stencils for use in sequence to produce a composite display. Each stencil has openings defining a portion of the total display, and pressure sensitive adhesive on one face for temporarily mounting it on the display surface. Registration guide means may be carried by but separable from the first stencil of the sequence, or may be independent elements positioned on the display surface in accordance with the position of the first stencil. Each subsequent stencil carries registration indicator means cooperable with the guide means. The stencils may be transparent and bear indicia indicating the order in which they are to be used and the nature of the display material to be used with them.

3,665,890

APPARATUS FOR REPETITIVELY APPLYING COATINGS TO A SUBSTRATE

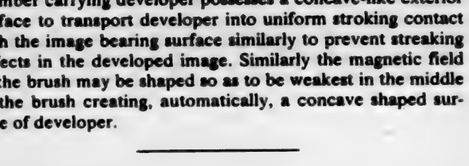
Ralph Ephraim Mishler, Menomonee Falls, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed Mar. 10, 1970, Ser. No. 18,278

Int. Cl. B05c *3/18, 3/20*

U.S. Cl. 118—412 **10 Claims**

An apparatus for repetitively striping the surface of a dielectric substrate with two or more micro-thin coatings from a single applicator station with each coating of substantially even thickness and interconnected along adjacent edges, each coating being formed from a flowable viscous plastic material having a dispersion of particles therein that exhibit discrete electrical properties so that there is formed a thin line overlapped junction between adjacent edges with the junction providing uniform and improved electrical characteristics.



3,665,891

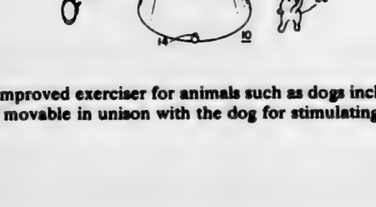
MAGNETIC BRUSH DEVELOPMENT APPARATUS

Carl R. Pitasi, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Feb. 24, 1970, Ser. No. 13,543

Int. Cl. G03g *13/00*

U.S. Cl. 118—637 **12 Claims**



An apparatus for developing a latent electrostatic image with developer material wherein development is effected by utilizing a rotating magnetic brush mechanism. The axis of rotation of the magnetic brush extends in a skewed relationship with respect to the axis of rotation of the image bearing surface. The developer material attracted to the magnetic brush is doctored to form a concave outer surface of developer on the member for effective development of the latent image without streaking. Alternatively, the magnetic member carrying developer possesses a concave-like exterior surface to transport developer into uniform stroking contact with the image bearing surface similarly to prevent streaking defects in the developed image. Similarly the magnetic field of the brush may be shaped so as to be weakest in the middle of the brush creating, automatically, a concave shaped surface of developer.

3,665,892

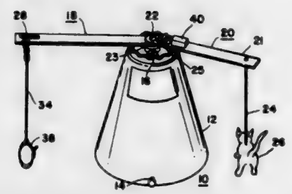
EXERCISER FOR ANIMALS

Ike W. Kusisto, P.O. Box 13237, Phoenix, Ariz.

Filed Oct. 30, 1970, Ser. No. 85,461

Int. Cl. A01k *15/00*

U.S. Cl. 119—29 **7 Claims**



An improved exerciser for animals such as dogs including a means movable in unison with the dog for stimulating his activity.

3,665,893

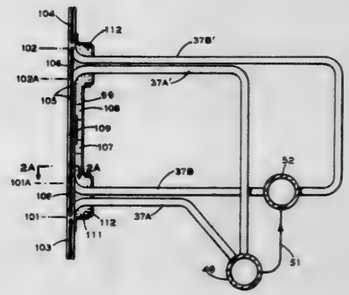
VAPOR GENERATOR TUBE ARRANGEMENT

Carl Lieb Barberton, and Murray Wiener, both of Akron, Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y.

Filed Dec. 29, 1970, Ser. No. 102,346

Int. Cl. F22b *37/24*

U.S. Cl. 122—6 A **14 Claims**



A forced flow vapor generator wherein at least one of the upright boundary walls of the furnace has a lower and upper section formed of a first and second group of parallel flow tubes respectively, the tubes in each group being rigidly united throughout most of their lengths and having portions thereof interlaced and coextensive with each other, the interlaced portions being detached from one another for the most part. Provisions for interconnecting the tubes of the first and second groups including having inlet and outlet portions of the tubes bent out of the plane of the wall, the bent out portions being detached from one another for the most part.

3,665,894

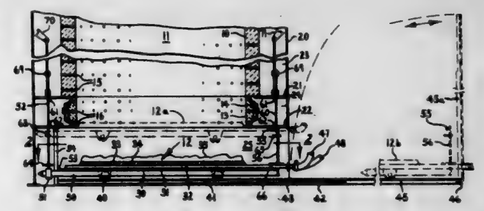
ROLL OUT FURNACE GRATE

Allen J. Jones, Fall Creek, Oreg., assignor to Michel Lumber Company, Lake Oswego, Oreg.

Filed Nov. 9, 1970, Ser. No. 87,806

Int. Cl. F23h *3/04*

U.S. Cl. 122—374 **8 Claims**

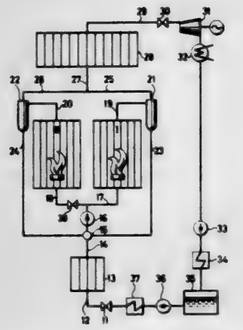


The grate is supported in raised, operative position by a raising and lowering mechanism. For cleaning, the grate is lowered onto track rails in an air chamber below the grate. By opening a door in the furnace air jacket the grate may be pulled out onto exterior track rails for cleaning. The grate is equipped with a water cooling coil and flexible hose connections which accommodate travel of the grate into and out of the furnace without disconnection of the water supply. When the grate is pulled out of the furnace it disengages from the raising and lowering mechanism and when rolled back into the furnace it reengages with the raising and lowering mechanism and is lifted to operative position. Instead of cleaning the grate immediately and returning it to the furnace, it may be replaced with a cleaned grate in order to get the furnace back into operation more quickly.

3,665,895
PROCESS FOR VARIABLE-PRESSURE OPERATION OF A FORCED-FLOW VAPOR GENERATOR

Josef Sauter, Suigen, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed Dec. 7, 1970, Ser. No. 95,453
Claims priority, application Switzerland, Dec. 12, 1969, 18501/69
Int. Cl. F22b *35/14*
U.S. Cl. 122—406 ST 6 Claims

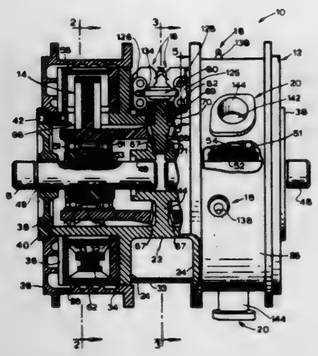


The enthalpies of the working mediums leaving the respective evaporators in the plant are maintained at a difference of at least 30 kcal/kg when the load approaches or exceeds the critical pressure range. The working medium fed to the downstream heating surfaces is drawn chiefly from the evaporator having the highest enthalpy while the working medium which is recirculated is drawn chiefly from the evaporator having the lowest enthalpy.

3,665,896
TWO-CYCLE ENGINE

Robert Crehore, 414 East Frye Avenue, Peoria, Ill.

Filed May 13, 1971, Ser. No. 143,100
Int. Cl. F02b *53/00*
U.S. Cl. 123—18 A 12 Claims

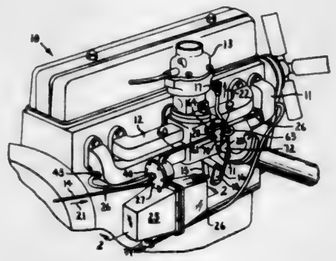


A two-cycle engine having banks of arcuately reciprocating pistons interconnected such that the banks of pistons move in opposite arcuate reciprocating directions, and including novel fuel vapor inlet and exhaust valve means adapted for employment of hydrogen and oxygen input vapor gases whereby to substantially eliminate exhaust air pollutants.

3,665,897
STEAM INJECTION DEVICE FOR INTERNAL COMBUSTION ENGINE

Oscar E. Boyer, Portland, Oreg., assignor to Boyer & Abbott Enterprises, Inc., Portland, Oreg.

Filed July 10, 1970, Ser. No. 53,805
Int. Cl. F02d *19/00*
U.S. Cl. 123—25 B 4 Claims

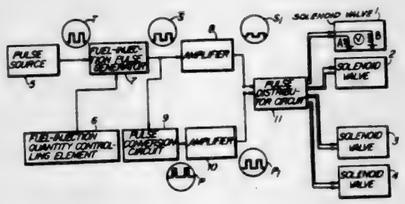


A steam generating tube is mounted in the exhaust manifold of the engine and supplied with water from a water tank. Wet steam generated in the tube passes through a steam separator and substantially dry steam is injected into the intake manifold of the engine to pass into the cylinders along with the fuel and air mixture from the carburetor. Water removed from the steam in the steam separator returns to the tank. The steam separator comprises a housing filled with stainless steel shavings, one end of said steam generating tube being connected with said housing. A tube to a steam control valve is connected to the top of said housing and a water return tube in the bottom of said housing is connected with said tank.

3,665,898
DRIVING DEVICE FOR FUEL INJECTION SOLENOID VALVES

Isezi Kamazuka, Kariya-shi, Japan, assignor to Nippondenso Kabushiki Kaisha, Kariya-shi, Japan

Filed Dec. 16, 1969, Ser. No. 885,470
Claims priority, application Japan, Dec. 24, 1968, 43/94839; Jan. 16, 1969, 44/3054
Int. Cl. F02m *51/00*
U.S. Cl. 123—32 EA 2 Claims

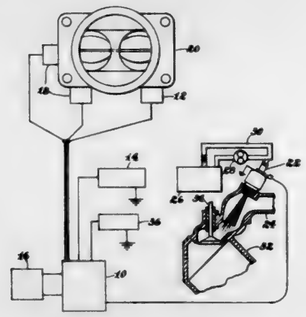


A driving system for solenoid valves in an electrical fuel injection system of an internal combustion engine, wherein said solenoid valves are adapted to inject the fuel into the engine cylinders upon application thereto of a fuel injection pulse synchronized with the valve opening timing of the air intake valves in the internal combustion engine and having a pulse width corresponding to the load of the engine and the like.

3,665,899
CIRCUIT FOR AIDING THE COLLAPSE OF AN ELECTROMAGNETIC FIELD

John R. Nagy, Detroit, Mich., assignor to The Bendix Corporation

Filed Sept. 21, 1970, Ser. No. 74,057
Int. Cl. F02m *51/00*
U.S. Cl. 123—32 EA 2 Claims

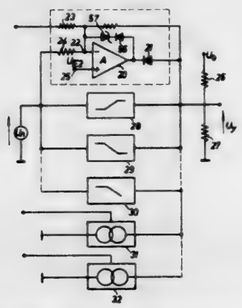


A circuit means is disclosed for aiding the collapse of an electromagnetic field in order to remove energy stored therein and thus to hasten movement of a movable member whose position is controlled by the strength of the electromagnetic field. In particular, an electronic device is used to provide a repeatable, uniform, rapid, controlled energy dissipating circuit path. By dissipating the energy stored in the electromagnetic field through a zener diode, uniformity of field collapse is assured, good repeatability is provided and actuation frequency of the field is increased.

3,665,900
ELECTRONIC CONTROL SYSTEM FOR SHAPING THE FUEL-SPEED CHARACTERISTICS OF AN INTERNAL COMBUSTION ENGINE

Ewald Schlimme, Hildesheim, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Continuation-in-part of application Ser. No. 867,025, Oct. 16, 1969. This application Oct. 30, 1969, Ser. No. 872,674
Claims priority, application Germany, Nov. 7, 1968, P 18 07 539.3
Int. Cl. F02b *3/00*; F02m *39/00*
U.S. Cl. 123—32 EA 17 Claims

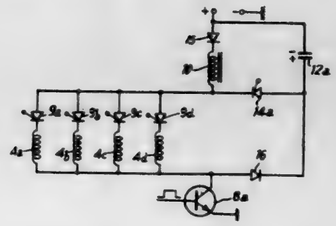


Additional amplifiers are connected in parallel to the high gain direct current amplifier of the parent application. These have a very high output impedance compared to the output impedance of the direct current amplifier. All amplifier outputs are connected to a voltage divider tap from which the fuel control signal is derived. The additional amplifiers have inherent temperature compensation and shape the full-load limiting line, while the original high gain direct current amplifier shapes the speed control lines.

3,665,901
SYSTEM CONTROLLING THE SPEEDY ENERGIZATION OF ELECTROMAGNETS, CHIEFLY THOSE CONTROLLING THE OPENING OF ELECTROMAGNETIC INJECTORS IN INTERNAL COMBUSTION ENGINES

Louis A. Mouquetit, L'Etang-la-Ville, and Pierre M. Advenier, Paris, both of France, assignors to Societe des Procedes Modernes d'Injection Soprosni, Les Mureaux, France

Filed Dec. 23, 1969, Ser. No. 887,487
Claims priority, application France, Dec. 27, 1968, 181114; Apr. 18, 1969, 6912153; June 13, 1969, 6919657; Aug. 14, 1969, 6928097
Int. Cl. F02b *3/00*; H01h *47/24*
U.S. Cl. 123—32 EA 22 Claims



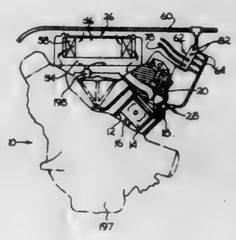
System controlling the speedy energization of electromagnets, chiefly those controlling the opening of electromagnetic injectors in internal combustion engines.

An arrangement intended chiefly for the energization of electromagnetic solenoids for operating fuel injectors of internal combustion engines wherein the means for energizing the electromagnetic solenoids in the desired sequence receive control signals periodically and at the same frequency as an induction coil fed by the same power supply as said solenoids. The magnetic energy generated in the solenoids and in the induction coil upon termination of the control signals is stored in means such as one or more condensers so as to be recovered for rapidly energizing the proper electromagnetic solenoid for the next injector operation.

3,665,902
STRATFIELD-CHARGE ENGINE AND FUEL IGNITION-INJECTION PLUG THEREFOR

John J. Bloomfield, 222 South Sunset Canyon Dr., Burbank, Calif.

Filed Dec. 24, 1969, Ser. No. 887,941
Int. Cl. F02p *13/02*
U.S. Cl. 123—32 ST 10 Claims



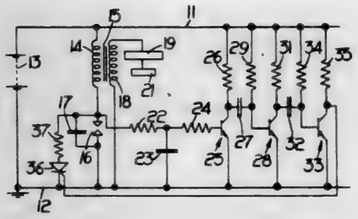
A stratified-charge spark ignition engine. The engine has cylinder intake ports which effectively open directly to at-

mosphere, such that unheated and unthrottled fuel free air is drawn into the cylinders during intake, and a novel throttle controlled compression actuated fuel injection and ignition system which injects a metered quantity of atomized fuel directly into the spark region of each cylinder immediately prior to firing to provide within the region at the instant of firing a highly combustible stratified fuel charge. The fuel injection-ignition system embodies novel fuel injection-ignition units for the cylinders which serve the dual function of throttle controlled, compression actuated fuel metering pumps for injecting fuel into the cylinder spark regions and spark plugs for igniting the fuel. In their preferred configuration, these injection-ignition units resemble and are designed to replace the spark plugs of a conventional gasoline engine to permit conversion of the latter to a stratified-charge engine with minimum modification and cost.

3,665,903
SPEED LIMITING SYSTEMS FOR INTERNAL COMBUSTION ENGINES

Paul Anthony Harris, Walsall, and Lancelot Phoenix, Birmingham, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Jan. 23, 1970, Ser. No. 5,421
Claims priority, application Great Britain, Feb. 3, 1969, 5,607/69; May 12, 1969, 24,056/69
Int. Cl. F02d *11/10*
U.S. Cl. 123—102 **1 Claim**



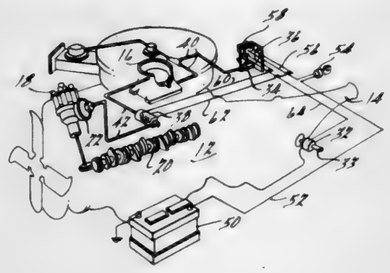
A speed limiting system for an internal combustion engine includes timing means for measuring the interval between successive openings of a contact breaker or other switching device which is turned on and off in timed relationship to the engine to control the production of sparks at the plugs of the engine. A thyristor is operable by the timing means when the interval between successive openings of the switch device falls below a predetermined minimum value for preventing production of sparks.

3,665,904
AUTOMATIC VACUUM SPARK ADVANCE CONTROLLER

Richard E. Goodwillie, Detroit, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed June 3, 1970, Ser. No. 43,090
Int. Cl. F02p *5/04*
U.S. Cl. 123—117 A **8 Claims**

A method of and apparatus for operation of an automotive vehicle internal combustion engine to reduce exhaust emissions thereof by disabling the engine vacuum spark advance control in response to and over a range of engine vacuum levels existing at or corresponding to medium to light vehicle acceleration loads up to a predetermined vehicle speed and restoring or enabling the normal vacuum spark advance control of the distributor when the vehicle is operated in any

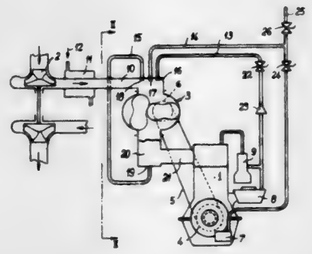


mode above said speed or during deceleration, steady speed or road load driving conditions below said speed.

3,665,905
FUMIGATION DEVICES FOR SUPERCHARGED DIESEL ENGINES

Maurice G. Brille, and Yves-Marie E. Baguelin, both of Suresnes, France, assignors to Societe Anonyme de Vehicules Industriels et d'Equipments Mecaniques Saviem, Suresnes, France

Filed June 18, 1970, Ser. No. 47,331
Claims priority, application France, June 26, 1969, 6921520
Int. Cl. F02b *37/04*
U.S. Cl. 123—119 C **6 Claims**



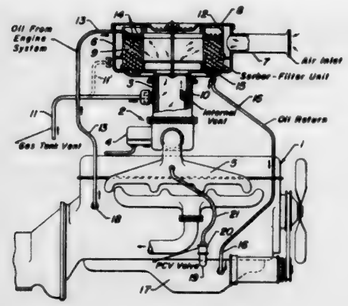
Device for the permanent atomization of liquid fuel into Diesel engines comprising a volumetric pump interposed in the engine air induction pipe, whereby pipes for delivering liquid fuels and additives, such as oil, open through jets into said air induction pipe, upstream of the volumetric gear pump operated simultaneously as a pump and as an atomizer.

3,665,906
VAPOR CONTROL SYSTEM FOR AN ENGINE TO ELIMINATE SMOG

Ted V. De Palma, Roselle, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 29, 1969, Ser. No. 888,259
Int. Cl. F02m *59/00*
U.S. Cl. 123—136 **3 Claims**

A vapor absorption system for an internal combustion engine provides for a replenishing flow of oil to coat an absorber unit so as to keep a high efficiency operation. A desired oil flow to the evaporation control unit may be a portion of the oil from the engine crankcase lubrication system which, in turn, includes a crankcase ventilation valve in a line

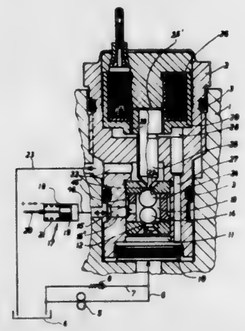


to the engine intake manifold so that sorbed vapors are effectively removed from the oil returning from the sorption unit.

3,665,907
DEVICE FOR ADJUSTING THE TIMING IN FUEL INJECTION PUMPS

Helmut Laufer, Stuttgart-Botnang, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 13, 1970, Ser. No. 27,767
Claims priority, application Germany, Apr. 22, 1969, P 19 20 274.5
Int. Cl. F02m *39/00*; F02b *3/00*
U.S. Cl. 123—139 E **6 Claims**



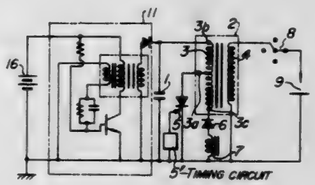
In a fuel injection pump, for an rpm-independent, arbitrary adjustment of the injection timing, there is provided an electromagnet which, on command, opens or closes a conduit to admit or cut off, respectively, a control pressure affecting an adjusting member and simultaneously, closes or opens a bypass channel communicating with said conduit upstream of said adjusting member.

3,665,908
CAPACITOR DISCHARGE TYPE IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Kazuo Oishi, Kariya, Japan, assignor to Nippondenso Kabushiki Kaisha, Kariya-shi, Japan

Filed Feb. 27, 1970, Ser. No. 14,969
Claims priority, application Japan, Apr. 11, 1969, 44/28535; Apr. 12, 1969, 44/28405
Int. Cl. F02p *3/06*
U.S. Cl. 123—148 E **2 Claims**

A capacitor discharge type ignition system for internal combustion engines comprising an ignition coil whose primary winding is connected at one end thereof to one terminal of a discharge capacitor, has an intermediate tap connected through a switching element to the other terminal of the capacitor, and is connected at the other end thereof to the

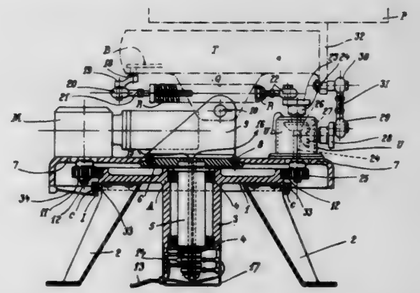


aforesaid other terminal of the capacitor through a diode inserted in the polarity opposite to that of the switching element or a series circuit consisting of a diode of the above-mentioned polarity and a choke coil.

3,665,909
APPARATUS CONTROLLING THE MECHANISM THROWING CLAY TARGETS IN BALL TRAPS

Pierre Laporte, Ponte de la Brogue, Antibec, Alpes Maritimes, France

Filed Mar. 4, 1970, Ser. No. 16,321
Claims priority, application France, Mar. 6, 1969, 6906183; Aug. 6, 1967, 6921259
Int. Cl. F41f *7/00*
U.S. Cl. 124—9 **2 Claims**



A target-throwing apparatus comprises a frame, a turret mounted for rotational movement on the frame, a swinging throwing arm carried by a support tiltably mounted on the turret, an energy-storing spring to swing the throwing arm, and mechanical connections which adjust the azimuth of the turret, the inclination of the tiltable support and the tension of the spring. A motor activates the connection which adjusts the tension of the spring, and a control device activates the motor so that the tension of the spring can be adjusted while the apparatus is in operation.

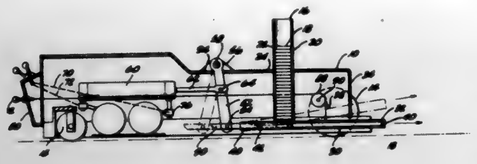
3,665,910
HOCKEY PRACTICE DEVICE FOR PROPELLING PUCKS

Orlando Bozi, 5423 Fallbrook Ave., Woodland Hills, Calif.

Filed Sept. 19, 1969, Ser. No. 859,343
Int. Cl. F41f *1/04*
U.S. Cl. 124—11 **5 Claims**

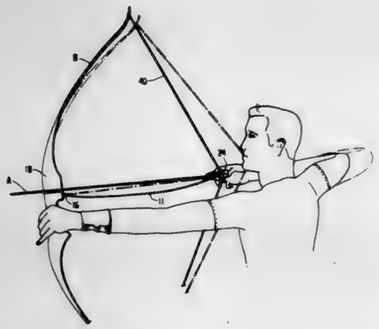
A machine for automatically shooting or propelling a hockey puck is described. The machine includes apparatus for automatically issuing a hockey puck from a hopper. The puck is then dropped into an aiming chute from which it is

propelled by a piston driven hammer. The aiming chute is adapted to be raised or lowered to propel the puck therefrom



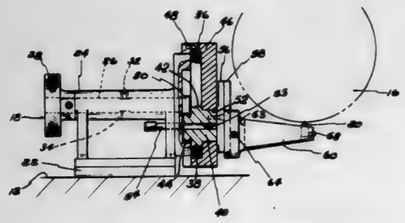
at different levels off of the ice. For ease in maneuvering across the ice, the machine is placed on wheels.

3,665,911
ARCHERY BOW STRING RELEASE TAB AND DRAW LIMITING DEVICE
Anthony L. Altier, Honesdale, Pa.
Filed Oct. 6, 1969, Ser. No. 864,143
Int. Cl. F41b 5/00
U.S. Cl. 124—24 9 Claims



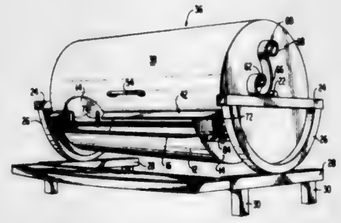
A bow string draw limiting device for archers to maintain a constant draw length during shooting. The device includes a non-stretchable line secured at one end to the bow near the handle and having a free end a reel or bobbin is provided for convolutions of the line to vary the length of the line to adjust to the archer's draw length a slip tab or disc is provided at the free end of the line which is engageable with the shooting fingers and serves as a drawn bow string limit stop.

3,665,912
HYPOCYCLIC WHEEL DRESSER
John W. Confortl, Detroit, and Joseph Silvagi, Warren, both of Mich., assignors to Camdale Enterprises, Roseville, Mich.
Filed Aug. 22, 1969, Ser. No. 852,267
Int. Cl. B24b 53/08
U.S. Cl. 125—11 AT 11 Claims



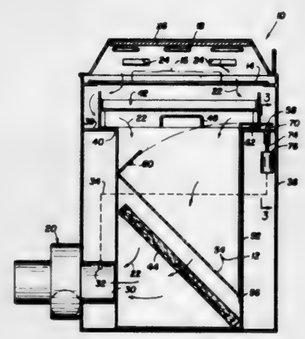
A diamond tool for dressing a grinding wheel is supported by a fixture for motion along a path having a curvature that can be reversed for generating either a convex or a concave wheel profile, and a radius of curvature that can be increased to infinity for generating a linear profile.

3,665,913
PORTABLE COOKING GRILL
Bunyam B. Cagle, Jr., 5711 Grand Ave., Fort Smith, Ark.
Filed Dec. 30, 1970, Ser. No. 102,684
Int. Cl. A47j 37/00; F24b 3/00
U.S. Cl. 126—25 R 13 Claims



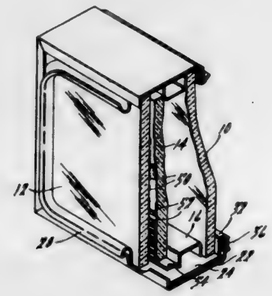
A portable charcoal cooking grill comprising a generally half-cylindrical open-topped firebox is surmounted by a generally half-cylindrical cover which is rotatable on the firebox axially to adjusted degrees of opening settable by cam means cooperating between the firebox and cover so as to regulate the rate of air supply to burning fuel beneath a grate which is similarly cam-supported and vertically adjustable in the firebox.

3,665,914
FIRE SAFETY DEVICE FOR ELECTRIC COOKING UNIT
Victor M. Berger, 200-17 50th Ave., Bayside, N.Y.
Filed June 16, 1971, Ser. No. 153,634
Int. Cl. A47j 37/06; F24c 7/08
U.S. Cl. 126—41 R 2 Claims



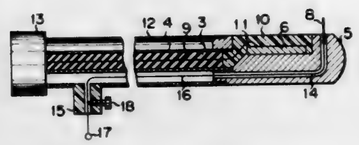
An electric cooking unit with a down-draft induced air flow in which the fire hazard potential of the air flow is effectively minimized by a closure member which, in its closed position, terminates the air flow. The closure member is arranged in a removable container of the unit which does not interfere with achieving the aforesaid safety feature, and yet also permits the container to be readily transported to a remote washing station to thereby facilitate cleaning the cooking unit.

3,665,915
OVEN DOOR WINDOW UNIT FOR SELF-CLEANING OVENS
Joseph W. Katona, Walled Lake, and David W. Crouse, Union Lake, both of Mich., assignors to Mills Products, Inc., Farmington, Mich.
Filed Mar. 18, 1971, Ser. No. 125,557
Int. Cl. F23m 7/00
U.S. Cl. 126—200 8 Claims



A window unit for a door of a self-cleaning oven has three transparent panes of glass clamped in spaced relation to provide a self-contained unit to be mounted in the window opening of an oven door. The middle pane of glass is elevated by thermostatic means at oven cleaning temperatures, and stripe of heat reflecting material on the middle and outer panes of glass permit viewing into the oven at temperatures within the cooking range and are arranged to reflect heat as well as block visibility at oven cleaning temperatures.

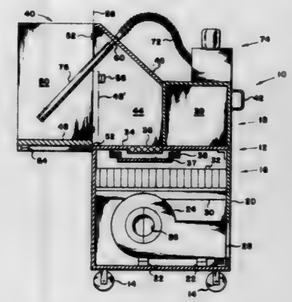
3,665,916
CATHETER TYPE SEMICONDUCTOR RADIATION DETECTOR
Tetsuji Kobayashi; Tetsuo Sasaki, both of Yokohama-shi; Seiichi Takayanagi, Tokyo, and Toru Sugita, Yokohama-shi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Aug. 28, 1969, Ser. No. 853,638
Claims priority, application Japan, Aug. 31, 1968, 43/75513; Sept. 30, 1968, 43/84156; Oct. 25, 1968, 43/92569
U.S. Cl. 128—2 R 7 Claims



A catheter type semiconductor radiation detector comprising a semiconductor element introduced into a living body for detecting radiation prevailing therein wherein there is provided a movable retractable needle for fixing the detecting element at a prescribed position in the living body.

3,665,917
ENVIRONMENT CONTAMINENT CONTROL CONSOLE
Marcus M. Jensen, 1764 North 1450 East, Provo, Utah
Filed Oct. 1, 1969, Ser. No. 862,747
Int. Cl. A61b 10/00
U.S. Cl. 128—2 R 9 Claims

A console for the collection and containment of airborne contaminants within a given environmental region, particularly as related to the induction of coughing for diagnostic procedures and the control of resultant microbial scatter. This compact and mobile console contains a fan for forcibly drawing air from the environs of the console, through a hood,



a pre-filter and an absolute filter. Doors are hinged upon one side of the cabinet for nesting during storage and to form an air-collecting hood during operational procedures. Means are also provided for dispensing aerosol to a patient through the hood via a disposable tube, to induce coughing in the patient.

3,665,918
CONFORMABLE ADHESIVE SHEET
Julius A. Lindquist, Somerville, and George J. Buese, East Brunswick, both of N.J., assignors to Johnson & Johnson
Filed Jan. 12, 1970, Ser. No. 2,225
Int. Cl. C09j 7/02; A61l 15/06
U.S. Cl. 128—156 24 Claims

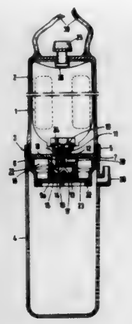


This pressure-sensitive adhesive sheet of improved conformability and splitting resistance which may be advantageously employed, for example, as a surgical drape or used in tape form or as part of a surgical bandage comprises a flexible polyurethane foam web which is compressedly set to less than about 50 percent of its original thickness and has a splitting resistance of at least about 20 pounds per square inch, an extent of elasticity of at least about 110 percent and a 100 percent modulus of less than about 5 pounds per inch width. A porous pressure-sensitive adhesive is applied to at least portions of one side of the web and, in certain embodiments, a low-friction coating is applied to the other side. In other embodiments, a release coating which may also have a low coefficient of friction may be applied to enhance unwindability. As a tape, the product is advantageously applied to irregularly shaped portions of the body having varied and changeable conformability requirements, such as joint locations, particularly knuckles, elbows, knees and the like.

3,665,919
SUCTION APPARATUS
Asmund Sigurd Laerdal, Stavanger, Norway
Filed Nov. 23, 1970, Ser. No. 92,044
Claims priority, application Germany, Apr. 21, 1970, P 20 18 964.4
Int. Cl. A61m 1/00
U.S. Cl. 128—277 12 Claims

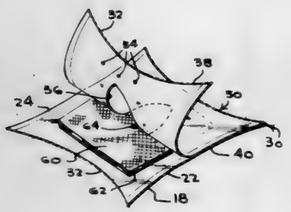
Medical suction apparatus having a container, a collector vessel for receiving secretion from the oral cavity of a pa-

tient, and a jet ejector system fed with gas from a bottle in



the container for applying suction to the collector vessel. The parts can be connected together directly, without tubing.

3,665,920
PERINEAL PROTECTOR
Rachel D. Davis, 111 East Gordon St., Kinston, N.C.
Filed Sept. 26, 1969, Ser. No. 861,431
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 14 Claims



A perineal protector to be worn by humans, particularly incontinent adults, shaped to fit the perineal area and comprised of sheet material having elongated curved sides and curved ends defining a waist area. The perineal protector is preferably formed from a continuous length of sheet material having at the ends scored lines capable of being torn, and a wedge-shaped area formed between and being bound by the ends of adjacent protectors, which wedge-shaped area is removable by tearing along the score lines. An inner layer of liquid-impervious material may be included through which means are provided for fluid communication through the inner layer for admitting fluids from the perineum of a wearer, and between the layers there may be positioned the liquid receiving and retaining material to prevent solids and fluids from passing beyond the protector.

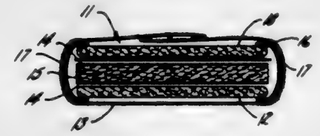
3,665,921
DISPOSABLE DIAPER WITH IMPROVED LINER MATERIAL
Robert J. Stumpf, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Nov. 19, 1969, Ser. No. 877,968
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 10 Claims

A disposable diaper having a conventional central pad of absorbent material, a conventional layer of fluid impervious material disposed on one side of the central pad and extending around the edges thereof, and an improved liner material disposed on the other side of the central pad and joined to the fluid impervious material around the periphery of the pad. The improved liner material comprises a high-loft, nonwoven fabric having a discontinuous backing layer of flexible



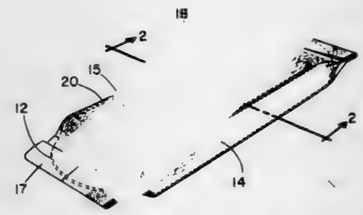
adhesive, and including a multiplicity of hydrophobic fibers individually looped outwardly away from the backing layer with the ends of each loop embedded in the backing layer.

3,665,922
SANITARY NAPKIN WITH IMPROVED WRAP MATERIAL
Robert F. Skora, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Nov. 20, 1969, Ser. No. 878,393
Int. Cl. A61f *13/16*
U.S. Cl. 128—290 9 Claims



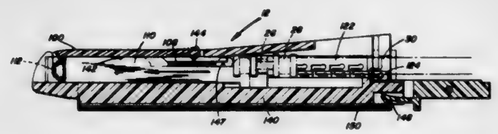
A sanitary napkin having a conventional central pad of absorbent material, and an improved wrap material disposed around the central pad and comprising a high-loft, nonwoven fabric having a discontinuous backing layer of flexible adhesive. The fabric includes a multiplicity of hydrophobic fibers individually looped outwardly from the backing layer with the ends of each loop embedded in the backing layer.

3,665,923
FLUSHABLE SANITARY NAPKIN
John F. Champaigne, Jr., Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Feb. 5, 1970, Ser. No. 8,838
Int. Cl. A61f *13/16*
U.S. Cl. 128—290 W 7 Claims



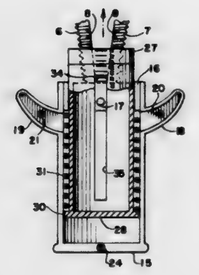
A flushable sanitary napkin with adhesive attachment means. A major portion of the wrapper enclosing the absorbent pad is a non-woven web of fibers held together with a water-dispersible binder. The napkin has no end tabs but is provided on its bottom side with a pressure sensitive adhesive area for attachment to a suitable undergarment for support.

3,665,924
SUTURING AND DIVIDING ORGANIC TUBULAR STRUCTURES
Douglas G. Nolles, New Canaan, and Graham W. Bryan, Ridgefield, both of Conn., assignors to United States Surgical Corporation, Baltimore, Md.
Filed Oct. 13, 1970, Ser. No. 80,451
Int. Cl. A61b *17/32, 17/12*
U.S. Cl. 128—305 19 Claims



A cartridge and an instrument which, together serve to mechanically suture and divide organic tubular structures, such as blood vessels. The cartridge houses a plurality of staples and operates in three stages. After the tubular structure is inserted between the jaws of the cartridge, the cartridge jaws close, a pair of pushers come forward and suture the organic structure in two spaced locations with a pair of surgical staples, and a blade comes forward and divides the tubular structure at a position intermediate the two staples. The staples are indexed and readied for discharge by means of a pair of leaf springs which act between a fixed rail assembly and a movable wrap assembly. The instrument is adapted to coact with the novel cartridge and depends upon the interaction of three springs to bring about the three-stage operation of the cartridge.

3,665,925
OBSTETRICAL FORCEPS
Hamo M. Dersookian, 7300 Riverdale Rd., Lanham, Md.
Filed Aug. 11, 1970, Ser. No. 62,824
Int. Cl. A61b *17/44*; A61d *1/08*; G01l *5/00*
U.S. Cl. 128—323 19 Claims



An obstetrical forceps wherein the gripping portions or blades are provided with an externally threaded shank or base portion over which is adapted to be threaded a combined tensiometer and hand grip portion to indicate the amount of compressive force and tension applied to the head of a baby during delivery.

3,665,926
LIGATURE AND APPLICATOR THEREFOR
Mary Alice Flores, New Orleans, La., assignor to C. R. Bard, Inc., Glens Falls, N.Y.
Filed Apr. 8, 1970, Ser. No. 26,488
Int. Cl. A61b *17/12, 17/10*
U.S. Cl. 128—326 5 Claims

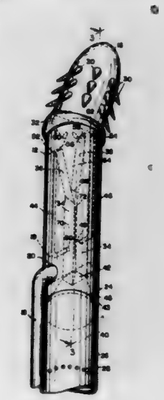


A vessel ligature constituted by a tape applied around a vessel by means of a hemostat adapted to pass under the vessel, engage the tape, and draw the engaged tape back below the vessel, the tape ends being then passed through an elongated wire loop and drawn with the loop into a plastic sleeve, the sleeve being slidable over the wire loop and along the tape toward the vessel to tighten the bight of the tape around the vessel, and the bight being maintained in vessel-closing position by means of a hemostat clamped on the plastic sleeve and/or tape at a distance from the vessel; and the methed including said steps.

3,665,927
IMPREGNATION OF POLYFILAMENTOUS SUTURES WITH SYNTHETIC POLYMER PARTICLES
Leonard D. Kurtz, Woodmere, N.Y., assignor to Sutures, Inc., Coventry, Conn.
Filed May 29, 1968, Ser. No. 732,859. The portion of the term of the patent subsequent to May 30, 1984, has been disclaimed.
Int. Cl. A61l *17/00*
U.S. Cl. 128—335.5 6 Claims

Polyfilamentous sutures having the attributes of a monofilamentous suture are prepared by impregnating the sutures with an aqueous dispersion of inert, synthetic polymeric particles and then subjecting the impregnated suture to centrifugal force to simultaneously extract water and dry the suture.

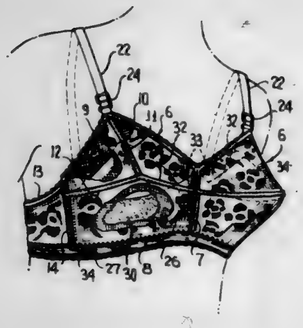
3,665,928
SELF PROPELLED CATHETER
Louis R. M. Del Guercio, 14 Pryer Lane, Larchmont, N.Y.
Filed Oct. 6, 1969, Ser. No. 864,141
Int. Cl. A61m *25/00*
U.S. Cl. 128—350 R 15 Claims



A catheter effective for self movement within a passageway comprises an elongated tube having a first chan-

nel extending axially thereof and a member operatively hingedly connected to the forward end of the tube. The member is provided with means such as a plurality of angularly projecting parts for gripping the walls of the passageway. Means are provided to oscillate the member within the passageway so that the projecting parts alternately grip one side wall of the passageway and then another. The oscillating means preferably comprises a fluid system which includes two channels connecting with the channel of the elongated tube, extending forwardly and outwardly therefrom, and provided with openings proximate the oscillating member. When a fluid is forced through the main channel it is directed by fluid control means to enter one and then the other of the laterally extending channels to pressurize different surface parts of the member, thereby to cause the oscillation thereof.

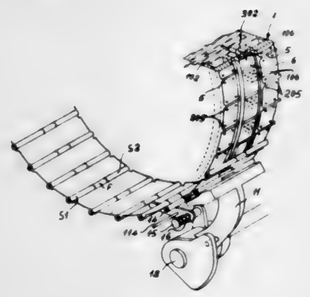
3,665,929
BRASSIERE
Newby O. Brantly, 1104 Rebecca Rd., Frederick, Okla.
Filed May 4, 1970, Ser. No. 34,109
Int. Cl. A41c *3/00*
U.S. Cl. 128—494 **4 Claims**



This disclosure relates to a brassiere of the uplift type which includes a pair of breast cups joined together and having extension panels secured to the remote ends thereof, and cooperating attaching means carried by the remote ends of the extension panels. The brassiere is further provided with a single elastic band extending entirely along the lower edge of the brassiere and terminating in connected relation to the attaching means whereby the entire lower portion of the brassiere snugly fits a wearer's body with lower portions of the breast cups being snugly retained in place.

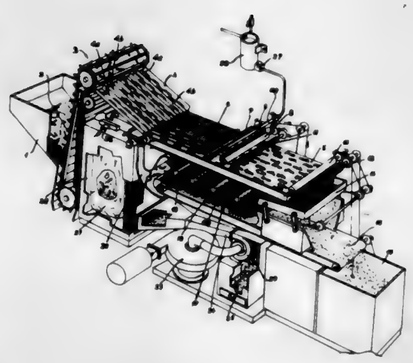
3,665,930
DOUBLE LENGTH FILTER PLUG AND CIGARETTE CONNECTOR SHEET APPLICATOR
Filippo Giatti, Bologna, Italy, assignor to AMF Incorporated
Filed Mar. 26, 1970, Ser. No. 22,913
Claims priority, application Italy, Apr. 29, 1969, 6986 A/69
Int. Cl. A24c *05/343, 05/52*
U.S. Cl. 131—21 R **1 Claim**

In this invention, connector sheets are applied to pairs of axially aligned cigarettes and an interposed double length filter plug by means of a rotating drum having on its periphery two corresponding groups of longitudinal fins or projections laterally positioned from each other to define an intermediate region on the drum periphery. The width of the intermediate region is slightly greater than the length of the filter plug while the spacing between the projections is substantially equal to that of the circumference of a cigarette. The drum is operatively associated with a mechanism which cuts connector sheets from a continuous tape, the sheets being coated with adhesive on its upper surface relative to the drum in the area corresponding to the intermediate region between two successive fins, the drum also being associated with a transfer means which transfers to the drum,



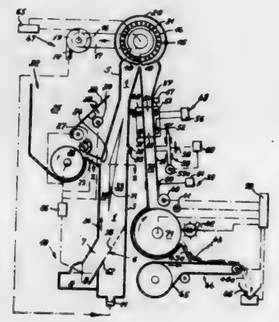
for each connector sheet, a pair of cigarettes with the interposed filter plug, selectively actuated pneumatic cigarette and connector sheet retaining means being provided to cooperate with the drum. The cigarettes and the filter plug are rolled on their own axis on the periphery of the drum to wrap around itself the adhesive connector sheet.

3,665,931
CIGARETTE RIPPING DEVICE
Carlo Mizzau, Bologna, Italy, assignor to AMF Incorporated
Filed June 22, 1970, Ser. No. 48,161
Claims priority, application Italy, July 18, 1969, 7183-A/69
Int. Cl. A24c *05/36*; G05d *07/06*
U.S. Cl. 131—21 R **10 Claims**



In this invention, cigarettes are processed to separate the tobacco from the other parts of the cigarette. The cigarettes are stored in a random manner in a bin. An endless belt having paddle-like projections scoops cigarettes from the bin and deposits them onto a feed track having a plurality of channels. The cigarettes travel along each of the channels in end-to-end relationship. As the cigarettes travel along the channels, the cigarette paper is wet along a line that is parallel to the axis of the cigarette, the paper is opened along the wet line, the cigarette is further opened and filter plugs, if present, are broken away, and the tobacco is then separated from the other parts of the cigarette.

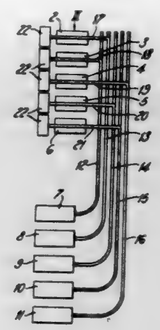
3,665,932
APPARATUS FOR FEEDING AND CLASSIFYING CUT TOBACCO
Manfred Goldbach, Hamburg-Bergedorf, Germany, assignor to Hauni-Werke Korber & Co. KG, Hamburg-Bergedorf, Germany
Continuation of application Ser. No. 688,576, Dec. 6, 1967, now abandoned. This application June 5, 1970, Ser. No. 41,782
Claims priority, application Germany, Dec. 9, 1966, H 61235
Int. Cl. A24b *07/14*
U.S. Cl. 131—21 R **11 Claims**



Apparatus for feeding and classifying tobacco wherein a distributor feeds a mixture of lighter and heavier tobacco particles into an intermediate portion of a vertical duct wherein an ascending current of air entrains lighter particles but permits heavier particles to drop by gravity. The upper portion of the duct is closed by the rotor of a suction drum which accumulates lighter particles and transfers them into the upper end of a vertical chute wherein the lighter particles form a column. The material of the column is evacuated at the lower end of the chute and is converted first into a carpet of uniform height and width and thereupon into a narrow tobacco rope or stream. The rate at which the distributor delivers tobacco particles into the duct can be regulated as a function of the height of the column in the chute and/or as a function of density of tobacco particles in the lower part of the column. Furthermore, the height of the column can be regulated as a function of density of tobacco particles in the lower end of the chute and/or the density of tobacco particles in the chute can regulated as a function of the results of measurement of density in the lower region of the column.

3,665,933
CONVEYOR SYSTEMS
Desmond Walter Molins, and Alan Keith McCombie, both of London, England, assignors to Molins Machine Company Limited, London, England
Filed Feb. 10, 1970, Ser. No. 10,214
Claims priority, application Great Britain, Feb. 14, 1969 8,314/69
Int. Cl. A24c *05/35*
U.S. Cl. 131—25 **15 Claims**

This invention concerns a cigarette making and packing complex comprising a number of cigarette making machines, a number of cigarette packing machines and a conveyor system comprising a number of delivery conveyors each of which is permanently associated at one end with one particular maker or packer and can be selectively connected at its other end to any one of a number of packers or makers as the case may be.



3,665,934
ASH EJECTING AND CLEANING UNIT FOR TOBACCO PIPES
Kenneth R. Townsend, P.O. Box 466, Vanceboro, N.C.
Filed Nov. 30, 1970, Ser. No. 93,532
Int. Cl. A24f *03/02*
U.S. Cl. 131—183 **10 Claims**



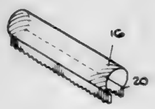
An ash ejecting and cleaning unit for tobacco pipes is described. The unit includes a cylindrical sleeve that reduces to a relatively small opening at the top. A push rod extends from above the opening in the top to approximately the level of the lower end of the sleeve. A disk having a pair of outwardly and downwardly projecting wings is fixedly attached to the upper end of the push rod and a button, which is generally rectangular when viewed from below, is fixedly attached to the lower end of the push rod. A coil spring is located about the push rod between the upper surface of the button and the bottom surface of the reduction region located at the top of the sleeve. The entire unit is mounted in cylindrical aperture formed between the bottom of a conventional pipe bowl and the outer bottom of the pipe. When the push button is rotated, the rod and the attached winged disc also rotate to loosen tobacco residue about the top of the sleeve. Thereafter, when the button is pushed toward the bowl and the bowl is inverted, the loosened tobacco residue is ejected.

3,665,935

METHOD OF STRAIGHTENING KERATINOUS FIBERS

Patricia Alexandra Kingshott, Pinetown, Natal Province, Republic of South Africa, assignor to Kingshott Investments (Proprietary) Limited, Durban, Natal Providence, Republic of South Africa

Filed June 16, 1970, Ser. No. 46,653
Int. Cl. A45d *7/00*
U.S. Cl. 132—7 5 Claims



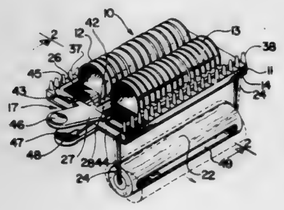
This invention concerns a method of straightening keratinous fibers, especially hair, by applying an oily preparation, subsequently applying a composition containing ammonia and thioglycolic acid as constituents, applying tension to the fibers by gripping them between under tension between a mandrel and a clamp and subsequently releasing the tension when fibers have been straightened. The oily composition may contain cholesterol, sulphonated castor oil, sodium lauryl sulphate and water.

3,665,936

HAIR WAVE AND CURL SETTING DEVICE

Evelyn M. Pugh, 10 St. Nicholas Terrace, New York, N.Y.

Filed Apr. 5, 1971, Ser. No. 130,967
Int. Cl. A45d *1/00*
U.S. Cl. 132—9 5 Claims



This device comprises a flat base member having slots therein, grooved hair wave guide members adjustable in the slots and a rack and pinion mechanism for adjusting the hair wave guide members to place the wave in the hair held clamped over the members and to comb teeth by a spring finger clamp. This clamp has three fingers extending along the sides of the base member and in between the base member is a finger which has a series of holes for accommodating the combed teeth located a central intermediate portion of the base member lying between the opposite sides of the slots thereof and between the grooved guide members. After the hair strands have been clamped over the hair guide members ends can be rolled up on a curler supported on wire supports to the base and in such a manner that the curler can be pivoted. In this manner the hair strands are provided with a wave intermediate the length of the hair and with curls in the ends of the hair at the same time. The hair after being shampooed and washed and with set lotion applied to the hair, will be provided with the device and after a sufficient drying time a permanent set will have been given to the hair.

3,665,937

CYLINDER COMB

Keijiro Nakagawa; Junichiro Nakagawa, both of 442-3, Oazaoka Ano-mura, and Wasuke Tsuda, 490-6, Oazaoka Ano-mura, all of Age-gun, Mie-ken, Japan

Filed Oct. 28, 1969, Ser. No. 871,840
Claims priority, application Japan, May 19, 1969, 44/38901; June 24, 1969, 44/60239
Int. Cl. A45d *24/00*
U.S. Cl. 132—11 8 Claims



A cylinder comb wherein a plurality of needle plates of the same type each having one or more needle heads on the head part are piled up in grooves for setting a needle row provided on a radiating line from the central axis of a cylinder on the exterior circumferential surface of said cylinder, and adjacent needle plates are reciprocally connected by joining belt-typed plates with the front or the back surface of the base part of the above-mentioned piled-up needle plates.

3,665,938

HAIR ROLLER CONTAINING TEMPERATURE INDICATOR

Arne Bybjerg Pedersen, Hovvejen, Kalundborg, Denmark, assignor to Bristol Myers Company, New York, N.Y.

Continuation-in-part of application Ser. No. 612,102, Jan. 27, 1967, now abandoned. This application Jan. 27, 1970, Ser. No. 6,332
Int. Cl. A45d *2/12*; C09k *3/04*
U.S. Cl. 132—33 R 9 Claims

A temperature indicator which consists of a suspension of a cuprous mercuric iodide complex in a transparent carrier, which is able to protect the complex indicator compound against deterioration from sublimation of the mercuric part of the complex and to protect the same against the detrimental influence from the ambient atmosphere such as oxygen. The indicator may be further protected by a transparent cured cover, and it will change its color at 65°–75° C from red to black, when heated and back again to red when cooled. These temperature indicators are particularly adopted for use on heated hair rollers to identify to the user, when each roller is ready for use.

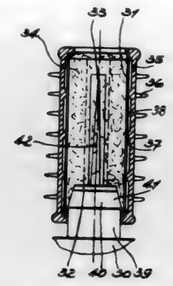
3,665,939

HAIR ROLLER AND AN APPARATUS FOR HEATING HAIR ROLLERS

Ingeborg Laing, 7141 Aldingen near Stuttgart, Hofener Weg 35-37, Stuttgart, Germany

Filed June 4, 1969, Ser. No. 830,322
Claims priority, application Austria, June 6, 1968, A 5389/68
Int. Cl. A45d *2/12*
U.S. Cl. 132—33 R 21 Claims

A hair roller having a container enclosing a thermally chargeable storage body of a hydrate which melts at working temperature. Advantageously a heat insulation is provided between said storage body and a sleeve enclosing said container. An apparatus for heating a plurality of hair rollers



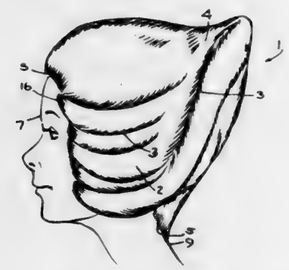
comprises thermally conductive projections supporting the hair rollers.

3,665,940

PERMANENTLY SHAPED WIG ARTICLE

Constantios A. Schordalides, 32, Efroniou St. (Pangrati), and Dimitri G. Papageorgiou, 58, Spyrow Merkouri, St. T.T. 516, both of Athens, Greece

Filed Oct. 1, 1969, Ser. No. 862,745
Int. Cl. A41g *3/00*
U.S. Cl. 132—53 19 Claims



An improved wig article comprising a substantially rigid backing member shaped to contain predetermined projections and depressions on at least the outer surface of the member, and hair or hair-like material secured to the outer surface of the rigid base member in conformity with the projections and depressions thereby providing a wig article of a coiffure predetermined by the shape of the projections and depressions.

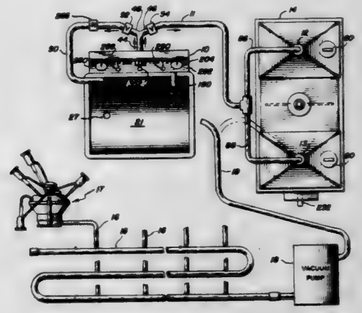
3,665,941

APPARATUS FOR CLEANING TANKS AND ASSOCIATED PIPELINES

Andrew Geo. Griparis, Joliet, Ill., assignor to The Diversey Corporation, Chicago, Ill.

Continuation of application Ser. No. 763,823, Sept. 30, 1968, now abandoned. This application Sept. 18, 1970, Ser. No. 73,511
Int. Cl. B08b *3/02*, *9/08*
U.S. Cl. 134—58 R 11 Claims

Apparatus for spray cleaning the soiled interior surfaces of a tank by alternately: (1) applying a burst of cleansing liquid through a sprayer which directs a heavy spray mist to saturate the interior tank surfaces; and (2) enabling the applied cleansing liquid to soak for a timed interval on the tank surfaces. Portions of the apparatus can be used for cleaning pipelines associated with the tank. A tank sprayer which includes an equalization chamber to form a heavy spray mist in cleaning tank interiors. A quick drain valve for rapidly draining large amounts of liquid from a conduit including a solenoid actuated seal for selectively sealing or opening a series of drain openings around the perimeter of the valve. A liquid level indicating apparatus for indicating the drop in level



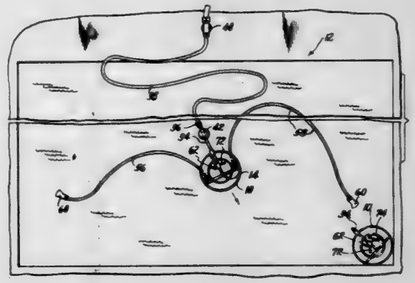
below a preset level of liquid in any one of a number of closed containers each having a narrow neck for filling the contained, including a detector inserted through each container neck for detecting the level changes, and a single air pressure sensor responsive to the detected changes in any of the containers for indicating a low level condition.

3,665,942

SWIMMING POOL CLEANING DEVICE

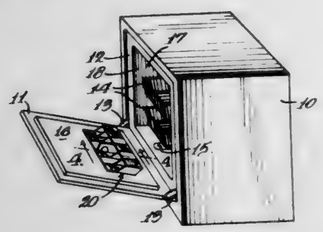
Werton D. Moore, Dallas, Tex., assignor to Marty Ross and Danny Henderson, Las Vegas, Nev.

Filed Nov. 17, 1971, Ser. No. 199,644
Int. Cl. B08b *3/02*
U.S. Cl. 134—167 R 11 Claims



A swimming pool cleaning device having a floating head which is placed upon a pool surface and adapted to be supplied with water from a floating flexible hose, the floating head having cleaner hose attachments and an impeller all receiving a portion of the water supplied to the head, the impeller and a rudder being carried by a hollow swivel through which water is supplied to the impeller and being so constructed and arranged as to propel and guide the head around the pool in a random manner.

3,665,943
DISHWASHER
William T. Lampman, St. Joseph, and Charles H. Wade, Benton Harbor, both of Mich., assignors to Whirlpool Corporation
Filed Mar. 18, 1969, Ser. No. 808,242
Int. Cl. B08b 3/00
U.S. Cl. 134—200 10 Claims



A dishwasher comprising a tub, a movable panel such as a door providing access to the interior of the tub and having a front surface facing the tub interior, a silverware basket having side walls, a water pervious front wall on the side adjacent the tub interior, a water pervious bottom wall and a water pervious back wall, and fasteners for releasably mounting the basket on the front surface so that the loaded basket may be easily attached, and at the conclusion of the dishwashing operation the basket and the silverware contained therein may be removed from the dishwasher.

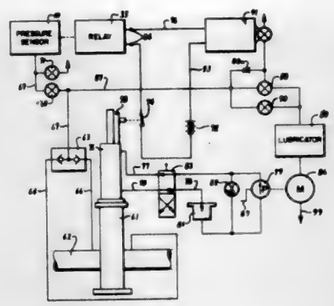
3,665,944
BUG HOUSE
Max C. Knapp, 23529 Lake Manor Dr., Chatsworth, Calif.
Filed Dec. 2, 1970, Ser. No. 94,506
Int. Cl. A45f 1/00
U.S. Cl. 135—1 R 1 Claim



An out of doors enclosure for keeping out insects, the device comprising a framework of horizontal rings and vertical pipes there between so to support a netting fitted there around, the lowermost ring being held in position by means of spikes driven into the ground, and the framework being readily collapsable so that the device can be conveniently transported.

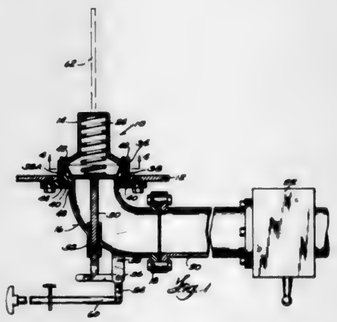
3,665,945
VALVE CONTROL SYSTEM AND METHOD
Sidney Allan Ottenstein, Spring, Tex., assignor to M & J Valve Company, Houston, Tex.
Filed Feb. 2, 1971, Ser. No. 112,343
Int. Cl. F16k 31/00
U.S. Cl. 137—14 23 Claims

An electronic system and method suitable for initiating the functioning of power operators for one or more flow control valves, responsive to controlling input signals. The controlling signals may be derived from or responsive to operating conditions of the system with which the valve is associated, such as a pressure drop in the line with which the valve is associated. The electronic system initiates operation of the valve responsive to such signals and serves to effect operation of the valve in a predetermined manner or accord-



ing to a predetermined program, e.g., to close the valve when a pressure drop occurs at a rate greater than a predetermined value.

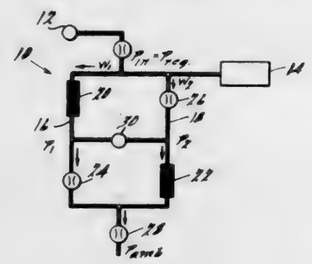
3,665,946
TANK TRUCK SAFETY VALVE
Bernie E. Robinson, Oak Creek, Wis., assignor to Milwaukee Valve Company, Inc., Milwaukee, Wis.
Filed Aug. 10, 1970, Ser. No. 62,267
Int. Cl. F16k 27/03
U.S. Cl. 137—68 4 Claims



The upper portion of the valve body encloses the spring acting on the diaphragm valve to normally seat the valve. The lower portion of the valve body carries the valve actuator which lifts the valve against the spring load. If the outlet portion is struck hard enough, the groove in the body just below the valve seat will break, which allows the outlet and actuator to fall away whereupon the spring closes the valve. This prevents accidental loss of the contents of the tank truck. The spring chamber is vented. The parts exposed to the contents are readily cleaned in place.

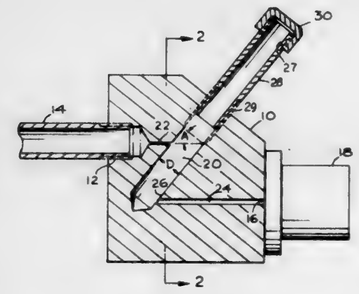
3,665,947
FLUIDIC SENSING CIRCUIT AND PRESSURE REGULATOR
Endre A. Mayer, Birmingham, Mich., assignor to The Bendix Corporation
Filed Jan. 5, 1970, Ser. No. 753
Int. Cl. F15c 1/00
U.S. Cl. 137—81.5 26 Claims

A fluidic pressure regulator for maintaining a system pressure over a range of ambient pressures, which includes a pressure sensing circuit comprised of a bridge network of orifice and laminar flow restrictors providing an output error signal for all pressures except the unique null pressure at which the pressure drop across an orifice restriction and a laminar flow restriction are equal. A downstream orifice is provided which operates in the sonic regime to eliminate the



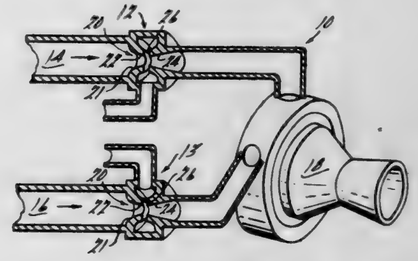
effects of ambient pressure shifts on the null point, while the error signal is used with a flow controller to maintain the system pressure at this null point. In a second version, the effects of temperature on the null point are eliminated by means of a temperature controlled variation of the area of the downstream orifice.

3,665,948
TRANSIENT REDUCTION APPARATUS FOR HYDRAULIC SYSTEM
Clive P. Hohberger, Port Jefferson, N.Y., assignor to Allen-Bradley Company, Wilwaukee, Wis.
Filed July 6, 1970, Ser. No. 52,519
Int. Cl. F15c 1/16
U.S. Cl. 137—81.5 5 Claims



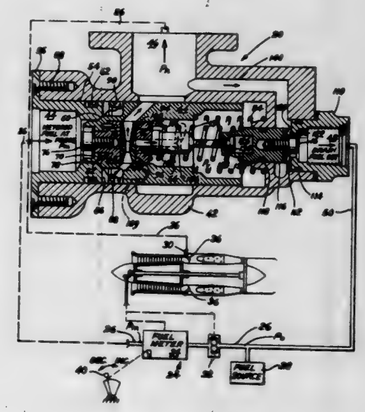
Apparatus for coupling a hydraulic line to a pressure gauge, to reduce the level of high pressure transients that are applied to the guage, comprising a housing with an inlet connected to the hydraulic line, a variable volume chamber coupled to the inlet through a small diameter passageway orifice, and a narrow diameter passageway connecting the chamber to the pressure gauge. The orifice which connects the inlet to the chamber is oriented to direct a jet of oil at an angle, such as 30° to 45° with the chamber walls, to create a vortex in the chamber so that the incoming jet pressure wave is well mixed with the fluid contained in the chamber volume, thereby reducing localized pressure pulses or shock waves that could pass through the chamber to the gauge.

3,665,949
GASEOUS CONTROLLED FLUIDIC THROTTLING VALVE
Jerome G. Rivard, Birmingham, Mich., assignor to The Bendix Corporation
Filed June 27, 1969, Ser. No. 837,217
Int. Cl. F15c 1/00
U.S. Cl. 137—81.5 11 Claims



A fluidic throttling valve for controlling flow in a pipe or conduit of a high density fluid, such as a liquid, by injecting a lower density fluid, such as an inert gas, into the pipe. In the preferred embodiment shown herein, this control gas is injected into a pipeline leading to a combustion engine to control the quantity of liquid flowing through that pipeline. The control gas is injected through a slot extending completely around the circumference of the pipe. The gas is injected at the throat section of a venturi constructed in the pipe to define a point of minimal cross-sectional area.

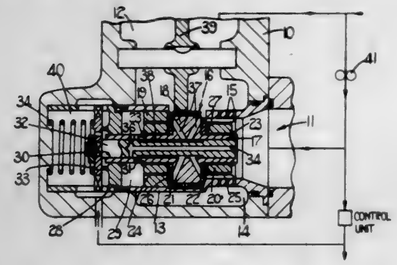
3,665,950
VARIABLE BACK PRESSURE CHECK VALVE AND DRAIN VALVE
Thomas A. Nelson, South Bend, Ind., assignor to The Bendix Corporation
Filed July 13, 1970, Ser. No. 54,416
Int. Cl. F16k 11/22; F02h 55/00
U.S. Cl. 137—107 9 Claims



A fluid receiver is connected via a supply orifice to a pressurized fluid supply source and via a fluid drain orifice to a relatively low pressure fluid drain source. A fluid pressure responsive spring-loaded check valve connected to the supply orifice and a drain valve connected to the drain orifice are provided with a one way collapsible link including a

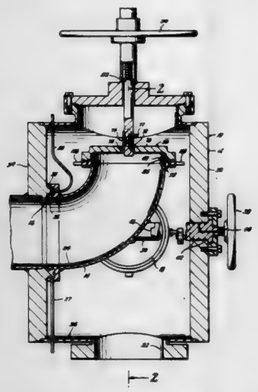
compression spring connecting the same causing the drain valve to open when the check valve is fully closed and close in response to compression of the spring when the check valve moves a predetermined distance in an opening direction. The check valve is provided with a contoured end portion and parallel flow passages in series flow therewith. One of the parallel flow passages includes a venturi for generating a fluid pressure which varies as a function of the flow therethrough and which is imposed on the check valve to assist the spring force acting thereagainst.

3,665,951
SPILL VALVES
Robert Thomas John Skinner, Kenilworth, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Dec. 11, 1970, Ser. No. 97,224
Int. Cl. G05d *16/18*
U.S. Cl. 137—117 **8 Claims**



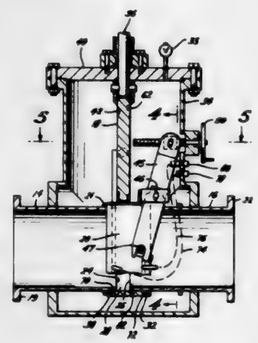
A spill valve for a fuel control system has a pilot valve responsive to the pressure difference across a fuel control unit and a follow-up servo valve assembly controlled by the pilot valve to spill fuel from the upstream side of the control unit. There is relative rotation between the pilot valve and the servo valve assemble to reduce the effects of static friction.

3,665,952
ELBOW VALVE
Clyde H. Chronister, Houston, Tex., assignor to Chronister Valve Company, Inc., Houston, Tex.
Continuation-in-part of application Ser. No. 839,280, July 7, 1969, now Patent No. 3,665,952, dated May 30, 1972. This application Feb. 12, 1971, Ser. No. 114,905
Int. Cl. F16k *11/02*
U.S. Cl. 137—246 **16 Claims**



A pipe elbow in a valve housing having first and second conduits extending therein with the elbow pivotally sealable to the first conduit and to a trunnion axially aligned with the first conduit whereby the elbow may be rotated to bring the second end into and out of alignment with the second conduit. Sealing means for closing off the second end of the elbow for equalizing pressure before opening the valve having a first member sealing against the elbow and having an opening therethrough with a second member positioned to extend into the opening and seal therein with a loss motion connection between the first and second members. The elbow being actuated by means connected to the trunnion and the trunnion including a load bearing type universal joint. The second end of the elbow and the second conduit having coacting bevels whereby the ends thereof may be closely spaced together to provide a through conduit valve. The seal means including a double block and bleed seal with a testing conduit. The housing being made of portions of conventional pipe and flat plate to provide an inexpensive yet sturdy valve.

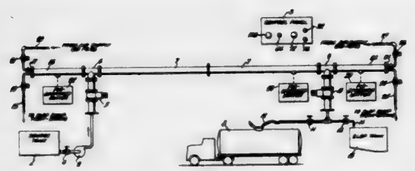
3,665,953
GATE VALVE
Clyde H. Chronister, Houston, Tex., assignor to Chronister Valve Company, Inc., Houston, Tex.
Continuation-in-part of application Ser. No. 823,103, May 8, 1969, now Patent No. 3,557,822. This application Jan. 22, 1971, Ser. No. 108,703
Int. Cl. F16k *43/00*
U.S. Cl. 137—246.22 **10 Claims**

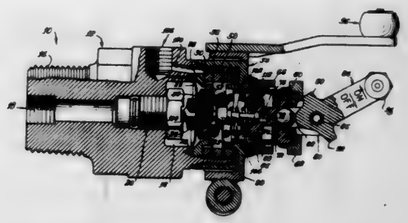


A gate valve having an inlet and an outlet conduit extending into a housing spaced from each other to provide an opening therebetween with a sleeve telescoping with the inlet and outlet conduits and a valve gate positioned for transverse movement into and out of the opening with the gate valve and sleeve being separately actuated by separate means extending through the housing whereby the outer ends of the conduits may be spaced the prescribed distance apart for interchangeability with standard sized valves and the sleeve may be firmly moved against the gate valve to seal the gate valve against the inlet conduit. Lubricant sealing grooves on the inside of said sleeve adjacent each end of the sleeve for lubricating and sealing the sleeve relative to the inlet and outlet conduits.

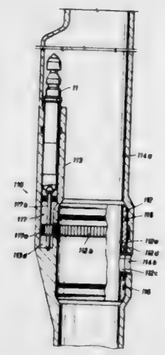
3,665,954
PIG SYSTEM
Donald A. McNeal, Brookhaven, Pa., and Paul A. Dearry, Wilmington, Del., assignors to Sun Oil Company, Philadelphia, Pa.
Filed Feb. 17, 1971, Ser. No. 116,079
Int. Cl. F17d *3/00*
U.S. Cl. 137—268 **12 Claims**

In a system for loading a liquid into a tank truck by means of a pipeline, a pig is used for pushing product through the line toward the truck. This pig is stored at the source end of the line and is caused to move through the line first toward the truck end, and then back to its storage location at the source end, all in response to the operation of a "pig start" pushbutton.





3,665,955
SELF-CONTAINED VALVE CONTROL SYSTEM
George Eugene Conner, Sr., 5559 Hollysprings, Houston, Tex.
Filed July 20, 1970, Ser. No. 56,262
Int. Cl. H04b *13/00, 1/20, 1/02*
U.S. Cl. 137—495 **28 Claims**

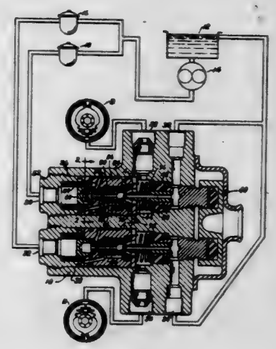


The valve control system of the present invention includes a self-contained operator having a control means and power source adapted to energize a prime mover which in turn is coupled with a motion transmitting means which partially or completely opens or closes a fluid flow passage in a valve. In the preferred form, the operator includes a battery coupled to an electric motor acting through a mechanical driving linkage to open or close a valve. Operation of the motor is governed by the control means which may include pressure or flow responsive means and/or receiving means responsive to sonic or electrical signals transmitted from a remote location. When adapted for use in well valving, the operator is removably received within the inside pocket of a mandrel which houses a valve closure member.

3,665,956
GAS PRESSURE REGULATOR
George L. Hammon, Oakland, Calif., assignor to Chemetron Corporation, Chicago, Ill.
Filed Jan. 29, 1970, Ser. No. 6,786
Int. Cl. F16k *31/365*
U.S. Cl. 137—505.11 **4 Claims**

In a gas pressure regulator of the type having a normally closed diaphragm-actuated valve, means are provided for relieving residual gas pressure in the regulator. Said means is operative at any orientation of the regulator.

3,665,957
CONTROL VALVE FOR A HYDRAULIC SYSTEM
Keith H. Fulmer, and Deane K. Jenney, both of South Bend, Ind., assignors to The Bendix Corporation
Filed Apr. 13, 1970, Ser. No. 27,552
Int. Cl. B60t *13/14*
U.S. Cl. 137—509 **3 Claims**

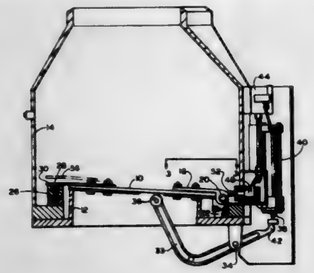


A fluid pressure control valve consisting of a housing with a bore therein. A valve sleeve with an internal division is inserted in the bore. A plug is fixed to one end of the sleeve to form a first chamber and a valve seat attached to the opposite end of a control chamber. A ball valve carried on a valve stem, whose diameter is larger than the valve seat, is contained in the control chamber. A valve return spring surrounding the valve stem biases the ball valve against the valve seat during normal operating pressures but during periods of high pressure allows the ball valve to move away from the seat to release this high pressure into a reservoir thereby preventing damage to the brake system.

3,665,958
VENT CLOSURE DEVICE
Evald Dunkelis, Glen Ellyn, Ill., assignor to GPE Controls, Inc., Morton Grove, Ill.
Filed Sept. 16, 1968, Ser. No. 762,252
Int. Cl. F16k *17/04*
U.S. Cl. 137—522 **10 Claims**

A hinged cover for a vent opening with safety features to insure reliability of operation in remote and critical applications, such as nuclear reactors. Means are provided for opening the cover from a remote location to insure its freedom of

movement, and to then move it back to the closed position. The latter means comprises a return spring, and a standby



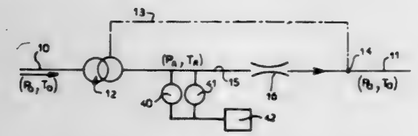
spring is provided to become operative only in the event of breakage or other malfunction of the first spring.

3,665,959

PRESSURE REGULATING AND REDUCING GAS-FLOW METER FOR INDUSTRIAL INSTALLATIONS

Philippe Charles Albert Castillon, Paris, France, assignor to Gaz De France, Paris, France

Filed Mar. 12, 1971, Ser. No. 123,588
Int. Cl. F16k *37/00*
U.S. Cl. 137—551 **6 Claims**



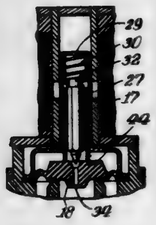
Pressure regulating and reducing gas-flow meter device allowing to supply gas at a variable rate of flow and under a predetermined pressure from a source of gas under a higher pressure. The device comprises arranged in series : a pressure reducing and regulating device provided with a pilot circuit, a sonic nozzle mounted downstream of the said regulating device and supplied thereby, and means for measuring the conditions of flow, in the interval comprised between said regulating device and said nozzle, which conditions enable the rate of flow through the apparatus to be measured.

3,665,960

AUDIBLE INDICATOR FOR SOLENOID VALVE

Frank R. Skinner, II, and Robert T. Wigfall, both of St. Joseph, Mich., assignors to Whirlpool Corporation

Filed Sept. 11, 1970, Ser. No. 71,541
Int. Cl. F16k *37/00*
U.S. Cl. 137—551 **15 Claims**



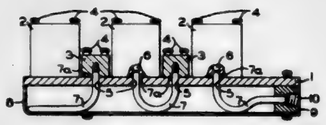
A solenoid valve device having means for providing a signal when the solenoid is energized in the absence of fluid pressure at the inlet of the valve. The signal may comprise an audible sound and more specifically may comprise a tone having a frequency controlled by the frequency of the alternating current applied to the solenoid coil.

3,665,961

MANIFOLD SYSTEM FOR LOGIC VALVES

Wilhelm Bachmann, Godshorn, Germany, assignor to Westinghouse Bremsen-Und Apparatebau G.m.b.H., Hannover, Germany

Filed Feb. 2, 1971, Ser. No. 111,899
Claims priority, application Germany, Mar. 19, 1970, G 70 10 075.3
Int. Cl. F17d *1/00*
U.S. Cl. 137—608 **11 Claims**



This invention relates to a manifold through which a source of fluid under pressure is connected to a plurality of logic valves by means of pipes or pieces of tubing each having a bend therein of either 90° or 180° the radius of these bends being that minimum without which a reduction of the internal cross-sectional area of the respective pipe or tubing is effected. The logic valves are removably mounted on top of a flat horizontal plate provided with a plurality of bores through which extend one end of the pipes or pieces of tubing for connection to a corresponding logic valve by some suitable means such as socket connections and sealing rings. The other end of each pipe or piece of tubing extends either through another bore in the plate for connection to another logic valve or is connected to a vertically arranged pipe bracket the height of which is determined by the radius of the bends in the pipes or pieces of tubing. The upper end of the pipe bracket is suitably connected as by screws to one end of the flat horizontal plate and the lower end is likewise secured to one end of a thin housing member in the form of an angle bracket one side of which extends beneath the pipes or tubing in abutting relation therewith. The other side of this angle bracket extends parallel to the pipe bracket and is so disposed as to support thereon the lower side of the other end of the flat horizontal plate on the upper side of which is mounted the logic valves. Thus the pipes or pieces of tubing are enclosed in a hollow box or housing which may be filled with a rigid-type foam material formed in place by using a rigid-type foam such as polyurethane to form a resilient packing around the plurality of pipes or tubes to isolate each from the other and prevent movement thereof relative to the logic valves which movement could cause rupture of the connection therewith.

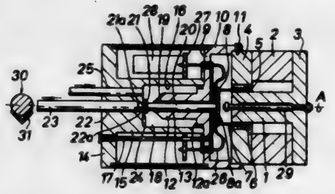
3,665,962

ELECTRICALLY ACTUATED VALVE

Josephus D. Dornseiffen, Zevenaar, Netherlands, assignor to Turmac Tobacco Company N.V., Zevenaar, Netherlands

Filed Feb. 16, 1970, Ser. No. 12,418
Claims priority, application Netherlands, Feb. 20, 1969, 6902697
Int. Cl. F16k *31/08*
U.S. Cl. 137—624.13 **2 Claims**

Device, comprising a permanent magnetic circuit, a coil suspended for reciprocatal movement within the air gap of said circuit, an enclosed space in front of said air gap, a supply duct connecting said space with a source of constant air pressure, a delivery duct connecting said space with the open air, a valve arranged for opening to a limited extent, determined by an adjustable stop member and for closing said space from the inside and located at the end of said delivery duct opening into said space, the said coil being fixedly connected to said valve for movement in unison



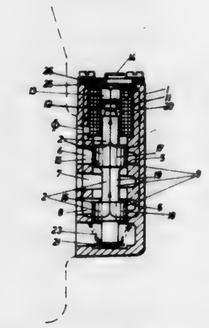
therewith, said device, on connecting the coil with a source of electric current impulses having a rapid succession being adapted to provide air puffs leaving said delivery duct in accordance with said impulses.

3,665,963

MAGNETIC VALVE

Heinrich Dick, Heidenheim, Germany, assignor to Voith Getriebe KG, Heidenheim (Brenz), Germany

Filed Feb. 12, 1970, Ser. No. 10,761
Claims priority, application Germany, Feb. 21, 1969, P 19 08 659.0
Int. Cl. F16k *31/06*
U.S. Cl. 137—625.48 **5 Claims**



A magnetic valve in which the valve housing with the casing for the valve spool is made of a magnetically uniform piece while the armature of the magnet and the valve spool are likewise made of a magnetically uniform piece, the magnetic flux being passed from the iron casing into the armature of the magnet through the guiding surfaces between the valve housing and the valve spool. By sufficiently dimensioning the diameter of the valve spool and by sufficiently dimensioning the length of the valve spool and thereby the contacting surface thereof, it is possible to maintain the magnetic flux small so that a magnetic jamming of the valve spool with the harmful consequences thereof cannot occur.

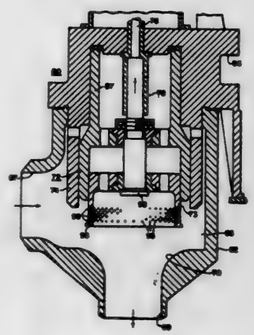
3,665,964

STEAM TURBINE CONTROL VALVE STRUCTURE

Robert O. Brown, Media; Edwin G. Noyes, Jr., Newtown Square, and Joseph D. Conrad, Jr., Glen Mills, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original application Mar. 27, 1969, Ser. No. 811,007.
Divided and this application Jan. 27, 1971, Ser. No. 110,187
Int. Cl. F16k *11/14*
U.S. Cl. 137—630.13 **5 Claims**

The invention provides novel valve structure for controlling the supply of hot pressurized steam to a steam turbine with a minimum of noise and vibration, especially in the partially open position where a large degree of throttling is attained. Tubular structure having a large number of perforations that are progressively uncovered as the valve plug is moved in opening direction is provided, thereby imposing a large number of small throttlings in the steam flow (instead of the usual single large throttling) with attendant reduction in noise and vibration level over the entire operating range of the valve.

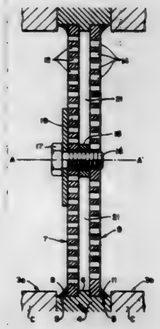


3,665,965

APPARATUS FOR REDUCING FLOWING FLUID PRESSURE WITH LOW NOISE GENERATION

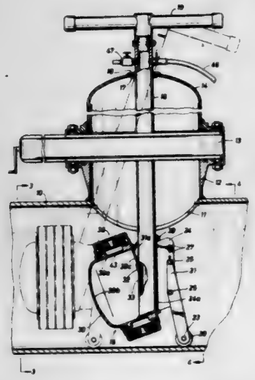
Hans D. Baumann, Foxboro, Mass., assignor to Masoneilan International, Inc., Norwood, Mass.

Filed May 26, 1970, Ser. No. 40,607
Int. Cl. F15d *1/00*
U.S. Cl. 138—42 **12 Claims**



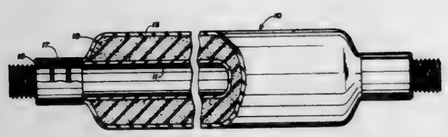
Fluid pressure reducing apparatus presenting low noise throttling plates. The low noise fluid pressure throttling apparatus provides an assembly of a plurality of such plates, and which may comprise a segment of or be interposed in a fluid flow containing conduit. The low noise throttling plates are passaged by multiple small section orifices producing a high frequency pressure wave whose noise is more readily attenuated by the conduit. The spacing of the plates in the pressure reducing assembly defines with the intervening flow containing means a volume which is dimensioned to produce resonant damping of the noise pressure wave generated in the primary orifices. The pressure drop through the reducing apparatus is divided into nearly equal ratio drops across each plate, further minimizing noise generation.

3,665,966
PIPE PLUGGER
Burton Ver Nooy, Tulsa, Okla., assignor to T. D. Williamson, Inc., Tulsa, Okla.
Continuation of application Ser. No. 808,078, Mar. 18, 1969, now abandoned. This application Dec. 14, 1970, Ser. No. 98,149
Int. Cl. F16l 55/12
U.S. Cl. 138—93 11 Claims



A pipe plugger disclosed includes a sealing element that can be expanded inside the pipe to plug off a range of pipe diameters. The element is inserted into a pipe, relaxed and unexpanded, through an opening of uniform diameter. This allows pipe tapping equipment for cutting a side opening of one diameter to be used with a range of pipe sizes, which results in a considerable reduction in the equipment required to handle plugging operations in a variety of pipe diameters.

3,665,967
SUPERCHARGE HOSE
Joseph E. Kachnik, Fort Worth, Tex., assignor to The Western Company of North America, Fort Worth, Tex.
Filed Jan. 16, 1970, Ser. No. 3,352
Int. Cl. F16l 11.00
U.S. Cl. 138—137 4 Claims



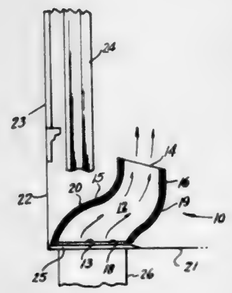
A conduit is provided for use in fluid-conducting systems which are subjected to pressure surges and includes an inner conduit for carrying fluid which is surrounded by a body of resilient material adapted to absorb undulations of the inner conduit in response to pressure surges of the fluid. In one embodiment the inner conduit is an expandable conduit and the resilient body is contained within a reinforcing member. In this embodiment, the inner conduit expands in response to pressure surges and thereby functions as an accumulator, so as to prevent damage to equipment in the system, such as pressure gauges, piping, and conduits, or for example, to even out the flow discharge from a positive displacement pump for the fluid.

3,665,968
INSULATED TUBE
Warner Jan De Putter, Zwolle, Netherlands, assignor to Industriele Onderneming Wavin N.V., Zwolle, Netherlands
Filed Mar. 12, 1970, Ser. No. 18,949
Claims priority, application Netherlands, Mar. 13, 1969, 6903871
Int. Cl. F16l 9/14
U.S. Cl. 138—141 2 Claims



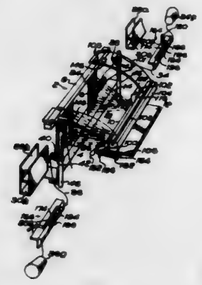
An insulated tube comprising an inner protective layer of polyurethane or hard polyurethane foam plastic, an intermediate layer of polyurethane foam plastic insulation and an outer layer of glass fiber reinforced polyester resin. Reinforcing glass tissue layers might be present in the space between the inner and outer layers. The polyurethane foam plastic insulation is resistant to temperatures over 120° C.

3,665,969
AIR DEFLECTOR ATTACHMENT
Joseph M. Clifford, 643 E. 4350 South, Salt Lake City, Utah
Filed Aug. 28, 1970, Ser. No. 67,863
Int. Cl. F16l 9/00; F24f 13/06
U.S. Cl. 138—178 4 Claims



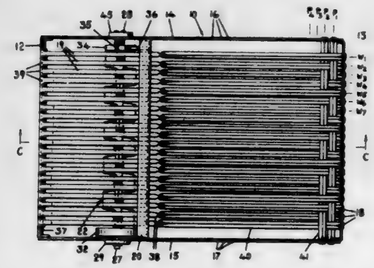
An air deflector attachment for heating and/or cooling ducts opening through the floor wall or ceiling to move the column of air outwardly from an adjacent wall or ceiling permitting the curtains, furniture, persons and objects to be in the room without being directly contacted by the column of air. The deflector includes serpentine inner and outer walls mounted in serpentine tracks formed in spaced parallel end walls. The end walls are provided with serpentine tracks on each side face thereof to permit the joining together of a plurality of side walls when an especially long deflector is required. The deflector offsets the path of the column of air but retains its direction characteristic for efficiency in hot and cold air distribution.

3,665,970
PICKING MECHANISM FOR LOOMS FOR WEAVING
Ian S. Porter, Barnsley, England, assignor to Wilson & Longbottom Limited, Barnsley, England
Filed Feb. 16, 1970, Ser. No. 11,797
Claims priority, application Great Britain, Feb. 18, 1969, 8,679/69
Int. Cl. D03d 17/24
U.S. Cl. 139—20 12 Claims



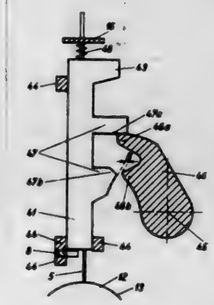
A weaving loom in which warp yarns are divided into an upper and a lower shed through which an upper and a lower gripper shuttle are respectively picked simultaneously, each from an opposite side of the loom; and a weft yarn presenter at each side is moved up and down to supply either shuttle with weft alternately.

3,665,971
HAND WEAVING LOOM
Eugene Ileks, Providence Hospital, 3276 St. Clair Ave. East, Toronto, Ontario, Canada
Filed June 12, 1970, Ser. No. 45,805
Int. Cl. D03d 29/00
U.S. Cl. 139—33 1 Claim



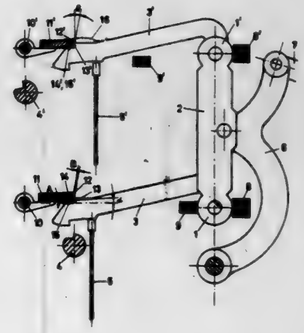
A hand operated weaving loom comprising, a rectangular frame having a pair of side walls and a pair of end walls, a series of lifters pivotally mounted on a first end wall for retaining the warp threads and a detachable rotatable cam mechanism positioned below the lifters and supported by the side walls whereby on rotation of the cam mechanism the lifters are oscillated upwards and downwards relative to the longitudinal axis of the frame to effect shedding of the warp threads and to produce the desired weaving pattern. One end of the warp thread is attached to a hook provided on the end of the lifter and the other end of the warp thread is attached to a series of fingers mounted on the second end wall. At predetermined positions of the cam assembly the weft threads are inserted manually between the warp threads and the ends of the weft threads are attached to a series of fingers mounted on each of the side walls. In one embodiment each of the warp and weft threads is in the form of an elongated elastic loop. The weaving pattern may be varied by interchanging the cam mechanism and utilizing a different set of cams.

3,665,972
DOBBIES
Ernest Hoenig, Horgen-Zurich, Switzerland, assignor to Staubli Ltd., Zurich, Switzerland
Original application Apr. 23, 1968, Ser. No. 723,527, now Patent No. 3,554,238, dated Jan. 12, 1971. Divided and this application Sept. 1, 1970, Ser. No. 68,736
Int. Cl. D03C 1/00, 15/00
U.S. Cl. 139—68 5 Claims



A dobby in which the reading needles are actuated into reading position of a perforated pattern card by a first system that applies a low value driving force to the needles so that the pattern card is not damaged if a perforation is not sensed by the needles as would be the case if too strong a force were applied to the reading needle. A second driving system operative in a series mode with the first system applies a stronger driving force to the needles in those instances where a perforation in the pattern card is read by the needles.

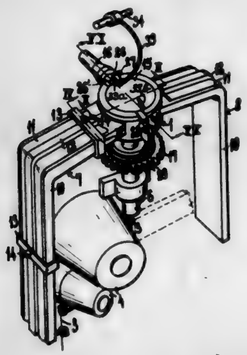
3,665,973
DOBBY
Adolf Reisdorf, Horgen-Zurich, Switzerland, assignor to Staubli Ltd., Zurich, Switzerland
Filed May 4, 1970, Ser. No. 34,399
Claims priority, application Switzerland, May 5, 1969, 6845/69
Int. Cl. D03c 1/06
U.S. Cl. 139—71 3 Claims



A dobby of the Hattersley type comprising a hook hinged to a baulk, the hook being adapted to engage with and

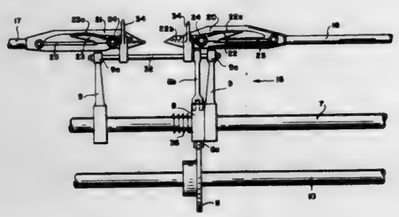
withdrawn from a draw-blade, and a rotationally mounted support blade having a contact surface adapted to engage the hook when the hook is raised.

3,665,974
DEVICE FOR PREPARING A WEFT
Antonius Martinus Bartes, Deurne, Netherlands, assignor to N. V. Machinefabriek L. Te Strake, Deurne, Netherlands
Continuation-in-part of application Ser. No. 828,291, May 27, 1969. This application Aug. 2, 1971, Ser. No. 168,182
Claims priority, application Netherlands, May 29, 1968, 6807613
Int. Cl. D03d 47/28, 47/34
U.S. Cl. 139—127 P 11 Claims



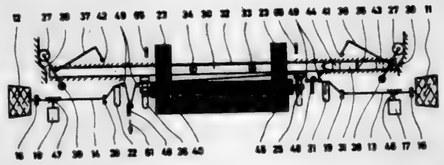
A presenting device for conducting a weft thread is rotatable on an axis and has an axial thread inlet and a thread outlet at a point spaced from the axis. A member for temporarily storing a loop in the thread has an entrance arranged adjacent to the path of rotation of the thread outlet of the presenting device, to receive a loop of thread from such outlet. A thread clamp is arranged adjacent to the entrance of the storing member for clamping one end of such loop of thread, and a weft inserting device is arranged adjacent to the path of rotation of the thread outlet of the presenting device, to receive the other end of the loop of thread from such outlet.

3,665,975
WEFT THREAD INSERTING MECHANISM FOR LOOMS
Nikolaus Kokkinis, Erisirch, Germany, assignor to Lindauer Dornier Gesellschaft m.b.H., Lindau/Bodensee, Germany
Filed Jan. 19, 1970, Ser. No. 3,902
Int. Cl. D03d 47/18
U.S. Cl. 139—127 R 10 Claims



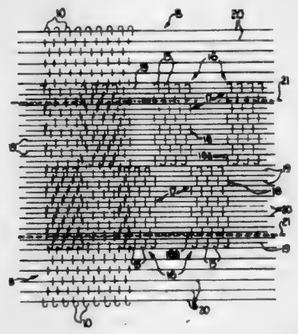
This invention relates to a weft thread inserting device for a shuttleless loom comprising a pair of gripper rods having gripper heads mounted on the ends thereof, the gripper rods being mounted for reciprocating movement and being adapted to extend into the shed whereby a weft thread is transferred from one gripper head to the other, and clamping means on the gripper heads for the weft thread adapted to be positively actuated from the exterior of the shed.

3,665,976
SUCTION APPARATUS ON A TEXTILE MACHINE
Alexis Freiholer, Rutl/ZH, Switzerland, assignor to Rutl Machinery Works, Ltd., Rutl/ZH, Switzerland
Filed June 29, 1970, Ser. No. 50,722
Claims priority, application Switzerland, July 22, 1969, 011162
Int. Cl. D03d 47/24
U.S. Cl. 139—126 17 Claims



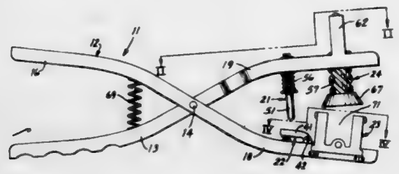
A suction apparatus for picking up the free end-portion of a thread on a textile machine wherein the thread is brought into a freely stretched condition over a suction means and is drawn into this means by a suction action, said apparatus comprising a thread-holder located on the suction means, said holder comprising clamping zones that are biassed towards each other for clamping a thread therebetween and guide means for guiding the end-portion of the thread towards the clamping zones; and means for pulling the end-portion of the thread, drawn into the suction means, in between the clamping zones.

3,665,977
CURTAIN HEADING TAPE
Roger Heldt, Paris, France, assignor to Thomas French & Sons Limited
Filed Feb. 27, 1970, Ser. No. 14,966
Claims priority, application Great Britain, Mar. 22, 1969, 15,165/69
Int. Cl. D03d 3/02
U.S. Cl. 139—387 9 Claims



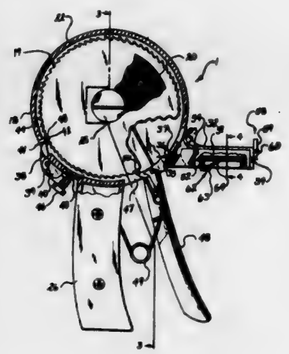
A curtain heading tape in which lateral stiffness is provided by using, as a weft in the body of the fabric, a composite yarn consisting of a core of relatively stiff synthetic yarn around which is wrapped at least one other yarn, whereby the composite yarn so formed has a surface characteristic such that any tendency of warp yarns to slip relative to the weft yarns when the fabric is woven is prevented or substantially reduced due to the uneven surface of the composite yarn.

3,665,978
TIEING TOOL
Marlow H. Pardike, 209 Pine St., Paw Paw, Mich.
Filed Nov. 12, 1970, Ser. No. 88,814
Int. Cl. B21f 15/04
U.S. Cl. 140—93 A 10 Claims



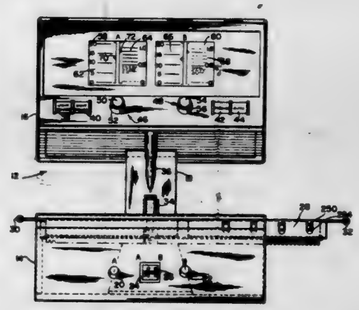
A hand tool for tieing objects, such as grape vines, having a pair of pivotally connected levers manually movable toward one another and provided with suitable coacting structure thereon for permitting a small flexible member, such as a U-shaped wire staple, to have the free ends thereof twisted together for bundling the objects together. A staple-holding cartridge is mounted on one lever and disposed opposite a rotatable twisting member mounted on the other lever, which twisting member is disposed for engaging the free ends of an ejected staple for twisting the free ends together. An ejecting mechanism is disposed adjacent the cartridge for ejecting a selected staple, and an actuating mechanism coacts with the ejecting mechanism in response to relative pivotal movement of the levers toward one another whereby the selected staple is automatically ejected and the free ends thereof twisted together.

3,665,979
BANDING APPARATUS
Dory J. Neale, Sr., 3710 Shore Acres Blvd., St. Petersburg, Fla.
Filed June 25, 1970, Ser. No. 49,594
Int. Cl. B21f 9/02
U.S. Cl. 140—93.4 9 Claims



A banding apparatus for flexible bands or tape and comprising a clip having a passage therethrough to receive portions of lashing tape extending around an article to be lashed or banded and a tape dispensing and tightening device operative to effect movement of clip portions to engate a plurality of teeth on the clip into engagement with the tape portions to hold said tape or band portions against movement. The tape dispensing device has a tape compartment and means for mounting a roll of flexible lashing tape therein and a passage extending through the tape compartment and ratchet means mounted on the tape compartment for effecting retractive movement of a portion of the tape through the passage and into the tape compartment thereby moving the clip into engagement with the article to be lashed and setting the teeth in the tape portions.

3,665,980
DISPENSING APPARATUS AND ASSOCIATED ELECTRONIC CONTROL FOR SELECTING DIFFERENT MODES OF OPERATION
Michael E. Croslin, Forest Hills, and Carl R. Blackman, Westbury, both of N.Y., assignors to Grumman Data Systems Corporation
Filed Dec. 9, 1969, Ser. No. 883,573
Int. Cl. B65b 43/54
U.S. Cl. 141—183 9 Claims

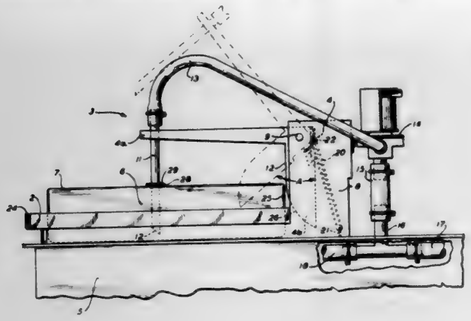


A dispensing apparatus is provided which has various modes of operation including automatic, manual and prime modes. The dispensing apparatus includes coarse and fine metering devices consisting of cylinders with pistons displaceable therein, the displacement of the pistons being controlled by adjustable switches in turn controlling electronic circuits which reverse the direction of movement of the pistons. The metering devices are associated with dispensing nozzles beneath which can be stepped a tray in which are positions for vials or other such receptacles. A sensing switch is provided to detect the presence or absence of receptacles in the aforesaid positions to prevent attempts to dispense fluids into positions in which there are no receptacles. The tray is electronically controlled for automatic or manual modes of operation and a cam control switch is provided which determines whether the tray has been stepped to discrete positions for which dispensing operations might be effected. The apparatus employs a bi-directional, three port valve for enabling the withdrawal of one or more fluids from a source and for dispensing the thusly withdrawn fluids into the aforenoted receptacles. The dispensing apparatus is controlled by a logic circuit involving combinations of flip flops, OR gates and AND gates, and further including decade counters for counting the number of receptacles filled and comparing the count with a selected number in an electronic comparator whereby operation can be terminated after an appropriate number of cycles. The selected quantities for dispensing are indicated on conveniently positioned indexes.

3,665,981
REPLENISHER LOADING DEVICE
Allen R. Trebbien, Rocky Point, N.Y., assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed Jan. 30, 1970, Ser. No. 7,278
Int. Cl. B65b 1/04, 3/04
U.S. Cl. 141—329 5 Claims

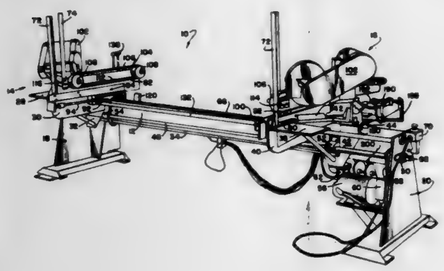
A loading device for receiving, engaging and holding a cartridge container of liquid replenisher or the like. An L-shaped tilt member is pivotably mounted above a space at a

receiving cradle adapted for receipt of said cartridge. One leg of said member carries transverse thereto a tubular coupling means for engaging said cartridge and its liquid contents. The said member is spring-biased about its pivot so that in the absence of a cartridge said one leg and the coupling means



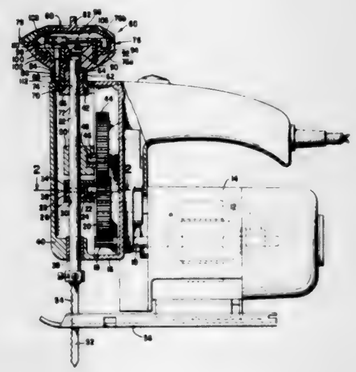
are swung clear of said space, with the second leg protruding into the space. A cartridge inserted into said space displaces said second leg toward a vertical position, thereby rotating the first leg toward the said space and bringing the coupling member into engagement with the cartridge.

3,665,982
ADJUSTABLE TRIM SAW APPARATUS FOR MITER CUTS AND SAW KERFS
Andrew M. Kvalheim, Petaluma, Calif., assignor to Kvalheim Machinery Co., Petaluma, Calif.
Filed Feb. 13, 1970, Ser. No. 11,191
Int. Cl. B27b *5/36, 25/04*
U.S. Cl. 143—6 H **5 Claims**



A saw assembly for multiple cutting of a workpiece, for example, miter and kerf cuts for splines for preformed door jamb assembly trim comprising a main frame, a first, fixed table support including a movable miter saw and a movable kerf saw, a second, movable carriage having another movable miter saw and another movable kerf saw, manual or motor means for moving the carriage with respect to the first table, a brake for locking the carriage in a predetermined position, a reciprocating conveyor arrangement to carry workpieces through the machine, and a hopper for storing workpieces to be fed to the conveyor. Each miter saw may be adjusted in a vertical and horizontal plane. Each workpiece is stagger-fed through the invention by means of the conveyor cooperating with clamp means, programmed to lock the workpiece in position as it is sawed, first by the miter saws, and then by the kerf saws. A kickout cylinder and piston is located adjacent each miter saw to move the workpiece quickly away after one pass of the saw to prevent tearing of the workpiece.

3,665,983
SABRE SAWS WITH ANGULARLY ADJUSTABLE SWIVEL SAW BARS
Robert W. Wagner, Easley, S.C., and John McLaughlin, Raleigh, N.C., assignors to The Singer Company, New York, N.Y.
Filed Dec. 15, 1970, Ser. No. 98,251
Int. Cl. B27b *19/08*
U.S. Cl. 143—68 F **4 Claims**

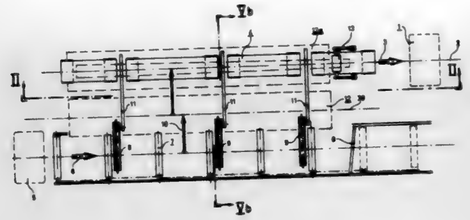


A sabre saw is provided with means for driving the saw bar in a linear reciprocatory motion from a rotary electric motor, while at the same time, permitting the saw bar to be manually rotated or selectively locked in position about its own axis to set the cutting edge of the saw blade in different angularly oblique positions relative to the line of movement of the tool. A control knob is fixedly connected to a journal bushing held captive in the housing, but free to rotate therein. The journal bushing has a central "D" aperture through which extends the slabbed upper end of the saw bar. The saw bar slides up and down within the journal bushing and its angular position is controlled by the angular position of the journal bushing which is caused to be rotated by the control knob. A control bar is operatively secured to the control knob to selectively cam a control arm in a locked or unlocked position. The control arm carries a spring-biased locking pin which in locked position will engage one of a plurality of holes set in the housing at predetermined angular positions corresponding to the desired angular position of the cutting edge of saw blade. With the control bar in the unlocked position, the control knob can be manually manipulated so as to suitably position the cutting edge of the saw blade, as in scroll cutting.

3,665,984
LOG ADJUSTING AND ALIGNING DEVICE
Bo Ingemar Ackerfeldt, Stockholm, Sweden, assignor to USNR Forest Industries, Inc., Portland, Oreg.
Continuation of application Ser. No. 779,102, Nov. 26, 1968, now abandoned. This application Aug. 19, 1970, Ser. No. 65,005
Int. Cl. B27b *31/06*
U.S. Cl. 143—157 R **25 Claims**

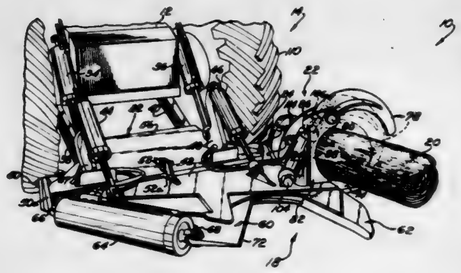
At a sawmill a device at the input side of the sawmill for adjusting automatically a log or a similar elongated object to be sawn relative to the center line or sawing line through the sawing unit so that a straight line through the centers of the end surfaces of the log becomes parallel to and coincident with the sawing line, if the log is straight, but parallel to and transversely offset from the sawing line, if the log is curved or

bent, said transverse offset having a direction opposite to the direction of the curve or bow in the log and a magnitude



which is a predetermined proportion of the height of the curve or bow in the log.

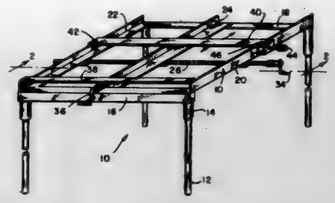
3,665,985
TREE HARVESTING APPARATUS
Idas B. White, Blountstown, Fla., assignor to Eaton Yale & Towne Canada Limited, London, Ontario, Canada
Filed June 29, 1970, Ser. No. 50,593
Int. Cl. A01g *23/02*
U.S. Cl. 144—34 E **7 Claims**



An improved tree harvesting apparatus is adapted to be mounted on a vehicle and includes a shear assembly for severing a tree. A grapple is mounted on a common base with the shear assembly and is selectively operable to grip a severed or felled tree. A single set of positioning cylinders is selectively operable to move both the shear assembly and grapple relative to the ground to facilitate positioning them in a desired relationship with a tree which is to be either severed or gripped. Another set of positioning cylinders is selectively operable to raise both the shear assembly and grapple to a nonoperating or over-the-road position.

3,665,986
JIG FOR CABINET DOOR CONSTRUCTION
Jimmie Johnson, General Delivery, Ketchum, Okla.
Filed Oct. 2, 1969, Ser. No. 863,249
Int. Cl. B25h *1/02*
U.S. Cl. 144—288 **2 Claims**

A jig for holding doors during a work operation thereon and comprising a substantially rectangular frame supported at a predetermined elevation, with door supporting means provided on the frame and having fixed means for receiving an edge of the door thereagainst. Movable means is carried by the frame for engagement with an oppositely disposed edge of the door with respect to the edge against the fixed means, and means cooperates with the movable means for securely retaining the door between the movable means and fixed means. Means is also carried by the frame for spanning

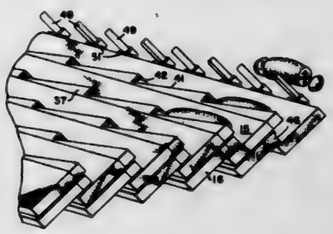


the upper surface of the door disposed in the door supporting means.

ERRATUM

For Class 144—288 A see:
Patent No. 3,665,989

3,665,987
SHUFFLE FEED POSITIONER
Ralph K. Daugherty, San Jose, Calif., assignor to Genevieve I. Hanscom and Genevieve I. Hanscom, Robert Magnuson, Lois J. Thomson, as Trustees of the Estate of Roy M. Magnuson, part interest to each
Original application June 13, 1968, Ser. No. 736,861, now Patent No. 3,584,735. Divided and this application Sept. 2, 1970, Ser. No. 68,926
Int. Cl. A23n *7/04*
U.S. Cl. 146—81 R **3 Claims**



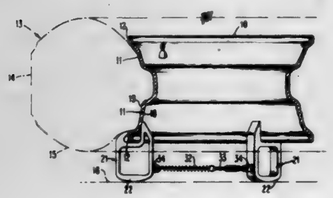
A shuffle feed structure for feeding articles which require trimming of the ends, in which the article advancing faces of the shuffle members include a series of wedge-shaped surfaces for feeding and orienting the articles (such as pickles) so that each article rests against one of the inclined faces of the shuffle feed member and abuts the end face of one of the wedges. During the last step of movement of the shuffle feed the articles are carried through a pair of trimming knives which cut off the ends of the pickle so that the middle segment of each pickle is cut to a uniform length.

3,665,988
PROCESS FOR PRODUCING GRANULAR AND FIBROUS COLLAGEN DISPERSIONS
Nicholas C. Aceto, Roslyn; Joseph Naghski, and Michael Komanowsky, both of Philadelphia, all of Pa., assignors to The United States of America as represented by the Secretary of Agriculture
Filed Mar. 31, 1970, Ser. No. 24,327
Int. Cl. A23l *1/44*
U.S. Cl. 146—227 **2 Claims**

A collagen granule is prepared from unhaired hides by cutting the hide into long, thin strips, recutting the strips and comminuting the recut strips. Collagen fibers are prepared

from the granule by shearing in a disc mill. Since no added water is required in the process, the solids content of the product is virtually the same as that of the original hide. The flexibility of the process conditions allow for the production of granules and fibers of different lengths so that collagen products can be made for incorporation into a variety of human and animal foodstuffs.

3,665,989
TIRE STAND
Don J. Marshall, Edgewater, Md., assignor to Goodall Semi-Metallic Hose and Mfg. Co., Philadelphia, Pa.
Filed Nov. 23, 1970, Ser. No. 91,926
Int. Cl. B25h *5/00*
U.S. Cl. 144—288 A 10 Claims



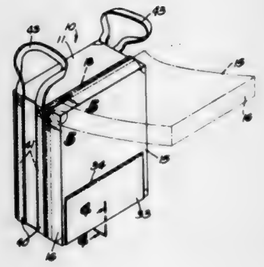
This patent discloses a tire stand for supporting a tire rim, the rim being conventional in that it includes a radially extending peripheral flange portion upon which, for example, an automotive or truck tire may be mounted. The tire stand includes a plurality of feet each of which comprise a rounded base portion, a body portion and a rim seating means which extends from the body portion, the seating means including a pair of spaced arms, the first arm being adapted for engagement of the inner surface of the flange of the rim and the second arm which is spaced from the first arm, being adapted for engagement with the outer surface of the flange, the second arm being foreshortened with respect to the first arm. Interconnecting the feet are spring biasing means which act on each of the feet to effect a gripping action by the feet on the inner and outer surfaces of the flange, the rotational effect upon each of the feet causing the first arm to dig into the interior or the inner surface of the rim and the foreshortened arm to dig into the lip of the rim.

3,665,990
GUN STOCK COVER
Chester W. Hefner, Jr., 2509 Wallis, Overland, Mo.
Filed May 18, 1970, Ser. No. 38,234
Int. Cl. B65d *65/02*
U.S. Cl. 150—52 R 4 Claims



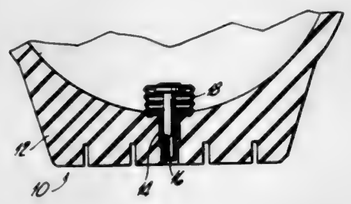
A cover for a gun stock comprising a body constructed of a multiplicity of panels sewn or otherwise united, and being contoured for snugly receiving the stock so as to be adapted for maintenance thereon during periods of use, as well as disuse, of the gun. Said cover is provided with a line of opening in its normally downwardly presented portion to permit ready application of the cover upon the gun stock and equally facile removal therefrom; there being closure means provided with said line of opening.

3,665,991
PROTECTIVE ENCLOSURE FOR TEST INSTRUMENT
George W. Gillemot, 2331 20th St., Santa Monica, Calif., and John T. Thompson, 244 Loring St., Los Angeles, Calif.
Filed July 24, 1970, Ser. No. 57,912
Int. Cl. B65b *11/00*
U.S. Cl. 150—52 R 8 Claims



A weather-proof flexible enclosure for electrical test equipment commonly used in the field. The enclosure or casing has a built-in window of flexible transparent material with sufficient excess to permit the user to manipulate, from the exterior thereof, control elements on a panel of test equipment housed in the casing. Loops of strip material secured to the enclosure serve to reinforce the saem as well as to carry and to suspend it in the filed from any convenient support.

3,665,992
TIRE WITH RETRACTABLE STUDS
Joseph Rossel, 253 10th Avenue, New York, N.Y.
Filed Nov. 9, 1970, Ser. No. 87,962
Int. Cl. B60c *11/00*
U.S. Cl. 152—208 1 Claim



A tire with retractable hollow studs and pressure sensing means for extending the studs when the pressure in the tire exceeds a selected pressure and for retracting the studs at a second and lower pressure.

3,665,993
PNEUMATIC VEHICLE TIRE
Hermann Wittneben, Hannover, Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany
Filed Dec. 16, 1970, Ser. No. 98,711
Claims priority, application Germany, Dec. 17, 1969, P 19 63 260.1
Int. Cl. B60c *9/02, 9/20*
U.S. Cl. 152—356 2 Claims

A pneumatic vehicle tire with a carcass having twisted strength carriers extending at least approximately at a right angle with regard to the circumferential direction of the tire in which the number of twists of the strength carriers within the region of the side walls of the tire is considerably less than the number of the twists of the strength carriers within the region radially inwardly of the belt of the tire.



3,665,994
TIRE CORD, ETC.
Frederick J. Kovac, Bath, and Grover W. Rye, Cuyahoga Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Original application Apr. 24, 1968, Ser. No. 748,136, now Patent No. 3,553,307, which is a continuation-in-part of application Ser. No. 376,750, June 22, 1964, now abandoned. Divided and this application May 20, 1970, Ser. No. 39,051
Int. Cl. B60c *9/02*; D02g *3/48*
U.S. Cl. 152—359 2 Claims

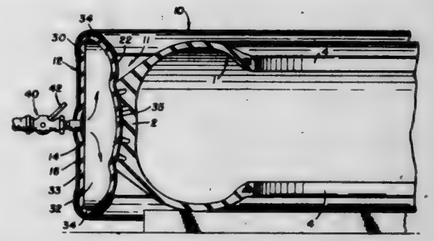


An improved tire and tire cord which is made by treating polyester cord reinforcement by subjecting the tire cord to a first stage of heat treatment at a temperature in excess of 440° F. and for a period of 30 to 70 seconds while stretching the cord from 2 to 10 percent of its original length, followed by a second stage of heat treatment at a temperature also in excess of 440° F., and preferably higher than the temperature of the first stage, with an exposure time of 30 to 70 seconds and with the cord being permitted to shrink by 30 to 50 percent of the amount that it was stretched in the first stage treatment. An improved tire cord results.

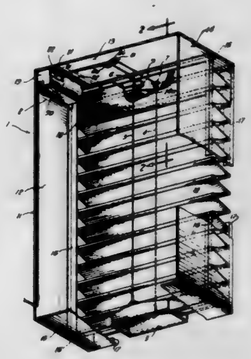
The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawings and the following detailed description.

3,665,995
DIAPHRAGM BEAD SPREADER
Irvin E. Middleton, Jr., Akron, Ohio, assignor to The General Tire & Rubber Company
Filed Nov. 4, 1969, Ser. No. 873,876
Int. Cl. B60c *25/12*
U.S. Cl. 157—1.1 6 Claims

The disclosure is concerned with an improved annular, expansible diaphragm for spreading the beads of a pneumatic tire for purposes of mounting the tire on a rim and/or inserting an inner tube, if desired. The diaphragm features an outer, annular, restraining layer comprising at least two fabric plies, with oppositely directed mutually parallel reinforcing cords disposed at an acute angle relative to the circumferential center-line of the diaphragm. An inner, annular, tread engaging layer comprises at least one fabric ply comprising mutually parallel reinforcing cords disposed at an angle of substantially 90° relative to the circumferential center-line of the diaphragm. An annular, tubular, air-tight bladder member is sandwiched between the outer and inner layers, which is inflatable through a valve disposed in the outer diameter of the tube.



3,665,996
CLOSURE OPERATOR
Frank D. Roberts, North Reading, Mass., assignor to Rixson Inc., Franklin Park, Ill.
Filed Dec. 8, 1969, Ser. No. 882,827
Int. Cl. E05f *15/20*
U.S. Cl. 160—1 10 Claims



A closure operator to effect remote, failsafe opening and closing of a damper, particularly a multi-fold or interlocking slat curtain damper.

A frame or shell envelops a damper curtain which is capable of opening and closing an air passage through the frame or shell. A housing containing an electromechanical curtain operator is optionally positioned within or outside the frame or shell. The curtain is lifted by a tray connected to two wire cables, in response to the winding of the cable upon a take-up drum located within the housing.

The drum rotates, when a driven spur gear coupled to the drum is engaged with a driving spur gear, by pivoting a motor which carries the driving gear.

This pivot action is effected by lifting a pivoting arm which is connected to the motor. This arm is lifted whenever a solenoid and its associated plunger are actuated to lift a lever upon which the arm rides. An electromagnet armature fixed to the lever is held by an electromagnet when the lever is lifted so that the motor is latched in the pivoted position as required.

Thus, if the motor is pivoted so that the spur gears are driven into engagement, the take-up drum is rotated to wind the cable and elevate the curtain.

Upon occurrence of (1) a manual switch operation to effect damper closure, (2) a power failure, (3) circuit malfunctioning, or (4) the detection of an undesired condition such as smoke or fire, the motor is released from its pivoted position permitting the spur gears to disengage. This allows the drum to unwind, thus lowering the curtain and closing the damper.

In a preferred embodiment of the take-up drum, the drum includes a relatively light-weight cable anchor which is mechanically coupled by a spring clutch to the other components of the take-up drum. This clutch is engaged when the curtain is lifted to open the damper; and the clutch is also engaged when the curtain is released to close the damper. Ultimately, the clutch is disengaged when the curtain attains full closure. At this point of operation, the anchor is freed from the other drum components.

With this arrangement, the forces of drum momentum acting upon the cable and tending to rewind the cable in the opposite direction when the curtain is released are substantially minimized because the mass of the anchor is freed from the other components. Without this feature the cable is excessively flexed and strained and, therefore, has an unsatisfactory operational life. Additionally, other operator components, such as those directly related to the cable will also have a reduced operational life due to forces generated by the tendency to rewind the cable.

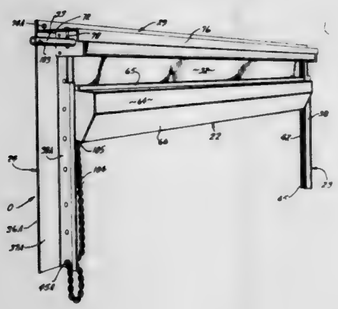
An air vane latch is also optionally associated with the curtain operator to delay curtain closure until the forces generated by the air passing through the damper have been reduced to permit safe lowering of the curtain.

3,665,997

ADJUSTABLE DOCK SEAL ASSEMBLY

Vernon O. Smith, Ashley, and Alfred T. Dietrich, Marion, both of Ohio, assignors to Overhead Door Corporation, Dallas, Tex.

Filed Feb. 20, 1970, Ser. No. 13,128
Int. Cl. E06b 7/00
U.S. Cl. 160—41 **13 Claims**



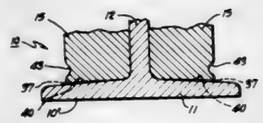
A dock seal assembly for an opening in a wall, said seal assembly having a resiliently flexible head seal supported by upright, parallel track means mounted upon the wall adjacent the sides of said opening near the upper end thereof. Spring-biased annular means is supported upon the wall for rotation about a horizontal axis near the upper end of said opening and is connected to the head seal by sheet means which covers said upper end of the opening when the head seal is lowered. The sheet means also serves to raise the head seal when it is released from an anchored, lowered position.

3,665,998

PROCESS FOR FORMING A MULTI-METALLIC RAIL DEVICE

Thomas A. Nowak, Veradale, Wash., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Original application July 5, 1968, Ser. No. 742,586, now Patent No. 3,544,737, dated Dec. 1, 1970, which is a continuation-in-part of application Ser. No. 666,654, Sept. 11, 1967, now abandoned. Divided and this application May 28, 1970, Ser. No. 9,288
Int. Cl. B22d 11/12
U.S. Cl. 164—76 **8 Claims**



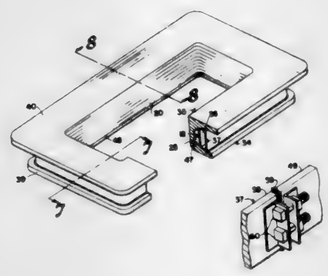
This invention relates to an improved process for producing a multi-metallic rail device wherein the different metal components making up the rail device are permanently secured together in intimate interfacial and electrical contact as well as a multi-metallic rail device produced by the said process.

3,665,999

CONTINUOUS CASTING MOULD

Frank E. Wagstaff; William G. Wagstaff, and Paul H. May, all of Spokane, Wash., assignors to Wagstaff Machine Works, Inc., Spokane, Wash.

Filed July 30, 1970, Ser. No. 59,444
Int. Cl. B22d 11/12
U.S. Cl. 164—283 **6 Claims**



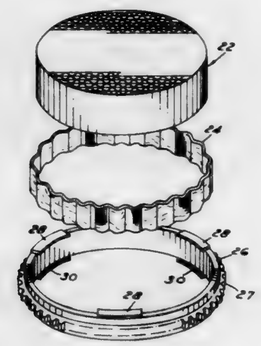
An improved compound, disassemble, mould, for the continuous vertical casting of metals, of the type having an internal annular chamber divided into concentric annular parts for coolant dispersal. The structure provides a separate band-like septum divider and a water dispersing skirt having internal supports to prevent differential change in water dispersal upon thermally caused changes in the mould configuration. One water supply system disclosed enters from only one end of the mould with aid of corner deflectors. The improvements may be embodied in either bottom or side opening moulds.

3,666,000

TORQUE TRANSMISSION SYSTEM FOR A GAS TURBINE HEAT EXCHANGER

Joab J. Blech, Oak Park, and Antoni Paluszny, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 19, 1970, Ser. No. 81,949
Int. Cl. F28d 19/04
U.S. Cl. 165—8 **11 Claims**



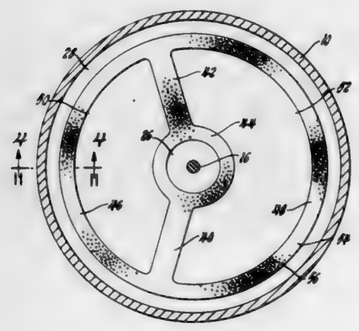
A torque transmission system for a gas turbine heat exchanger assembly comprising a rotary heat exchanger formed of a ceramic honeycomb structure and driven by annular metal driving means coupled to the heat exchanger periphery by a wire mesh located between the inner surface of the annular driving means and the periphery of the heat exchanger. The wire mesh transmits torque from the annular metal driving means to the heat exchanger and may comprise a plurality of interwoven wires. The wire mesh may be corrugated and preferably has a thermal coefficient of linear expansion greater than that of the annular metal driving means. The wire mesh may comprise a plurality of plaited layers of interwoven wire.

3,666,001

HIGH TEMPERATURE SEAL

John N. Johnson, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 10, 1970, Ser. No. 62,257
Int. Cl. F28d 19/00
U.S. Cl. 277—234 **4 Claims**



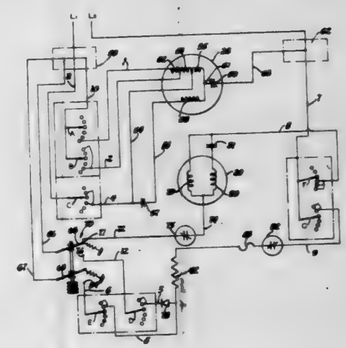
A rubbing contact fluid seal, particularly suitable for use in a gas turbine engine rotary regenerator, comprising a reticulate metal facing layer bonded to a base member and adapted for rubbing contact with the regenerator, the facing layer having disposed in the pores thereof a seal material consisting of, by weight, 72 to 75 percent chromite powder and potassium silicate equivalent to 25 to 28 percent of an aqueous potassium silicate solution containing about 29.1 percent, by weight, potassium silicate which material is bonded in and to the facing layer by curing at 500° F.

3,666,002

CONTROL FOR ROOM AIR CONDITIONER WITH ELECTRIC HEAT

Donald C. Ferdelman, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 2, 1970, Ser. No. 86,140
Int. Cl. F25b 29/00
U.S. Cl. 165—29 **2 Claims**



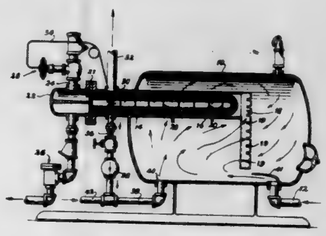
A control system for regulating the energization of an electric heater used with an all season type room air conditioning unit. A rotary snap switch provides a multiple circuit arrangement having a common manual selector operating means which selects either an electric heating cycle with medium or high fan speed or a cooling cycle with low, medium or high fan speed. The switch provides for complete circuit isolation of the electric heater during the cooling phases to prevent possible current leakage to the air conditioning cabinet.

3,666,003

WATER HEATER UNIT

John A. Clark, Jr., East Stroudsburg; Lemuel J. Morgan, Stroudsburg, both of Pa., and Robert F. Kirschner, Stoughton, Mass., assignors to The Patterson-Kelley Co., Inc., East Stroudsburg, Pa.

Filed May 28, 1970, Ser. No. 41,401
Int. Cl. B60h 1/00
U.S. Cl. 165—39 **6 Claims**



A water heating and supply system is provided, comprising in combination, a water storage tank having a cold water supply inlet and a heated water service outlet and supply

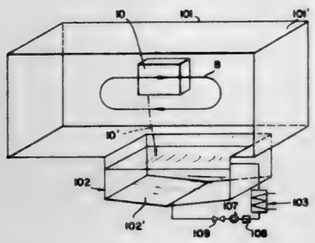
conduit system, and a heater shroud extending into the upper level of the tank; the shroud being arranged at its inner end in closed fluid flow communication with an intake manifold means drawing water from substantially throughout the vertical range of the interior of the tank. A heater is disposed within the shroud and operates under control of a heat supply regulator. A by-pass circulating conduit system is provided including a continuously operating pump having its intake in fluid communication with the interior of said shroud adjacent the outer end thereof and its discharge arranged to deliver water into the bottom level of said tank. The return from the heated water supply system is arranged in open communication with said by-pass conduit system, Hence, whenever water is withdrawn from the service outlet, replacement cold feed water moves through said supply inlet and is thereby mixed into the water being circulated throughout the entire vertical extent of the tank from which the intake manifold draws water from substantially all levels within the tank. A water temperature sensor is disposed in the region of service water withdrawal from the heater shroud, and is operable to regulate the heat supply. The invention features improved water temperature stratification control in systems designed for such purposes.

3,666,004

ENCLOSED PUBLIC BATHS AND THE LIKE

Hans Hilgemann, Recklinghausen, and Hermann Gettmann, Wanne-Eickel, both of Germany, assignors to Fa. Hans Hilgemann & Co. GmbH, Hochlarmarkstr, Recklinghausen, Germany

Filed Dec. 1, 1969, Ser. No. 881,152
Claims priority, application Germany, Dec. 3, 1968, P 18 12 353.0; Feb. 3, 1969, P 19 05 141.3
Int. Cl. F25b *29/00*
U.S. Cl. 165—19 **14 Claims**



An enclosed bath system, having a bath chamber in which a body of water has its surface exposed to the air in the chamber. A heat pump, having an evaporator, a condenser and a circulating primary heat-transfer fluid carrying thermal energy absorbed at the evaporator to the condenser, circulates air from the chamber into heat-exchanging relation with the evaporator and the condenser successively whereby the evaporator abstracts heat and moisture from the circulated air and the condenser reheats the circulated air prior to its return to the chamber.

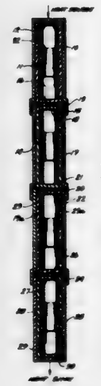
3,666,005

SEGMENTED HEAT PIPE

Robert David Moore, Jr., 817 West Camino Real, Arcadia, Calif.

Filed July 6, 1970, Ser. No. 52,249
Int. Cl. F28d *15/00*
U.S. Cl. 165—105 **2 Claims**

An improved heat pipe capable of conveying a greater heat flux than a conventional heat pipe is provided in practice of this invention. A heat pipe transfers heat from a heat source to a heat sink in the form of latent heat of vaporization of a fluid within the heat pipe. Hot vapor transfers heat from the heat source to the heat sink. Condensed liquid is returned from heat sink to the heat source through porous capillary material due to surface tension forces. The heat flux obtainable is limited by the available flow of returning liquid. In the improved heat pipe, the flow paths for liquid and vapor are serially segmented by impermeable barriers transverse to the direction of heat flow so that the distance of liquid flow in each segment is minimized. In zero gravity the heat flux obtainable is approximately proportional to the number of serial segments N into which the heat pipe is divided, that is, if the heat is transferred serially through N segments approximately N times the heat flux is possible as compared with a conventional heat pipe of the same overall dimensions. When operating against a gravity head, the maximum heat flux is about N^2 times the heat flux of a conventional heat pipe. Thus a heat pipe segmented into 10 serial segments has approximately 10 to 100 times the maximum heat flux capacity of an unsegmented heat pipe of the same cross section and total length.

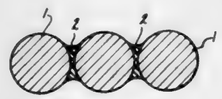


3,666,006

HEAT EXCHANGER

Emery I. Valyi, Riverdale, N.Y., assignor to Olin Corporation

Continuation-in-part of 754,995, Aug. 23, 1968, now Patent No. 3,539,672, dated Nov. 10, 1970. This application May 4, 1970, Ser. No. 34,409
Int. Cl. F28f *1/16*
U.S. Cl. 165—164 **6 Claims**



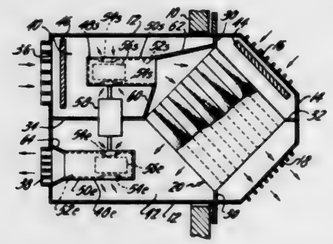
An improved heat exchanger utilizing bonding metal particles, especially aluminous, cuprous or ferrous particles. The particles are bonded together and to an imperforate metal member utilizing a thin coating of resin as the bonding medium.

3,666,007

APPARATUS FOR EFFECTING CONTINUOUS AND SIMULTANEOUS TRANSFER OF HEAT AND MOISTURE BETWEEN TWO AIR STREAMS

Masataka Yoshino; Akima Kamiya; Nin Ogawa; Atsushi Oguri, all of Naka-ougawa, and Shigeo Muramatsu, Kamakura, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1970, Ser. No. 20,302
Claims priority, application Japan, Mar. 20, 1969, 44/21477; Apr. 30, 1969, 44/33375; 44/33376; 44/39556; May 8, 1969, 44/35420; May 12, 1969, 44/43466; Aug 15, 1969, 44/77524; Aug. 20, 1969, 44/79027; Nov. 4, 1969, 44/88311
Int. Cl. F28f *3/00*
U.S. Cl. 165—166 **16 Claims**



Apparatus for effecting continuous and simultaneous transfer of both heat and moisture between two air streams comprises a housing having therein a plurality of heat and moisture transfer surfaces statically disposed in superposed and spaced-apart relationship defining therebetween static flow paths, and means for including air from one locale through alternate ones of the flow paths to another locale and for discharging air from said another locale through the remaining flow paths to said one locale. The heat and moisture transfer surfaces are each composed of a material, such as Japanese paper, which is sufficiently heat conductive and permeable to moisture to continuously and simultaneously effect both heat and moisture exchange between the inducted and discharged air.

3,666,008

HEATING ELEMENTS FOR HEAT-TREATING THREADS

Guy Jean Batsch, Aubenas, France, assignor to Societe Civile Textile Dite Societe, Lyon, France

Filed Apr. 2, 1970, Ser. No. 32,586
Claims priority, application France, Apr. 30, 1969, 6913804
Int. Cl. F28g *1/40*
U.S. Cl. 165—177 **11 Claims**



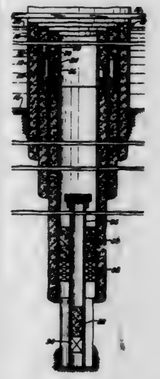
The element is a tube with a zone of its inner wall extended radially close to its axis over a helicoidal track extending through the tube. The thread can thus be passed axially through the tube and heated by conduction through the zone, whilst being simultaneously heated by radiation from the tube wall and by convection from a hot fluid circulated through the tube.

3,666,009

METHOD AND APPARATUS FOR SHUTTING IN OFFSHORE WELLS

Virgil D. Stone, Anchorage, Alaska, assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Jan. 23, 1970, Ser. No. 5,319
Int. Cl. F16l *11/12*; E21b *33/035*
U.S. Cl. 166—.5 **8 Claims**



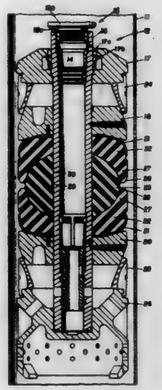
An offshore exploratory well is plugged, cut off just above the mud line, and left until equipment for completion of the well is ready. A cementing sub installed just above the mud line in one or more casing strings has a sleeve surrounding a joint in the casing strings and isolating that joint from fluids in the surrounding annulus between casing strings. Before leaving the well, the casing strings are cut off through the cementing subs above the joint within the subs to leave a portion of casing connected in the joint. That portion of casing can be removed to leave threads for tying back into the well.

3,666,010

PACKER SLEEVES

Allen E. Harris, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed June 11, 1970, Ser. No. 45,464
Int. Cl. E21b *33/128, 33/129*
U.S. Cl. 166—134 **6 Claims**

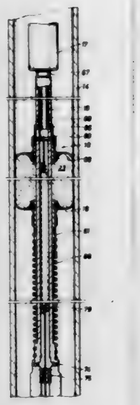


This invention relates to resilient packer sleeves which when expanded laterally in a well, provides a seal separating the well into the isolated sections.

3,666,011
APPARATUS FOR PLUGGING WELL BORES WITH HARDENABLE FLUENT SUBSTANCES

Nevyl G. Owens, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Nov. 13, 1970, Ser. No. 89,332
Int. Cl. E21b *33/127*
U.S. Cl. 166—187 12 Claims

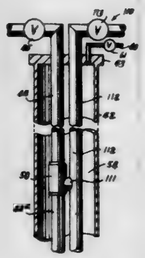


As a preferred embodiment of the invention disclosed herein, a tubular bag sealingly mounted around an elongated body is operatively arranged to be expanded into engagement with the walls of a well bore by discharging thereinto an initially fluent hardenable substance contained in a selectively operable displacement assembly releasably coupled to the body. Biasing means are uniquely arranged for initially retaining the bag in a collapsed position along the body and then selectively imposing opposed axial forces against the expanded bag to depress the ends of the bag inwardly. In this manner, the biasing means functions further to utilize the unbalanced pressure forces acting on the tool for urging the bag outwardly into anchoring engagement with the well bore wall as the fluent substance solidifies.

3,666,012
WELL CROSS-OVER APPARATUS FOR SELECTIVE COMMUNICATION OF FLOW PASSAGES IN A WELL INSTALLATION

Phillip S. Sizer, and Albert W. Carroll, both of Dallas, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Nov. 23, 1970, Ser. No. 91,751
Int. Cl. E21b *33/00*
U.S. Cl. 166—224 23 Claims



A well flow system, including one or more flow conductors disposed in a well having a casing annulus, means interconnecting the conductor or conductors and/or annulus, and a fluid-actuated valve in at least one of the flow conductors for selectively communicating the conductor or conductors and/or the annulus of the well responsive to a pressure differential applied across the valve and controlled from the surface. The flow system is adapted to well producing and well treating procedures. A number of different flow conductor, well annulus, and valve arrangements are shown with provision in each system disclosed for hydraulic control of a down-hole valve to communicate selected combinations of flow passages of the conductors and the well annulus.

3,666,013
REINFORCED CONCRETE STABILIZER FOR AN INSULATED TUBING STRING IN A SECONDARY RECOVERY STEAM STIMULATION OPERATION

Faud T. Saadeh, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 30, 1969, Ser. No. 889,057
Int. Cl. E21b *17/10*
U.S. Cl. 166—241 7 Claims

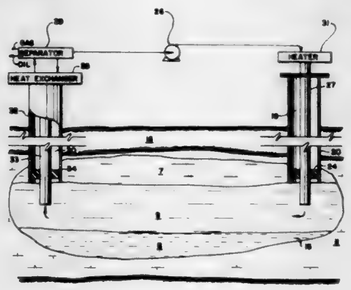


A concrete stabilizer with reinforcing means therein and having insulating properties is mounted on a tubing collar of an insulated tubing string used for steam stimulation in a secondary recovery operation.

3,666,014
METHOD FOR THE RECOVERY OF SHALE OIL

Thomas N. Beard, Denver, Colo., assignor to Shell Oil Company, New York, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,699
Int. Cl. E21b *43/20*, *43/24*, *43/26*
U.S. Cl. 166—271 9 Claims

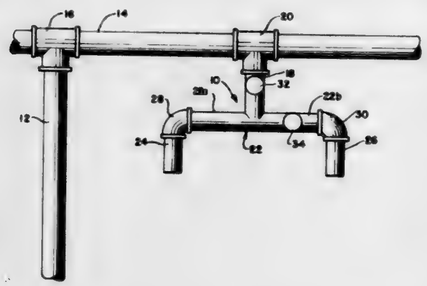


A method for recovering shale oil from a subterranean oil shale formation by forming a rubbled zone therein and emplacing first and second layers of fluid therein. The first fluid layer overlies the second fluid layer which is of a higher specific gravity and is largely immiscible therewith. A shale oil-extractive fluid of a specific gravity intermediate that of the first two fluids is then circulated through the zone between the first and second layers and in contact therewith until shale oil is entrained in the shale-oil extractive circulating fluid layer. Shale oil is then recovered from the shale oil-extractive fluid.

3,666,015
FLUID FLOW CONTROL DEVICE

William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Filed Sept. 15, 1970, Ser. No. 72,370
Int. Cl. A62c *35/00*
U.S. Cl. 169—5 26 Claims

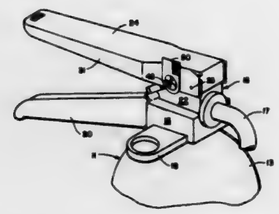


A device for controlling the flow of fluid, wherein a fluid distributing member is connected to a source of fluid in response to a predetermined temperature condition to establish a fluid flow path in the fluid distributing member. An additional fluid flow path is established in the fluid distributing member in response to a predetermined fluid pressure occurring therein. A fixed fire extinguishing system incorporating the above fluid flow control device.

3,666,016
SAFETY FEATURE FOR FIRE EXTINGUISHERS

Roger Q. Estes, C/O Shelledy 319 Peyton Bldg., Spokane, Wash.

Filed Apr. 1, 1971, Ser. No. 130,083
Int. Cl. A62c *13/00*
U.S. Cl. 169—31 R 9 Claims

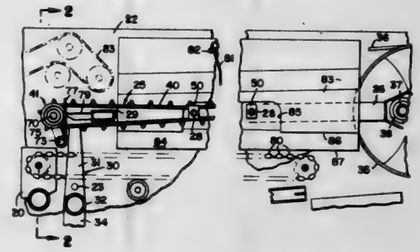


A safety feature is described for preventing the inadvertent operation of a fire extinguisher during normal handling but which will enable the fire extinguisher to be operated when desired. The safety feature includes a pull pin that is made of a frangible material that has sufficient shear strength characteristics to withstand normal handling forces but which will break when forces are applied commensurate with the intentional operation of the extinguisher. A frangible seal means is mounted on the end of the pull pin to prevent the pin from being pulled without first breaking the seal means.

3,666,017
SEPARATOR FOR TOMATO HARVESTER AND THE LIKE

Lauren W. Gates, Rio Vista, and Michael J. Hartwig, Walnut Creek, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Original application May 1, 1968, Ser. No. 725,874. Divided and this application July 2, 1970, Ser. No. 60,974
Int. Cl. A01d *27/00*
U.S. Cl. 171—27 4 Claims

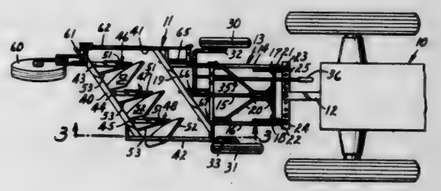


A separator for mechanical harvesters of the type where the fruit or other heavy part of the crop is separated from the remainder of the plant by a shaking action. A generally rectangular frame has a front end where harvested plants are introduced and a rear end where they leave. A rockshaft supports the front end of the frame for substantially pure fore-and-aft movement, while crank means support the rear end of the frame and drive it as a unit in a generally circular motion involving both vertical and fore-and-aft components. There is a plurality of pulleys at each end of the frame, those on the rear end being mounted on the crank pin and driven by the crank means, those on the front end being idlers individually spring mounted. The pulleys cany a plurality of closed-loop belts with upwardly extending projections for engaging harvesting plants and moving them from the front to the rear of the frame. A collecting conveyor beneath the frame catches the fruit shaken from said plant and conveys it elsewhere. Thus, the more easily loosened fruit is shaken off by fore-and-aft shaking while the fruit more difficult to loosen is shaken off by the gradual introduction of vertical movement as the crop moves rearwardly. The belt, pulleys, and belt guides are also novel in structure.

3,666,018
GANG-PLOW

Harold R. Trahms, Route #2, Janesville, Minn.

Continuation-in-part of application Ser. No. 533,496, Mar. 11, 1966, now abandoned. This application Nov. 5, 1969, Ser. No. 874,199
Int. Cl. A01b *15/14*
U.S. Cl. 172—669 5 Claims



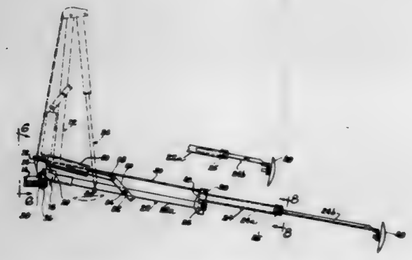
A gang-plow having a generally transversely extending backbone spaced rearwardly from a main wheeled frame, a plurality of forwardly extending beams affixed to the backbone adjacent the rear end thereof and having downwardly and forwardly extending standards affixed

thereto adjacent the forward end, and plow bottoms affixed to the lower forward ends of the standards so as to be oriented beneath the space between the frame and the backbone.

3,666,019
ROW MARKING APPARATUS

Laurel R. Yeske, Rockford, Ill., assignor to J. I. Case Company

Filed Oct. 7, 1969, Ser. No. 864,315
Int. Cl. A01b *17/00*
U.S. Cl. 172—130 4 Claims



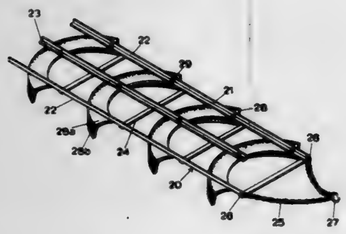
A row marking apparatus including first and second row markers individually pivoted at one end on a tool bar of a tractor. Each marker is pivoted between raised and lowered positions by a ram having its cylinder connected to the tool bar and its piston rod pivotally connected intermediate the ends of the associated row marker. The flow of fluid to and from the ram is automatically controlled by a flow control valve which provides first and second isolated flow paths between a main valve and the rams. The flow paths cooperate with the rams to alternatively (1) sequentially raise and lower respective markers or (2) raise and lower an individual lowered marker.

Each row marker is preferably formed in two sections which are pivotally interconnected at adjacent ends and which are moved between folded and end-to-end relation when the row marker is moved between the lowered and raised positions. This movement is accomplished by a cable having one end connected to the tool bar and an opposite end connected to the second section and an intermediate portion of the cable cooperating with a guide located adjacent the pivotal connection for the sections.

3,666,020
DRAGS FOR SNOWMOBILE TRAILS

Robert V. Hess, Route #2, Deerbrook, Wis.

Filed Nov. 18, 1970, Ser. No. 90,619
Int. Cl. A01b *31/00*
U.S. Cl. 172—612 1 Claim



Apparatus for leveling and conditioning snowmobile trails having a substantially rigid elongate frame assembly and a series of resilient snow gathering and distributing scoops formed from sectors of pneumatic tire casings depending from the frame.

3,666,021
POWER TOOL HAVING PROPORTIONING TRANSMISSION

Hugh L. Whitehouse, Lyndhurst, Ohio, assignor to The Stanley Works, New Britain, Conn.

Filed May 13, 1970, Ser. No. 36,951
Int. Cl. B25b *23/14*
U.S. Cl. 173—12 24 Claims

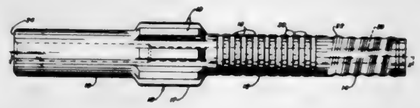


Fastener setting power tool having a proportioning transmission capable of repeatedly applying fastener setting torque within rigorous torque tolerance limits irrespective of the rate of fastener deceleration.

3,666,022
STRIKING BAR

Edward A. Bailey, RFD #2 Box 37, Newport, N.H., and James F. Ordway, 10 Floyd Ave., Lebanon, N.H.

Filed Nov. 23, 1970, Ser. No. 92,033
Int. Cl. E21c *7/00, 15/00*
U.S. Cl. 173—80 10 Claims



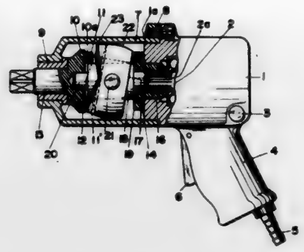
A striking bar of a type utilized in a percussive tool, such as a hammer rock drill, and more particularly a striking bar having a bearing portion thereof provided with stress distributing means such that stresses in the bearing portion of the striking bar due to bending and impact occur primarily in sections of the bearing portion other than sections thereof where heat cracking or friction welding can occur.

3,666,023
ROTATIONAL IMPACT TOOL

Yasuhisa Sakamoto, 15-1, 3 chome, Kaminakozato, Kito-ku, Tokyo, Japan

Filed July 23, 1970, Ser. No. 57,627
Claims priority, application Japan, July 30, 1969, 44/60168
Int. Cl. B25d *15/00*
U.S. Cl. 173—93.5 7 Claims

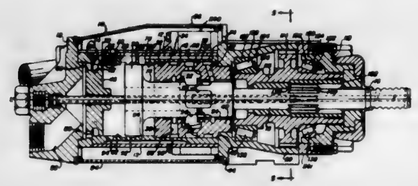
A rotational impact tool having two oppositely facing hammers on a rotatable hammer body and two oppositely facing anvils on an output shaft, a motor for rotating the hammer body selectively in either direction through a driving connection which ensures tilting of the hammer body so that the advancing hammer is held back, and a camming arrangement which tilts the hammer body against the action of the driving connection to allow the advancing hammer to hit the corresponding anvil, thus producing a rotational impact on the output shaft.



3,666,024
ROCK DRILL

Richard W. Beaumont, 3025 Wildflower Drive, Dallas, Tex.

Filed July 29, 1970, Ser. No. 59,290
Int. Cl. B25d *9/00*
U.S. Cl. 173—105 10 Claims

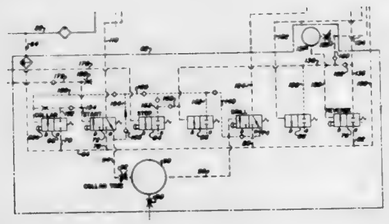


A rock drill wherein a piston is the only moving hammer part and such piston is movable without independent valve means or the like.

3,666,025
COLLARING TIMING CONTROL SYSTEM FOR ROCK DRILLS

Laurence B. Hanson, Pine, and Wallace W. Arthur, Denver, both of Colo., assignors to Gardner-Denver Company, Quincy, Ill.

Original application Mar. 20, 1969, Ser. No. 808,925, now Patent No. 3,561,542. Divided and this application Sept. 11, 1970, Ser. No. 71,405
Int. Cl. B25d *17/28*; E21c *5/10*
U.S. Cl. 173—112 5 Claims

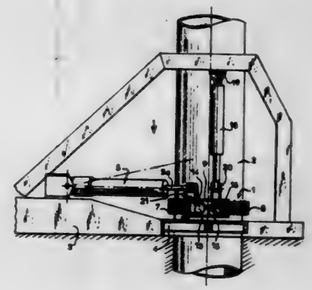


An automatic control system for a guide shell mounted rock drill including a control circuit having pneumatically operated valves for providing pressure fluid to the drill hammer, rotation motor and feed motor and for controlling drill hole flushing medium. Sensors mounted on the drill guide shell provide for reversal of the feed motor and reduced drill power upon reaching the forward end of the guide shell, and shutdown of the drill upon reaching the rearward end of the guide shell. The control circuit includes a series of control valves for selection, at will, by the drill operator of a particular operating sequence or condition of the drill. A control valve is included for providing an operating sequence which includes operation of the drill at reduced power for a predetermined period of time for collaring a drill hole. The control system also includes pressure proportioning valves for automatically regulating the feed motor pressure to be proportional to the drill percussion motor supply pressure.

3,666,026
DEVICE FOR GRIPPING AND ACTUATING A BORING TUBE, FOUNDATION PILE OR THE LIKE

Pierre Jean-Marie Theodore Allard, 178, Boulevard Francois 1er, 76, La Havre, France

Filed Aug. 21, 1970, Ser. No. 65,820
Claims priority, application France, Sept. 11, 1969, 6931009; Jan. 28, 1970, 7002958
Int. Cl. E02d *7/18*
U.S. Cl. 173—152 5 Claims



A device for tightening and actuating a boring tube, and comprising a collar constituted by a first and a second chain links or sections interconnected through the medium of linking elements, the ends of said first link being secured directly to the said linking elements while the ends of said second link are adapted to be actuated respectively by traction means solid with the said linking elements, so as to ensure a uniform and accurate tightening of the collar on the tube by exerting a tractional action on both ends of said second chain link.

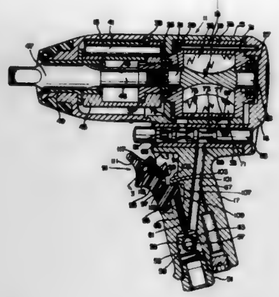
3,666,027
HANDLE AND TRIGGER CONSTRUCTION

William D. Sauerwein, Joppa; Robert A. Meloni, Baltimore, and Harvey J. Walter, Joppatown, all of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed Aug. 1, 1970, Ser. No. 65,954
Int. Cl. B23b *45/04*
U.S. Cl. 173—169 5 Claims

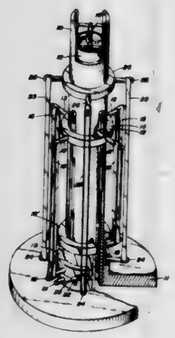
A portable tool including a housing having a rotary pneumatic motor disposed therein and coupled to a tool spindle. Compressed air is delivered to the motor by conduit means which includes passage means in a handle dependent from

the housing. A throttle valve is disposed within the handle and is controlled by a trigger pivoted upon the handle. The



trigger and handle are provided with novel adjustable stop means to limit trigger movement.

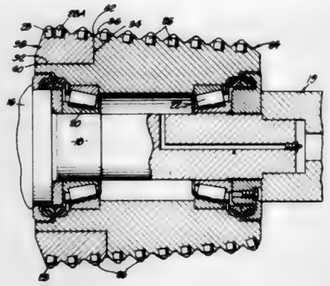
3,666,028
CORING APPARATUS FOR TAKING SAMPLES OF THE OCEAN FLOOR
Michael L. Greene, Hillcrest Heights, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Sept. 25, 1970, Ser. No. 75,519
Int. Cl. E21b *1/00*; G01n *1/08*
U.S. Cl. 175—189 **3 Claims**



An apparatus for extracting a core from the ocean floor which includes a core tube that is held in a "cocked" position, and can be driven into the ocean floor by a set of elastic bands when the restraining cord is cut. An extracting collar, also held in a "cocked" position and powered by elastic bands is used to extract the core tube, with its core, from the ocean floor when collar's restraining cord is cut.

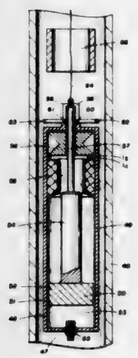
3,666,029
TUNNELING CUTTER GAGE RING REPLACEMENT
Robert L. Dixon, Whittier, Calif., assignor to Smith International, Inc., Newport Beach, Calif.
Filed Oct. 23, 1970, Ser. No. 83,508
Int. Cl. E21b *9/12*; E21c *13/01*
U.S. Cl. 175—374 **6 Claims**

A rotary cutter for tunneling machines comprising one of a series of gage cutters about the periphery of a face plate, the outer or gage end of the gage cutters being subject to rapid deterioration resulting in wearing away of the metal of the body of the cutter and displacement of the hardened metal inserts around the gage end, a gage ring about the gage end being produced by cutting inwardly beneath the gage row and possibly one or more additional rows of hardened inserts, and then cutting down from a valley between rows of



hardened inserts to the first described separation to provide a removable and replaceable gage ring portion on the cutter containing peripheral rows of hardened metal inserts in the same manner as the damaged gage ring portion being replaced.

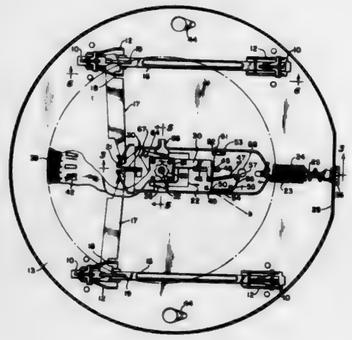
3,666,030
ELECTRICAL ENERGY SUPPLY FOR WELL TOOLS
Floyd O. Bohn, and Russell A. McLaughlin, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed Feb. 21, 1971, Ser. No. 114,924
Int. Cl. E21b *43/11, 29/02*
U.S. Cl. 175—4.56 **10 Claims**



A device for providing an electrical current to a downhole well tools without the requirement of a conductor from the earth's surface. Energy that will subsequently be converted to electrical energy is stored in the well tool. When the electrical current is required, the stored energy is released to drive a permanent magnet through a coil and generate an electric current.

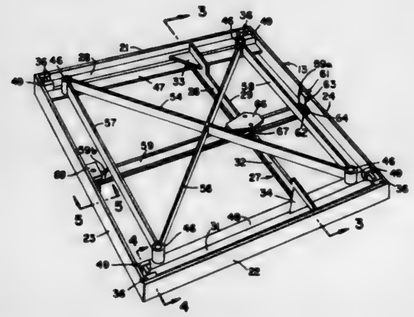
3,666,031
DAMAGE RESISTANT BATHROOM SCALE CONSTRUCTION
Mike A. Provi, and S. Robert Guinter, both of Rockford, Ill., assignors to The Brearley Company, Rockford, Ill.
Filed Apr. 10, 1970, Ser. No. 27,368
Int. Cl. G01g *23/06, 23/26*
U.S. Cl. 177—186 **13 Claims**

This scale's weight indicating mechanism is protected against destructive shear leads being imposed on the rack and pinion through the weight indicating means, first by providing a cushioning spring abutment for the rack near the return end of the slot for cushioning effect. Secondly, an elongated rotary floating stop plate is provided for the weight indicating dial, having widely spaced stop projections at the pivoted end for abutment with opposite sides of a boss on the



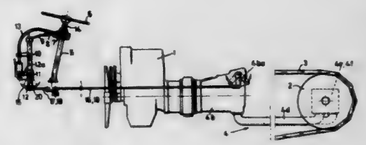
dial adapter for one portion of the greatly increased range of free rotation of the dial in either direction, a stop projection on the stop plate on its other end being arranged to engage either side of a fixed stop to provide plenty of additional free turning, and hence regardless of "flywheel" action of the dial, no damage is done to the vulnerable scale parts mentioned.

3,666,032
FLEXURE BASE SCALE
Doro Maffia, Santa Rosa, and Linus G. Schwartz, Rohnert Park, both of Calif., assignors to National Controls, Inc., Santa Rosa, Calif.
Filed July 13, 1970, Ser. No. 54,473
Int. Cl. G01g *21/08*
U.S. Cl. 177—256 **17 Claims**



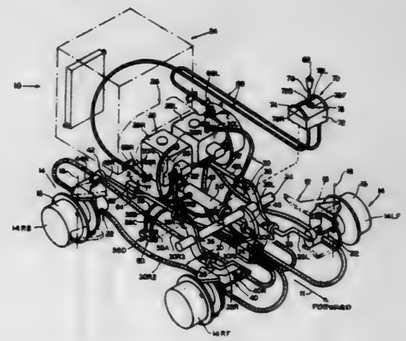
Scale in which force applied to a platform is transmitted to a transfer lever arm through flexure plates. In one embodiment, the transfer arm is connected to a load cell which produces an electrical signal which actuates digital means to provide a digital indication of the weight of an object on the platform. In other embodiments the transfer arm bears against a hydraulic load cell which is connected to a pressure gauge or digital display means for indicating the weight of an object of the platform.

3,666,033
STEERING MECHANISM FOR TRACKED VEHICLES, ESPECIALLY SNOW MOBILES
Walter Haug, Blaustein, Germany, assignor to Karl Kassbohrer Fahrzeugwerke, Ulm (Donau), Germany
Filed June 1, 1970, Ser. No. 42,141
Claims priority, application Germany, June 3, 1969, P 19 28 332.0
Int. Cl. B62d *11/04*
U.S. Cl. 180—6.48 **4 Claims**



Steering mechanism for a vehicle having independently driven wheels, especially a tracked vehicle. Assuming the wheels or tracks on opposite sides of the vehicle to be independently driven by the speed controllable motors, such as hydraulic motors, one respective end of suitable push-pull rods are connected to the controls of such motors for operation of same in forward, reverse directions and for placement in neutral position. A steering wheel is connected by linkage to a rotatable substantially vertically, positioned shaft and a crank is mounted by its apex pivotally to one end of said shaft, the axis of such pivoting being substantially perpendicular to the axis of rotation of said shaft. When in one selected pivotal position, a first arm of said crank is substantially coaxial with the axis of said shaft and the free end of said arm is connected to said rods. The free end of the other arm of said crank is connected to a manual control by which the crank can be moved on its pivot. Thus rotation of said shaft by the steering wheel when said first arm is coaxial with the shaft effects no movement of said push-pull rods and same remain in neutral position. Movement of said crank on said pivot will move said rods to control the motors to forward, reversing, or neutral positions. Rotation of said shaft when said crank is in a position for forward or reversing operation will alter the respective degree of positioning of the respective motors to effect the desired steering function.

3,666,034
HYDROSTATIC VEHICLE—FOUR-WHEEL DRIVE, FOUR-WHEEL STEERING
Howard E. Stuller, and Jerry D. Baker, both of Lubbock, Tex., assignors to Clark Equipment Company
Filed Oct. 24, 1969, Ser. No. 869,211
Int. Cl. B62d *11/04*
U.S. Cl. 180—6.48 **14 Claims**



A vehicle having an independent drive motor for each wheel, the wheels being positionable to either a straight fore-

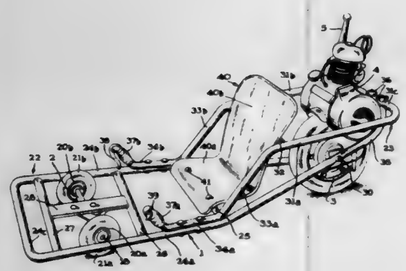
and-aft position or angular position; in a straight position, turning is done by differential in the speed between the outer and the inner wheels; when the wheels are in angular position, the wheels can spin-turn in either direction about an internal vertical axis.

3,666,035

SPORTS VEHICLE STEERED BY INCLINATION OF DRIVER'S BODY

Jean Paul Antoine Dudouyt, Route d'Olx, Labenne (Landes), France

Filed Oct. 27, 1969, Ser. No. 869,459
Claims priority, application France, Oct. 25, 1968, 171531
Int. Cl. B62d *15/00, 61/00*; B62k *15/00*
U.S. Cl. 180—25 A **9 Claims**



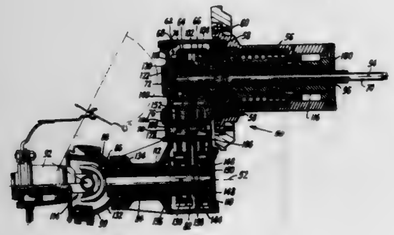
The invention relates to a three-wheeled power-driven vehicle wherein a motor driven frictional driving member is brought into engagement with a ground engaged traction wheel with steering of the vehicle being accomplished by the driver thereof leaning laterally toward one side or the other of the vehicle.

3,666,036

TRAILING ROAD ARM SYSTEM

Joseph Ernest Scerbo, 710 Pinehurst Rd., York, Pa.

Filed May 18, 1970, Ser. No. 38,343
Int. Cl. B60k *17/30*; B62d *61/10*
U.S. Cl. 180—43 R **5 Claims**



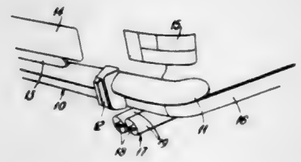
In a vehicle a road arm mounted adjacent one end thereof for pivotal movement, means for mounting a wheel adjacent the other end of said road arm, means for steering said wheel about a generally vertical axis, and means for maintaining said axis in a constant attitude as the road arm is pivoted.

3,666,037

MOTOR VEHICLE EXHAUST PIPES

Herbert Otto, Russelsheim, and Helmut Schonberger, Ginsheim, both of Germany, assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 24, 1970, Ser. No. 75,047
Claims priority, application Germany, Sept. 27, 1969, P 19 48 939.5
Int. Cl. B60k *13/04*
U.S. Cl. 180—64 A **2 Claims**



A motor vehicle exhaust pipe has an end piece which is formed as a nozzle and directed downwards and is also provided with an upwardly directed bend. The upper vertex of the bend is arranged above the central axis of the exhaust pipe and the lower vertex is arranged in the region of the central axis.

The cross section of the end piece is constricted in nozzle-like fashion up to the termination of the bend and is constant up to the exit aperture.

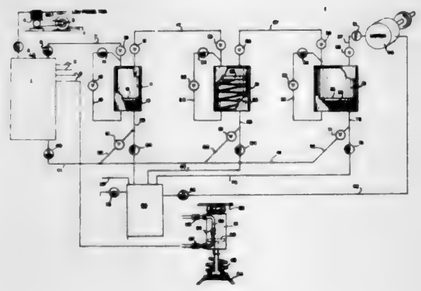
This arrangement provides a rapid lead-away of the waste gases from the vicinity of the vehicle and thereby prevents soiling of the rear windows.

3,666,038

AIR PULSING SYSTEM

Steve A. Hudspeth, and John B. Lunsford, both of Springfield, Oreg., assignors to FMA, Inc., Eugene, Oreg.

Filed Oct. 8, 1970, Ser. No. 79,124
Int. Cl. B60k *3/00, 27/00*
U.S. Cl. 180—66 B **7 Claims**



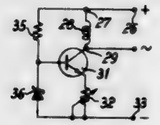
A system utilizing a pressure storage vessel for initially charging a first air cylinder of a series of air cylinders. Valve means admits a flow of pressurized air, in a sequential manner, into the cylinders for piston movement downwardly to compress spring members to a loaded condition. Additional valve means, closed during downward piston movement, are subsequently actuated to permit discharge of an air impulse, by the action of said spring combined with a second source of air pressure acting on the underside of the piston. The last cylinder of the series is operable to impart a force to a media for the operation of a motor for powering a vehicle.

3,666,039

ARRANGEMENT FOR DETECTING SLIDING AND SLIPPAGE OF VEHICLE WHEELS

Karl Bachle, Esslingen-Hegensberg, and Jurgen Knorr, Neckarsulm, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed July 6, 1970, Ser. No. 52,192
Claims priority, application Germany, July 12, 1969, P 19 35 518.1
Int. Cl. B60t *8/08*; B60k *27/06*
U.S. Cl. 180—105 E **19 Claims**



A generator wheel turning with the vehicle wheel forms a magnetic circuit with a core and coil, the air gap between the core and generator wheel varying constantly during rotation of the latter so as to produce an alternating voltage in the coil, which is fed a direct current from a constant current source.

3,666,040

CEILING MOUNTING RING FOR SPEAKER CONES

Heinrich J. Junk, Maplewood, Mo., assignor to Chamois Electronic Manufacturing Company, Inc., Chamois, Mo.

Filed July 6, 1970, Ser. No. 52,592
Int. Cl. G10k *13/00*; H04r *1/28*
U.S. Cl. 181—31 R **7 Claims**



A ceiling ring for mounting speakers in a ceiling. The ceiling ring is especially adapted for mounting a speaker from the bottom side of the ceiling after the ceiling has been constructed. The ceiling ring comprises a plaster ring inserted through the top of a hole in the ceiling and a closing plate which nests from below the ceiling within the plaster ring after the ceiling has been finished. The closing plate has an inwardly extending flange defining a central opening and opposite cutout portions which receive the speaker which is provided with a circular grill extending beyond the bottom edges of the speaker and which has a pair of flat sides which fit through the cutout opening in the rim-like flange of the closing plate when the speaker is turned perpendicularly on its side. The speaker, after it has been inserted, is righted and rests upon the flange by gravity. The closing plate can be clamped to the plaster ring by a workman who has availability through the central opening of the plaster ring to fasten connecting bolts extending from the plaster ring through slots in the closing plate.

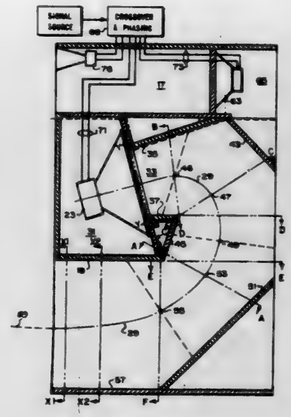
3,666,041

SPEAKER ENCLOSURE

Alan A. Engelhardt, 2656 Newhall St., Apt. #31, Santa Clara, Calif.

Filed July 13, 1970, Ser. No. 54,203
Int. Cl. G10k *13/00*; H04r *1/28*
U.S. Cl. 181—31 B **4 Claims**

An improved speaker enclosure provides a close approximation to a true exponentially expanded horn for a bass-responsive speaker in a relatively small-volume cabinet that is disposed at the corner of a room. The cabinet also includes a separate section for a mid-range responsive speaker which



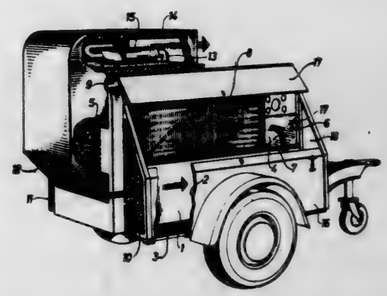
can be properly phased with respect to the acoustic waves at the output of the bass-responsive section.

3,666,042

METHOD FOR ELIMINATING NOISE FROM A MOTOR POWER UNIT AND DEVICE FOR THE PURPOSE

Jerzy Henryk Cederbaum, Sorterargatan 14-16, Vallingby, Sweden

Filed May 7, 1971, Ser. No. 141,281
Claims priority, application Sweden, Feb. 22, 1971, 1295
Int. Cl. F04b *39/12*; F01n *1/00*
U.S. Cl. 181—33 K **2 Claims**



Noise eliminating device for a motor power unit having a chassis with a rectangular frame and a casing with an end wall at one end of the frame, a ceiling over the motor power unit compartment and a cooler grill at the other end of the frame and, a bit outside the sides of the frame, side walls of height roughly corresponding to half the height of the unit and with movable side walls intended to enclose the unit laterally by connection to the upper edge of the fixed side walls as also to the corresponding edge of the ceiling, and finally end wall sections connecting to the cooler grill and to the opposing end wall of the casing and enclosing side compartment on both sides of the unit, which also has an exhaust pipe passing up through the ceiling, the device comprising a plate under the chassis frame, two detachable side walls separating the side compartments from the power unit compartment over a major part of the unit, perforated plates in the end wall sections connected to the cooler grill, allowing the entry of air to the side compartments, an impeller which forces the cooling air out through the cooler grill, a cover

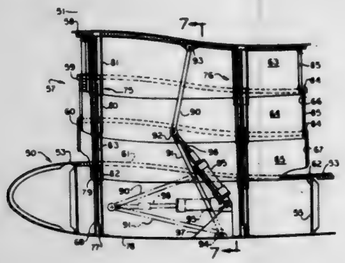
which is L-shaped viewed from the side, providing an outer screen for the cooler grill, and inside the upper part of the cover a silencer for the exhaust pipe.

3,666,043

AIR DIVIDER RING STRUCTURE FOR JET ENGINE INLET AIR DUCT

Rodney Eschenburg, San Diego, Calif., assignor to Rohr Corporation

Filed Nov. 12, 1970, Ser. No. 88,542
Int. Cl. G10k 11/04
U.S. Cl. 181—33 HA 4 Claims



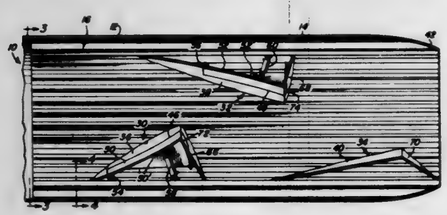
One or more inlet air dividing, sound absorptive rings are supported co-axially within the inlet duct of a jet engine nacelle on a plurality of radially inwardly extending, streamlined struts. In one form of the invention, these struts are telescopically extensible and retractable to move the rings from deployed position concentrically in the air duct to stowed condition within the cowl defining the air duct. In the other forms of the invention each sound absorptive ring comprises a plurality of arcuate acoustical honeycomb panel sections releasably connected at their lateral edges by piano hinge type connectors to narrow longerons supported by said struts, the panel sections and the longerons comprising complementary segments of each sound absorptive ring.

3,666,044

JET ENGINE SOUND SUPPRESSOR

Claud R. Killian, R.F.D. No. 2, Hayesville, N.C.

Filed Apr. 13, 1971, Ser. No. 133,663
Int. Cl. B64d 33/06; F01n 1/08, 1/16
U.S. Cl. 181—33 E 9 Claims



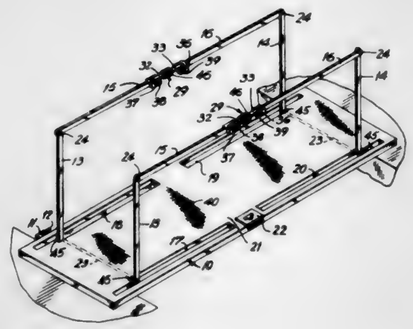
An elongated tubular jet engine nozzle including inner wall surfaces, sound wave trap means extending along and spaced about said inner wall surfaces operative to effectively trap and absorb a majority of sound waves incident thereon along paths inclined 15° or more relative to the center line of the nozzle. The nozzle includes rigid sound wave reflecting surfaces spaced along and about the inner wall surfaces of the nozzle inclined at least 10° relative to the longitudinal center line of the nozzle and the reflecting surfaces are operative to reflect sound waves moving generally axially of the nozzle and incident thereon toward the remote inner wall surfaces and the associated sound wave trap means thereon along paths inclined more than 15° relative to the center line of the nozzle.

3,666,045

EMERGENCY GANGWAY FOR RAILROAD CARS

Martin F. Olsen, 3192 Cambridge Ave., Bronx, N.Y.

Filed Mar. 15, 1971, Ser. No. 124,086
Int. Cl. E01d 15/12, 19/10
U.S. Cl. 182—20 5 Claims



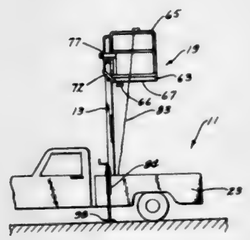
An emergency gangway particularly adaptable for railroad cars, wherein a compartment door within the railroad car includes detachable hinges so that the door can be removed and used as an emergency gangway exit by raising folded railings which are recessed within the door panel. The gangway is erected between adjacent railroad cars, or between a railroad car and a catwalk, so that passengers may easily exit from the railroad car during breakdown conditions.

3,666,046

PORTABLE SCAFFOLD

Clarence A. Meinecke, Jr., 306 South Pinet, Jefferson, Iowa

Filed Jan. 19, 1971, Ser. No. 107,764
Int. Cl. E04g 1/22
U.S. Cl. 182—145 8 Claims



Described herein is a portable, vertically adjustable, scaffold. This scaffold comprises a base, a telescoping mast hingeably attached thereto and a platform. The telescoping mast is raised by a hydraulic hoist and the mast is rotated about its lower end with a hydraulic hoist. As the telescoping mast is raised, a cable secured to the mast raises the platform assembly along the mast. Outriggers are provided to add stability to the scaffold.

3,666,047

SAWHORSE SUPPORT OR BRACE

John E. Adnerson, 2427 Kessler Blvd., Lincoln, Nebr.

Filed Apr. 29, 1971, Ser. No. 138,502
Int. Cl. E04g 1/32; F16m 11/00
U.S. Cl. 182—185 10 Claims



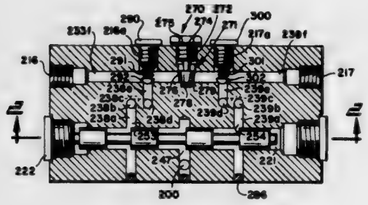
A sawhorse support or brace comprises a unitary metal body with a bottom and upstanding side members inclined inwardly therefrom to form a support for a cross member. Tubular legs are insertable through openings in the bottom member and are engaged at their upper ends by metal tangs or the like. Flexure of the legs under load causes the side member to grasp the cross member more tightly. The legs extend partially through and along slots formed in the side members. Springs releasably embrace the legs and urge them into the slots.

3,666,048

CROSS PORTING STRUCTURE

Ernest J. Zajaczkowski, Maple Heights, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 30, 1970, Ser. No. 85,522
Int. Cl. F16n 25/02
U.S. Cl. 184—7 E 4 Claims



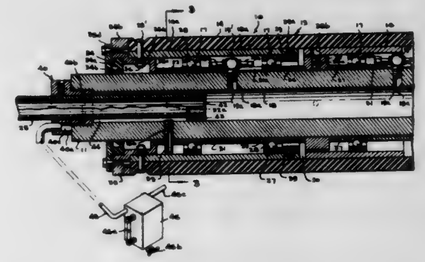
A cross porting structure for lubricant feeders. The structure includes a continuous straight outlet passageway having an outlet opening at opposite ends of said feeder and a pair of supply passageways alternately supplying lubricant to the outlet passageways, each supply passageway including an axial extension thereof acting as an alternate outlet opening and having a spring biased check valve located therein. Interposed between the intersection of the two supply passageways and the outlet passageway is a plug type valve which in one position serves to connect a supply passageway with one set of outlet openings and in a second position serves to connect each of the supply passageways with both sets of outlet openings.

3,666,049

EXPANDER ROLL ASSEMBLY WITH OIL-MIST LUBRICATION

Thomas W. Kern; George L. Barringer; William Ross Wands; Charles W. Leonard, and Gerald W. Goodman, all of Salisbury, N.C., assignors to Kern Roll and Rubber Company, Salisbury, N.C.

Filed Oct. 12, 1970, Ser. No. 79,914
Int. Cl. F16n 7/26
U.S. Cl. 184—6.26 11 Claims



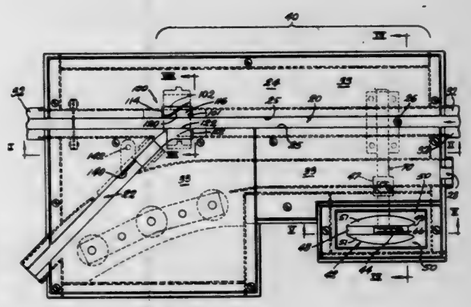
An expander roll assembly, wherein the shaft has a lubricating conduit extending along substantially its axial length, an oil-mist lubricant supply is coupled to an end of the lubricating conduit, and spray nozzle fittings are provided laterally adjacent each ball bearing unit between the outer surface portion of the roll and the shaft to spray oil-mist lubricant against a portion of each ball bearing assembly. An end seal assembly is provided to protect against entry of dust and similar foreign matter at the ends of the roll, and structure is provided for withdrawal of any surplus oil-mist lubricant to an external collecting facility.

3,666,050

TOW LINE SWITCH

Robert Krammer, Framington, Mich., assignor to Rapistan Incorporated, Grand Rapids, Mich.

Filed Mar. 16, 1970, Ser. No. 19,993
Int. Cl. B61l 13/02; E01b 7/14
U.S. Cl. 104—130 18 Claims



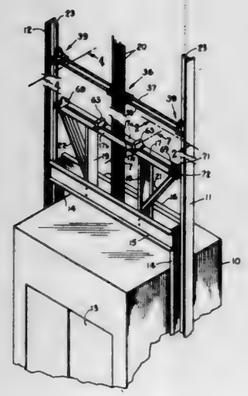
A switch for an in-floor towing system, the switch utilizing a sensor and a responder or switchplate, and a mechanical linkage interconnecting the sensor with the responder. The linkage includes a motion translating mechanism whereby rotational motion in one plane is converted into rotational

motion in a plane at right angles thereto. The responder is mounted for rotation in the latter plane, and has a slot with walls such that in one position it provides a wall inclined crosswise to the main track and in another position provides a straight wall in one side of the main track closing off the spur track.

3,666,051
CABLE STABILIZER FOR OPEN SHAFT CABLE OPERATED ELEVATORS

Edwin J. Davis, Merritt Island, and Bill A. Tolson, Titusville, both of Fla., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Aug. 6, 1970, Ser. No. 61,535
Int. Cl. B66b 9/00
U.S. Cl. 187—1 **1 Claim**

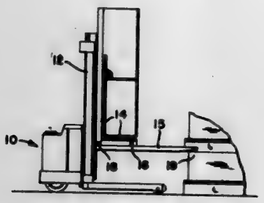


An apparatus for stabilizing the cables used to raise and lower an elevator compartment. A guide member through which the cables of the elevator pass is provided for aiding in preventing the cables from swaying in the wind. A pair of stops are carried on the guide rails so as to prevent the guide member from dropping below an intermediate location. When the elevator compartment is raised above the intermediate location such, in turn, causes the guide member to be raised therewith.

3,666,052
LIFT TRUCK SAFETY CONTROL

Richard N. Anderson, and James W. Uetrecht, both of New Bremen, Ohio, assignors to Crown Controls Corporation, New Bremen, Ohio

Filed June 29, 1970, Ser. No. 50,866
Int. Cl. B66b 5/02, 9/20
U.S. Cl. 187—9 **6 Claims**

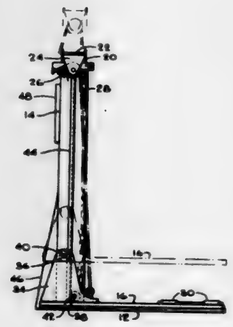


An industrial lift truck with a power operated lift carriage has pivoted forks in a normal horizontal position to carry a load. Switches or valves in the carriage power control sense the position of the forks and prevent carriage movement when the forks are tilted from the normal position.

3,666,053
VEHICLE LIFT

Robert M. Tormey, Dayton, Ohio, and John G. Petry, San Jose, Calif., assignors to J. D. Cochin Manufacturing Company, San Francisco, Calif.

Continuation-in-part of application Ser. No. 648,911, June 26, 1967, now abandoned. This application Jan. 6, 1970, Ser. No. 993
Int. Cl. B66f 7/02
U.S. Cl. 187—8.50 **3 Claims**

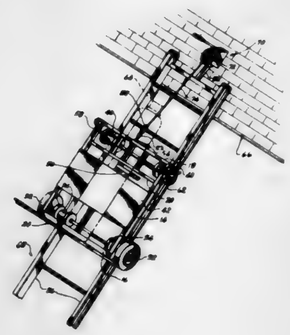


A vehicle lift employing a fluid actuated, vertically mounted power device having a shiftable portion connected by a mount to a vehicle lift plate which extends laterally from the power device. The mount has roller means for engaging the outer surface of the power device to equalize the load of a vehicle on the lift plate. The lift plate has support arms for engaging the underside of a vehicle after the latter has been moved onto the lift plate and before the lift plate is elevated by actuation of said power device.

3,666,054
LADDER DOLLY AND WINCH

Frank L. Ellings, San Dimas, and Thomas E. Milliron, Valinda, both of Calif.

Filed Feb. 24, 1970, Ser. No. 13,293
Int. Cl. B66b 9/20
U.S. Cl. 187—10 **7 Claims**

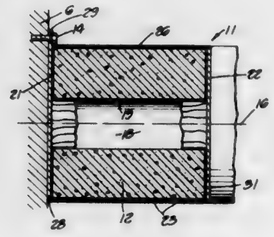


A hand truck mounted on wheels has a load carrying framework and an extendable handle for steering the hand truck to the base of a ladder. The rear side of the hand truck framework has flanged rubber rollers arranged for engagement with the rails of the ladder. A winch mounted at the top of the ladder drives a steel cable which is releasably coupled to the hand truck framework. During operation of the winch, the rollers provide guided upward movement for the hand truck and the load along the rails of the ladder.

3,666,055
ENERGY ABSORBING DEVICE

Grant W. Walker; Duane B. Ford, and Lester N. Meinzer, all of Sacramento, Calif., assignors to Dynamics Research and Manufacturing, Inc.

Filed May 25, 1970, Ser. No. 40,220
Int. Cl. F16f 7/12; B60t 1/14
U.S. Cl. 188—1 C **11 Claims**

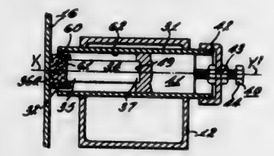


An energy absorbing device includes a block adapted to be mounted on a support in position to receive an impact. The block is preferably a figure of revolution about an axis disposed approximately in the direction of impact. The block is conveniently made out of vermiculite with a cement binder and usually has a hole along the axis. A wire is wrapped coaxially around the block and has turns spaced slightly apart. An impact plate extends normally across one end of the block. The block is enclosed in a deformable wrapper.

3,666,056
VIBRATION DAMPER FOR VIBRATING SCREENS

Mathew P. Hahn, Wauwatosa, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Aug. 28, 1970, Ser. No. 67,830
Int. Cl. F16f 7/08
U.S. Cl. 188—1 B **11 Claims**

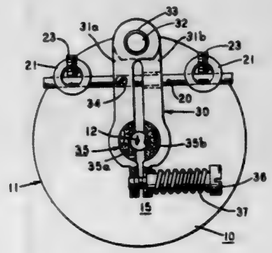


A vibration damper for a vibrating screen is provided with tubular housing and a flexible cylinder arranged within the tubular housing, with the flexible cylinder projecting outwardly of one end of the housing. The flexible cylinder provides a friction surface perpendicular to a central axis through the cylinder. The end of the cylinder opposite the friction surface, is spaced inwardly from the adjacent end of the housing. A ram assembly is connected to the second end of the housing. The ram assembly includes a rigid member arranged within the housing to engage the adjacent end of the flexible cylinder and cap mounted over the second end opening of the housing. The cap is provided with a central axial bore, at least partly threaded, into which is fitted a threaded actuating bolt which extends therethrough and engages the rigid member. The bolt is operative upon turning to move the rigid member toward the flexible cylinder and apply an adjustable force biasing the flexible cylinder to move the friction surface outwardly of the first end opening of the tubular housing for vibration dampening engagement with a vibrating screen. The end of the tubular housing surrounding the friction surface end of the flexible cylinder is spaced radially outward of the flexible cylinder and limits flexing of the flexible cylinder transversely to the central axis through the tubular housing.

3,666,057
FLOATING DAMPER ASSEMBLY

Noel Arthur Leifer, Pine Brook, and Eugene Charles Schramm, Mountain Lakes, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 28, 1970, Ser. No. 101,476
Int. Cl. F16f 7/06
U.S. Cl. 188—1 B **5 Claims**



A floating damper assembly for applying a constant damping torque to a motor shaft exhibiting substantial runout comprises a flexible cable element, which is anchored at its ends to the motor housing, and a floating damper, which is attached to the cable element substantially at the element's center, further including an appropriately shaped bushing of frictional material and means for radially loading the bushing against the shaft. The floating damper assembly is particularly useful in an incremental stepping motor whose step profile must remain relatively constant and free of excessive ringing or overshoot.

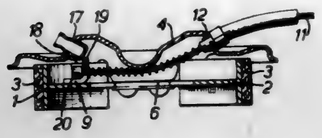
3,666,058
INTERNAL SHOE DRUM BRAKES

Kenneth Maurice Quiney, Warwickshire, England, assignor to Girling Limited, Birmingham, England

Filed Feb. 24, 1970, Ser. No. 13,596
Claims priority, application Great Britain, Mar. 1, 1969, 11,032/69; Oct. 18, 1969, 51,267/69
Int. Cl. F16d 65/22, 65/42
U.S. Cl. 188—106 A **19 Claims**

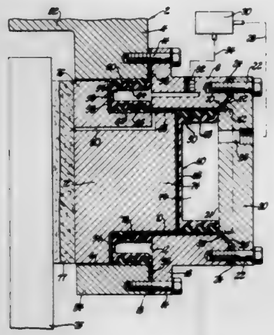
In a shoe drum brake a mechanical actuator for separating adjacent shoe ends includes a lever pivotally connected to a shoe and adapted to act on the other shoe through a strut which is chordal with respect to the axis of the brake. In the off position of brake the lever is held in a first retracted position spaced from a fully retracted position by a back stop.

The back stop is adapted to be manipulated externally of the brake to permit the lever to move into the fully retracted



position under the influence of pull-off springs whereby the braking clearances are increased.

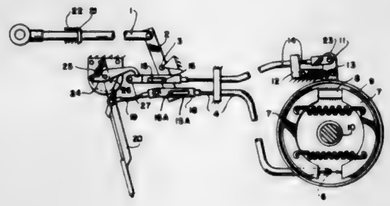
3,666,059
FAIL-SAFE HYDRUALIC BRAKE APPARATUS
Tom H. Thompson, 2800 North Atlantic Drive, Towers Apt. 910, Daytona Beach, Fla.
Filed Oct. 22, 1970, Ser. No. 83,083
Int. Cl. F16d *65/20*
U.S. Cl. 188—106 R **19 Claims**



Hydraulic brake apparatus comprising a housing having a pair of flexible resilient actuators mounted therein each forming a separate closed chamber with the housing. Each of the closed chambers is independently connected with a source of brake fluid. When the brakes are applied to increase the pressure from the source to the actuators, the actuators both expand to apply braking pressure. Since the actuators are independently connected with the source of brake fluid, the failure of one actuator does not result in failure of the system.

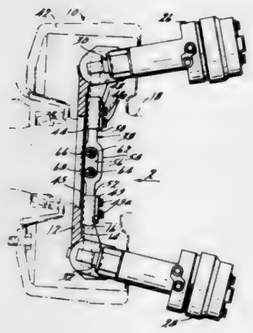
3,666,060
SERVICE AND PARKING BRAKE ARRANGEMENT FOR TRAILER VEHICLES
Hans O. Schroter, 8 Munchen 22, Robert-Koch-Strasse 18, Munchen, Germany
Filed Nov. 25, 1970, Ser. No. 92,652
Claims priority, application Germany, Nov. 27, 1969, P 19 59 633.9
Int. Cl. B60t *7/20*
U.S. Cl. 188—112 **6 Claims**

A wheel brake mechanism on a trailer has a brake shoe support mounted for limited tangential movement with respect to the wheel axle but restrained against movement during forward movement of the trailer vehicle by an abutment mounted on the frame of the vehicle. An auxiliary rod linkage interconnects the brake shoe support to the service rod linkage which is operated during ordinary or service braking applications to apply an actuating force to the brake shoes of the trailer wheel brake mechanism. During rearward movement of the trailer vehicle the brake shoe support may



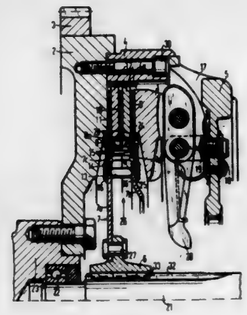
move sufficiently to cause the auxiliary rod linkage to exert a counteracting force on the service rod linkage. A parking brake comprising a pivotally mounted operating lever has a locking lever thereon which locks the auxiliary rod linkage against movement when the operating lever is moved in the braking direction but which is unlocked from the auxiliary rod linkage when the operating lever is in the release position.

3,666,061
VEHICLE BRAKE ASSEMBLY
Charles W. Nehr, Bloomfield, Mich., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed July 13, 1970, Ser. No. 54,173
Int. Cl. F16d *65/08*
U.S. Cl. 188—206 R **9 Claims**



A brake assembly adapted to be mounted on a motor vehicle axle member and constructed to permit removal of the assembly brake shoes for relining without removal of the brake drum or other structure located outboard of the assembly. The assembly includes a spider abutting the outboard surface of and secured to a radial flange formed on the axle. The spider carries brake shoes located inboard of the spider-axle flange interface that are held in place by brake shoe return springs attached to the shoes and the inboard face of the spider at a point easily accessible from inboard of the assembly. Lateral brake shoe movement along the axle axis is prevented by brake shoe retaining members normally located outboard and inboard of the brake shoes. The inboard of these retaining members are removable to permit the brake shoes to be removed from the assembly by inboard movement thereof.

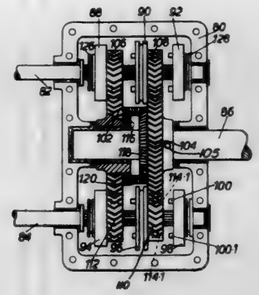
3,666,062
MULTIPLE-DISC FRICTION CLUTCH
Hans Walter Riese, Dittelbrunn, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany
Filed Oct. 27, 1970, Ser. No. 84,396
Claims priority, application Germany, Nov. 27, 1969, P 19 59 520.1
Int. Cl. F16d *13/56*
U.S. Cl. 192—70.28 **5 Claims**



The two terminal driven discs of a stack of driven and driving discs which directly engage the flywheel and the pressure plate in an otherwise largely conventional, multiple-disc, automotive friction clutch are held in forks distributed over the circumference of a hub assembly and each consisting of a rigid abutment and a leaf spring axially biasing the disc away from the other terminal disc and toward the abutment. This arrangement holds the terminal discs in well-defined axial positions in all clutch conditions and reduces the axial movement of the hub assembly during clutch engagement and disengagement, particularly when the springs exert greater biasing force on the terminal driven disc near the flywheel.

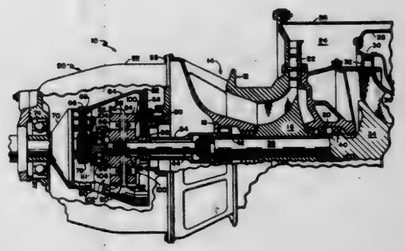
3,666,063
POWER UNITS AND PARTS THEREOF
Musgrave Schoeman, Pinetown, and Herbert Halliday Warmington, Durban, Natal Province, both of Republic of South Africa, assignors to Straw Engines (Proprietary) Limited, Pietermaritzburg, Province of Natal, Republic of South Africa
Filed Sept. 4, 1970, Ser. No. 69,598
Claims priority, application South Africa, Sept. 12, 1969, 69/6487
Int. Cl. F16d *21/04*; **F16h** *27/02*; **F02b** *53/00*
U.S. Cl. 192—21 **1 Claim**

The invention concerns a torque converter in which multidirectional input is converted to unidirectional output. The invention also concerns a rotary engine giving multidirectional output in combination with the converter to give unidirectional output therefrom. The converter includes two unidirectional clutches, one reversed with respect to the other, and a reversing means for enabling input in both



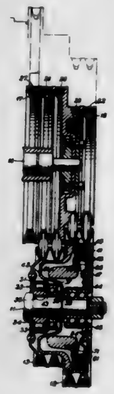
clockwise and anticlockwise directions to be converted to unidirectional output.

3,666,064
PERMANENT MAGNET SPEED RESPONSIVE CLUTCH
Waldo R. Bird, and Wayne C. Shank, both of Williamsport, Pa., assignors to Avco Corporation, Williamsport, Pa.
Filed Feb. 25, 1971, Ser. No. 118,685
Int. Cl. F16d *27/01*
U.S. Cl. 192—84 PM **10 Claims**



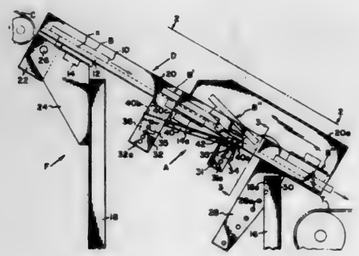
The disclosure illustrates a high speed clutch assembly incorporated in a differential gas turbine engine to prevent the turbine shaft from rotating at a speed greater than the compressor shaft speed. The clutch assembly comprises a pair of opposed clutch elements on the turbine shaft and compressor shaft, displaceable into engagement with one another. The clutch elements have magnets oriented so that as the rotational speed of the shafts become equal they are magnetically attracted into engagement. A magnetic spring biases the clutch elements away from one another so that they engage when the shaft speeds are substantially equal. In one form the magnetic spring comprises a pair of coaxial sleeve-type magnets positioned on the turbine shaft and compressor shaft to bias the clutch elements apart. In another form it comprises a bar magnet in the turbine shaft and a pair of bar magnets oriented with their longitudinal axis parallel to the axis of the shafts.

3,666,065
SPEED RESPONSIVE TRANSMISSION
Charles T. Schmidt, North Riverside, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed July 17, 1970, Ser. No. 55,772
Int. Cl. F16d 43/06
U.S. Cl. 192—103 A 4 Claims



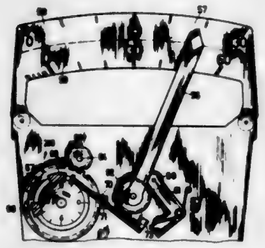
A speed responsive clutch is provided with shifting means including orbitally rotatable centrifugal flyweights and a lost motion connector. At a predetermined drive speed, the radius of rotation of the flyweights changes by means of the lost motion connector providing a change in energy level without corresponding change in drive speed. Rotation of an input member at a predetermined threshold speed of rotation results in outward movement of the flyweights without further increase in drive speed thereby increasing the energy level to provide a clutch release force. Rotation of the input member at another preselected reengagement speed of rotation results in inward movement of the flyweights without further reduction in drive speed thereby reducing the energy level to permit reengagement of the clutch. A substantial difference between the threshold and reengagement speeds can be provided for avoiding cyclic shifting of the clutch when operating near either speed.

3,666,066
STATIONARY ARTICLE TURNOVER DEVICE
William Arthur Coakes, Flint, Mich., assignor to Simplicity Engineering Company, Durand, Mich.
Filed May 28, 1970, Ser. No. 41,210
Int. Cl. B65g 11/20
U.S. Cl. 193—43 B 8 Claims



A device for overturning articles, such as brake drum castings, and the like, which travel down a vertically inclined chute, including stationarily mounted apparatus for temporarily interrupting the travel of a portion of the article while permitting the remainder of the article to swing forwardly therearound so that the momentum of the workpiece forces the article into an inverted position as it moves forwardly down the inclined chute.

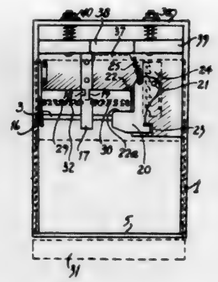
3,666,067
PARKING METER HAVING AN INCREASED RATE DURING PEAK DEMAND PERIODS
Bernhard Kaiser, Villingen, Germany, assignor to Kienzle Apparate GmbH, Villingen, Germany
Filed Jan. 20, 1971, Ser. No. 108,102
Claims priority, application Germany, Jan. 21, 1970, P 20 02 468.4
Int. Cl. G07f 17/24
U.S. Cl. 194—DIG. 22 11 Claims



In order to operate at an increased rate during peak demand hours, a parking meter has rotary cam means with lugs representing peak demand hours and controlling a cam follower to shift a transmission so that a pointer moves faster during peak demand hours than during normal demand hours from a set position representing a period of time to a position of rest representing the end of a parking period. In a second embodiment, the cam follower sets the pointer to represent during normal demand hours a longer parking period than during peak demand hours. In a third embodiment, different coins set the pointer to the same position so that a more valuable coin is required during peak demand hours for the same parking period.

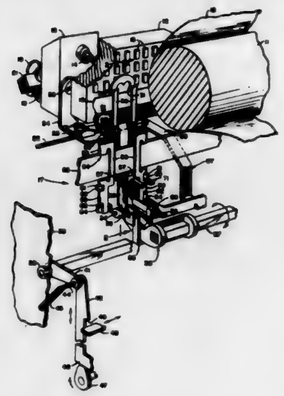
3,666,068
COIN RELEASED MECHANISM IN A VENDING MACHINE
Patrick Joseph Kenny, Bray, Ireland, assignor to Kenson Limited, Bray, Ireland
Filed June 1, 1970, Ser. No. 41,894
Claims priority, application Ireland, June 4, 1969, 761/69
Int. Cl. G07f 11/20
U.S. Cl. 194—58 20 Claims

A coin released mechanism for mounting in a vending machine cassette comprises a drawer for delivery of an article to a customer. The drawer is operated by the customer by inserting a coin or coins in a transverse slot of the drawer.



Fixed and movable coin supports are operatively associated with the drawer to support the coin(s) in the slot.

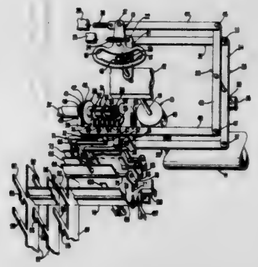
3,666,069
RIBBON POSITIONING MECHANISM FOR TELEGRAPH PRINTERS
Kiyoshi Suzuki, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed Sept. 15, 1969, Ser. No. 858,081
Int. Cl. B41j 23/02, 33/14, 33/56
U.S. Cl. 197—16 13 Claims



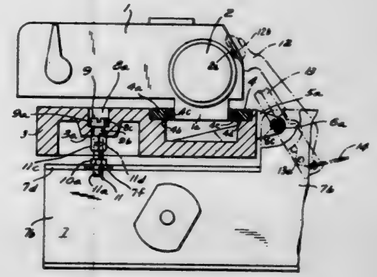
An independently mounted ribbon shift mechanism facilitates two color printing in a telegraph page printer. The mechanism includes a slidably mounted ribbon lifter for reciprocally supporting an inked ribbon to be raised to one of two selected positions to interpose the raised ribbon between a printing element and a platen traversed by the printing element. The printing element is connected through a drive bracket to the ribbon lifter to impart the traversing movement of the printing element to the ribbon lifter.

3,666,070
DIFFERENTIAL MECHANISM FOR POSITIONING A TYPE CHARACTER ON A TYPE ELEMENT
John O. Schaefer, Lexington, Ky., assignor to International Business Machine Corporation, Armonk, N.Y.
Filed June 29, 1970, Ser. No. 50,480
Int. Cl. B41j 23/04
U.S. Cl. 197—18 18 Claims

A type element, which is mounted for movement along a writing line and has a plurality of types arranged thereon, is rotated through a differential mechanism to position a selected type at the printing position. The differential mechanism includes a first gear connected to the type element through a rotatably supported shaft. A sector gear meshes with the first gear to rotate the first gear in one direction in accordance with inputs to an arm on which the sector gear is mounted. The arm is pivotally connected by a pin to a link, which is pivotally mounted about the axis of the first gear, so that movements of the link change the position of the pin, which is the axis of rotation of the sector gear and is intermediate the sector gear and the input end of the arm, to rotate the first gear in the opposite direction. The inputs to the link and the arm are supplied through separate lever arrangements, which may be actuated by a single driving means or by separate pneumatically controlled means.

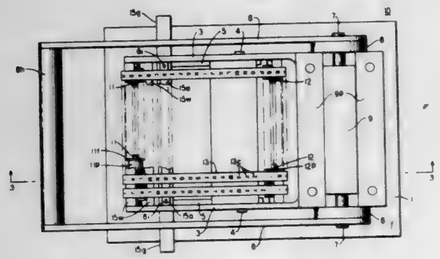


3,666,071
ADJUSTABLE PAPER CARRIAGE ASSEMBLY
Horst Purr, Wilhelmshaven, Germany, assignor to Olympia Werke AG, Wilhelmshaven, Germany
Filed Sept. 4, 1969, Ser. No. 855,133
Claims priority, application Germany, Sept. 5, 1968, P 17 86 245.2
Int. Cl. B41j 19/00
U.S. Cl. 197—60 11 Claims



A paper carriage support is mounted on the supporting frame of a typewriter for angular movement about an axis parallel to the direction of movement of the carriage and to the axis of the platen. An adjusting device, including adjusting screws and stop screws, exactly determines the desired angular position of the carriage support in relation to the supporting frame, so that the impact area of the platen can be moved in the direction of the path of movement of the types of type levers whereby the rebound distance of the types is adjusted.

3,666,072
ENDLESS BAND EMBOSSING DEVICE
Charles C. Austin, Nashua, N.H., assignor to Dennison Manufacturing Company, Farmingham, Mass.
Continuation-in-part of application Ser. No. 713,783, Mar. 18, 1968, now abandoned. This application May 6, 1970, Ser. No. 35,209
Int. Cl. B41j 1/20
U.S. Cl. 197—6.2 9 Claims

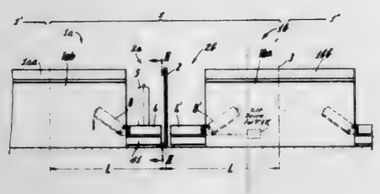


An embossing device employing a plurality of sets of interlocking embossing bands, there being one set of bands for each of a group of characters that are to be embossed simultaneously on a suitable medium such as a flexible strip or sheet of plastic material.

Each set of embossing bands has two constituent belts with respective raised and recessed complementary characters, which are juxtaposed. The two constituents belts are interlocked over a portion of their length at a plurality of character positions. Consequently, the correct registration of the belts is maintained during the selection of specified characters. This results in distinct and non-disfigured embossments of the flexible material.

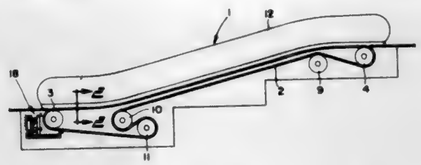
In one embodiment, the constituent bands are closed loops which are nested, one inside the other, and traverse the same orbit. In another embodiment, the constituent bands are closed loops which traverse different orbits.

3,666,073
AIRPORT CHECK-IN COUNTER WITH BAGGAGE RECEIVING AND HANDLING FACILITY
Gerhard Lings, Leimen, and Eberhard Heilermann, Morfelden, both of Germany, assignors to Mannesmann-Geisel GmbH & Co., Mannheim, Germany
Filed Feb. 19, 1971, Ser. No. 116,832
Int. Cl. B65j 47/26; B65g 69/100; E04h 3/04
U.S. Cl. 198—1 8 Claims



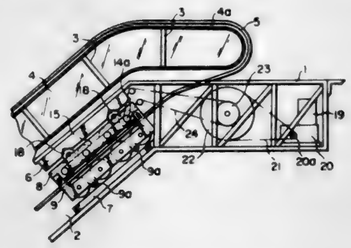
An airport check-in counter with desk and baggage receiving and placement area containing a first conveyor belt with scale; a second belt also constructed as scale is behind the first one and feeds baggage tilting and pallet loading facilities. The baggage tilting equipment has two parallely running belts tiltable on an axis between them. The pallet loading facility has two belts on carriages, moving transverse to each other.

3,666,074
SAFETY BRAKE FOR PASSENGER CONVEYOR
Ernest D. Johnson, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Apr. 3, 1970, Ser. No. 25,398
Int. Cl. B65g 15/42
U.S. Cl. 198—16 R 3 Claims



A belt-constraining channel partially encloses the lower pulley of an inclined belt-type passenger conveyor and has a supporting surface for holding a released portion of the belt and a retaining surface for containing the belt between the channel and the lower pulley. Pivotal support of the channel provides braking engagement of an upper edge of the channel with the belt when the supporting member is depressed by the weight of the released portion of the belt.

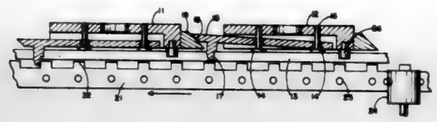
3,666,075
MOVING-HANDRAIL DEVICE IN MOVING STAIRWAYS AND THE LIKE
Tetjo Iwata, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, a/k/a Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Jan. 5, 1971, Ser. No. 104,109
Claims priority, application Japan, Jan. 12, 1970, 45/3816; Dec. 5, 1970, 45/121349; 45/121350
Int. Cl. B66b 9/12
U.S. Cl. 198—16 R 8 Claims



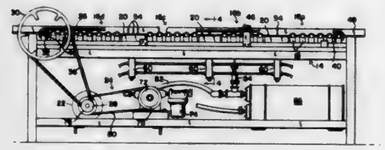
The moving handrail of endless-belt form of a moving stairway is driven at a part of its return span by a drive mechanism comprising, essentially, two floating carriages, friction-drive wheels rotatably mounted in a row on one of the carriages, idler wheels rotatably mounted in a row on the other carriage in positions confronting respective friction-drive wheels with the moving handrail interposed and clamped therebetween, and a cam mechanism reacting to increasing driving force on the handrail to cause the friction-drive wheels and idler wheels to grip the handrail with increasing force.

3,666,076
TRANSPORTING SYSTEM
Robert C. Miller, Frederic, Wis., and Glenn R. Nevins, Minneapolis, Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Dec. 18, 1970, Ser. No. 99,468
Int. Cl. B23q 5/22
U.S. Cl. 198—1 1 Claim

Transporting apparatus in which work pallets are transported by means of variable engagement with a continuous metal band which apparatus provides sequential starting and stopping of the work pallets.

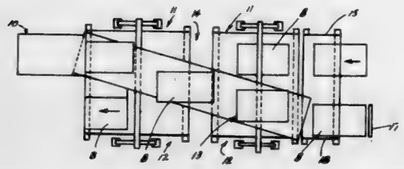


3,666,077
POWER DRIVEN CONVEYOR
Burton H. Marshall, Accord, N.Y.
Continuation-in-part of application Ser. No. 727,745, May 8, 1968, Pat. No. 3,431,805, which is a continuation of application Ser. No, 655,822, July 25, 1967, now abandoned. This application Feb. 18, 1969, Ser. No. 800,051
Int. Cl. B65g 47/22, 13/02
U.S. Cl. 198—29 12 Claims



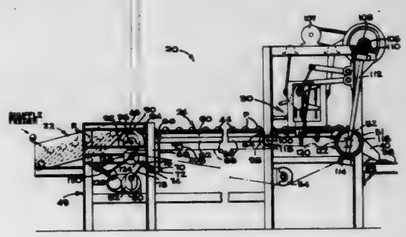
A power driven conveyor having driven skewed rollers which cooperate with a longitudinally extending guide to position articles laterally of the conveyor. The conveyor may have retractible stops for halting articles on the conveyor and/or one or more guides for turning articles moving therealong.

3,666,078
METHOD AND APPARATUS FOR INVERTING RIGID OR FLEXIBLE SHEETS
Elwin J. Biorseth, Cincinnati, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Filed Mar. 5, 1970, Ser. No. 16,865
Int. Cl. B65g 47/24; B65h 29/12
U.S. Cl. 198—33 AD 8 Claims



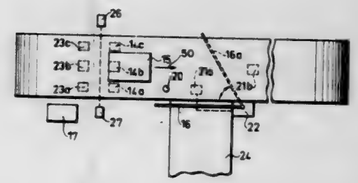
The direction of movement of blanks of rigid or flexible sheet material is reversed and the blanks are inverted by subjecting them to centrifugal force sufficient to overcome gravitational effects and maintain driving engagement between endless flexible belts and the blanks while they are driven by the belts along an arcuate path.

3,666,079
FRUIT ORIENTER
Gerald R. Anderson, Campbell, and William C. Wann, Jr., San Jose, both of Calif., assignors to FMC Corporation, San Jose, Calif.
Filed Aug. 21, 1970, Ser. No. 65,834
Int. Cl. B65g 47/24
U.S. Cl. 198—33 AA 9 Claims



A multiple lane fruit orienter having a conveyor comprising transverse carriers with fruit receiving cups. A rotary finder wheel projects into each cup from below to rotate the fruit and locate the stem cavity. In addition to being rotated the finder wheels are oscillated about a vertical axis to rotate the fruit in varying planes. After the stem cavity has been found the finder wheel is no longer rotated but rapidly oscillated with an increasing frequency and decreasing amplitude so that the major axis of the stem cavity and suture plane of the fruit become aligned with the finder wheel. An additional vibration is imparted to the cam that produces the finder wheel oscillation during the suture plane alignment.

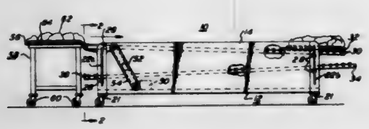
3,666,080
CONVEYOR BELT SYSTEM
Stig Allan Junior Alfredsson, Sandviken, Sweden, assignor to Sandviken Jernverks Aktiebolag, Sandviken, Sweden
Filed Nov. 14, 1969, Ser. No. 876,967
Claims priority, application Sweden, Apr. 28, 1969, 5979/69
Int. Cl. B65g 43/00
U.S. Cl. 198—38 7 Claims



A system is disclosed for controlling the discharge of articles from a steel belt conveyor. When articles are placed on the belt at the loading station, the belt is magnetized at a high intensity in a very small area which has a predetermined relationship, longitudinally of the belt, to the position of the article on the belt. The magnetized spot is also positioned transversely of the belt in accordance with the station where the article is to be discharged. At each discharge station there is an arrangement in the form of a plow and means to move the plow to and from the path of articles carried on the belt so as to deflect the articles from the belt. The plow operating mechanism has an electronic control which includes a Hall-effect transducer positioned adjacent the bottom surface of the belt and relatively positioned transversely of the belt along the path of the magnetized spots for that station. Hence, when an article is placed on the belt and the magnetized spot is produced corresponding to a particular unloading station. The article will be carried to that station and

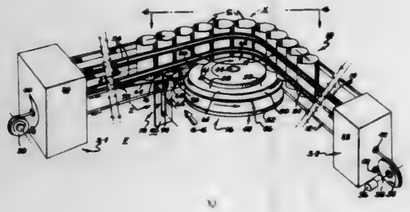
unloaded. The high intensity magnetization is produced by an electromagnet extending transversely from the bottom surface of the belt, and direct current is supplied to the electromagnet coil from a condenser circuit. The current can be caused to flow in either direction through the coil so as to produce a magnetized zone or spot of either north or south polarity. The magnetized zone or spot is surrounded by a ring of the opposite polarity but of insufficient intensity to energize the Hall-effect control unit. The number of discharge stations may be increased by producing two or more magnetized spots for various of the discharge stations.

3,666,081
LAUNDRY CONVEYOR
Stanley E. Axenfeld, 1413 June Lane, Narberth, Pa.
Filed Sept. 16, 1969, Ser. No. 858,324
Int. Cl. B65g *47/00*
U.S. Cl. 198—43 **8 Claims**



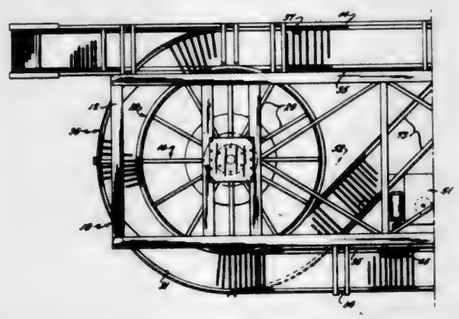
A conveyor for transferring pallets containing pieces of laundry from one location to another. The conveyor includes a frame which supports two sets of vertically spaced guide rails which extend between the ends of the frame. The upper set of guide rails extends downwardly from one end of the frame to the other end, and the lower set of guide rails extends downwardly from the other end of the frame to the one end. A set of driven conveyor belts is provided at the higher end of the upper set of guide rails. A pallet loaded with pieces of laundry is carried by the conveyor belts to the high end of the upper set of guide rails and then slides down the upper set of guide rails. The pallet is unloaded and the empty pallet is placed on the higher end of the lower set of guide rails. The pallet slides down the lower set of guide rails back to the one end of the conveyor where it can be reloaded with the pieces of laundry.

3,666,082
CONVEYOR SYSTEM FOR A CONTAINER
Milton D. Riggs, Houston, Tex., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Filed Dec. 29, 1969, Ser. No. 888,291
Int. Cl. B65g *15/00*; B61b *11/00*
U.S. Cl. 198—130 **11 Claims**



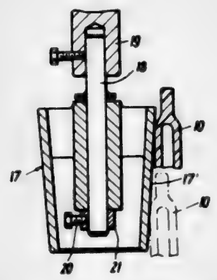
Improved conveyor system for transferring containers and in particular lightweight aluminum cans between stations in a container production plant and the like wherein novel means are provided for holding the container in firm engagement with a conveyor belt element at all times, including periods when the container's direction of travel is sharply or gradually changed during its passage between stations.

3,666,083
CARRIER AND DRIVE MEANS FOR TWO-AXES TYPE REFRIGERATING CONVEYOR
Malcolm C. Smith, Hagerstown, Md., assignor to Frick Company, Waynesboro, Pa.
Filed Feb. 13, 1970, Ser. No. 11,247
Int. Cl. B65g *17/06*
U.S. Cl. 198—136 **3 Claims**



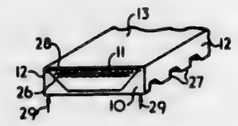
Apparatus for freezing materials and including an endless conveyor disposed about a pair of drums in such a manner that rotation of the drums drives the conveyor. An independent motor is provided for driving the conveyor at a faster rate than the drums to apply a tension between the conveyor and the drums. A mobius inversion unit is provided so that opposite sides of the conveyor will alternately engage the drums in a manner to be driven thereby.

3,666,084
GUIDE DEVICE FOR THE UPPER EDGES OF VERTICALLY POSITIONED AND HORIZONTALLY MOVED PLATES
Otto Stehl, Furth, Germany, assignor to Flachglas Aktiengesellschaft Delog-Detag, Furth/Bavaria, Germany
Filed Feb. 16, 1970, Ser. No. 11,419
Claims priority, application Germany, Feb. 19, 1969, P 19 08 109.5
Int. Cl. B65g *15/00*
U.S. Cl. 198—160 **4 Claims**



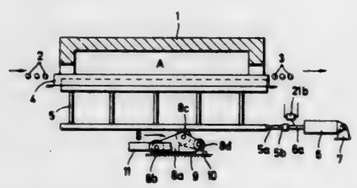
A guide device for engaging the upper horizontal edge of vertically disposed glass plates when the same are conveyed in an upright position through an annealing oven. The guide device comprises a relatively wide roller rotatable about a substantially vertical axis, either cylindrically or conically formed or provided with a spherically curved circumference and arranged in such a position that only a narrow, almost a line-like area of their circumference comes into engagement with the marginal edge portion of the plane surface of the glass plate. The guide device may also consist of one or more resiliently or pivotally mounted stationary strips covered with a friction-reducing coating along which the glass plates slide during their movement through the annealing oven.

3,666,085
MECHANICAL BELTING
Hugh L. Folkes, Saint Leonard's-on-sea, England, assignor to Dunlop Holdings Limited, London, England
Filed Jan. 19, 1970, Ser. No. 3,925
Claims priority, application Great Britain, Jan. 25, 1969, 4,334/69
Int. Cl. B65g *15/30*
U.S. Cl. 198—193 **10 Claims**



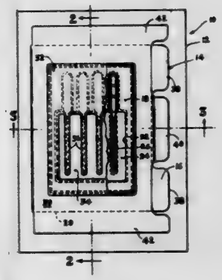
Mechanical belting having transverse rigidity provided by spaced apart transversely extending layers, one of these layers is of compression-resisting material and the other of tension-resisting material, the spaced apart layers giving a beam effect. The layer of tension-resisting material is of troughed shape in a transverse cross section. By this means, the centers of the layers are spaced further apart than their lateral edges, giving an increased resistance to troughing of the belt.

3,666,086
WALKING BEAM CONVEYOR
Heinz Brockmann, Dusseldorf-Gallberg, Germany, assignor to Brockmann & Bundt Industrie-Ofenbau, Dusseldorf, Germany
Filed July 2, 1970, Ser. No. 51,813
Claims priority, application Germany, Jan. 12, 1970, P 20 01 052.0
Int. Cl. B65g *25/04*
U.S. Cl. 198—219 **5 Claims**



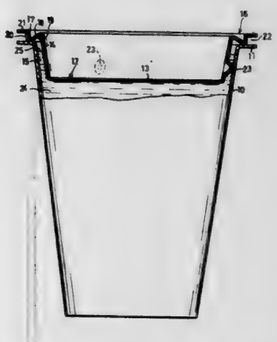
A walking beam conveyor of the kind which comprises a series of stationary beams and a series of walking beams which have a driving mechanism by which they are moved upwards relative to the stationary beams to lift workpieces therefrom, then longitudinally to convey the workpieces along the stationary beams and subsequently downwards again to replace the workpieces on the stationary beams is provided with a mechanism for raising and lowering the walking beams in such a way as to minimize the impact of the working beams on the workpieces as they raise the workpieces from the stationary beams. This mechanism includes a number of hydraulic fluid pressure operated cylinders which are connected to the walking beams and operate successively. A number of the cylinders move the walking beams upwards until they come into contact with the workpieces and are then stalled. One or more further cylinders are then brought into operation in sequence until there are sufficient cylinders to increase the force acting on the walking beams until the walking beams are able to lift the workpieces from the stationary beams after which the walking beams are moved longitudinally by a further hydraulic fluid pressure operated cylinder and the beams are then lowered again.

3,666,087
REUSABLE PACKAGE
Joseph Cooper, Westport, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.
Filed Aug. 24, 1970, Ser. No. 66,241
Int. Cl. B65d *25/54*, *73/00*, *43/16*
U.S. Cl. 206—45.34 **1 Claim**



A package comprises a folded-over plastic sheet adhesively secured to a panel. The folded-over sheet comprises an article-carrying member and cover member which are hinged together and interfit in snap fastener fashion. Extensions on the cover may also be adhesively secured to the panel.

3,666,088
LIQUID CONTAINERS
Uno Wingardh, Morarp, Sweden, assignor to Sprinter Pack AB, Laholmsvagen, Halmstad, Sweden
Filed May 25, 1970, Ser. No. 40,325
Claims priority, application Sweden, June 18, 1969, 8687/69
Int. Cl. B65d *85/72*, *39/04*, *43/08*
U.S. Cl. 206—46 L **3 Claims**

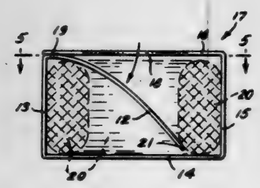


A liquid container comprising a cup, the contents of which have a more or less low viscous consistency, which is closed by a lid. Radially inwardly of the pouring edge of the cup the lid has a recess which comprises a bottom and an annular side wall, said side wall being spaced from the inside surface of the cup so as to present around a portion of its circumference a slot-like interspace between the inside surface of the cup and the annular side wall. The volume of liquid contained in the cup is such that the liquid, when the cup stands vertical, fills the whole of the cup below the bottom of the recess and fills at least a portion of the slot-like interspace.

3,666,089
SLEEVE WRAPPER CONSTRUCTION

Joseph G. Souza, East Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.

Filed Sept. 21, 1970, Ser. No. 73,957
Int. Cl. B65d 85/04
U.S. Cl. 206—52 W 6 Claims

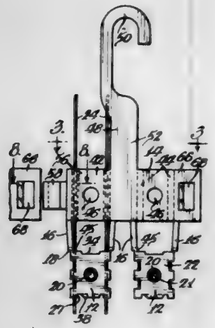


The device comprises a sleeve wrapper for a coiled product such as a coil of electrical wire or cable. Such products are normally wrapped in a paper or cardboard sleeve open at the ends. Instructions, etc., are printed on the sleeve. However, the sleeve has a tendency to slide off the product during handling and shipping. The present device comprises a sleeve wrapper having a movable wall portion which can be pushed into the coil to lock the sleeve against axial movement off the coil.

3,666,090
COIL FORM AND CARRIER STRIP

Richard A. Johnson, McHenry; Charles E. Jensen, and John O. Renskers, both of Crystal Lake, all of Ill., assignors to Collcraft, Inc., Cary, Ill.

Filed Jan. 27, 1970, Ser. No. 6,157
Int. Cl. B65d 73/02, 85/62
U.S. Cl. 206—56 AB 5 Claims



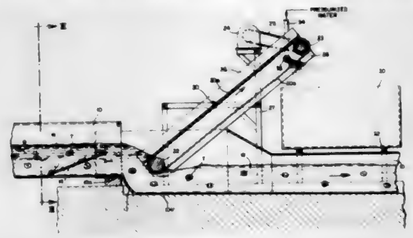
A molded polymeric carrier strip having a plurality of coil forms integrally formed therewith in a fashion to permit automated terminal wire and coil attachment thereto, the coil forms being readily detachable from the carrier strip.

3,666,091
APPARATUS FOR SEPARATING FRUITS AND VEGETABLES FROM LEAVES, VINES, AND THE LIKE

William J. Ludlum, Moorestown, N.J., assignor to Campbell Soup Company, Camden, N.J.

Filed Jan. 6, 1970, Ser. No. 956
Int. Cl. B03b 7/00
U.S. Cl. 209—12 6 Claims

Apparatus for separating fruits and vegetables from leaves, vines and the like which includes a flume containing a flow of water in which the fruits and plant waste material are carried; a series of generally upright, spaced-apart inclined rods located within and across the flume with upper ends inclined in the direction of flow; and an inclined endless belt having a flat, upwardly moving surface transverse to the direction of flow and a lower end in the flume. The angle of inclination and the speed of movement of the belt, together with the coarseness of its surface, causes the leaves and vines to adhere to the belt and be drawn out of the flume while the

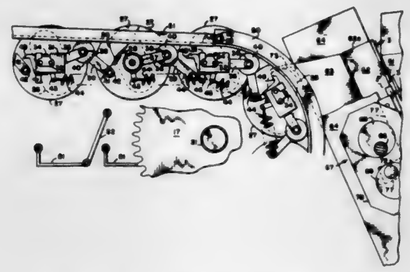


fruits roll down the belt to be carried along in the flume. The modification of this invention provides for the fruits, leaves and vines to be discharged on to the top of a similarly inclined, upwardly moving belt whereby the fruits roll down and off the belt to be collected for processing while the vines and leaves adhere to the belt and are carried upwardly to be discharged over the top and collected for disposal.

3,666,092
SIZER CONVEYOR

Earl R. Anderson, Los Gatos, Calif., assignor to Brex Corp., Los Gatos, Calif.

Original application Nov. 6, 1967, Ser. No. 684,893, now abandoned. Divided and this application July 6, 1970, Ser. No. 52,616
Int. Cl. B07b 1/16
U.S. Cl. 209—73 3 Claims



An endless series of grading elements are carried through a grading path and provide transverse grading openings between each adjacent pair. The product to be graded is fed row by row by a transverse feed member which is reciprocated in a timed manner by an essentially harmonic drive means.

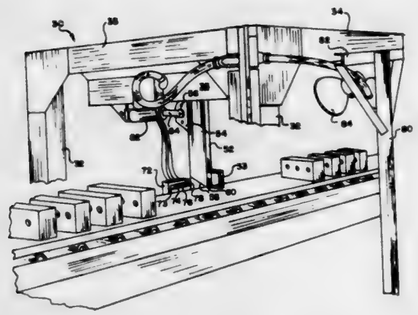
3,666,093
APPARATUS FOR SENSING AND EJECTING BRICKS OF IMPROPER SIZE

La Verne Thornton, Goldston, and Gerald L. Stuart, Siler City, both of N.C., assignors to Forrest Paschal Machinery Company, Siler City, N.C.

Filed Aug. 18, 1970, Ser. No. 64,740
Int. Cl. B07c 5/10
U.S. Cl. 209—74 13 Claims

Raw bricks are cut from an extruded column of clay and conveyed in single file past a sensing means including an inclined light path extending between a light source and a

plurality of photocells arranged linearly along one side of the conveyor. The light path cuts through one corner of each brick, and the photocell arrangement measures the thickness thereof. The sensing means is adapted for use with both "standard" and "utility" size bricks and also effective to determine undersize as well as oversize bricks. A brick ejecting means is mounted adjacent the conveyor, immediately succeeding the photocells, and is responsive to the sensing means to eject prescribed bricks of improper thickness. The ejecting means includes a pivotal kickoff lever attached to the free end of an air cylinder and so arranged as to deliver a

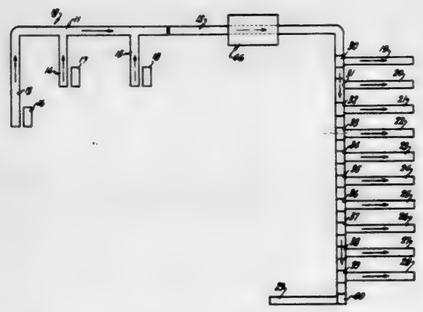


sharp blow to the end of a prescribed brick during the upward portion of its arcuate path. Such an arrangement imparts to the brick a strong, upward and outward movement without further or continuous engagement by the lever, and eliminates the frictional drag of the conveyor belt facilitating removal of the brick therefrom. The transverse path of the lever is angularly adjustable with respect to the conveyor path, so that the force imparted by the lever includes a longitudinal component along the conveyor path as well as a transverse component to utilize somewhat the impetus of the brick along the conveyor in lifting and removing it therefrom.

3,666,094
SONIC ARTICLE-SORTING SYSTEM

Stephen J. Martin, Miami, Fla., assignor to Spott Electrical Company, Hayward, Calif.

Filed May 1, 1969, Ser. No. 820,942
Int. Cl. B07c 5/344
U.S. Cl. 209—111.5 17 Claims

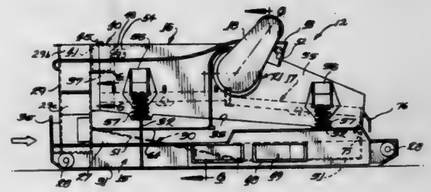


A sonic article-sorting system for processing passenger baggage at an airline terminal. A particular form of the system includes a conveyor having both a collection section along which baggage is accumulated and a distribution section providing a plurality of distribution branches or stations respectively corresponding to particular flight destinations and into which baggage is selectively diverted in accordance with the destinations thereof. A plurality of diverters disposed in respective association with the distribution branches are operative selectively to effect diversion thereinto of individual articles of baggage being advanced along the conveyor. Each article of baggage carries a tag equipped with an identification responder operative to transmit an ultrasonic signal corresponding to the destination indicated by the tag; and a plurality of interrogation units produce electromagnetic energizing signals adapted to intercept each article of baggage and the responder-equipped tag carried thereby. A plurality of sensors respectively connected with the diverters through control means are respectively responsive to the ultrasonic signals transmitted by the identification responders; and whenever a sensor responds to the ultrasonic signal of appropriate frequency resulting from the identification responder being intercepted by an energizing signal of proper frequency, the diverter associated with such sensor is actuated to segregate or divert into the appropriate branch the article of baggage carrying such transmitting responder.

3,666,095
VIBRATING SCREEN FOR FINE SCREENING OF LIQUIDS

Robert A. Krynock, Lansdale, Pa., and Robert W. Ruhe, Jr., Houston, Tex., assignors to FMC Corporation, San Jose, Calif.

Filed Feb. 2, 1970, Ser. No. 7,869
Int. Cl. B07b 1/42
U.S. Cl. 209—254 18 Claims



A vibrating screen is provided for screening with cloths having 60 to 100 mesh openings. A rotary vibrator mechanism producing a minimum stroke of five-sixteenths inch is located above the screen cloth and forward of the longitudinal center of the screen box to obtain a high acceleration and unequal elliptical motion at the ends of the box. The screening surface has a first horizontal section and a second section sloped downwardly at 5° to obtain maximum dewatering on the first section and maximum retention on the second section. Adjustable flow control vanes are included in the feed flume.

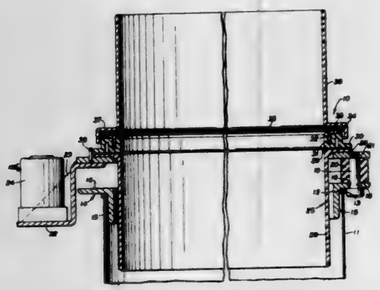
3,666,096
PORTABLE VIBRATING SCREENER

Laverne J. Riesbeck, and Willis A. Blackwell, both of Canton, Ohio, assignors to Midwestern Industries, Inc., Massillon, Ohio

Filed Nov. 28, 1969, Ser. No. 880,707
Int. Cl. B07b 1/28
U.S. Cl. 209—259 9 Claims

A portable material separator to be used with a container having an opening of any shape in the top thereof. A vibrating device is attached to a plane which rests on a plurality of cushions. The cushions are mounted on a base plate which fits within the opening in, and rests on top of, the container.

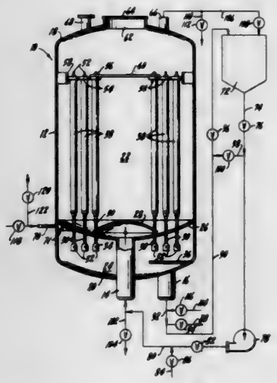
A screen spans the opening in the container and is mounted in a frame which rests on the plate and therefore receives



vibrations therefrom. A clamping means holds the above described assembly in a properly spaced relationship.

3,666,097
METHOD AND APPARATUS FOR CLEANING A FILTER CARTRIDGE

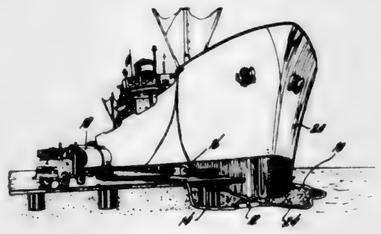
Leo F. Ryan, Somerville, N.J., assignor to Ecodyne Corporation, Chicago, Ill.
Continuation of application Ser. No. 768,580, Aug. 30, 1968, now abandoned. This application June 8, 1970, Ser. No. 48,809
Int. Cl. B01d *25/32*
U.S. Cl. 210—82 15 Claims



A method for cleaning pre-coated filter cartridges vertically mounted in a filter tank in which the tank is drained and then refilled by passing a mixture of air and water through the cartridges in reverse flow to their normal operation. As the tank fills with water, the filters are gradually cleaned from bottom to top. The tank may then be gradually drained while continuing the delivery of air to the interior of the cartridges. The invention also provides apparatus including a filter tank having gas distributors on the bottoms of the filter cartridge seat means. The gas distributors form a mixture of gas and liquid for delivery to the filter cartridges.

3,666,098
METHOD AND APPARATUS FOR CONFINING AND COLLECTING AN OIL SLICK

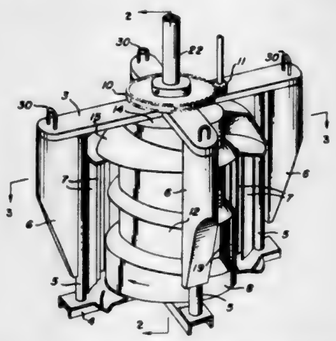
Charles Garland, Williamsburg; James J. Victory, and John P. Latimer, both of Newport News, all of Va., assignors to Deepsea Ventures, Inc., Gloucester Point, Va.
Filed Sept. 8, 1970, Ser. No. 70,142
Int. Cl. B01d *37/00*
U.S. Cl. 210—83 6 Claims



Method and apparatus for confining and collecting an oil slick upon the ocean's surface, particularly a method for shielding the oil slick/ambient air interface during collecting of the oil, so as to prevent ingestion of air while maintaining flexibility of the confining and collecting boom.

3,666,099
METHOD OF AND APPARATUS FOR SEPARATING LIQUIDS

Frank Galicia, 5043 Catherine St., Philadelphia, Pa.
Filed Nov. 6, 1970, Ser. No. 87,505
Int. Cl. E02b *15/04*
U.S. Cl. 210—83 10 Claims

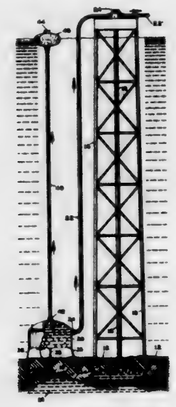


This invention relates to the separation of liquids of different densities and is directed primarily to a method and apparatus for moving an inverted inclined V-shaped trough relatively to a liquid floating on a more dense one to carry the less dense liquid below the liquid interface for release into a conduit or chamber from which it may be collected and removed free of the more dense of the two liquids.

3,666,100
METHOD AND APPARATUS FOR COLLECTING OIL FROM AN UNDERWATER LEAK

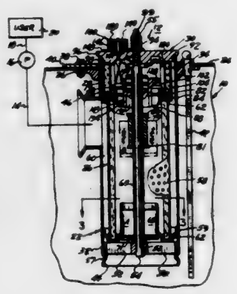
Thaddeus A. Madej, 1223 Polk St., Hollywood, Fla.
Filed Apr. 24, 1969, Ser. No. 818,868
Int. Cl. B01d *21/00*
U.S. Cl. 210—83 2 Claims

A method and apparatus for collecting oil from an underwater leak including the steps of (1) detecting the location of the leak, (2) submerging an inverted collector shell under the water to a position directly over and enclosing the leak so that oil, being lighter than water, rises from the source of the leak into the collector shell and displaces water in the collector shell to partially fill the collector shell with oil, (3) providing a conduit leading from the submerged collector shell upward through the water to a pump and from a pump to a storage receptacle, and (4) pumping oil from the collector shell through the conduit to the storage receptacle with said pump. Also disclosed is apparatus for carrying out the method.



3,666,101
MULTIPLE FILTER DEVICE

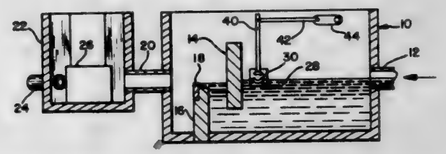
Nils O. Rosaen, Bloomfield Hills, Mich., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Aug. 18, 1969, Ser. No. 850,730. The portion of the term of the patent subsequent to Feb. 3, 1987, has been disclaimed.
Int. Cl. B01d *27/10*
U.S. Cl. 210—90 14 Claims



A housing having a cylindrical filter element for filtering fluid circulated within a fluid system from a reservoir to a user and including a strainer slidably engaged about a shaft disposed along the axis of the filter. Fluid in such systems normally circulates axially upwardly from the reservoir through the inlet end of the filter and radially through the filter walls to the user. A refill charge of fluid is poured axially downwardly through the cylindrical filter and the filter inlet into the reservoir, in a direction opposite to the normal fluid circulation. The strainer is supported for axial movement in response to the fluid flow from a first position in which the strainer engages a seat formed around the fluid inlet when the reservoir is being refilled so as to trap foreign matter carried therein, to a second position in which the strainer is substantially spaced apart from the filter inlet permitting unrestricted fluid flow between the reservoir and the filter walls during normal fluid circulation.

3,666,102
AUTOMATICALLY OPERATED OIL SEPARATOR SCUM TROUGH

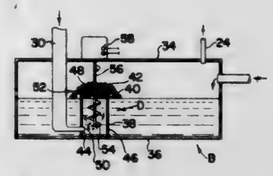
Walter P. Blanchard, P.O. Box 64, Quincy, Mass.
Filed Sept. 15, 1970, Ser. No. 72,438
Int. Cl. B01d *21/24*
U.S. Cl. 210—138 7 Claims



A timing control system is provided for automatically separating oil floating on the surface of water or the like and is useful in drainage systems for oil handling facilities and similar installations. A settling tank receives drains typically comprised of oil and water. A weir arrangement maintains the level of the drains at a predetermined height in the tank and a longitudinally slit scum pipe is disposed partly submerged across the surface of the liquids. A timing device automatically rotates the pipe so that the slit will allow the oil floating on the surface to drain from the tank, the water being separately removed through the weir.

3,666,103
WASTE DISPOSAL SYSTEM FOR A HUMAN CONVEYANCE

Harry W. Green, Ann Arbor, Mich., assignor to The Standard Products Company, Cleveland, Ohio
Filed May 5, 1971, Ser. No. 140,492
Int. Cl. C02c *1/02*
U.S. Cl. 210—152 3 Claims



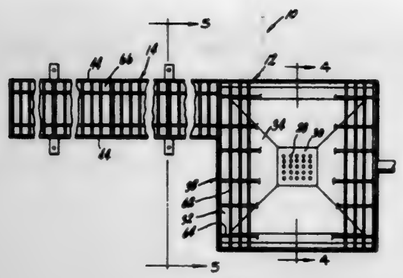
A waste disposal system for a human conveyance includes a waste tank for receiving liquid and organic waste material. An aerating device for aerating waste material in the tank is operated by air pressure during movement of the conveyance to bubble air through waste material in the tank.

3,666,104
PREFABRICATED DRAIN APPARATUS

Theophil Aprill, Jr., and John R. Leerkamp, both of Ann Arbor, Mich., assignors to A & L Battery & Electric Service, Inc., Ann Arbor, Mich.
Filed Dec. 30, 1970, Ser. No. 102,703
Int. Cl. B01d *35/02*
U.S. Cl. 210—164 7 Claims

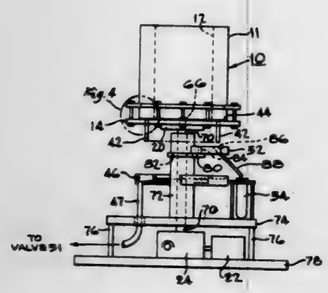
Apparatus for use in constructing a drainage system for paved surfaces such as are found in automobile service stations and the like. The apparatus includes sheet metal sec-

tions which can be assembled at the site of use to serve as forms for an indefinite length about which concrete can be



poured and which then remain as integral parts of a trench drain and sump assembly.

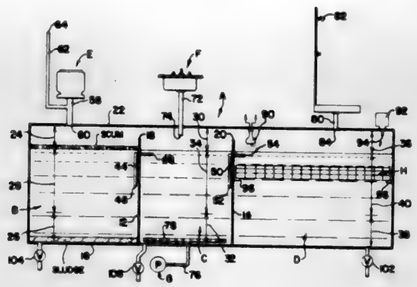
3,666,105
APPARATUS FOR CONTINUOUS LIQUID-SOLID PHASE CHROMATOGRAPHY
Jay B. Fox, Jr., Ambler, Pa., assignor to The United States of America as represented by the Secretary of Agriculture
Filed Aug. 4, 1970, Ser. No. 60,447
Int. Cl. B01d *15/08*
U.S. Cl. 210—198 **1 Claim**



An apparatus for continuous liquid-solid phase chromatography having a column formed by two concentric cylinders clamped to a bottom plate which rests on a turntable operably connected to a drive means. A flat fixed phase bed surface for even layering of a solution and uniform entry of solution into the fixed phase is obtained by a unique accessory, a leveling plow.

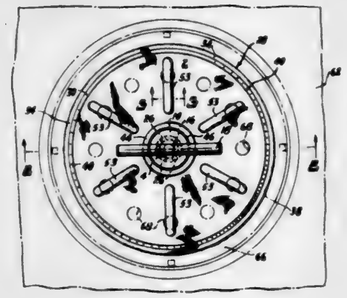
3,666,106
APPARATUS FOR MULTI-STAGE TREATMENT OF WASTE MATERIAL
Harry W. Green, Ann Arbor, Mich., assignor to The Standard Products Company, Cleveland, Ohio
Filed May 5, 1971, Ser. No. 140,532
Int. Cl. C02c *1/02*
U.S. Cl. 210—201 **6 Claims**

A waste disposal system includes three interconnected tanks. Waste material is subjected to anaerobic bacterial action in a first tank and then transferred to a second tank. The waste material is subjected to aerobic bacterial action in the second tank and is then transferred to the third tank. The



waste material may be subjected to action of a treating agent in the third tank.

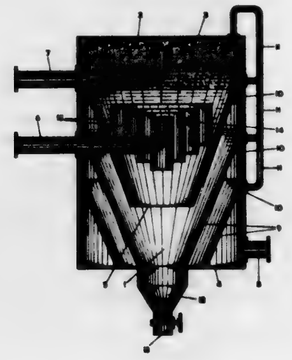
3,666,107
FILTER UNIT
Weldon C. Boggs, Tampa, and Charles A. Turcotte, Daytona Beach, both of Fla., assignors to Food Research & Equipment Company, Tampa, Fla.
Filed Sept. 17, 1970, Ser. No. 73,015
Int. Cl. B01d *35/02, 29/34*
U.S. Cl. 210—238 **12 Claims**



A filter unit for separating solids from liquids comprising filter elements each consisting of two dished diaphragm sections of fine mesh material, each section having an inner and outer rim portions with an inclined annular portion adjacent thereto and a series of radial ribs in the area between said inclined portions to stiffen the section. One or more of the filter elements is mounted upon a tubular core having openings adjacent the lowermost section of the filter unit for effecting maximum drainage of liquid from the filter unit. The core is threaded at its lower end for mounting upon an outlet fitting in a housing. A handle is attached to the upper end of the core to facilitate mounting and removal of the filter unit from the housing.

3,666,108
SEPARATOR FOR LIQUIDS OF DIFFERENT SPECIFIC GRAVITIES
Cornelis in 't Veld, Vlaardingen, Netherlands
Filed Apr. 20, 1970, Ser. No. 30,091
Int. Cl. B01d *21/10, 35/00*
U.S. Cl. 210—305 **3 Claims**

A separator for liquids of different specific gravities, such as oil and water, comprises a tank having a hopper therein with downwardly convergent side walls and an open bottom which is spaced above the bottom of the tank, the top of the hopper being closed by the top of the tank. Oil-water mixture is fed to an intermediate level of the hopper, and oil is withdrawn from the top of the tank and water from the bottom of the tank on the opposite side of a filter that passes water but not oil. The downward convergence of the hopper



walls lengthens the path through which the water must travel during separation, thereby to reduce the entrainment of oil in the water. Vertical anti-turbulence baffles are positioned in the hopper, as well as a sensor responsive to the presence of oil to control the device. By-pass conduits return to the top of the hopper the oil that accumulates in the tank outside the hopper.

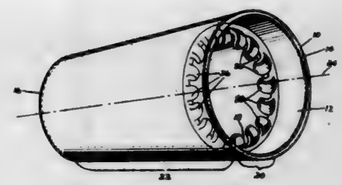
3,666,109
REVERSE OSMOSIS LIQUID SEPARATION APPARATUS
Richard W. Goeldner, New Berlin, Wis., assignor to Aqua-Chem, Inc.
Filed Apr. 23, 1970, Ser. No. 31,195
Int. Cl. B01d *31/00, 13/00*
U.S. Cl. 210—321 **6 Claims**



A membrane module for use in solvent separation by reverse osmosis. Tubular membranes are mounted in liquid impervious thin-walled tubes, all within a pressure vessel, with a conduit provided for directing a liquid mixture under reverse osmosis operating pressure to the interior of the tubular membranes together with a conduit for receiving the solvent from the interface of the membranes and the liquid impervious tubes. There is also provided a conduit communicating with the high pressure liquid mixture flow path to provide liquid under the high pressure to the exterior of the liquid impervious tubes to thereby provide a support for the tubes and thus, the membrane therewithin, during reverse osmosis operating conditions.

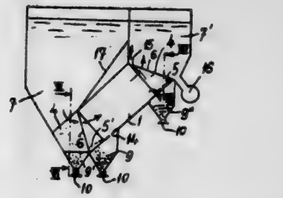
3,666,110
DRINKING RECEPTACLE
Frederick R. Hodges, 520 N. Michigan Ave., Chicago, Ill.
Filed June 22, 1970, Ser. No. 48,162
Int. Cl. B01d *23/20*
U.S. Cl. 210—469 **3 Claims**

A drinking receptacle having means for maintaining ice, fruit, and the like within the receptacle and spaced from the rim thereof during use. The receptacle comprises a guard spaced from the rim of the receptacle. The guard has a plurality of spaced openings therein through which liquids will



pass. The guard does not restrict the flow of liquid from the drinking receptacle and all of the liquid in the drinking receptacle can be drained therefrom.

3,666,111
SEPARATION DEVICE
Jacob Pielkenrood, and Willem L. B. Ambrosius, both of Krommenie, Netherlands, assignors to Pielkenrood-Vinitex N.V., Assendelft, Netherlands
Filed June 18, 1970, Ser. No. 47,575
Claims priority, application Netherlands, June 28, 1969, 6909973; Sept. 29, 1969, 6914731
Int. Cl. B01d *21/02*
U.S. Cl. 210—521 **21 Claims**

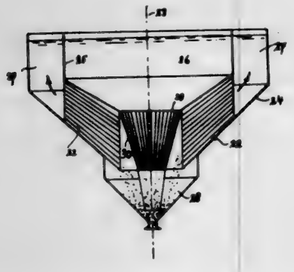


A separation device comprising substantially parallel sloping passages in an assembly of corrugated bordering surfaces with tops and valleys for separating heavier and/or lighter components from a carrier liquid by supplying the liquid to be treated at one end of this assembly, the heavier components sinking into the valleys and/or the lighter components rising into the tops of said passages. This device is provided with mutually parallel guiding partitions at least at the supply side of this assembly, between which partitions transverse plates of alternately different slope are provided for delimiting mutually separated channels communicating with the tops or the valleys of said passages respectively, in order to suppress turbulences in the liquid and preventing remixing of the separated substances. Auxiliary partitions may be provided for improving the liquid distribution and/or for classification of the separated substances.

3,666,112
SEPARATION DEVICE
Jacob Pielkenrood, and Willem L. B. Ambrosius, both of Krommenie, Netherlands, assignors to Pielkenrood-Vinitex N.V., Assendelft, Netherlands
Filed June 18, 1970, Ser. No. 47,576
Claims priority, application Netherlands, June 8, 1969, 6,909,974; Aug. 4, 1969, 6,911,882; 6,911,883
Int. Cl. B01d *21/02*
U.S. Cl. 210—521 **14 Claims**

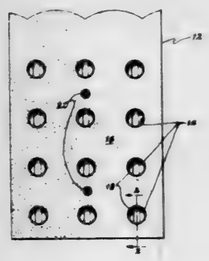
A separating device comprising an assembly of sloping passages, in which components of a liquid moving through

this assembly are separated therefrom, which components are separately removed at an extremity of this assembly. This assembly is composed of tubes, troughs or corrugated plates delimiting sets of plural passages connected by narrower channels, the liquid to be treated being supplied to one



passage, and the separated components passing through a connected channel into another passage, from which it may be removed out of contact with the liquid. Special guiding partitions may be arranged at a discharge end of such an assembly for suppressing turbulences.

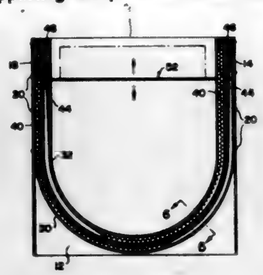
3,666,113
HOLDER FOR LIGHT BULBS
Dean Wm. Burrell, 35 Jefferson St., Ellicottville, N.Y.; Paul A. Costello, 27 Stevens Rd., Needham, Mass., and Robert C. Costello, 349 Adams St., Milton, Mass.
Filed Aug. 19, 1970, Ser. No. 64,967
Int. Cl. A47f 7/00
U.S. Cl. 211—26 3 Claims



A holder for spare light bulbs including a generally rectangular board of molded plastic foam material having a plurality of cavities opening through one surface of the board and arranged in a uniform geometric pattern formed of aligned columns and rows. Bulb holding screw sleeve devices are friction fitted one in each of the cavities.

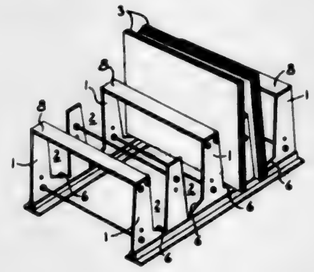
3,666,114
DISPLAY RACK
Ardell Davis, 3811 De Leon Ave., Tampa, Fla.
Filed Aug. 5, 1970, Ser. No. 61,137
Int. Cl. A47f 7/00
U.S. Cl. 211—49 R 12 Claims

A self-leveling dispenser and display rack including a support frame, a horizontally displaced platform, a plurality of springs for supporting the platform within the frame. The



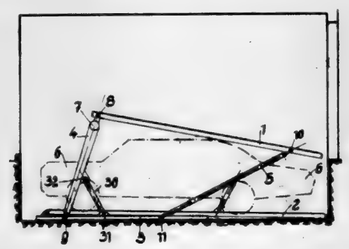
springs being encased within arcuate support guide members so that the platform is self-leveling under a varying load.

3,666,115
PLATE STORAGE SYSTEM
Raymond Turner, Rose Bay, New South Wales, Australia, assignor to Rayson Engineering Pty. Ltd., New South Wales, Australia
Filed Sept. 25, 1970, Ser. No. 75,488
Int. Cl. A47f 7/00
U.S. Cl. 211—50 11 Claims



A storage device for plate materials, particularly steel plates, has upstanding tongues between which the plates are supported edgewise on a supporting base, which base is located at an angle to the horizontal.

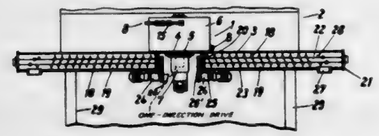
3,666,116
GARAGE
Kaspar Klaus, 46 Schlachthofstrasse, Memmingen, Bavaria, Germany
Continuation of application Ser. No. 872,431, Oct. 29, 1969, now abandoned, which is a continuation of application Ser. No. 611,003, Jan. 23, 1967, now abandoned. This application Oct. 7, 1970, Ser. No. 78,965
Claims priority, application Germany, Feb. 1, 1966, K 58290
Int. Cl. E04h 6/06
U.S. Cl. 214—16.1 ED 8 Claims



A garage including two mobile platforms for motor vehicles arranged one above the other, the lower platform being

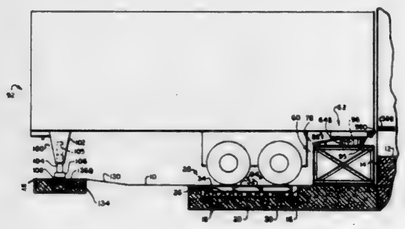
rotatable about an axis located at the end remote from the entrance to the garage, and the upper platform being connected with the lower platform in such a manner that either platform can be selectively placed adjacent the entrance.

3,666,117
SILO DISCHARGING DEVICE
Hans Gessler, Aalen, Wurtemburg, Germany, assignor to Schwabische Huttenwerke Gesellschaft mit beschrankter Haftung, Wasseralfingen, Wurtemburg, Germany
Filed Oct. 1, 1969, Ser. No. 862,761
Claims priority, application Germany, Oct. 2, 1968, G 68 00 301
Int. Cl. B65g 65/48
U.S. Cl. 214—17 D 26 Claims



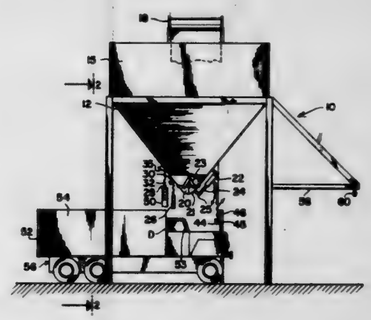
A silo discharging device with an operable conveyor element leading to a discharge opening and with a rotary motor driven cutter located above said conveying element in which the rotary cutter with the motor driving the same forms a structural unit which is separate from the conveying element.

3,666,118
SYSTEM FOR POSITIONING A WHEELED CARRIER
Burt F. Raynes, Chula Vista; Necati Kanatsiz, Spring Valley, and Robert E. Ottle, San Diego, all of Calif., assignors to Rohr Corporation, Chula Vista, San Diego, Calif.
Filed July 27, 1970, Ser. No. 58,351
Int. Cl. B65g 69/24
U.S. Cl. 214—38 B 6 Claims



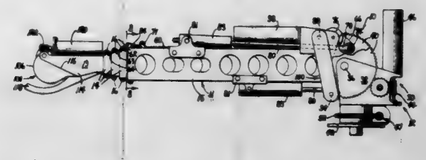
A carrier having wheels at the rear thereof is moved to a selected location on a surface by means of a system which includes a centering deck supported on said surface for movement in any direction thereon and a notched centering member fixedly positioned on one side of said centering deck. The centering member is spaced above the aforesaid surface, and a pin depending from the rear of the carrier engages one wall of the notch in the centering member as the wheels of the carrier roll across the centering deck toward the centering member. Springs are arranged to resiliently bias the centering deck into a desired alignment relative to the centering member, and ramps are fixedly positioned on opposite sides of the latter to lift the rear of the carrier as it rolls across the centering deck. Centering plates are located on the aforesaid surface at a predetermined distance from the centering deck and supports are mounted on the forward end of the carrier, the lower ends of said supports moving to the centers of the centering plates when supported on the sloped upper surfaces of the latter.

3,666,119
AUTOMATIC LOADING AND SIGNALING SYSTEM FOR DRIVER OPERATED VEHICLES
Ward H. Parsons, 1202 Green Glen Rd., Birmingham, Ala.
Filed Sept. 25, 1970, Ser. No. 75,404
Int. Cl. B65g 67/04
U.S. Cl. 214—41 9 Claims



A truck loading system for loading an open top truck with material discharged from an overhead bin at a loading station. The bin has a gate operated by electromechanical means. An omnidirectional loading probe is connected in a circuit with the electromechanical means and with a signal lamp visible to the driver for closing the gate and turning on the lamp when the probe is tilted by material in the truck. A second omnidirectional probe is connected in the circuit with a second signal lamp to signal when the second probe is tilted by the truck body after the truck is fully loaded, and to lock the gate closed as the truck is driven away from the loading station. A start switch in the circuit initiates opening the gate. The start switch and probes can be mechanically interconnected so that adjusting the position of the start switch selectively positions the probes in the truck body.

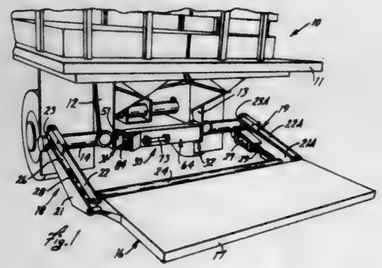
3,666,120
MECHANICALLY EXTENDIBLE TELESCOPING BOOM
T. O. Paine, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Wilfred H. Bachle, 2502 Monogram AVe., Long Beach, Calif.
Filed Feb. 4, 1970, Ser. No. 8,650
Int. Cl. B66b 17/00
U.S. Cl. 214—90 R 8 Claims



A crane capable of being employed as a back-hoe for digging, gathering, collecting or recovering bulk materials, such as soil particles or the like, characterized by a boom assembly including a plurality of telescoping boom segments pivotally supported on a rotatable base and including a plurality of flexible tape members interconnecting the segments and adapted to be selectively tensioned for imparting selective rectilinear displacement to the segments for thereby telescopingly elongating and contracting the boom assembly, a feature of the invention being a furlable tape adapted to be flattened and wound about a tape take-up drum as the boom

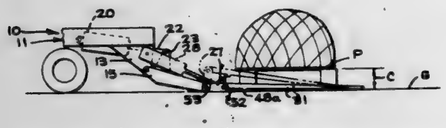
assembly is contracted and deployed into an elongated tubular conduit extending axially between the opposite ends of the boom assembly as it is elongated, whereby a variable length fluid conduit is provided between the distal end and the base of the boom assembly.

3,666,121
TRAILER HITCH
David L. Denner, and Herbert E. Warner, both of Toledo, Ohio, assignors to Overhead Door Corporation, Dallas, Tex.
Filed May 28, 1970, Ser. No. 41,507
Int. Cl. B60d 1/00
U.S. Cl. 214—77 P 10 Claims



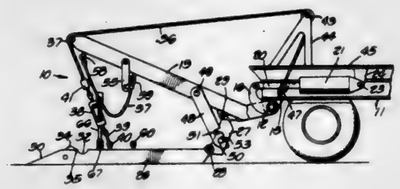
A trailer hitch comprising two arms pivotally supported upon the mounting means by which a lift mechanism is supported upon a vehicle. The arms are movable between substantially parallel positions adjacent the mounting means, where they do not interfere with the upward and downward movement of the lift mechanism, and extended positions in which their free ends are interconnected, one of said arms supports a hitch ball and both said arms include means whereby the same pin can hold the arms in either the extended positions or the retracted positions.

3,666,122
MOVABLE LOAD SUPPORT FOR SELF LOADING VEHICLE
Donald W. Youmans, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.
Filed Sept. 9, 1970, Ser. No. 70,738
Int. Cl. B60p 1/48
U.S. Cl. 214—77 R 6 Claims



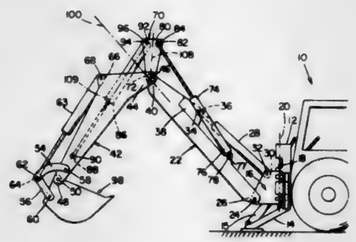
A self-loading vehicle has a vertical swinging load support that includes a load engaging element of a fork type insertable under a pallet for loading the pallet onto the vehicle. Pivotally connected to the load engaging element is a link coupled to the vehicle by a linkage for swinging the link vertically and maintaining the link at a constant angular orientation with the horizontal during vertical swinging movement. A strut is pivotally connected to the link and engageable with a stop on the load engaging element for maintaining a horizontal position of the load engaging element during vertical swinging movement. The linkage includes an extensible link for pivoting the link connected to the load engaging element to a horizontal position which facilitates insertion of the load engaging element under a pallet with a minimum clearance.

3,666,123
TAILGATE CARGO LIFTING APPARATUS FOR THE REAR END OF A TRUCK
Harold Tornheim, 430 N. Auburn Ave., Sierra Madre, Calif.
Filed Jan. 20, 1971, Ser. No. 107,991
Int. Cl. B60p 1/48
U.S. Cl. 214—77 P 20 Claims



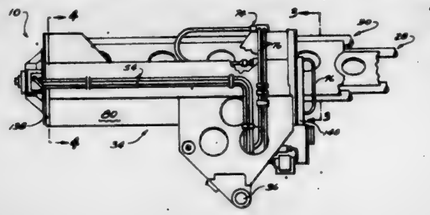
Tailgate cargo lifting apparatus for the rear end of a truck capable of handling unusually heavy loads. The apparatus utilizes a power-operated yoke pivoting in a vertical plane and employing linkage and flexible line means to maintain the cargo support platform level while swinging it in an arc between the rear end of the truck and the ground. The cargo platform may be a single rigid structure or formed in major and minor sections hinged together transversely of the truck for compact stowage in an upright position when not in use. The apparatus includes provision for using the power drive to aid in pivoting the platform to its fully retracted position.

3,666,124
LIFTING AND EXCAVATING APPARATUS
Carroll H. Arnold, Westminster, Mass., assignor to Wain-Roy, Hubbardston, Mass.
Filed Oct. 15, 1970, Ser. No. 81,002
Int. Cl. E02f 3/74
U.S. Cl. 214—138 7 Claims



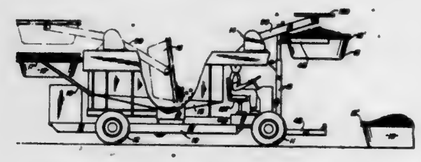
An improved construction for a backhoe which has a supporting member, a boom having a longitudinal axis and being pivotally connected at one end to the supporting member and arranged to be rotated at that end about a first horizontal axis and swung at that end about a vertical axis, a dipper stick pivotally connected to the boom, arranged to be rotated with respect to the boom about a second horizontal axis and arranged to have connected thereto, at the end remote from the second horizontal axis and the boom, elements, respectively for excavating and lifting. According to the improvement the boom and the dipper stick are pivotally connected to each other at their adjacent ends and the backhoe includes a mechanism connected both to the boom and the dipper stick for rotating the dipper stick about the second horizontal axis on either side of the longitudinal axis of the boom.

3,666,125
BOOM ASSEMBLY
John W. Gano, and Paul W. Schlafly, both of New Philadelphia, Ohio, assignors to The Warner & Swasey Company, Cleveland, Ohio
Filed Sept. 10, 1970, Ser. No. 70,954
Int. Cl. E02f 3/00
U.S. Cl. 214—141 16 Claims



An extendable boom assembly includes a plurality of longitudinally extending guide walls which define channels for receiving loops or bends in flexible conduits. Upon extension of the boom assembly, the loops move outwardly along the channels into engagement with rollers of a biasing assembly. The biasing assembly tensions the flexible conduits during continued extension of the boom assembly. The biasing assembly also initiates inward movement of the loops along the channels in a predetermined manner when the boom assembly is retracted. Structural frame members of the boom assembly are connected with the flexible conduits and conduct fluid under pressure from the flexible conduits to a device mounted on an outer end portion of the boom assembly.

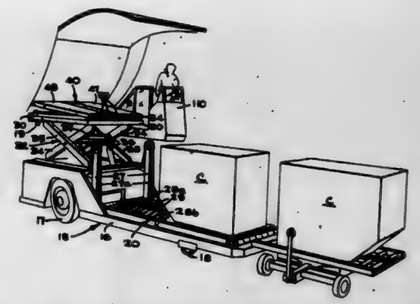
3,666,126
FRUIT CONTAINER PICKUP VEHICLE
Dietrich G. Rempel, Akron, Ohio, assignor to Rempel Enterprises, Inc., Akron, Ohio
Filed Aug. 28, 1970, Ser. No. 67,900
Int. Cl. B65g 67/02
U.S. Cl. 214—302 8 Claims



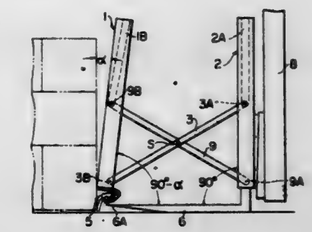
A vehicle having lifting means at its front end to raise a container filled with fruit from the ground to a position for engagement and support by a carriage movable rearwardly over the vehicle. A hopper is normally supported on the vehicle below the carriage which is adapted to dump the filled containers into the hopper, there being means to raise the hopper to an unloading position. The carriage is adapted to stack emptied containers at the rear of the vehicle and to pick up and transfer the stack to another vehicle.

3,666,127
CARGO HANDLING APPARATUS
James R. Guyaux, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.
Filed June 22, 1970, Ser. No. 48,229
Int. Cl. B60p 1/02
U.S. Cl. 214—512 8 Claims

An aircraft cargo-handling vehicle has an elevatable platform adapted to be raised approximately to the level of the sill of the aircraft cargo door, said platform being provided with a transfer bridge so connected to the platform that it can be extended from the platform to the aircraft sill for supporting the forward end of the platform during the loading and unloading operation.

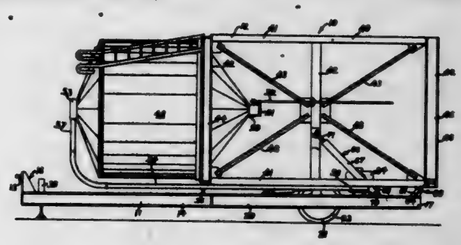


3,666,128
LIFT TRUCK
Masahiko Shimizu, Chita-ku, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Aichi, Prefecture, Japan
Filed June 12, 1970, Ser. No. 45,868
Int. Cl. B60p 1/04; B66f 9/16, 9/19
U.S. Cl. 214—514 9 Claims



This invention relates to a lift truck provided with a load handling device comprising a push-pull attachment having a pushing frame and means adapted to be put into operation according to the tendency of the forward tilting motion of said pushing frame for cancelling parallelism of the pushing frame and a mast, thereby preventing any occurrence of disorder of the load.

3,666,129
DETACHABLE STORAGE BIN AND TRAILER
Roy Haskins, P.O. Box 4215, Station B, Spokane, Wash.
Filed Feb. 16, 1970, Ser. No. 11,609
Int. Cl. B60p 1/02
U.S. Cl. 214—515 1 Claim



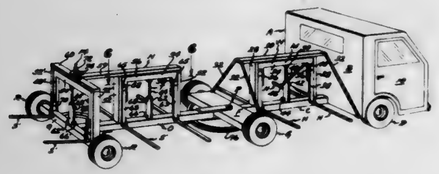
A detachable storage bin and trailer assembly is described having a storage bin that is releasably, pivotally attached to a

trailer. The trailer frame can be lowered to the ground to provide a sturdy support for erecting the storage bin. After the bin is erected release pins are pulled to detach the storage bin from the trailer.

3,666,130
POWER DRIVEN ARTICULATED CONTAINER TRANSPORTING DEVICE

Charles J. Ellerd, 105 Panorama Drive, Bakersfield, Calif.

Continuation-in-part of application Ser. No. 815,875, Apr. 14, 1969, now Patent No. 3,550,802. This application Dec. 3, 1970, Ser. No. 94,738
Int. Cl. B65f *3/08*
U.S. Cl. 214—621 **10 Claims**



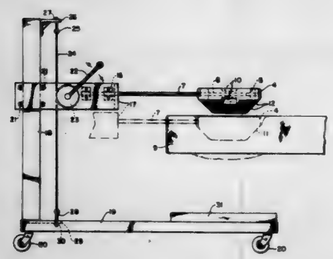
A first power driven vehicle having a pivoted wheel supported extension situated rearwardly therefrom, and the extension capable of having a wheel supported second vehicle pivotally connected thereto. The first vehicle, extension, and second vehicle have a number of power operated, vertically movable pairs of forks extending outwardly therefrom. Each pair of forks is capable of removably engaging a loaded container and raising the latter to a position where it may be transported to a desired destination.

The first vehicle and extension are so operatively associated that when the first vehicle negotiates a curve the wheels of the extension are automatically pivoted to the extent that they track with the wheels of the first vehicle. Due to this automatic tracking, the first vehicle, extension, and second vehicle may be easily maneuvered in confined areas and on narrow roadways.

3,666,131
PORTABLE BEDPAN CARRIER

Wilbur O. Thompson, 815 South Second St., DeKalb, Ill.

Filed Aug. 21, 1969, Ser. No. 851,997
Int. Cl. B66f *9/00*
U.S. Cl. 214—621 **11 Claims**

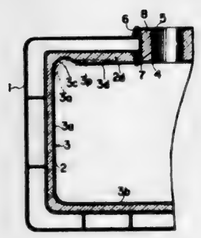


A cart having a vertical post thereon is run into place adjacent a bed and a frame that is adjustable vertically on the post by operation of a hand-crank, supports a bedpan carrier is of tapered form at least marginally of the bottom to facilitate its impression into the mattress and that extends over the mattress on the bed and is adapted to be impressed into the mattress to the point where the bedpan in the carrier is disposed substantially flush with the top of the mattress with minimum open space left around the carrier. After use of the bedpan, the carrier with the bedpan in it, is removable from the support to facilitate emptying the bedpan and cleaning and sanitizing both the pan and carrier.

3,666,132
MEMBRANE CONTAINER CONSTRUCTION FOR STORING LOW-TEMPERATURE LIQUIFIED GAS

Katsuro Yamamoto, Tokyo, and Shinji Nakagawa, Yokohama, both of Japan, assignors to Bridgestone Liquified Gas Company Limited, Chuo-ku, Tokyo, Japan

Filed Jan. 4, 1971, Ser. No. 103,740
Claims priority, application Japan, Jan. 14, 1970, 45/3706
Int. Cl. B65d *25/18*
U.S. Cl. 220—9 LG **4 Claims**



A container or carrier for storing a low-temperature liquified gas in which a thin, metallic, film or membrane fluid-containing inner vessel composed of a bottom wall, side walls and a top having a central opening has a flexible bulge developed on the top in the area of juncture of the top and side walls and this bulge straightens in cross section for compensating for temperature decreases and loading for the inner vessel with a liquified gas. The internal pressure of the inner vessel is supported by a rigid, outer vessel in which a heat-insulating layer of compression-resistant material is installed. The strength of the inner vessel is maintained by the compensating deformations and at the same time leakage of liquid is prevented. Pipes lead into the inner vessel through a trunk mounted on a top wall structure of the outer vessel.

3,666,133
RADIATION-INITIATED, SELF-SEALING SYSTEM FOR SPACECRAFT

Calvin J. Benning, Mahwah, N.J., assignor to W. R. Grace & Co., New York, N.Y.

Filed June 5, 1969, Ser. No. 830,742
Int. Cl. B65d *25/00*; B65h *1/00*
U.S. Cl. 220—15 **9 Claims**

A space vehicle containing a double-walled closure can be made self-sealing by placing a viscous photocurable material (can be slightly pressurized) in the hollow portion of the double-walled closure. When a meteorite pierces both walls, the internal pressure forces some of the photocurable material into the hole in the outer wall. A seal is rapidly formed as the photocurable material is photocured by ultraviolet light into a hardened substance.

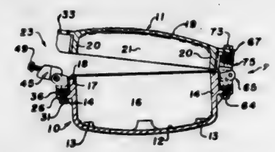
3,666,134
HOUSING FOR ELECTRICAL EQUIPMENT

Gerhard J. Rauch, Burnaby, British Columbia, Canada, assignor to Cascade Electronics Ltd., Port Moody, British Columbia, Canada

Filed June 29, 1970, Ser. No. 50,478
Int. Cl. B65d *51/04*; A47j *36/10*
U.S. Cl. 220—31 R **3 Claims**

An electrical housing particularly but not exclusively for cable television amplifier units. The housing has a base and a

lid which are hinged together by one or usually more pairs of hinge elements. One of each pair being releasably received in a socket on the lid and the other being releasably secured in a socket on the base, the two elements being joined by a

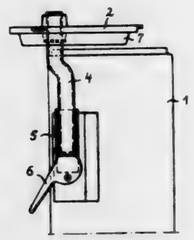


hinge pin. The lid can be removed and replaced by releasing it from its associated hinge element and securing a new lid (which may be substantially similar to the base) to that element.

3,666,135
VERTICAL HEATING VESSEL WITH A BURNER DISPOSED ON ITS UPPER SIDE

Edwin Kindle, Schaan, Liechtenstein, assignor to Gustav Ospelt Hovalwerk A.G., Vaduz, Liechtenstein

Filed Oct. 29, 1970, Ser. No. 84,999
Claims priority, application Luxembourg, Nov. 4, 1969, 59.742
Int. Cl. B65d *43/26*
U.S. Cl. 220—36 **1 Claim**



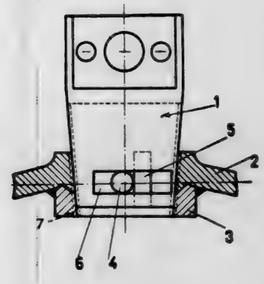
A heating vessel with a vertical, substantially cylindrically shaped water jacket, which comprises a cover arranged on the upper side of the water jacket and adapted to carry a burner projecting into a combination chamber surrounded by the water jacket. A vertical crank-like rod carries the cover pivotally about a first vertical axis at the upper end of the rod. A support means is arranged on the outer side of the heating vessel bearing at its lower end the crank-like rod swingably about a second vertical axis and displaceably in the direction of the second vertical axis. An eccentric lever lifts the crank-like rod by cooperation between the lower end of the rod and the eccentric lever in the support means. The eccentric lever has a curved path, and the latter has a plane face supporting the crank-like rod in its lifted position.

3,666,136
SEALING STOPPER

Maria del Carmen Murga Lopez, Valmaseda (Vizcaya), Spain

Filed Oct. 9, 1970, Ser. No. 79,528
Claims priority, application Spain, Feb. 18, 1970, 156001
Int. Cl. B65d *41/04*
U.S. Cl. 220—39 R **4 Claims**

A sealing stopper compriaing a stopper having a bottom portion, and a substantially transverse recess formed from the side of the bottom portion, a limiting stop secured to the stopper and disposed in the recess, and a bearing ball movably disposed in the recess. The recess has a depth adjacent the stop at least equal to the diameter of the bearing ball and the recess includes ends remote from the stop having a depth less than the diameter of the bearing ball, whereby the stop limits the path of the ball in the recess so that the bearing ball permits the stopper to turn freely in a closing direction, the ball remaining resting against the stop, and

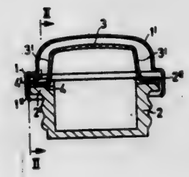


subsequently when turning the stopper in the opposite direction of opening, the ball is moved towards the remote end and becomes wedged between the stopper and the thread of a cap of a container in which the stopper is adapted to be inserted, destroying the cap and making the container useless.

3,666,137
SCREW-ON CLOSURE CAP

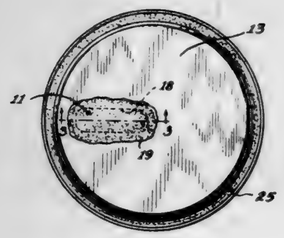
Werner Blau, Schneiderstrasse 13-17, Langenfeld-Immigrath (BRD), and Theo Gerdes, D 4018 Langenfeld, Lortzingweg 9, both of Germany

Filed Dec. 11, 1970, Ser. No. 97,194
Claims priority, application Germany, Dec. 11, 1969, P 19 62 187.5
Int. Cl. B65d *41/04*
U.S. Cl. 220—39 R **3 Claims**



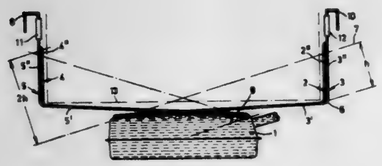
A screw-on closure cap for closing the filling opening of a container or a tubular spout, the cap comprising relatively rotatable upper and threaded lower cap parts assembled together coaxially and having a resilient drive connection between them capable of transmitting a predetermined maximum torque between the upper and lower cap parts in the closing direction. The resilient drive connection comprises a bowed leaf spring whose arch is engaged in the interior of a pressed-up hand grip portion of the upper cap part, and whose two out-turned ends are resiliently engaged ratchetwise in depressions formed in the upper peripheral portion of the lower cap member. When limiting torque is reached the ends of the spring ride resiliently out of the recesses to allow the upper cap part to turn relatively to the lower cap part without further tightening the closure cap on the neck of the container or spout.

3,666,138
CONTAINER CLOSURE
Robert J. Morris, Jr., Lisle, and Thomas Jayes Hartz, Downers Grove, both of Ill., assignors to National Can Corporation, Chicago, Ill.
Filed June 15, 1970, Ser. No. 46,312
Int. Cl. B65d 17/20, 17/14
U.S. Cl. 220—53 11 Claims



A metal container having a preformed aperture sealed on a side with an easy open tape laminate made of a flexible strip and a pressure sensitive adhesive. The exposed edge of the preformed aperture in the closure is coated with a cured coating composition comprising a low molecular weight epoxy resin and a urea-formaldehyde curing agent.

3,666,139
TANK
Norbert Urban, Rotgersbuttel, Germany, assignor to Volkswagen Aktiengesellschaft, Wolfsburg, Germany
Filed Nov. 30, 1970, Ser. No. 93,758
Claims priority, application Germany, Dec. 2, 1969, 19 60 651.1
Int. Cl. B65d 25/00
U.S. Cl. 220—85 S 8 Claims



A container, especially a fuel tank for a motor vehicle, having a top wall and opposite side walls, comprising a plurality of conduits for connecting the interior of the container with the atmosphere, each of the conduits having a first, substantially horizontally extending section, when the container is in its normal substantially horizontal position and extending from an opening in the interior at one side wall toward the opposite side wall, the first section merging into a substantially vertically extending second section of the respective conduit at a sharply bent portion thereof, the conduits being of such dimension that, upon inclination of the container from the normal position, gases forming in the interior rise to the respective bent portion of those conduits, the first sections of which point downwardly, and that the liquid level in those conduits the first sections of which point upwardly is prevented from being lifted out of the second sections of the conduits.

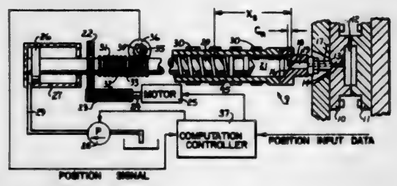
3,666,140
STORAGE AND DISPENSING PACKAGE FOR STACKED SHEET MATERIAL
Paul E. Brefka, Southboro, and Peter A. Latham, Newburyport, both of Mass., assignors to Millipore Corporation, Bedford, Mass.
Filed July 6, 1970, Ser. No. 52,473
Int. Cl. B65h 3/02
U.S. Cl. 221—46 13 Claims



Sheet material stacked in groupings, each with two protective sheet-like covers above and below each piece of sheet material and having lesser friction therebetween than with the sheet material, readily dispenses by sliding a single grouping from the stack.

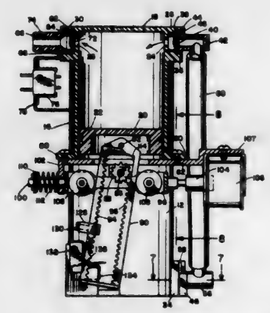
A package for storing and dispensing stacked sheet material has a sleeve-type container slidably receiving a tray that carries the sheet material in a recess having walls conforming to the peripheral edges of the sheet material. A loading member overlies the sheet material on the tray and has a void therethrough aligned under an opening in the container top panel through which individual sheets are urged forward out of the tray recess for dispensing through an opening in the sleeve container.

3,666,141
METHOD AND APPARATUS FOR ITERATIVE CONTROL OF SHOT SIZE AND CUSHION SIZE
Carlton Y. Ma, and Klaus Dold, both of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed May 25, 1970, Ser. No. 40,093
Int. Cl. B29f 1/02
U.S. Cl. 222—1 12 Claims



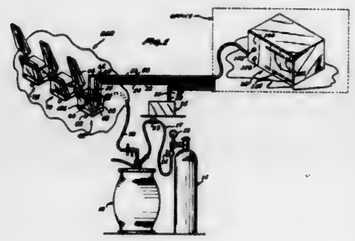
Apparatus and method for controlling the axial movement of a ram member inside a barrel within which fluent material is processed and subsequently discharged from one end thereof by the ram member. Both the length of the stroke of the ram member and the end point of its path of travel are controlled to maintain a uniform volume of material discharged from the barrel during each stroke of the ram member after the apparatus has reached a substantially steady state condition. In the course of startup of the machine, the control system automatically adjusts the stroke of the ram member during the initial operating cycles to achieve a predetermined end point in its path of travel and to provide the necessary shot size.

3,666,142
BEVERAGE DISPENSING APPARATUS HAVING ADJUSTABLE PISTON STROKE
Raymond E. Gust, Spring Valley, Calif., assignor to Courtesy Products Corporation, San Diego, Calif.
Filed July 2, 1970, Ser. No. 52,048
Int. Cl. B67d 5/30
U.S. Cl. 222—16 5 Claims



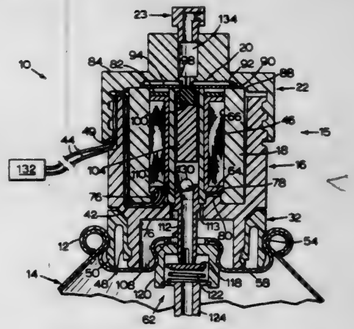
Beverage dispensing apparatus having an adjustable stroke, positive displacement pump unit, coupled to a reservoir which holds an inverted beverage bottle. The pump unit is adaptable to installation in an assembly of several units in rack form, with a single drive motor, each unit being selectively operable. Single or multiple units can be connected to a variety of actuating means and delivery spout or nozzle arrangements, each unit being readily removable for servicing. When actuated, the pump drive mechanism completes a single cycle to drive the selected pump through a preset dispensing and recharging stroke, and is capable of delivering the liquid for a considerable distance to an outlet.

3,666,143
AUTOMATIC FLUID DISPENSING APPARATUS WITH MANUAL OVERRIDE
Murray Weston, Northridge, Calif., assignor to Fred Fisher, Van Nuys, Calif., part interest
Filed June 22, 1970, Ser. No. 48,327
Int. Cl. B67d 1/12
U.S. Cl. 222—61 10 Claims



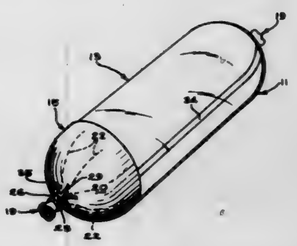
An apparatus for dispensing a predetermined volume of fluid under pressure with provision for modifying the dispensing time of the fluid to compensate for changes in the pressure on the fluid. Further provision is made to selectively dispense one of a plurality of predetermined liquid volumes, and to record the number of dispensing cycles made of each said predetermined liquid volume.

3,666,144
AEROSOL DISPENSING APPARATUS HAVING DISC-SHAPED SOLENOID-ACTUATED PLUNGER
Gary C. Winder, Islington, Ontario, Canada, assignor to Air Guard Control of Canada Limited, Downsview, Ontario, Canada
Filed Dec. 11, 1970, Ser. No. 97,265
Int. Cl. G04c 23/38
U.S. Cl. 222—70 10 Claims



An aerosol dispenser having a housing defining a chamber. The housing is adapted to be attached to an aerosol container to permit spraying liquid to leave the container and enter the chamber. An outlet opening in the top of the chamber leads from a valve seat in the chamber to a spray tip and a seal assembly is normally held in sealing engagement on the seat by pressure in the container. An electromagnetis coupled to the body and is operable to draw a plunger downwardly to move the seal assembly off the valve seat to periodically dispense a predetermined quantity of spraying liquid from the container.

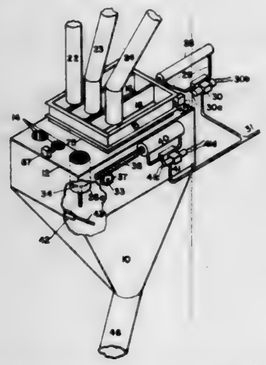
3,666,145
COLLAPSIBLE DISPENSER WITH DISPENSING CAP
Guy Norwood Fisher, Wilmette, Ill., assignor to Kraftco Corporation, New York, N.Y.
Filed Nov. 17, 1969, Ser. No. 877,062
Int. Cl. B65d 35/04
U.S. Cl. 222—107 1 Claim



A package for flowable products is provided, the package comprising generally tube shaped dispenser of flexible plastic material and formed with a dispensing cap secured to the end of the package. The dispensing cap is secured to the exterior of the package adjacent an end closure which may be severed from the package to provide a discharge opening. The dispensing cap has an opening therein but holds the package wall against an uncontrolled expansion or a tear propagation when the package is squeezed to dispense the package contents through the opening formed in the

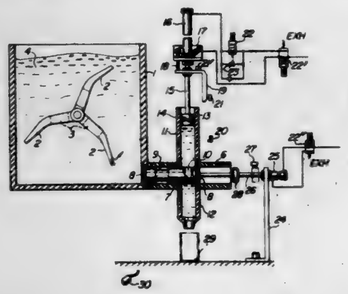
dispensing cap. The stream of dispensed material may be discharged at different rates and, if desired, formed to be fanciful in shape.

3,666,146
MINOR INGREDIENT DISPENSER
Philip W. Robinson, 7831 Seventh St., Downey, Calif.
Filed Jan. 21, 1971, Ser. No. 108,379
Int. Cl. G01f *11/10*
U.S. Cl. 222—132 6 Claims



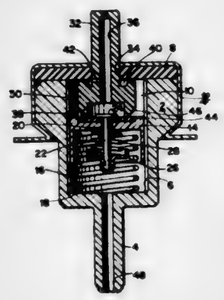
An apparatus is provided for measuring and dispensing materials in particulate form. The apparatus includes a receiver having a sheeted top with openings therein. An open-bottom rack, divided into material storage compartments, is disposed on the sheeted top in spaced relationship to the openings. Means are provided for horizontally moving the rack into and out of alignment with the openings for sequentially discharging particulate material therethrough. Measuring cups, with adjustable volume, are disposed below the openings with their open upper ends substantially level with the top. Means are provided for (a) holding the cups in alignment with the top, (b) inverting the cups to discharge their contents into the receiver, and (c) returning the cups to their upright position. The apparatus includes electrical circuit means for operating the rack and measuring cups in controlled sequence.

3,666,147
APPARATUS FOR FEEDING VISCOUS MATERIALS
Takashi Shiraki, Neyagawa, and Izumi Hino, Moriguchi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sept. 8, 1970, Ser. No. 70,159
Claims priority, application Japan, Sept. 19, 1969, 44/76079; 44/76080; 44/76081
Int. Cl. G01f *11/06*
U.S. Cl. 222—309 4 Claims



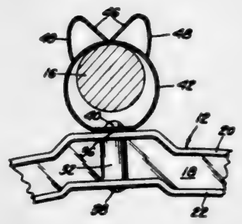
An apparatus for feeding viscous materials, in which a material, e.g. a gel, having a relatively high viscosity is stored in a storage tank with stirring means disposed therein, and feeder means consisting of two piston-cylinder units combined integrally in a cross-shape is connected to the storage tank in communication therewith, said two pistons being slidingly operated within the respective cylinders by driving means, whereby the gel in the storage tank is sucked into one of the cylinders and discharged from one end of the other cylinder.

3,666,148
AEROSOL VALVE WITH SAFETY RELIEF DEVICE
Milo E. Webster, Braintree, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Oct. 13, 1969, Ser. No. 865,907
Int. Cl. B65d *83/14*
U.S. Cl. 222—396 4 Claims



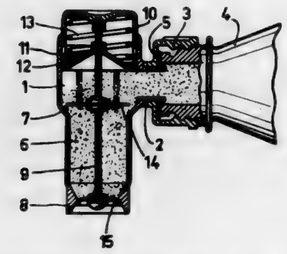
A valve assembly for a pressurized container, the valve assembly facilitating use of the container in the normal manner, but also having facility for automatically relieving excessive pressure in the container.

3,666,149
GARMENT HANGER SUPPORT
John K. Woodhull, 140 East Palm Canyon Drive, Palm Springs, Calif.
Filed July 17, 1970, Ser. No. 55,710
Int. Cl. A47j *51/098*
U.S. Cl. 223—85 1 Claim



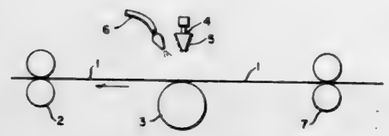
A garment hanger comprising at its midpoint a shoulder bar having a holder consisting of two opposed, spring-pressed parts that cooperate to form a substantially closed loop surrounding the supporting bar. Cam means are provided on the abutting ends of the holder so that when pushed upwardly against the bar from below, the two holder parts are cammed apart to pass on opposite sides of the bar, and then close together above the bar to provide a bearing surface that overlies the top of the bar. A downward pull on the hanger causes the two parts of the holder to open up and slip down off the bar.

3,666,150
ARRANGEMENT FOR DELIVERING PREDETERMINED QUANTITIES OF LIQUID AND SOLID MATERIAL
Sten Liljeholm, Karlskoga, Sweden, assignor to Stefi Konsult, Karlskoga, Sweden
Filed Nov. 5, 1969, Ser. No. 874,337
Claims priority, application Sweden, Nov. 7, 1968, 15078/68
Int. Cl. G01f *11/28*
U.S. Cl. 222—453 2 Claims



A batching arrangement comprising two valve bodies both of which are closed in an intermediate position and thereby ensure accuracy of the material amount to be batched, in such a manner, that both valve bodies during a certain stroke length are simultaneously in sealing engagement whereafter one of said valves opens.

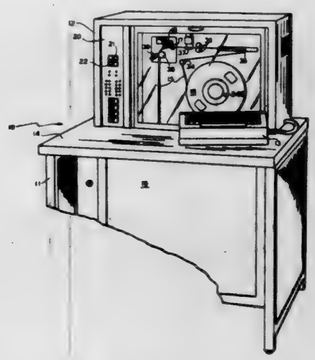
3,666,151
APPARATUS FOR AND METHOD OF SEVERING FILM
Gerald B. Dyer, and Edwin Szpak, both of Kingston, Ontario, Canada, assignors to Du Pont of Canada, Limited, Montreal, P.Q., Canada
Continuation of application Ser. No. 826,934, May 22, 1969, now abandoned. This application Aug. 18, 1970, Ser. No. 64,794
Int. Cl. B26f *3/02, 3/06*
U.S. Cl. 225—2 6 Claims



Process of severing film including the steps of subjecting the film to heat and pressure along the desired line of parting to weaken the film and cooling the heated area and effecting severing by pulling the film on either side of the line of parting with a snapping action. Apparatus is provided for performing the above described method of severing.

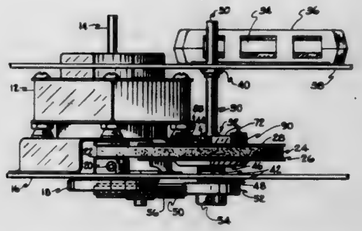
3,666,152
TAPE HANDLING APPARATUS FOR DATA RECORDER
George R. Cogar, Frankfort; Torkjell Sekse, Marcy; Walter Banziger; Joseph W. Ming, both of Utica, and Laszlo Horvath, Ilion, all of N.Y., assignors to Mohawk Data Sciences Corporation, Herkimer, N.Y.
Original application Nov. 18, 1968, Ser. No. 786,526, now Patent No. 3,578,257, which is a division of application Ser. No. 541,450, Mar. 30, 1966, now Patent No. 3,483,523. Divided and this application May 5, 1970, Ser. No. 46,570
Int. Cl. B65h *17/20*
U.S. Cl. 226—50 4 Claims

A tape handling apparatus for a machine which records data on magnetic tape wherein the tape is advanced by a drive capstan rotated by a driving belt which also drives a mechanism for backspacing the tape. To advance the tape a pinch roller is moved to engage the tape between itself and



the drive capstan. To backspace the tape, clutch means drivingly connects the backspace mechanism with the driving belt.

3,666,153
TAPE PLAYER WITH FAST TAPE WINDING MECHANISM
Robert Michael Stahl, Indianapolis, Ind., assignor to RCA Corporation
Filed June 26, 1970, Ser. No. 50,273
Int. Cl. B65h *17/22*
U.S. Cl. 226—178 6 Claims



A tape player apparatus includes a capstan utilized to drive a magnetizable medium past a transducing head. A flywheel is rotatably mounted to the capstan which is adapted to be rotated at two different speeds. The flywheel is driven at a first rotational velocity which is coupled to the capstan by a releaseable securing means. Means are provided for driving the capstan at a different, greater, rotational velocity. The releaseable securing means releases the capstan from the flywheel for independent rotation when the capstan is driven at the second rotational velocity.

3,666,154
BROKEN YARN WINDING APPARATUS
Kinyu Ishida, and Yasuhiro Okamura, both of Matsuyama-shi, Japan, assignors to Teijin Limited, Umeda, Kita-ku, Osaka, Japan
Filed Sept. 15, 1969, Ser. No. 857,728
Claims priority, application Japan, Sept. 18, 1968, 43/67446
Int. Cl. B65h *23/10*
U.S. Cl. 226—195 4 Claims

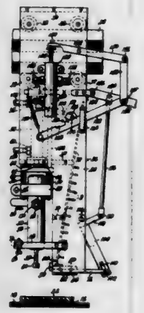
In winding a great number of filament yarns or tows in position parallel to each other after treatments such as draw-

ing and heat-setting, a rotatable disc having at least two rollers coming in contact with the yarn is disposed between the last roller available for said treatments to the yarn and a take-up apparatus. Said rollers are used interchangeably with



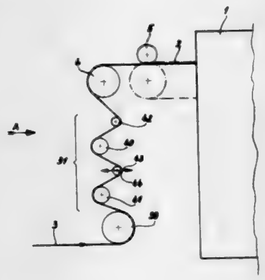
each other by rotating said disc, and when the yarn has wrapped itself around one of the rollers owing to yarn breakage or loosening, the roller with the wrapped yarn is replaced by the other roller by rotating the disc to insure continuity of operations.

3,666,155
GUN FOR PINCH FASTENERS
Frank Saluzzi, 5218 North Flora, Kansas City, Mo.
Filed Aug. 27, 1970, Ser. No. 67,316
Int. Cl. B27f 7/02
U.S. Cl. 227—110 **10 Claims**



An applicator gun for pinch fasteners of the type resembling a large-headed nail used for securing thick, soft slabs of insulation material to sheet metal, the shank of said fastener being adapted to pierce said insulation slab to abut the underlying sheet metal, and being specially formed to pinch and permanently grip said sheet metal responsively to hammer blows delivered to the head of said fastener, said applicator gun consisting of a carriage movable on a rail above a table supporting said sheet metal and insulation panels, a pneumatic hammer carried by the carriage with its head normally retracted above said panels, a feed mechanism carried by said carriage and operable to deliver fasteners one at a time to said hammer head while in its retracted position, said fastener being retained magnetically on said hammer head, hammer control mechanism carried by said carriage and operable to advance said hammer to cause the shank of said fastener to pierce said insulation and abut said sheet metal, and then to actuate said hammer to deliver hammer blows to the head of said fastener, a single lever operable to control both said feed mechanism and said hammer control mechanism, and an interlock operable to prevent any possible interference between said feed mechanism and said hammer.

3,666,156
APPARATUS FOR OBVIATING LONGITUDINAL RETARDATION OF A TEXTILE
Arno Becker, Stuttgart-Vaihingen, Germany, assignor to Bruckner-Trockentechnik KG, Denzstrasse, Leonberg, Germany
Filed Feb. 18, 1971, Ser. No. 116,483
Claims priority, application Germany, Feb. 18, 1970, P 20 07 359.0
Int. Cl. B65h 23/00
U.S. Cl. 226—111 **4 Claims**

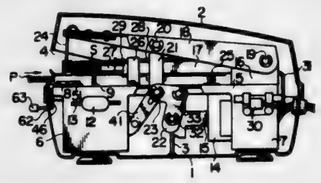


A treatment apparatus comprises a continuously running conveyer for the textile web and also comprises a feed roll which is arranged immediately ahead of the conveyer and which includes at least two separately driven coaxial adjacent roll portions, together with adjustable shrinking apparatus for applying the textile web in folds on the conveyor. At least one traction roll is arranged ahead of the feed roll and includes a corresponding number of separately driven roll portions. The drive at each side of the shrinking apparatus and the drives at the roll portions on the corresponding side of the traction roll and of the feed roll are coupled together to maintain their speeds in a constant ratio.

ERRATUM

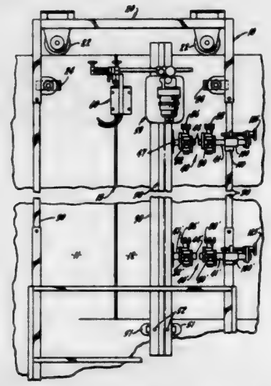
For Class 227—110 see:
Patent No. 3,666,155

3,666,157
ELECTRIC STAPLER APPARATUS
Hiroshi Kawai, Moriguchi; Osamu Sinohara, Daito, and Tadayuki Haruyama, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 4, 1970, Ser. No. 60,839
Claims priority, application Japan, Aug. 15, 1969, 44/78765
Int. Cl. B25c 5/02
U.S. Cl. 227—131 **2 Claims**



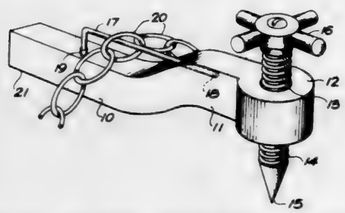
An electric stapler apparatus comprising an electromagnet provided on the rear undersurface of a base mount and constituting an operating power source, a staple driving lever adapted to be moved upwardly and downwardly by the electromagnet, the forward end portion thereof fixedly securing a staple driving hammer and the rear end thereof being mounted pivotally on the rear portion of the base mount, a staple guide casing positioned in a floating relationship above the base mount, said casing containing inside of the forward end portion thereof U-shaped staples and pivotally mounted at the rear end thereof on the rear portion of the base mount, and a staple clinching anvil rotatably mounted on the front upper surface of the base mount and provided with a pair of staple clinching grooves for clinching inwardly the staples on the upper surface of a flat anvil portion and another pair of staple clinching grooves for clinching the staples outwardly.

3,666,158
CAGE-TO-TRACK CONNECTION
Lawrence W. Bieker, Munster; Harold E. Schuler, Hobart, and Mark D. Kinghorn, Schererville, all of Ind., assignors to Aerojet-General Corporation
Filed Dec. 3, 1969, Ser. No. 881,777
Int. Cl. B23k 1/00
U.S. Cl. 228—25 **15 Claims**



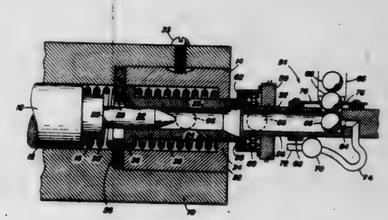
An apparatus for positioning and removing an operational unit about a desired location at a vertical weld seam. A flexible connection, attached to a cage, supports a vertical track on which travels a tractor which carries an operational unit for performing a desired operation on the weld seam. The flexible connection comprises a plurality of arms pivotally connection about vertical axes. The apparatus further includes a plurality of flexible connections to accurately align the vertical track along a vertical weld seam that is not truly vertical and/or is not perpendicular to any horizontal plane.

3,666,159
CLAMPING MEANS FOR PIPES AND FITTINGS
Robert L. Watson, Box 295 RD #2, Lowellville, Ohio
Continuation-in-part of application Ser. No. 648,318, June 23, 1967, now Patent No. 3,467,295, dated Mar. 3, 1969. This application July 15, 1969, Ser. No. 841,954
Int. Cl. B23k 1/14
U.S. Cl. 228—49 **4 Claims**



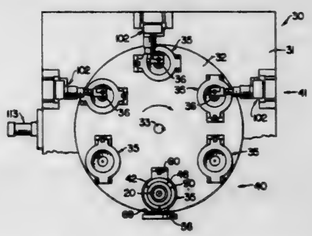
A portable lightweight clamping device for securing two sections of pipe in end to end relation to facilitate welding of the sections to one another. The clamping means includes a plurality of arms which are clamped to one of the sections of pipe and which extend outwardly in spaced relation to the other piece of pipe and are provided with adjustable screws so that the second piece of pipe can be brought into proper alignment with the first section and welded while being so held.

3,666,160
METHOD AND APPARATUS FOR FEEDING DISCRETE PARTS TO A COLD HEADING MACHINE
Childress B. Gwyn, Jr., Wethersfield, Conn., assignor to Contacts, Incorporated, Wethersfield, Conn.
Filed June 30, 1970, Ser. No. 51,290
Int. Cl. B23k 21/00; B23p 3/02
U.S. Cl. 228—3 **12 Claims**



The machine is described with reference to the production of cold bonded composite electrical contacts. A cold heading machine is altered to permit contact facing material to be fed into the coning punch assembly in discrete pieces such as balls, cylinders or the like. Ordinarily, pieces severed from a wire feed are delivered directly to the header die. In the present invention, the coning punch acts as a carrier of this material to the header die. The preferred apparatus is inherently self-timing, loading the contact facing material into the coning punch at its "rest" position. Optionally, individual body and facing components may be initially bonded as by brazing, and fed to the cold heading machine by the apparatus of the invention, eliminating wire feed and severing entirely. By virtue of the invention, facing and body components need not be of the same diameter, coning shapes are optimized, and a larger variety of heading diameters, facing thicknesses and heading ratios may be obtained. Stronger interfacial bonding is also achieved.

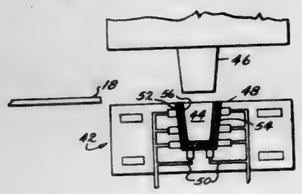
3,666,161
METHOD AND APPARATUS FOR WELDING BELLOWS CONSTRUCTIONS AND THE LIKE
Anthony T. Keller, Pequannock, N.J., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Mar. 6, 1970, Ser. No. 17,172
Int. Cl. B23k 1/00
U.S. Cl. 228—12 **12 Claims**



Method and apparatus for welding together the internal diameters of two bellows members wherein the apparatus has a frame means carrying an indexible table having a fixture thereon, the fixture being adapted to receive and hold the

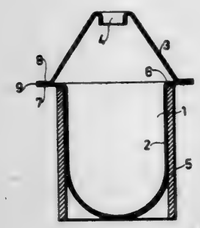
bellows members with the internal diameters thereof in a position for being welded together. The table is indexed to cause the fixture to move from a loading station thereof to a welding station thereof adjacent welding means carried by the frame means. Automatic means causes the welding together of the internal diameters of the bellows members with the welding means while the members are disposed at the welding station.

3,666,162
FOAMED POLYMER CUP AND METHOD FOR MAKING SAME
James R. Tiffin, 710 Colgate Lane, Newark, Del., and Earl Erdman, 117 Carlie Rd., Lynnfield, Wilmington, Del.
Continuation of application Ser. No. 261,683, Feb. 28, 1963, now abandoned. This application June 7, 1966, Ser. No. 555,922
Int. Cl. B29c *17/03*; B29d *27/00*
U.S. Cl. 229—1.5 B 6 Claims



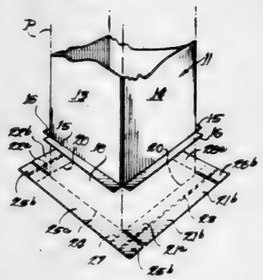
An improved polystyrene vending machine cup is made by vacuum forming and deep drawing a sheet consisting of a closed cell foam resin core with a nonporous, smooth tough resin skin on both sides of the core. The sheet is formed by extrusion of a hot sheet of foamable thermoplastic resin and quench chilling the surfaces of the sheet to form the skins on each side of the core. The cup can be held in the hand when filled with material having a temperature of 100° C.

3,666,163
PACKAGING CONTAINER
Rolf Lennart Ignell, Lund, Sweden, assignor to Sobrefina SA, Fribourg, Switzerland
Filed Feb. 24, 1970, Ser. No. 13,651
Claims priority, application Sweden, Mar. 20, 1969, 3866/69
Int. Cl. B65d *5/56*
U.S. Cl. 229—14 B 2 Claims



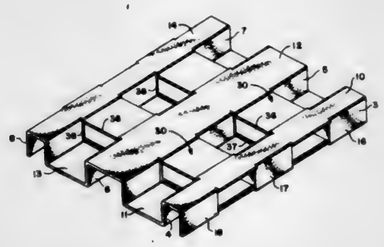
A packaging container having upper and lower parts and a sleeve surrounding the lower part to add strength thereto in which the two parts have outward flanges joined or sealed together to form the container, the inner diameter of the sealed portions of the flanges being substantially the same as the outer diameter of the sleeve so that the sealed portions when folded down over the top edge of the sleeve form a U-shaped channel for receiving the sleeve.

3,666,164
CONTAINER AND COVER THEREFOR
Terrill L. Nederveld, Neffsville, Pa., assignor to Packaging Corporation of America, Evanston, Ill.
Filed July 15, 1970, Ser. No. 55,043
Int. Cl. B65d *13/00*
U.S. Cl. 229—23 R 3 Claims



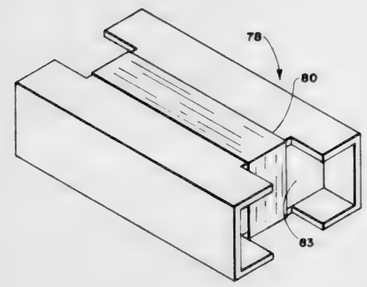
A container is provided having a tubular member with foldably connected side walls and one end thereof being delimited by locking flaps foldably connected to the side walls. Overlying the one end and in interlocking engagement with the flaps is a cover which is provided with peripheral panels foldable relative to the locking flaps so that each flap is in sandwiched relation with a peripheral panel, when the cover is assembled on the end of the tubular member.

3,666,165
CONTAINER AND PALLET
Edward L. Osborne, Kansas City, Kans., and Franklin J. Wagner, Kansas City, Mo., assignors to Westvaco Corporation, New York, N.Y.
Filed Sept. 23, 1970, Ser. No. 74,740
Int. Cl. B65d *13/00*
U.S. Cl. 229—23 R 6 Claims



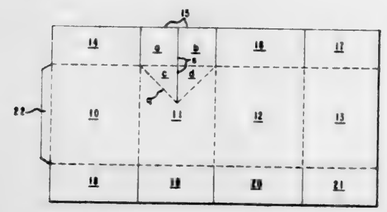
A composite container and pallet or separate pallet for four-way entry constructed from cut and scored blanks of corrugated paperboard or the like wherein the container includes cutout portions near the bottom thereof for receiving the tines of a forklift truck, and, the pallet includes a plurality of tubular members which are held in parallel spaced apart relation by a folded sheet of material having coplanar channels and supporting legs with flaps cut therein for receiving the tubular members.

3,666,166
WRAPPING SET AND PACKAGE FORMED THEREFROM
Anthony Freakes, Leonia, N.J., assignor to General Corrugated Machinery Co., Inc., Palisades Park, N.J.
Filed May 22, 1970, Ser. No. 39,808
Int. Cl. B65d *5/34*, *85/70*
U.S. Cl. 229—23 AB 1 Claim



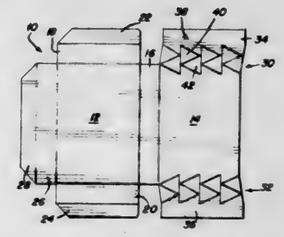
A wrapping set for packaging books or the like, comprising inner and outer panels, each said panel being provided with inner and outer scored lines defining central, side and flap portions when said panels are folded at said lines. The inner panel is folded about the package contents, and the outer panel is then folded about said inner panel in a direction transverse to the following direction of said inner panel, and is adhered to the inner panel. The width of the outer panel exceeds the separation of inner scored lines on the inner panel, whereby the lateral edges of said folded outer panel protrude beyond the folded inner panel to provide a buffer for protecting the package contents.

3,666,167
SHIPPING CASE WITH ACCESS OPENING
James Harry Watts, Hendersonville, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 7, 1970, Ser. No. 95,655
Int. Cl. B65d *5/16*
U.S. Cl. 229—37 R 1 Claim



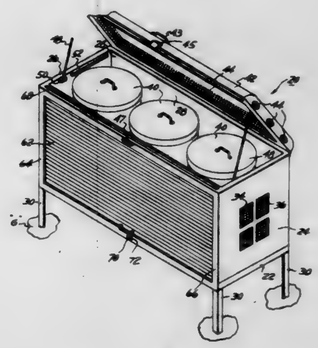
The disclosure is concerned with large, heavy-duty, paperboard shipping cases of a type constructed from one-piece standard slotted blanks. The front closure flap and part of the front wall are slit, and creases are provided for folding portions of the front wall outwardly to form a V-shaped opening. Advantages include easy access into deep shipping cases, sealing the opening and top flaps with a single strip of tape, strength and simplicity of construction.

3,666,168
PAPERBOARD CUSHIONING CELL CONSTRUCTION
James H. Partain, Norcross, Ga., and Richard H. Johnson, Arlington Heights, Ill., assignors to Stone Container Corporation, Chicago, Ill.
Filed June 29, 1970, Ser. No. 50,447
Int. Cl. B65d *85/00*
U.S. Cl. 229—40 29 Claims



A single-piece blank of paperboard or corrugated board capable of being folded to provide a pair of spaced apart parallel panels. Upon folding, there is realized an end cell cushioning construction connecting at least a pair of adjacent ends of the parallel panels. Also, the blank can be formed so that upon folding, a pair of opposite ends of the parallel panels can be connected by similar end cell cushioning constructions. The cushioning cell construction is suitable for use both in making spacer pads or pallets for use as interior protective devices in shipping containers or for making shipping containers for mailing books or the like.

3,666,169
REFUSE CAN RECEPTACLE
Jordan Eaton, 967 Continental Ave., Detroit, Mich.
Filed May 5, 1971, Ser. No. 140,472
Int. Cl. B65f *1/08*
U.S. Cl. 232—43.2 3 Claims



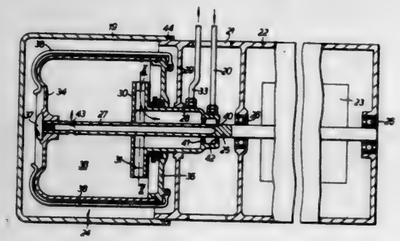
A refuse can receptacle comprising a normally closed substantially rectangular receptacle which, in one embodiment, may be anchored to the ground by spaced legs. The receptacle is provided with a bottom spaced from the ground and is divided by spacers to accommodate a plurality of refuse cans. The side and rear walls of the receptacle are imperforate except for a plurality of screened openings to dissipate odor. The top of the receptacle is closed by a hinged cover. The side and rear walls of the cover wall are of double walled construction to receive a sliding, flexible, corrugated front

retractable wall when the cover is closed to permit free access to the refuse cans from the front of the receptacle. The front wall is normally retained in closed position by a latch assembly.

In another embodiment, one end wall is provided with an auxilliary receptacle which can be opened from the side and top and which is adapted to receive a plurality of litter bags.

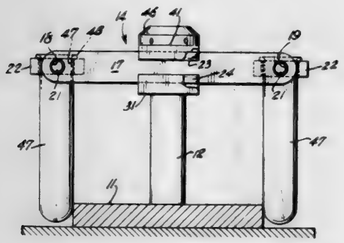
In another embodiment, the improved refuse can receptacle, instead of being anchored to the ground, is supported at one end on wheels and at the other end on a pair of legs, and a removable handle is provided which, when attached, permits moving.

3,666,170
CENTRIFUGAL SEPARATOR
Antonio Cacciabue, London, and Rodney Thomas Beazley, Maidstone, Kent, both of England, assignors to The Glacier Metal Company Limited, Alperton, Wembley, Middlesex, England
Filed May 7, 1969, Ser. No. 822,398
Int. Cl. B01d 21/26; B04b 1/00, 3/00
U.S. Cl. 233—1 A **5 Claims**



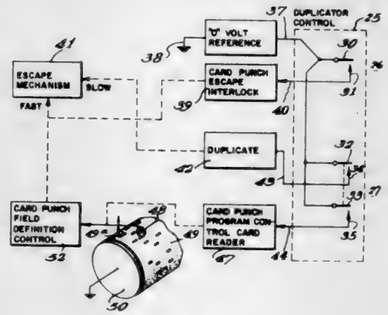
A centrifugal separator which includes a centrifugal pump for pumping the fluid from the separator, the pump being constituted by stationary vanes co-operating with the rotating fluid.

3,666,171
SWINGING BUCKET CENTRIFUGE ROTOR
Charles J. Fliz, Hamilton, Mont., assignor to Ivan Sorvall Inc., Newton, Conn.
Filed Oct. 20, 1969, Ser. No. 867,566
Int. Cl. B04b 9/12, 9/14
U.S. Cl. 233—26 **5 Claims**



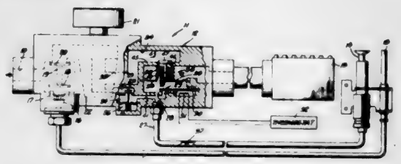
A swinging bucket centrifuge rotor made of separate, modular parts which are releaseably assembled and secured firmly in position by threading engagement between a nut and a central support block.

3,666,172
DUPLICATOR CONTROL FOR CARD PUNCH
Ralph E. Smith, Park Ridge, Ill., assignor to ICM, Inc.
Filed Apr. 23, 1970, Ser. No. 31,194
Int. Cl. G06k 1/16
U.S. Cl. 234—19 **5 Claims**



An auxiliary duplicator control for a card punch machine which bypasses the program control of the machine for copying all or a selected portion of the information on a card. The copying may be carried out at normal duplicate speed or at a higher speed used in the card punch machine for field definition indexing.

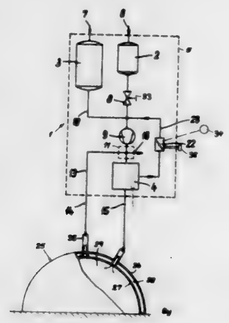
3,666,173
PILOT REGULATOR OPERATED MAIN VALVE
William A. Ray, North Hollywood, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed May 21, 1970, Ser. No. 39,282
Int. Cl. F23n 1/00
U.S. Cl. 236—15 A **3 Claims**



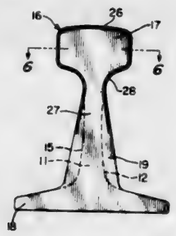
A control for a gas heater or the like including a regulator for the pilot burner gas supply, and a control valve connecting the regulator output to a main line gas shutoff valve. The main line valve is a diaphragm valve.

3,666,174
BLOWER APPARATUS FOR AIR-SUPPORTED STRUCTURES
Rudolf Brylka, Essen, and Hans-Jurgen Kleinwachter, Bad Nenndorf, both of Germany, assignors to Kappers Klimatechnik GmbH & Co. KG, Bad Nenndorf and Fried, Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany, part interest to each
Filed Nov. 14, 1969, Ser. No. 876,857
Claims priority, application Germany, Dec. 6, 1968, P 18 13 089.7
Int. Cl. F24h 3/02
U.S. Cl. 237—2 R **10 Claims**

A blower apparatus has a substantially closed housing formed as a trailer and an air passage through this housing. A blower in the passage sucks air in through one of two filters, i.e., a normal dust filter or an ABC (atomic, biological, chemical) filter, and expels it into the chamber formed between two walls of a double-walled air-supported structure. Some of the pressurized air is leaked into the housing to maintain this at superatmospheric pressure so that contaminants cannot enter. A heat exchanger is provided in the air stream for air which is used to pressurize the area enclosed by the structure, and a shunt from this exchanger back to the passage upstream of the blower is controlled by a thermostatic valve. The pressure in the chamber is greater than that in the area.



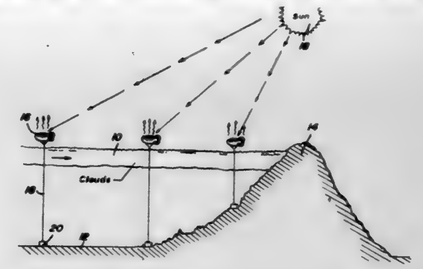
3,666,175
END POST INSULATOR
Homer R. Gill, St. Marys, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Apr. 15, 1970, Ser. No. 28,889
Int. Cl. E01b 11/00, 11/32, 26/00
U.S. Cl. 238—152 **2 Claims**



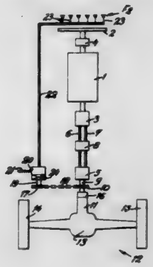
An improved insulated end post for use between the meeting ends of railway rails to insulate one rail from another in conjunction with insulated rail joints employed in block signal systems. The web of the end post has a greater width than the webs of the rail ends with which it is used to provide greater load-bearing capacity. The end post is preferably of a sandwich-type construction which has an elastomeric core and rigid metal face sheets. The core is preferably formed from a polyurethane compound.

3,666,176
SOLAR TEMPERATURE INVERSION DEVICE
Samuel R. Carter, Jr., 10601 Menoul N.E., Albuquerque, N. Mex.
Filed Mar. 3, 1970, Ser. No. 15,980
Int. Cl. E01h 13/00
U.S. Cl. 239—2 R **13 Claims**

A cloud cover trapping air pollutants over an affected region is dispersed by anchored balloons positioned closely above the cloud cover adjacent to the cloud trap. Heat radiated from the balloons produces a thermal updraft to change the characteristics of the clouds and subject them to the dispersal effects of air currents and wind.

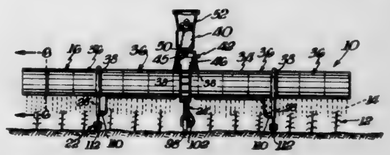


3,666,177
SELF PROPELLED, FAN-TYPE ORCHARD SPRAYER
Samuel Alfred Mencacci, Antwerp, Belgium, assignor to International Machinery Corporation, S.A., St. Niklaas-Waas, Belgium
Filed Apr. 9, 1970, Ser. No. 27,017
Claims priority, application Belgium, Feb. 25, 1970, 49,936
Int. Cl. A01n 17/08
U.S. Cl. 239—77 **5 Claims**



The invention pertains to a single-engined, self propelled sprayer wherein the fan speed can be pre-set at the optimum value for the job at hand, while the ground speed of the sprayer can be varied at will by the operator, during spraying.

3,666,178
FIELD-TREATING DEVICE
Arthur G. Crimmins, Woodbury, N.J., and Donald B. Doolittle, Wilmington, Del., assignors to All American Industries, Inc., Wilmington, Del.
Filed Oct. 30, 1970, Ser. No. 85,529
Int. Cl. A01n 17/08
U.S. Cl. 239—77 **26 Claims**



An elongated canopy approximately 50 feet long and about 10 feet wide is driven widthwise over a field on wheels of adjustable height. Air circulating fans are mounted under the canopy along its longitudinal axis pointing in the

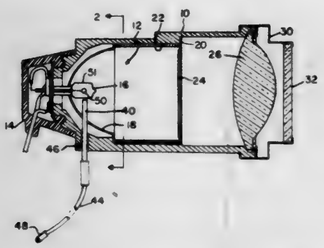
direction of movement of the canopy. Crop-treating substances, such as wet or dry chemicals, are ejected under the canopy and intermixed with the circulating air currents. The canopy substantially confines the circulating mixture and applied substance to the portion of the field substantially under it. Adjustable auxiliary lift surfaces and air inlet means may be provided on the canopy to help support its weight above the ground or to responsively control the footprint pressure and attitude of the device. A dual canopy may thus be joined by an auxiliary lift surface. A control console is mounted on a longitudinal center of the canopy. It is rotatable for driving in both directions without turning the entire device around. A pair of tandem driving wheels are mounted in the center of the canopy and freely rotatable castered outrigger wheels are spaced on both sides of the center driving wheels.

3,666,179
ADJUSTABLE SHOWER APPARATUS
Andreas D. Peschcke-Koedt, Box 134, Moose, Wyo.
Filed Sept. 28, 1970, Ser. No. 75,952
Int. Cl. B05b *15/08*
U.S. Cl. 239—587 **12 Claims**



Apparatus for adjustably disposing a shower head at any one of a plurality of different elevations while maintaining the shower head at a preselected angle. The mounting means includes a hollow elongated element and housing means for effecting the automatic adjustment of the shower head angle and for conducting shower water from a base member of the mounting means to the shower head.

3,666,180
DENTAL LIGHT
Peter M. Coombs, Newton, N.H., and Harold L. Hough, Beverly, Mass., assignors to Sylvania Electric Products, Inc.
Filed Sept. 2, 1970, Ser. No. 68,847
Int. Cl. A61b *1/06*; **F21v** *13/04*
U.S. Cl. 240—41.15 **6 Claims**



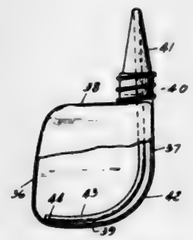
A dental illuminator projecting a sharply defined beam of light and having an optical clad glass rod for providing in addition a supplementary small spot of light for illuminating cavities and the like. The glass rod is placed with one end near and facing said bulb and perpendicular to the axis of the filament to receive light directly therefrom. The rod extends outside said fixture, and is connected to a flexible fiber optic conduit.

3,666,181
SPRINKLER HEAD APPARATUS
Mark Healy, Orange County, Fla., assignor to Senninger Irrigation, Inc., Orlando, Fla.
Filed Apr. 2, 1971, Ser. No. 130,653
Int. Cl. B05b *3/00*
U.S. Cl. 239—206 **10 Claims**



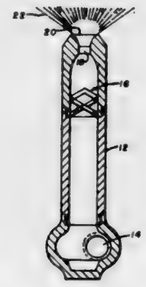
A sprinkler head apparatus is provided having a casing adapted to be connected to a water line in which the casing has a tube passing through the top thereof with a nozzle on the end exterior to the casing and a raceway attached to the other end of the tube inside the casing. The raceway has a ball located therein adapted to ride in a generally circular path and a protrusion connected thereto whereby intermittent collision with the ball riding in the raceway will rotate the raceway along with the tube and nozzle of the sprinkler head. The raceway has an inlet for water to enter at an angle generally tangential to the raceway for driving the ball in the raceway. The water entering the raceway may then pass into the tube and out the nozzle of the sprinkler head. The raceway has a second variable water inlet through which water may enter the raceway directly into the tube thereby varying the amount entering the angled inlet for driving the ball so that the rate of rotation of the tube and nozzle can be varied as desired.

3,666,182
SQUEEZE BOTTLE WITH MEANS FOR LOCATING END OF DELIVERY TUBE
Glen L. Cureton, Chattanooga, Tenn., assignor to Chattem Drug & Chemical Company, Chattanooga, Tenn.
Filed Apr. 24, 1970, Ser. No. 31,580
Int. Cl. B05b *11/00*
U.S. Cl. 239—327 **1 Claim**



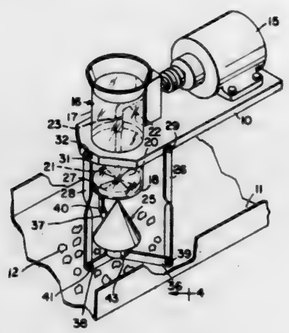
A squeeze bottle particularly useful for emitting a horizontal spray, the bottle being composed of a flexible plastic material and having a dispensing nozzle located in an off-center position adjacent one corner of the bottle enclosure, with a flexible delivery tube extending from the nozzle into the enclosure. Means are provided in the enclosure itself which guide the end of the delivery tube upon insertion into the enclosure to a position which is diagonally opposite to the corner of the enclosure in which the nozzle is located.

3,666,183
WIDE ANGLE SOLID CONE SPRAY NOZZLE CAPABLE OF HANDLING SLURRY FLOW
Donald A. Smith, Warehouse Point, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Dec. 30, 1970, Ser. No. 102,642
Int. Cl. B05b *1/34*
U.S. Cl. 239—463 **1 Claim**



A wide angle solid cone spray nozzle capable of handling flurry flow. Slurry is introduced into the nozzle tangentially at the inlet end to give the flow a spinning effect. A baffle in the nozzle increases the spinning effect. The slurry is discharged through a venturi having a flaring bell mouth outlet.

3,666,184
SPREADING DEVICE
Ray V. Beshgetoor, Merchantville, N.J., assignor to Be-Mo Machine Co., Kalamazoo, Mich.
Filed Oct. 15, 1970, Ser. No. 44,778
Int. Cl. B05b *1/26*
U.S. Cl. 239—512 **6 Claims**

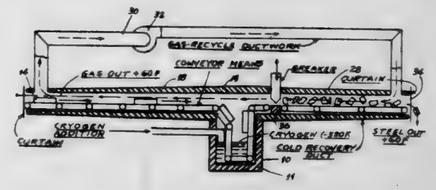


A device for spreading gravitationally falling particulate material wherein support means is located in the path of the falling material, a rotary drive member upstands from the support means, and an upwardly tapering distribution member is removably engaged in driven relation on the drive member for gravitationally receiving falling material and centrifugally impelling the material.

ERRATUM

For Class 240—41 see:
Patent No. 3,666,180

3,666,185
CRYOGENIC CRUSHING OF MATERIALS
Virgil C. Williams, 103 Frontenac Forest, St. Louis, Mo.
Filed Feb. 17, 1971, Ser. No. 115,976
Int. Cl. B02c *21/00*
U.S. Cl. 241—17 **4 Claims**

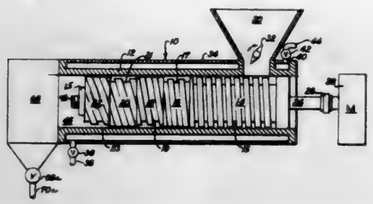


A cryogenic process for disintegrating materials such as metals, plastics, rubber, foodstuffs; wastes such as scrap iron, garbage, etc. The process is employed for materials which have decreased impact resistance upon refrigeration to low temperatures and recovers the refrigeration from the material after disintegration and employs this refrigeration in cooling of the material. The process can be employed in a continuous form where ferrous scrap material, such as junk automobiles, or the like, are fed countercurrently with a refrigerant fluid such as air or nitrogen in a pre-cooling stage and subsequently to a cryogenic cooling stage where the material is cooled to very low temperatures, and subsequently broken in a process using hammers, mechanical shredders, rotary crushers, or other physical forms. In the continuous process, in the post-cooling stage after breaking, the disintegrated material is passed in countercurrent heat exchange relation with the refrigerant fluid to recover the cold in the material. The scrap material in this stage may be separated by a magnetic separator which separates ferrous material from copper, aluminum and other materials, such as organic scrap in the form of fibers or the like, or separation may be effected on screens or in air or hydraulic elutriators or in cyclone separators. The refrigerant fluid may be used in a closed system, passing from the post-cooling stage to the cryogenic cooling stage where additional cryogenic refrigerant fluid may be added and into the pre-cooling stage and back to the process. In a preferred embodiment the refrigerant fluid, after passing through the pre-cooling stage, may be in part compressed to a high pressure and then expanded to a very low temperature in a turbine expander where the cooled refrigerant is used directly in the cryogenic cooling stage. The remainder of the refrigerant fluid, after the pre-cooling stage, that is not passed through the high pressure stage, may be recycled back to the post-cooling stage, where it is used to abstract refrigeration from the cold, disintegrated material.

3,666,186
THIN FILM MILL
Carroll B. Hoffman, P.O. Box 987, Newburgh, N.Y.
Filed July 20, 1970, Ser. No. 56,430
Int. Cl. B02c *7/06*
U.S. Cl. 241—45 **21 Claims**

A thin film mill for simultaneous reduction in size as by separation of agglomerates of particle clusters and dispersion of the fine particles in a liquid carrier, constructed of a plurality of rotatable cylindrical sections arranged in a row, each

section having a helical groove cut in its cylindrical surface, the grooves being variable in depth becoming shallower and wider with progressively increasing pitch from inlet to outlet,

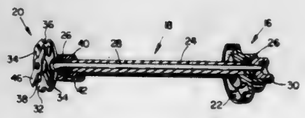


the sections being mounted for application eccentrically of radial pressure upon a thin film of the dispersion between each section and the walls of the confining casing.

3,666,187
LABORATORY HOMOGENIZER

George F. Norris, Kensington, Md., assignor to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare

Filed May 13, 1970, Ser. No. 36,758
Int. Cl. B02c *13/18*
U.S. Cl. 241—90 **6 Claims**

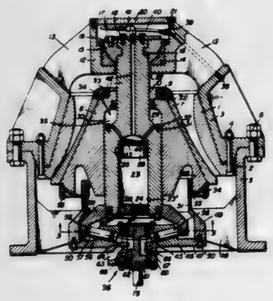


An homogenizer for laboratory usage for the grinding and homogenizing of animal bone, gristle, cartilage, fur and the like including a container and a cutting unit operable through the container cover. The grinding and homogenizing is accomplished by means of the cutting unit which includes three series of blades, the first being a stationary plate blade having obliquely directed holes passing therethrough, the second being a rotary cutting blade which slides against the plate blade, and the third being an axially disposed second rotary blade which assists in both cutting and pumping.

3,666,188
GYRATORY CRUSHER

Arthur W. Lippmann, Poway, Calif., assignor to Hewitt-Robins Incorporated, Stamford, Conn.

Filed Aug. 19, 1969, Ser. No. 851,283
Int. Cl. B02c *2/06*
U.S. Cl. 241—213 **2 Claims**

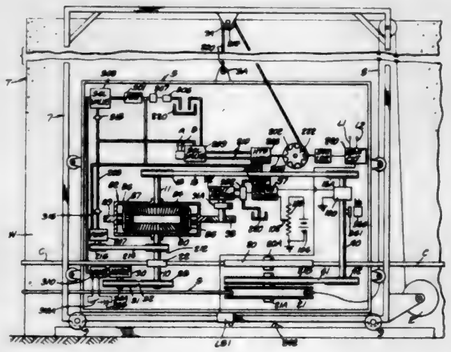


The present application discloses a gyratory crusher which is actuated by a fluid motor and, more particularly, by a fluid motor having a plurality of sequentially actuated pistons which are positioned radially about the central shaft supporting the movable crushing member and which operate directly on the shaft in order to create the necessary gyratory motion. In addition, a fluid bearing is provided intermediate the movable crushing member and the supporting shaft and which bearing is specifically designed to adjust the vertical position of the movable crushing member within the crushing chamber. The operating mechanism for the movable crushing member is also designed to provide automatic relief in the event uncrushable material in the crushing chamber might create excessive or damaging stresses.

3,666,189
MEANS AND TECHNIQUES USEFUL IN PRESTRESSING CONCRETE STRUCTURES

Maximiliaan J. Dykmans, 4434 Mayapan Drive, La Mesa, Calif.

Continuation-in-part of application Ser. No. 718,138, Apr. 2, 1968, now Patent No. 3,572,596. This application June 24, 1970, Ser. No. 49,277. The portion of the term of the patent subsequent to Mar. 30, 1988, has been disclaimed.
Int. Cl. B21f *17/00*; **B65h** *81/00*
U.S. Cl. 242—7.21 **25 Claims**



In wrapping wire around a concrete tank to prestress the same, a carriage is caused to travel around the tank by a motor-driven sprocket wheel thereon engaging a chain which extends tightly around and on the tank. Simultaneously the wire is fed from a supply spool onto a wire-gripping drum and is then laid on the outer tank wall with a wire tension established by monitoring deviations in stress with respect to a nominal value of stress, and using such deviations to produce changes in the differences in peripheral linear speed between on the one hand the sprocket wheel speed (carriage speed) and on the other hand the linear speed of the wire-gripping drum. Such stress is maintained substantially constant at the same nominal value whereby the wire is uniformly and accurately stressed when and as it is being wrapped around the tank wall.

A platform carrying wire tensioning apparatus may be raised or lowered on the carriage during carriage movement, either in the forward direction or in reverse direction or when the carriage is at standstill.

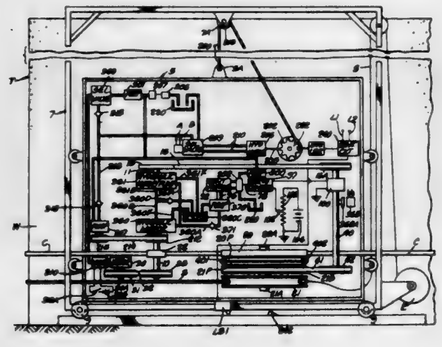
Means are incorporated to assure a constant spacing between wire convolutions. Also control means are incorporated to maintain constant tension regardless of carriage speed either in a forward or reverse direction or at carriage standstill. The wire may be laid in a continuous helix or in steps accurately controlled as to height. Also means are incorporated to achieve or maintain an automatic wire tension regardless of carriage movement in either direction of carriage movement or at standstill. Further, the wire may be tensioned from a slack or zero tension condition to any desired tension and maintained automatically at such tension without requiring carriage movement. Also, the desired tension may

be preadjusted to any desired value while the carriage is in motion either in the forward or reverse direction. A hydraulic-electrical system is used for these purposes.

3,666,190
MEANS AND TECHNIQUES USEFUL IN PRESTRESSING CONCRETE STRUCTURES

Maximiliaan J. Dykmans, 4434 Mayapan Drive, La Mesa, Calif.

Continuation-in-part of application Ser. No. 718,138, Apr. 2, 1968, now Patent No. 3,572,596, dated Mar. 30, 1971, and a continuation-in-part of 49,277, June 24, 1970. This application July 16, 1970, Ser. No. 55,335. The portion of the term of the patent subsequent to Mar. 30, 1988, has been disclaimed.
Int. Cl. B21f *17/00*
U.S. Cl. 242—7.21 **6 Claims**

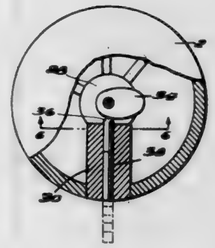


In wrapping wire around a concrete tank to prestress the same, a carriage is caused to travel around the tank by a motor-driven sprocket wheel thereon engaging a chain which extends tightly around and on the tank. Simultaneously the wire is fed from a supply spool onto a wire-gripping drum and is then laid on the outer tank wall with a wire tension established by monitoring deviations in stress with respect to a nominal value of stress, and using such deviations to produce changes in the differences in peripheral linear speed between, on the one hand, the sprocket wheel speed (carriage speed) and on the other hand the linear speed of the wire-gripping drum. Such stress is maintained substantially constant at the same nominal value whereby the wire is uniformly and accurately stressed when and as it is being wrapped around the tank wall. A platform carrying wire tensioning apparatus may be raised or lowered on the carriage during carriage movement, either in the forward direction or in reverse direction or when the carriage is at standstill. Means are incorporated to assure a constant spacing between wire convolutions. Also control means are incorporated to maintain constant tension regardless of carriage speed either in a forward or reverse direction or at carriage standstill. The wire may be laid in a continuous helix or in steps accurately controlled as to height. Also means are incorporated to achieve or maintain an automatic wire tension regardless of carriage movement in either direction of carriage movement or at standstill. Further, the wire may be tensioned from a slack or zero tension condition to any desired tension and maintained automatically at such tension without requiring carriage movement. Also, the desired tension may be preadjusted to any desired value while the carriage is in motion either in the forward or reverse direction. A hydraulic-electrical system is used for these purposes involving a hydraulic motor which drives the carriage connected in a unique manner with respect to a hydraulic motor/pump having its shaft connected to wire-gripping means.

3,666,191
AUTOMATIC TUBE EXTRACTOR

Donald J. Hopko, Yonkers, N.Y., assignor to Windings, Inc., Yonkers, N.Y.

Filed Sept. 1, 1970, Ser. No. 68,664
Int. Cl. B65h *54/00*
U.S. Cl. 242—18 R **1 Claim**

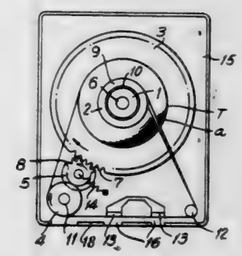


In the winding of a package of flexible material of the universal type with a radial opening, the inner end of the material being led out through the radial opening for twistless payout, in order to make the inner end available when the package is completed and at the same time to provide the radial hole with a guide tube, a rotary switch is connected to a retracting oscillating guide for flexible material which rests on the face of the material being wound and controls a motor mounted inside the mandrel on which the flexible material is being wound. This motor through a cam and follower advances a guide tube, through which the inner end of the material has been threaded, through the radial hole which is formed during the winding at substantially the same rate that the package builds up.

3,666,192
CARTRIDGE FOR ENDLESS TAPE

Fukuzo Ito, Yokohama-shi, and Masaoki Sekine, Kawasaki-shi, both of Japan, assignors to Tokyo Denki Kagaku Kogyo Kabushiki, Kaisha, Tokyo-to, Japan

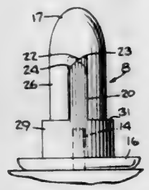
Filed Sept. 15, 1969, Ser. No. 857,980
Claims priority, application Japan, Sept. 16, 1968, 43/66756
Int. Cl. B65h *17/48*
U.S. Cl. 242—55.19 A **6 Claims**



This invention relates to an endless tape cartridge having a hub on which a looped endless tape is wound up in a convoluted manner. The tape is pulled out from the innermost convolution of the tape wound on the hub to be rewound on the outermost periphery of the wound tape through a pinch roller, etc. The above mentioned hub for taking up the tape is of double construction consisting of a driving wheel and a driven wheel incorporated with the driving wheel. A revolving plate is installed on the bottom of the driving to receive the tape. The revolving plate is equipped with a revolution

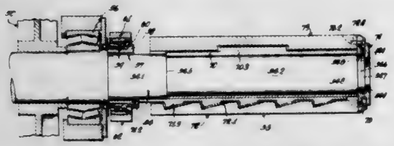
transmission unit through which the revolving plate is operatingly connected to the pinch roller.

3,666,193
TAPE REEL DRIVE TURNTABLE
Charles K. Wellington, Westford; Dietrich Jung, Belmont, and George A. Kwasniewski, Wellesley, all of Mass., assignors to Viatron Computer Systems Corporation, Bedford, Mass.
Filed Dec. 2, 1969, Ser. No. 881,406
Int. Cl. B65h *17/02, 75/00*
U.S. Cl. 242—68.3 **3 Claims**



An improved turntable for holding and driving reels of magnetic recording tape and other tapes and particularly for such tapes when supplied in sealed magazines which include cooperating supply and take-up spools. The turntable is preferably formed of a single piece of material and includes reel engaging bars having curved centering surfaces at their ends so that the magazine with its spools may be pressed onto the turntable without regard to the particular reel position. This facilitates the insertion of the magazine onto a recording or playback device and provides a drive turntable without backlash and tape flutter.

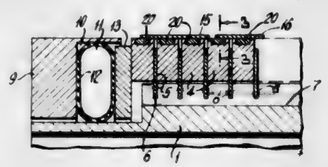
3,666,194
REELS FOR STRIP MATERIAL
Walter H. Gosnell, 741 West St., Niles, Ohio
Filed July 17, 1970, Ser. No. 55,907
Int. Cl. B65h *75/24*
U.S. Cl. 242—72 **15 Claims**



Reels for use in coiling and uncoiling metallic strip material, including a sleeve carried by and rotatable with a shaft of solid cross-section. Primary wedges are carried by the sleeve for longitudinal movement relative thereto, and a yoke is slidable along the shaft and effects movement of the primary wedges. Secondary wedges cooperate with the primary wedges and are moved in a radial direction by longitudinal movement of the primary wedges. Segments are carried by the secondary wedges and are moveable radially thereby.

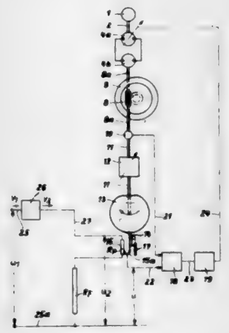
3,666,195
BRAKING DEVICE FOR USE IN WINDING MULTIPLE STRIPS UPON A COMMON MANDREL
Jean Gaudin, Montigny les Cormeilles, France, assignor to Societe De Constructions Mecaniques De Creil
Filed Sept. 9, 1969, Ser. No. 856,928
Claims priority, application France, Jan. 23, 1969, 6901164. The portion of the term of the patent subsequent to Sept. 23, 1986, has been disclaimed.
Int. Cl. B65h *23/10, 77/00*
U.S. Cl. 242—75.2 **3 Claims**

In winding multiple strips of magnetic material, the strips, in passing on their way to a common winding mandrel, are applied to engage an arc-shaped area of the cylindrical surface formed by the outer edge surfaces of a plurality of juxtaposed braking rings rotatively mounted upon a stationary drum. The rings are spaced by intervening spacing rings being of lesser diameter and mounted upon the drum to move freely axially but locked against relative rotation



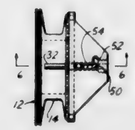
therewith. The stack of alternate braking and spacing rings is held under axial pressure to create a predetermined resilient pressure between the adjoining rings, and the strips to be wound are held in contact with the braking rings by permanent magnets embedded in or a ribbon of magnetic material affixed to the outer surfaces of the rings.

3,666,196
SYSTEM FOR CONTROLLING THE COILING OF ELONGATED MATERIAL ON A COILER
Detlef Fullers, Dusseldorf, and Friedrich Schubel, Herne, both of Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany
Filed Apr. 17, 1970, Ser. No. 29,505
Claims priority, application Germany, Apr. 18, 1969, P 19 19 687.3
Int. Cl. B21c *47/28*
U.S. Cl. 242—78 **10 Claims**



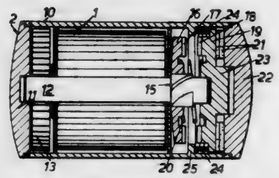
A control system is provided for controlling the speed of a rotation of a coiler, such as a drum, in accordance with the rate at which the material is supplied and the diameter of the turn of the coil being layed at that instant. The material is usually layed first in a spiral of increasing diameter and then in an adjacent spiral of decreasing diameter, so that the speed of rotation of the coiler has to be continuously varied. A first signal is provided as a measure of the actual speed of rotation of the coiler, and a second signal, produced by a potentiometer having a sliding contact controlled by cam means driven in a predetermined relationship with the coiler, is provided as a measure of the required speed of rotation. A regulator compares the signals and controls the speed of the coiler accordingly.

3,666,197
DEPTH GAUGING MEANS FOR FISHING REELS
Chester L. Coshow, P.O. Box 149, Collinsville, Okla.
Continuation-in-part of application Ser. No. 822,463, May 7, 1969, now Patent No. 3,563,489. This application Apr. 20, 1970, Ser. No. 29,809
Int. Cl. A01k *89/00*
U.S. Cl. 242—84.1 R **7 Claims**



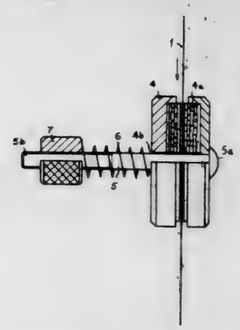
A spool for fishing reels having line wound thereon and provided with metering means for paying-out predetermined lengths of the line. The spool comprises a peripheral surface upon which the line can be wound, and a gauge member movable between a first position removed from the region of said peripheral surface and a second position spacedly superposed with respect to said peripheral surface, said gauge member being removably retainable in either said first or second position whereby when in said second position line wound on the spool will be spaced above the peripheral surface in the region of said gauge member and supported by the latter in said region, the length of line subsequently payable from the spool when said gauge member is in the second position being limited to those line windings supported by said gauge member.

3,666,198
SEAT BELT REEL
Bernhard Neumann, Baiascheim, Germany, assignor to General Motors Corporation, Detroit, Mich.
Filed June 29, 1970, Ser. No. 50,565
Claims priority, application Germany, July 12, 1969, P 19 35 539.6
Int. Cl. A62b *35/00*
U.S. Cl. 242—107.4 **4 Claims**



This invention relates to safety belts for use in vehicles to retain passengers in their seats in the event of rapid acceleration or deceleration of the vehicle. This application discloses a seat belt of the inertia reel type which allows the passenger restrained by the belt to make relatively slow movements to extend the belt from the reel but which locks the belt against further movement in the event of rapid changes in motion of the vehicle, an inertia reel seat belt according to the invention being provided with an extra safety feature in the form of an energy-absorbing device which is capable of absorbing energy from the seat belt when the force exerted on the seat belt exceeds a predetermined amount.

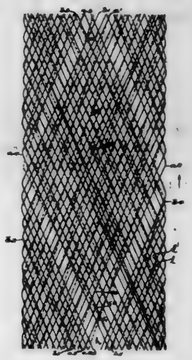
3,666,199
WIRE BRAKE
Eliseo Mezzadri, Zurich, Switzerland, assignor to Micafil A.-G., Zurich, Switzerland
Filed Dec. 14, 1970, Ser. No. 97,951
Claims priority, application Germany, Dec. 19, 1969, P 19 63 752.6
Int. Cl. B65h *59/22*
U.S. Cl. 242—149 **3 Claims**



A device for braking a traveling wire in order to apply a drag force to the wire is constituted by a pair of juxtaposed brake members between which the wire is passed. Each brake member is constituted by a pad of glass fabric adapted to press against the wire, and each glass fabric pad is adhered to an underlying relatively soft supporting base such as felt.

Each brake member is seated in a correspondingly configured recess in a rigid support member, and the two support members are mounted on a support bolt which passes through central openings provided therein and in the brake members. A compression spring adjusted by a nut on the bolt is used to apply an adjustable axial pressure against the two support members urging them towards each other which causes the glass fabric pads to be pressed against the wire.

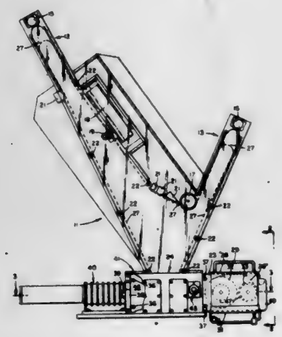
3,666,200
PACKAGE OF FLEXIBLE MATERIAL FOR TWISTLESS PAYOUT AND METHOD OF MAKING SUCH PACKAGE
James W. Newman, Scarsdale; Nicholas M. Bavaro, Mount Vernon, and William A. Wagner, Bronxville, all of N.Y., assignors to Windings, Inc., Yonkers, N.Y.
Filed Sept. 21, 1970, Ser. No. 73,802
Int. Cl. B65h *55/02*
U.S. Cl. 242—163 **5 Claims**



A package of material wound in a universal wind with crossovers in successive layers progressing in opposite

directions around the axis of the package through angles of less than 360° so as to leave a radial opening into the central core through which the free end of the material may be drawn out for payout has the coils in alternate layers spaced apart two to three times as far as those in the adjacent layers.

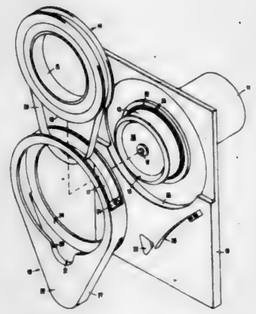
3,666,201
CASSETTE FEEDING APPARATUS
Alfred F. Stahler, San Jose, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Filed Apr. 1, 1970, Ser. No. 24,760
Int. Cl. G03b *1/04*; G11b *15/32*, *23/04*
U.S. Cl. 242—180 **8 Claims**



For use with a magnetic tape transport of the type in which a pair of vacuum tape loop storage columns are arranged on either side of a vacuum tape metering capstan and transducing means, and tape is drawn into the storage columns and against the capstan and transducing means from a magnetic tape cassette, an array of cassettes is arranged for movement parallel to the tape pack axes thereof for delivery of any selected cassette to an insertion-withdrawal means that then moves the selected cassette in a plane normal to the tape pack axes and into operative relationship with the tape transport. Means are provided to cause the cassette to engage a precision positioning wall on the transport, and extension means are arranged to extend for centering and driving the tape pack hubs of the cassette. The hubs are formed with springloaded portions engageable with the cassette side walls for braking the hubs when the cassette is not in operating relation with the transport, and the extension means also engages and releases these braking portions to free the hubs for operation. A cover door is provided for the transport and a reel-to-reel arrangement is also provided for operation with a suitable dummy cassette in the transport.

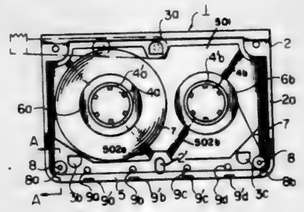
3,666,202
SINGLE REEL MAGNETIC TAPE UNIT
John W. Wenner, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 13, 1970, Ser. No. 63,350
Int. Cl. G11b *15/32*, *15/58*, *23/10*
U.S. Cl. 242—182 **12 Claims**

A standard 9-track, half-inch, 300-foot mini-reel of magnetic tape, having a relatively large endless polyethylene belt loosely encircling the tape, is inserted into a cartridge have a U-shaped vacuum column portion. The side walls of the vacuum column converge as they extend away from the reel, and an opening is formed in the back surface of the vacuum column. The reel mounts on a vacuum activated reel latch to accurately position the reel and loosely position the cartridge adjacent to reference plate. When the reel is so positioned, the open back of the vacuum column is held against the reference plate by the vacuum opening in the reference plate. A vacuum source both actuates the reel latch, to couple the tape reel to a reversible drive motor, and pulls the endless belt into the vacuum column. Forward rotation of the motor causes a fundamental band of magnetic tape, of increasing layer thickness, to be established in the vacuum column, the inner surface of the endless belt establishing the outer layer of the fundamental band. A magnetic transducer



is mounted on the reference plate in a position to contact with the inner layer of the fundamental band. A spring provides a light contact force to oppose the frictional force between the cartridge, and the reference plate and to cause slight rotation of the cartridge about the reel axis when a rewind mode is initiated, to allow high speed rewind with the tape out of contact with the transducer.

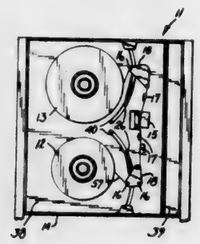
3,666,203
TAPE CASSETTE
Masaaki Sato, and Shoichi Saito, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Apr. 15, 1970, Ser. No. 28,753
Claims priority, application Japan, Apr. 18, 1969, 44/34990
Int. Cl. B65h *59/38*; G03b *1/04*; G11b *15/32*
U.S. Cl. 242—188 **16 Claims**



The two guide rollers which guide tape in a cassette along the narrow, apertured front wall of its casing are of conductive material and conductively connected with contacts accessible from outside the cassette. When the cassette is installed on a recorder, the contacts are engaged by corresponding contact elements in the control circuit of the recorder. A conductive coating on each end of the tape in the cassette is long enough to bridge the distance between the two guide rollers and thereby to close a circuit in the recorder which arrests the drive in the recorder for the tape reels in the cassette. Each tape end is secured to a reel in the cassette by means of a locking plate releasably engaging a circumferential recess in the drum portion of the reel, the film end being clamped between the plate and the body of the drum portion. Friction between the reels and the top and/or bottom plates of the cassette is reduced by a creased

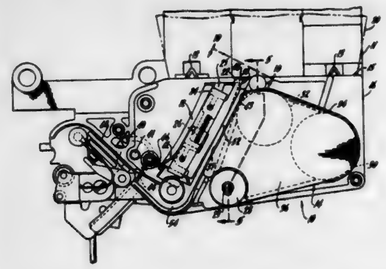
liner sheet whose crease forms a straight narrow ridge radial relative to the reel axis and resiliently engaging the reel. The recorded material may be indicated on a sheet of paper, plastic, or metal releasably retained on an outer surface of the top or bottom wall.

3,666,204
MAGNETIC TAPE TRANSPORT
Walter Gysling, Excelsior, Minn., assignor to Data Action Corporation, Minneapolis, Minn.
Filed Dec. 7, 1970, Ser. No. 95,545
Int. Cl. B65h *59/38*; G03b *1/04*; B65h *63/02*
U.S. Cl. 242—189 **14 Claims**



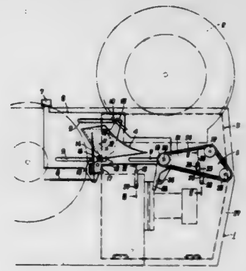
A high speed tape transport in which a pair of rotatably mounted tension arms move into engagement with information bearing tape as it passes between an electromagnetic tape head and, first and second tape reels to form tension loops and thereby maintain constant tape tension. The position of the tension arms is controlled by an actuating element which is connected to each of the arms and is reversibly movable along a line equidistant between the two tape reels. The tension arms are initially positioned outside the normal tape path in order to simplify the tape threading process and rotate inwardly through the path to form the tension loops. A beginning and end of tape sensor mounted adjacent the electromagnetic tape head is movable toward and away from the tape head as a function of tension arm position also for the purpose of simplifying tape threading process.

3,666,205
APPARATUS FOR STRIPPING AND FEEDING WEB MATERIAL FROM A SUPPLY ROLL OR CARTRIDGE
Jaroslav Cherniavsky, Skokie; Edward R. Prelletz, Chicago, and Roland R. Rucinski, Villa Park, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.
Filed Jan. 26, 1970, Ser. No. 5,665
Int. Cl. G03b *1/58*
U.S. Cl. 242—192 **48 Claims**



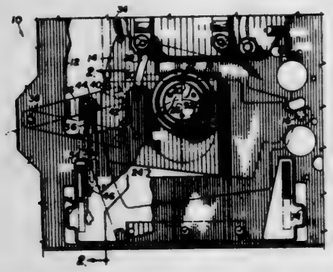
An apparatus for stripping and feeding strip material from a rotatably supported roll of such material having a leading end comprising: a stripping member having a first surface engageable with the strip material on the roll during rotation thereof to separate the leading end of the strip material from the roll and having a second surface adapted to direct the lead end of the strip material away from the roll; a drive member engageable with and adapted to drive the roll so that the leading end of the material is moved towards the stripping member; and a guide member connected to the drive member, wherein the guide member and the second surface of the stripping member cooperates to form a narrow passageway therebetween for guiding the leading end of the strip material away from the roll during rotation of the roll by the drive member.

3,666,206
STRIP-HANDLING ARRANGEMENT
Gottfried Pammer, Maria-Enzersdorf-Südstadt, and Karl Walz, Vienna, both of Austria, assignors to Karl Vockenhuber and Raimund Hauser, Vienna, Austria
Filed May 15, 1970, Ser. No. 37,813
Claims priority, application Austria, June 4, 1969, A 5346/69
Int. Cl. G03b *1/58*; G11b *15/66*
U.S. Cl. 242—192 **3 Claims**



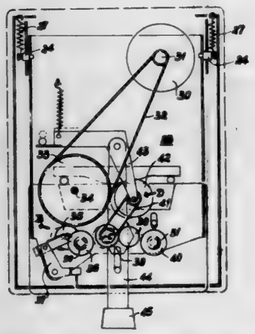
A coil holder is detachably mounted in a frame and holds a coil of strip having a leading end on the periphery of said coil. A belt drive comprises a first pulley, which is rotatably mounted in said frame on a stationary axis, a first coil-engaging element including a second pulley and mounted in said frame for movement between an inoperative position, in which said first coil-engaging element is clear of said coil holder and coil, and an operative position, in which said second pulley bears on the periphery of said coil, and a belt trained around both said pulleys and having a forward course extending from said second pulley. Drive means are operable to drive said first pulley to move said forward course of said belt away from said second pulley to rotate said coil in a strip-unwinding sense when said first coil-engaging element is in its said operative position, whereby said leading end of said strip is moved in a predetermined direction of travel. A stripper constitutes a second coil-engaging element and is mounted in said frame for movement between an inoperative position, in which said stripper is clear of said coil holder and coil, and an operative position, in which said stripper engages the periphery of said coil at a point which succeeds said second pulley in said direction of travel when said first coil-engaging element is in its said operative position, said stripper and said forward course of said belt defining between them a passage through which said strip is movable in said direction of travel away from said coil. A locking device is mounted in said frame for movement between an inoperative position and an operative position, in which it engages at least one of said coil-engaging elements and holds it against moving to its said operative position.

3,666,207
SHIFTABLE SPINDLE FOR TAPE TRANSPORT
William W. Swain, Mountain View, Calif., assignor to Cartridge Television, Inc., New York, N.Y.
Filed June 26, 1970, Ser. No. 50,244
Int. Cl. G03b *1/04*; G11b *15/32, 23/04*
U.S. Cl. 242—197 13 Claims



A shiftable spindle for receiving a tape reel of a tape cartridge when the latter is in an operative position relative to a base plate of a tape transport. The cartridge is received within a support having means for shifting the spindle as a function of the size of the cartridge.

3,666,208
AUTOMATIC TAPE TRANSDUCER MECHANISM
Alessandro Beretta, 16, Piazza Insubria 20137, Milano, Italy
Filed Mar. 18, 1970, Ser. No. 20,557
Claims priority, application Italy, Mar. 24, 1969, 14480 A/69
Int. Cl. G03b *1/04*; G11b *5/00*
U.S. Cl. 242—198 7 Claims



A tape transducer using a replaceable cartridge including a tape and two reels between which the tape is transferred upon tape drive provided by reel driving pins and capstan. The mechanism comprises an oscillatable plate carrying the pins and the capstan and the motor and transmission means for driving same, and various slide components, arm means and latching devices for causing engagement and activation of the transducer upon pushing the cartridge into the apparatus and for causing return of the transducer to fully deactivated condition and pushing out of the cartridge when complete unwinding of the tape from either reel is sensed.

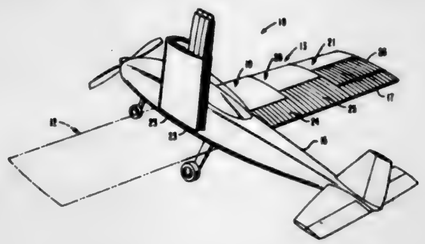
3,666,209
V/STOL AIRCRAFT WITH VARIABLE TILT WING
Frederick M. Taylor, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Feb. 24, 1970, Ser. No. 13,422
Int. Cl. B64c *27/28*
U.S. Cl. 244—7C 5 Claims

V/Stol aircraft wiring comprising two independently rotatable fore and aft portions, both portions being movable in any position from the horizontal to the vertical positions for the most aerodynamically efficient configuration for take-



off either conventional or vertical, for climb, for landing either conventional or vertical, and for braking either in the air or while taxiing on the ground.

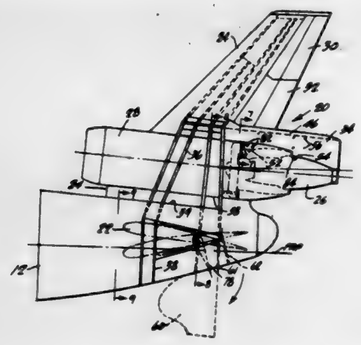
3,666,210
VARIABLE AERODYNAMIC STRUCTURE
Lance G. Look, Traverse City, and David G. Erickson, Williamsburg, both of Mich., assignors to Hitco, Gardena, Calif.
Filed Dec. 18, 1969, Ser. No. 886,322
Int. Cl. B64c *3/54*
U.S. Cl. 244—43 25 Claims



An aerodynamic or airfoil structure for a given span dimension includes a fixed spar or base portion and at least one movable portion comprising a plurality of pivotable rib elements which define a three dimensional aerodynamic structure when extended. The rib elements are hingedly mounted at one end to the fixed portion and at the other to an edge member, so as to form an internally movable parallelogram structure. When the ribs are in the compacted position, they nest against or within the fixed portion, and fold within each other. The aerodynamic or airfoil structure may be in two or more sections that are extendible spanwise through operation of an internal mechanism. Structures of this type may comprise aircraft wings, rotor blades, control surfaces, spoilers, flaps or specialized airfoil devices for atmospheric or reentry vehicles. The airfoils may have either or both trailing and leading edges that are compactible and deployable.

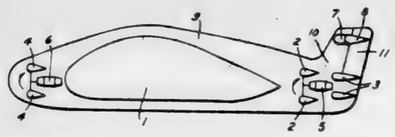
3,666,211
TRIJET AIRCRAFT
Richard T. Cathers, Fullerton; William M. Douglass, Palos Verdes Estates; Frederick D. Hess, Jr., Lakewood; John Morris, Newport Beach, and James E. Roberts, Long Beach, all of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.
Filed Mar. 12, 1970, Ser. No. 18,960
Int. Cl. B64d *27/20*
U.S. Cl. 244—54 19 Claims

An aircraft having a pair of wing mounted jet engines and an aft engine of the high-bypass turbofan type mounted in the vertical stabilizer of the tail section. The aft engine has a straight air inlet duct passing through vertical stabilizer spars attached directly to fuselage bulkheads. Each spar is a ring



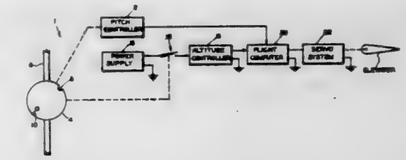
frame of a one-piece forging. A pylon beam extending aft from the base of the vertical stabilizer provides a top engine interface similar to that on the wing.

3,666,212
PROPULSION ARRANGEMENT FOR CRAFT WHICH MOVE IN A FLUID MEDIUM
Wilhelm Schmidt, Dresden, Germany, assignor to Deutsche Akademie Der Wissenschaften Zu Berlin, Berlin-Adlershof, Germany
Filed May 20, 1970, Ser. No. 39,059
Int. Cl. B64c *39/00*
U.S. Cl. 244—62 9 Claims



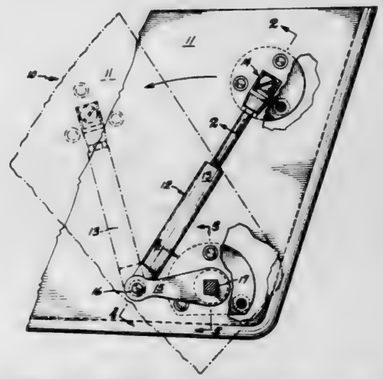
A hull is configurated as a lifting body, for instance as an airfoil, teardrop or the like. At its leading end portion one or more undulator units are mounted, each having one or more vanes which rotate about an axis normal to the longitudinal axis of the hull. This produces an undulatory fluid stream flowing opposite the intended direction of movement and providing the desired thrust. Alternate sweeping of the undulatory fluid stream over surfaces of the hull downstream of the units causes deundulation of the stream which increases the propulsive thrust.

3,666,213
FLIGHT CONTROL SYSTEM INCLUDING AUTOMATIC ALTITUDE LOCKING MEANS
Laurence C. Hofmeister, Ferndale, Mich., assignor to The Bendix Corporation
Filed May 15, 1970, Ser. No. 37,550
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 D 2 Claims



A flight control system includes a manually operated pitch command selector arranged for automatically engaging and locking the system in an altitude hold mode when pitch command is zero to eliminate pilot engagement of said altitude hold mode.

3,666,214
QUICKLY REMOVABLE, PIVOTAL, AND SNUBBED STORAGE BIN
James E. Matuska, 13515 25th N.E., Seattle, Wash.
Continuation of application Ser. No. 744,933, July 15, 1968, now abandoned. This application Nov. 9, 1970, Ser. No. 88,182
Int. Cl. B64d *11/00*
U.S. Cl. 244—118 P 17 Claims

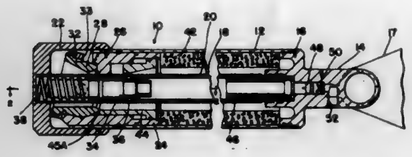


An easily and quickly removable, pivotal, and snubbed storage bin, such as for aircraft passenger carry-on luggage having axially retractable pivotal pins extendible from the bin into recesses in support structure, as in an aircraft passenger transport, in a nonrotatable fitting and a snubber pivotally connected between the bin and the pin for snubbing relative movement between the bin and its pivot pin and accordingly between the bin and the support structure. Also disclosed is a quickly retractable and snubbing pivot pin mechanism comprising an extendible means, snubbing means, and link means nonrotatably and slideably connected to the extendible pin means and pivotally connected to the snubbing means.

3,666,215
ROCKET CATAPULT EJECTOR ARRANGEMENT
Osyp Nimylowycz, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Army
Filed May 7, 1970, Ser. No. 35,373
Int. Cl. B64d *25/10*
U.S. Cl. 244—122 AB 5 Claims

A rocket catapult ejector arrangement for ejecting an occupant-seat mass from a disabled aircraft in which a swivel-

ing rocket nozzle is assembled at a tilted position with a launch tube extending through a nozzle throat portion having an eliptical configuration and lying in a plane that is non-perpendicular to the longitudinal axis of the nozzle member. This minimizes ball joint leakage around the nozzle and provides more uniform gas flow and thrust during operation.



3,666,216

THEFT-PROOF SELF-CONNECTING LOCK COUPLING DEVICE FOR HELICOPTERS AND TOW SUBMARINES

Charles E. Nagy, 3221 Benda Place, Hollywood, Calif., and John F. Nagy, 785 West End Ave., New York, N.Y.

Filed Aug. 19, 1970, Ser. No. 65,097
Int. Cl. B64c *1/22*
U.S. Cl. 244—137 11 Claims



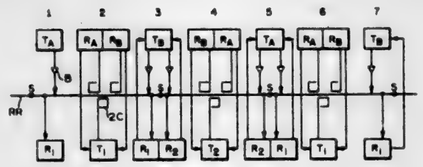
This is a two part theft-proof, self connecting lock coupling device for use with helicopters and trailer submarines by which the coupling parts can be readily centered with one another and the grip members of one coupling part extended about a ball-shaped head of the hitch pin on the other part and lock devices associated with the one coupling part to hold the grip members upon the hitch pin so long as the coupling device in the case of the helicopter has the load suspended with the cable under strain and wherein the lock devices are automatically released when the load is placed upon the ground and the strain of the cable released, and wherein the grip devices will upon release of the lock devices automatically function under spring action to release the hitch pin. The hitch pin on the other coupling part as a result of this action is automatically released and its trigger pin extended to close a switch and effect automatically the retraction of the hitch pin so that the hitch pin is made unavailable for further connection with the one coupling part bearing the grip members until the hitch pin is extended by one who has a lock key to the coupling part to throw a switch which will drive the electric motor to operate a jack screw that will extend the hitch pin. The submarine trailer coupling device is automatic in the retraction of the hitch pin on the trailing part, but the tow coupling part is operated by an air cylinder device working directly upon the grip members of the same between coupled and decoupled positions.

3,666,217

TRACK COMMUNICATION SYSTEM FOR CONTINUOUS RAIL

Henry C. Sibley, Adams Basin, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed May 4, 1970, Ser. No. 34,235
Int. Cl. B61l *23/30*
U.S. Cl. 246—34 CT 6 Claims



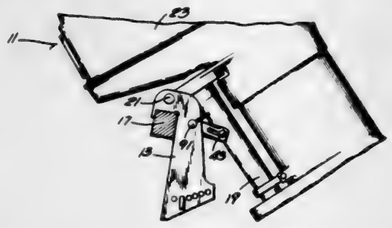
A communication system for continuous rail track layouts has been provided including a plurality of center fed track circuits. The improvement comprises train occupancy communication means including a plurality of track transmitters each selectively tuned to one of two transmission frequencies alternately coupled to the rails at spaced intervals representing the center of the track circuits and a plurality of receivers each selectively responsive to the transmitter frequencies coupled to the rails at the ends of each of these track circuits for receiving signals from the associated transmitter. Means coupled to the receiver generates an occupancy signal when the communication is cut off for one transmitter and its associated receiver by a vehicle shunt. Control communication means is also included wherein a plurality of control transmitters are each selectively tuned to one of two transmission frequencies different from the track transmission frequencies and are alternately coupled to the rails at each of the adjacent ends of the first track circuits representing a second set of center fed track circuits. A plurality of receivers again each selectively responsive to the transmitter frequencies are coupled to the rails at the center of each of the second set of track circuits for receiving signals from its associated transmitter. Means coupled to each control receiver generates a control signal in accordance with the control receiver signals. The occupancy communication means and the control communication means both simultaneously are capable of transmitting signals along the layout.

3,666,218

OUTBOARD MOTOR WITH PRE-SELECT TILT LOCK

Marcus W. Hagen, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Nov. 12, 1970, Ser. No. 88,585
Int. Cl. F16m *13/02*
U.S. Cl. 248—4 5 Claims



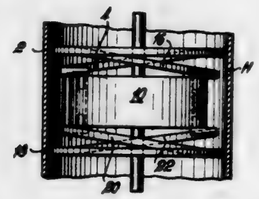
Disclosed herein is an outboard motor including means connecting a swivel bracket and a transom bracket at a point remote from the horizontal tilt axis therebetween and operative in response to pivotal movement of the swivel bracket to a fully elevated position to selectively afford either return of the swivel bracket to normal operating position under the influence of gravity or retention of the swivel bracket in a raised position. The means for selectively affording return or retention of the swivel bracket includes a follower link and a stop link, together with means for selectively biasing the stop link for movement relative to the follower link when the swivel bracket is in the fully elevated position so as to alternatively prevent entry of a stud extending from the swivel bracket into a detent portion of a slot in the stop link to thereby afford return to a normal operating position under the influence of gravity, or to alternatively cause entry of the stud into the slot detent portion to releasably retain the swivel bracket in the raised position against return to normal operation position.

3,666,219

MOTOR ASSEMBLY

Heinz Baus, Am Oberen Luisenpark 28, Mannheim, Germany

Filed Nov. 24, 1970, Ser. No. 92,441
Claims priority, application Germany, Dec. 1, 1969, P 19 601 97.9
Int. Cl. F16f *15/04*
U.S. Cl. 248—15 10 Claims



A motor is accommodated with some clearance in a tubular housing axially spaced end portions of which respectively extend beyond the motor. A pair of mounting elements are provided each being located at one of the end portions and each including a ring portion secured to the housing and having a diameter slightly larger than the motor and a pair of arms of one piece with the ring portion and each semi-circularly curved circumferentially of the housing and having a free end. Cooperating fastening portions are provided on the free ends and on the motor for fastening the latter to the mounting elements.

3,666,220

ADJUSTABLE RETAINABLE TOOL BALANCER

Thomas F. Rider, Manitowoc, Wis., assignor to Imperial-Eastman Corporation

Filed June 25, 1970, Ser. No. 49,603
Int. Cl. F16l *3/16*
U.S. Cl. 248—52 18 Claims



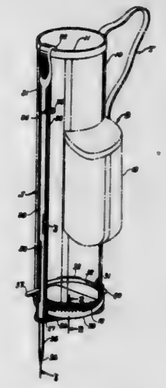
A tool balancer having means for adjustably retaining a tool in any one of a plurality of vertically related positions. The balancer includes means for powering the tool.

3,666,221

GOLF BAG STAND

Vincent P. Schilz, 1174 Paularino Ave., Costa Mesa, Calif.

Filed July 27, 1970, Ser. No. 58,593
Int. Cl. A63b *55/04*, *55/10*
U.S. Cl. 248—96 9 Claims



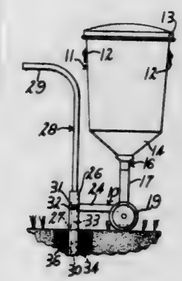
A stand for supporting a golf bag in an upright position on the ground and including a telescopic body having a hook at the upper end of the golf bag and a base at the lower end of the body engageable beneath the golf bag, the body having a spike reciprocable therein between a retracted position and an extended position with the spike sticking in the ground to hold the stand in an upright position; the base has a flexible band adapted to be clamped about the pan of the golf bag with the upper edge portions of the pan turned inwardly and engaging a horizontal shoulder on the pan.

3,666,222

SUPPORTING FRAME FOR RECEPTACLE WITH ANCHOR THEREFOR

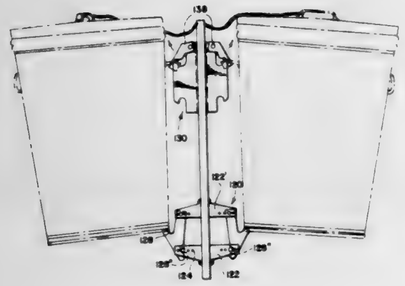
Arthur U. Griggers, 351 Hickory St., Greenville, Ala.

Filed Oct. 28, 1970, Ser. No. 84,740
Int. Cl. B65f *1/14*
U.S. Cl. 248—146 1 Claim



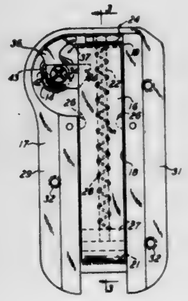
Wheel supported frame supporting receptacle and carrying upstanding sleeve. Lower portion of upstanding locking member telescopes into upstanding sleeve and detachably held in lower extended position and upper retracted position. Anchored sleeve in fixed location receives lower portion of locking member while in extended position detachably connecting frame to anchored sleeve.

3,666,223
REFUSE CONTAINER SUPPORT
Arvel H. Moore, 150 Chattahoochee Ave. N.W., Atlanta, Ga.
Filed Nov. 19, 1970, Ser. No. 91,032
Int. Cl. B65f 1/14
U.S. Cl. 248—149 2 Claims



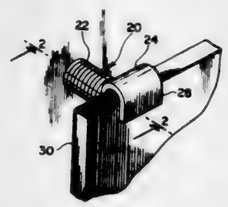
A vertical refuse container support possessing a novel securing bracket device for holding the refuse container above the ground is described.

3,666,224
SELF-RETRACTABLE HANGER
Charles J. Domanico, 150 Meadow Lane, Racine, Wis.
Filed Oct. 23, 1970, Ser. No. 83,543
Int. Cl. A47f 5/08
U.S. Cl. 248—203 6 Claims



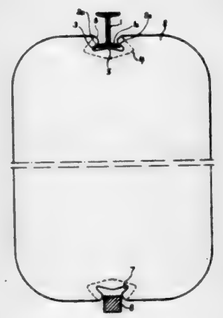
A housing having a reciprocally movable hook supported in the housing and under the influence of a spring. A key-actuated lock also influences the position of the hook to extend an angled end of the hook out of the housing. The angled hook end serves as a hanger for items, such as a fire extinguisher suspended on a wall, and, when the extinguisher is removed from the hanger, the hook automatically retracts into the housing so that it cannot again be used until the lock is rotated by the key. A finger is connected with the lock for engaging the hook and extending it from the housing, when the lock is rotated. Also, a pawl is connected with the finger for extending into the path of the hook and preventing the hook from being exposed from the housing, except for the use of a key.

3,666,225
STABILIZER BRACKET
Morris Weinberger, 245 West 10th St., New York, N.Y.
Filed Apr. 6, 1970, Ser. No. 25,831
Int. Cl. F16m 11/32
U.S. Cl. 248—205 A 4 Claims



A bracket for stabilizing a laterally unsupported surface. The bracket includes a compression member and is also provided with means for adjusting the effective length of the compression member so that the bracket can be positioned within a limited space such as between the unsupported surface of an article to be supported and a buttressing surface such as a room wall.

3,666,226
SUSPENSION ARRANGEMENT FOR HEAT EXCHANGER PLATES
Karl Borje Johansson, Lund, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden
Filed June 3, 1970, Ser. No. 43,011
Claims priority, application Sweden, June 13, 1969, 8428/69
Int. Cl. F28b 3/00
U.S. Cl. 248—214 2 Claims

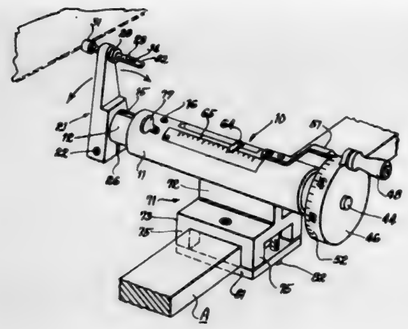


A heat exchanger plate is provided in its upper edge with a dove-tailed shaped recess which receives a horizontal flange of a suspension shaft, the recess being partly defined by spaced edge portions of the plate which rest upon the flange. At the lower part of the recess, the plate has a section protruding upwardly toward the shaft and operable to prevent substantial vertical and lateral movements of the plate relative to the shaft; but the recess adjacent this section is dimensioned to permit removal of the plate from the shaft by swinging the plate in its own plane.

3,666,227
GAUGE FOR PRESS BRAKES AND THE LIKE
Robert Frederick, 23W010 St. Charles Rd., Glen Ellyn, Ill.
Filed Feb. 13, 1970, Ser. No. 11,119
Int. Cl. B66d 3/00
U.S. Cl. 248—228 4 Claims

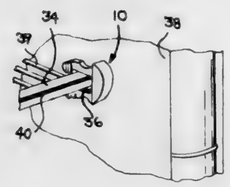
An adjustable gauge for use with press brakes, shears and the like machines wherein sheet material is formed or cut

and the forming or cutting is to be a specified distance from a reference edge of the sheet. The gauge is provided with a novel form of saddle to enable the gauge to be affixed non-



rotatably to one guide bar extending from left to right or non-rotatably to a second guide bar extending fore and aft or, as a plurality, to both bars.

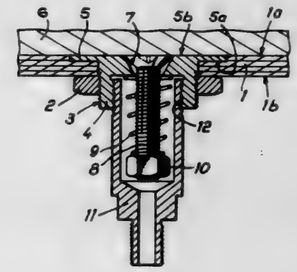
3,666,228
REFRIGERATOR CLIP
Emmons S. Arnold, Columbus, Ohio, assignor to Owens-Illinois, Inc.
Filed Nov. 9, 1970, Ser. No. 87,889
Int. Cl. A44b 21/00
U.S. Cl. 248—250 2 Claims



This invention relates to a holding device or fastener adapted to positively engage and secure refrigerator inner components during shipping and usage of the refrigerator. The clip or fastener of this invention comprises a U-shaped device which is adapted to cooperate with wall plugs or brackets on the inner walls of a refrigerator to secure the refrigerator inner components with respect to the refrigerator body. A number of different size and shape clips are taught by this invention to attach a variety of refrigerator inner components to the different types of wall plugs or brackets which are utilized to position the refrigerator components.

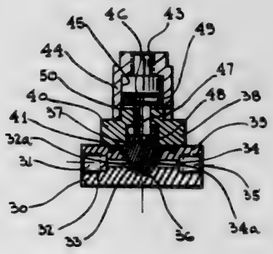
3,666,229
VALVE APPARATUS FOR SHUTTERING REMOVAL
Pierre A. M. Carrel-Billiard, Savigny-Sur-Orge, France, assignor to Materiel Special D'Enterprises, Juvisy-sur-Orge, France
Filed May 18, 1970, Ser. No. 38,216
Int. Cl. B28b 7/12
U.S. Cl. 249—66 6 Claims

A valve apparatus for use in the removal of shuttering by means of compressed air or other gas. The apparatus comprises a valve body insertible into an aperture in a shuttering plate and having a flange formed at one end thereof for abutment with the inside surface of the shuttering plate. The valve body has a hollow cylindrical portion which extends from the flange and is externally screw-threaded to engage a nut which can be screwed towards the flange so as to clamp the shuttering plate between the nut and the flange, thereby securing the valve apparatus in position. The cylindrical body portion is also connectible with a pipe for supplying compressed air or other gas and accommodates a valve closure



device which normally closes an opening through the flange end of the valve body. The valve closure device preferably has a frusto-conical closure element which seats in said opening, the opening also having a frusto-conical configuration but the angle of taper of the closure element being greater than that of the opening, the maximum diameters of the closure element and opening being substantially equal.

3,666,230
ELASTOMATIC VALVE
Richard S. Paullukonis, 6660 Greenbrier Dr., Parma Heights, Ohio
Filed Aug. 3, 1970, Ser. No. 60,238
Int. Cl. F16k 7/12
U.S. Cl. 251—63.5 1 Claim



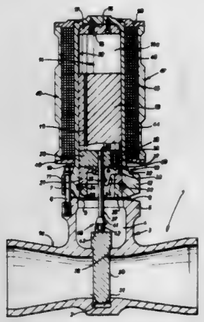
A membrane operated normally closed or normally open two-way valve including a valve plug adjustable from a closed first position blocking communication from an inlet port to a discharge port, or vice-versa, by a manually adjustable screw acting on a valve plug in contact with one side of such membrane and working against the forces of a fluid on the other side of this membrane to either block the fluid communication between the inlet and discharge ports or to permit such communication when the screw is withdrawn, or by a pilot operator, the piston of such pilot operator replacing the screw and working against the plug when energized by either air or hydraulic fluid pressure in the pilot, so constructed that the piston area of the pilot side is larger than the membrane area under the plug and on the other side of the membrane resulting in a mechanical advantage in which the piston pilot pressure can be lower than the pressure of the fluid valved.

3,666,231

SEALED VALVE WITH ELECTROMAGNETIC ACTION

Luciano Parodi, Turin, and Giancarlo Ghia, Carmagnola, both of Italy, assignors to Fiat Societa per Azioni, Turin, Italy

Filed Jan. 28, 1970, Ser. No. 6,490
Claims priority, application Italy, Mar. 10, 1969, 50920 A/69
Int. Cl. F16k 31/06
U.S. Cl. 251—129 2 Claims



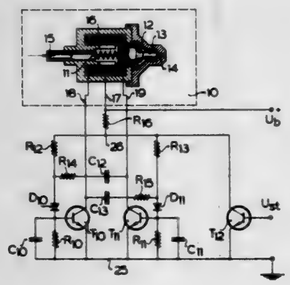
A main conduit through which fluid flows has a hollow transverse protrusion sealed to it. A gate-type closure member is slidable from the protrusion into the conduit to block it. A magnetic core is connected to the closure member and slides in the protrusion cavity. The body of the protrusion is non-magnetic. At least three winding surround the protrusion body and are selectively excited to open and close the valve by moving the core and with it the closure member. Latch-type rockers are provided to lock the closure member in one of its positions.

3,666,232

METHOD AND MEANS FOR REDUCING THE RESPONSE TIME OF MAGNETIC VALVES

Kurt Melcher, Markgroeningen, and Wilhelm Vogel, Stuttgart-Bad Cannstatt, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 14, 1970, Ser. No. 32,495
Claims priority, application Germany, Apr. 18, 1969, P 19 19 702.5
Int. Cl. F16k 31/06; H03k 3/281
U.S. Cl. 251—129 3 Claims



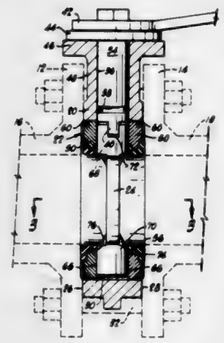
A method and apparatus for reducing the response times of electromagnetically controlled valves. The operating coil of the valve has a center tap connected to a D.C. supply voltage, whereas the end terminals of the coil are each connected to the collectors of two power transistors. The base supply voltages for the power transistors are derived from a voltage divider, and a control transistor has its emitter-collector path connected across the base voltage supply of the power transistors. The power transistors are connected to function as an astable multivibrator which is turned on and off by the control transistor. The astable multivibrator provides rectangular-shaped alternating voltage to the operating coil of the valve for de-magnetizing the valve before or after operation of actuation of the valve.

3,666,233

BUTTERFLY VALVE ASSEMBLY HAVING SPLIT BODY

Domer Scaramucci, 3245 South Hattie, Oklahoma City, Okla.

Filed May 6, 1970, Ser. No. 35,161
Int. Cl. F16k 1/22
U.S. Cl. 251—151 15 Claims



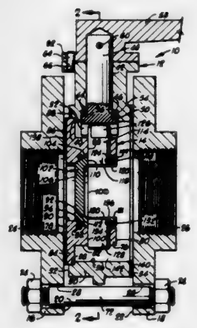
A valve assembly for use between pipe flanges employing an operating housing radially supporting the valve body of a butterfly or disc type valve, as well as supporting the valve operator. The valve body is in the form of two rings shaped to support the stems of the disc valve member and form at least one seat for the valve member. An elastomer lining is formed around the inner periphery of each ring and forms a seal with the respective pipe flange to isolate the operating housing from the fluid being controlled. Also, the linings cooperate to form stem seals. Various arrangements and shapes of seats are provided by the linings.

3,666,234

SPHERICAL DISC VALVE ASSEMBLY

Domer Scaramucci, 3245 South Hattie, Oklahoma City, Okla.

Continuation-in-part of application Ser. No. 763,644, Sept. 30, 1968, now Patent No. 3,531,081. This application Aug. 27, 1969, Ser. No. 853,238
Int. Cl. F16k 51/00, 25/00
U.S. Cl. 251—151 11 Claims



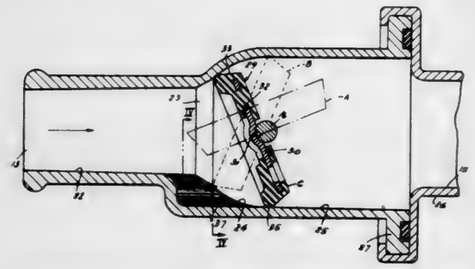
A disc valve assembly, particularly useful between flanges, which utilizes a housing unit and a separate valve unit. The housing unit and the valve unit are adapted so that a minimum contact area is established therebetween. The housing unit provides a supporting housing adapted to be supported between the flanges, and includes a first valve stem. The valve unit is sized to be inserted in the housing unit and includes a disc valve member, a seat and a pair of valve stems. One of the stems is journaled in the valve body and is adapted to be interconnected to the first valve stem, and secured to the disc valve member. The other valve stem is connected to the disc valve member and is journaled in the valve body.

3,666,235

THROTTLING BUTTERFLY VALVE

Arthur A. Scott, Prospect Heights, Ill., assignor to Eaton Yale & Towne, Inc., Cleveland, Ohio

Filed Apr. 13, 1970, Ser. No. 27,742
Int. Cl. F16k 1/22
U.S. Cl. 251—205 4 Claims



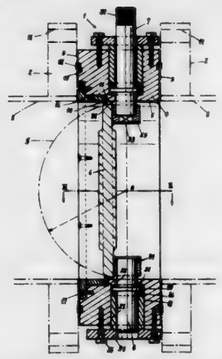
Butterfly fluid flow valve having substantial flow in the full open position of the valve. The valve has a peripheral sealing lip compressed along a frusto-spherical contoured seating surface, as the valve moves to its closed position, to provide a leak-proof seal. A throttling slot extends axially along the frusto-spherical contoured seating surface for approximately one-half of valve rotation and accommodates a decreasing throttling flow as the valve moves from its full open position towards its closed position. The valve may be operated either by a vacuum motor, a manually operated lever or by any other suitable operating means.

3,666,236

BUTTERFLY VALVE

Jean Gachot, 179 Avenue de la Division Lerclerc, Enghien, France

Filed Mar. 2, 1970, Ser. No. 15,435
Claims priority, application France, May 7, 1969, 6906499; May 29, 1969, 6917528; Aug. 4, 1969, 6926718
Int. Cl. F16k 1/22
U.S. Cl. 251—306 8 Claims



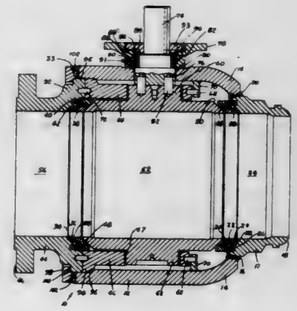
A butterfly valve intended for use in a piping system and comprising a body pierced by a duct located opposite to the two sections of the piping system and a closure disc rotatably mounted on the valve body and offset laterally with respect to its axis of rotation; the valve disc is provided at its periphery with a convex annular bearing face, the valve body is fitted with an annular seal which projects into the interior of the duct and said annular bearing face constitutes a seating for the seal in the closed position. A high standard of leak-tightness in the closed position of the valve is achieved owing to the combination of the offset valve disc and of the annular projecting seal applied against the bearing face of the valve disc.

3,666,237

WELDED FABRICATED BALL VALVE

Jack E. Piccardo, Oakland, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed May 21, 1970, Ser. No. 39,459
Int. Cl. F16k 27/00
U.S. Cl. 251—367 6 Claims



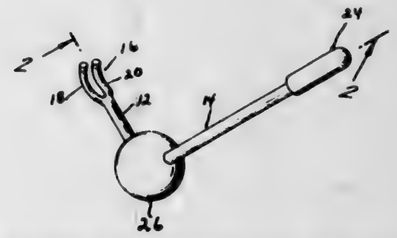
A valve body construction comprising a tubular body member with a closure received in one end thereof against an internal abutment. A lock ring engages against the outer face of the end closure around its outer edges and is welded to one end of the body member to hold the closure in place, contraction of the weld during cooling serves to clamp the closure tightly in place. In a preferred embodiment, the other end of the tubular body is swaged inward to a small diameter opening whereby a hub may be welded directly to the edge of the opening, eliminating the need for a second end closure.

3,666,238

TOOL

Henri Weber, 57-18 162 Street, Flushing, N.Y.

Filed July 30, 1970, Ser. No. 59,482
Int. Cl. B66f 3/00
U.S. Cl. 254—131.5 4 Claims

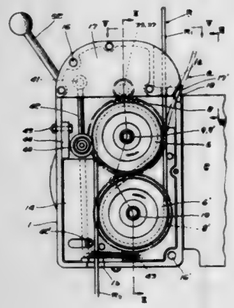


This invention relates to an improved tool such as may be used to pry windshield wiper arms from their supports. The fulcrum point is resilient to avoid damage to paint or glass on a vehicle.

3,666,239
WINCH

Atsuo Koshihara, 25-2 Ohmino, Sakai, Osaka Prefecture, Japan

Filed Aug. 13, 1970, Ser. No. 63,415
Int. Cl. B66d 1/22
U.S. Cl. 254—175.5 12 Claims

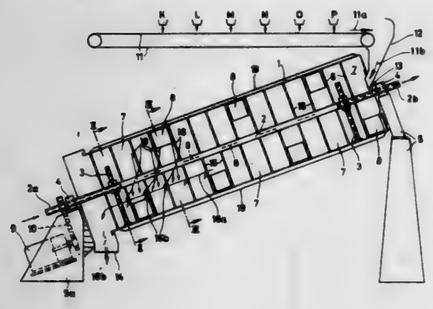


This winch is of a type driven by a prime mover, and comprises a mechanism wherein the rope is wound around two driving pulleys in the shape of the letter "Z", providing tractive force without coiling of the rope. Also included are an automatic safety device for preventing possible accidents in the course of lowering of the load, and a mechanism for changing over to manual operation in case of emergency.

3,666,240
GRAVITY MIXER

Wilhelm Lodige; Fritz Lodige; Josepf Lucke, and Karlheinz Luke, all of Paderborn, Germany, assignors to said Wilhelm Lodige, Fritz Lodige and Josef Lucke, all of Paderborn, Germany, by said Karlheinz Luke

Filed Apr. 29, 1969, Ser. No. 820,266
Claims priority, application Germany, May 14, 1968, P 17 57 478.6
Int. Cl. B01f 9/06, 15/06
U.S. Cl. 259—3 9 Claims

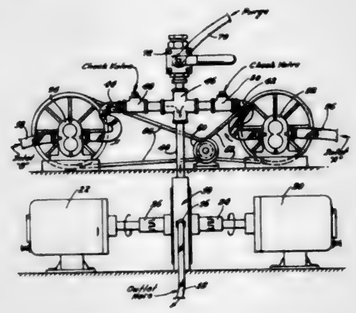


A gravity mixing machine for free-flowing products in which a mixing drum is arranged inclined to the horizontal and rotatable about its longitudinal axis and into which the material is introduced at its higher end and discharged at its lower end. The drum is divided into a plurality of successive mixing chambers by the provision of radially extending plates.

3,666,241
MIXING APPARATUS

Carlo Re, Santa Ana, Calif., assignor to Dyna-Shield, Inc., Santa Ana, Calif.

Filed Nov. 9, 1970, Ser. No. 87,837
Int. Cl. B01f 7/04
U.S. Cl. 259—6 3 Claims

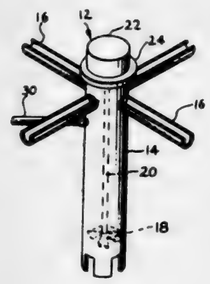


An improved mixing apparatus is provided for intimately mixing together two or more materials such as resin, paints, and the like, in liquid form, without the introduction of air into the resulting mixture. The apparatus comprises a mixing unit having a circular cavity therein. Two separate impellors are driven in a counter rotational manner about the central axis of the cavity, each of the impellors having one or more radially extending blades. The blades have fingers positioned to intermesh with one another as the impellors are driven in the aforesaid counter rotational manner. The liquids to be mixed are introduced radially through an inlet on one side of the mixer unit and into the cavity, and the resulting mixture is discharged through a radial outlet which is positioned diametrically opposite the inlet, in accordance with an important feature of the invention.

3,666,242
WASTE TREATMENT APPARATUS AND CIRCULATION UNIT THEREFOR

Rolland L. Fifer, P.O. Box 13175, Louisville, Ky.

Filed Feb. 18, 1971, Ser. No. 116,461
Int. Cl. B01f 7/22
U.S. Cl. 259—8 6 Claims



In the activated sludge treatment of sewage and similar wastes the method of treatment involves the use of a tank in which sewage is mixed with previously activated sludge and subjected to the action of bacteria. Since oxygen is necessary for bacterial action, air distributing means are employed in such units. Herein a circulation and oxygenation cell is disposed in the aeration chamber adapted to draw floating material through the circulating unit from a plurality of zones at spaced points about the surface of the liquor.

3,666,243
SAND MULLING OR CONDITIONING APPARATUS AND PLOW CONSTRUCTION THEREFOR

Angelo J. Bisinella, Niles, Ill., assignor to Pettibone Corporation, Chicago, Ill.

Filed Jan. 27, 1971, Ser. No. 110,180
Int. Cl. B02c 15/00
U.S. Cl. 259—107 9 Claims

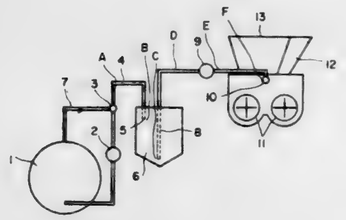


A foundry sand mulling or conditioning apparatus having a cylindrical bowl within which there is provided a novel form of plow construction which, upon peripheral travel around the bowl, functions in a novel manner to elevate the sand and produce a rolling and rotating torus of sand within the bowl.

3,666,244
PROCESS FOR PRODUCING CUTBACK ASPHALT MIXTURES

Shigeho Nomura, Tokyo, and Keijiro Murata, Yokohama, both of Japan, assignors to Sakimura Research Institute Inc., Tokyo, Japan

Filed Aug. 17, 1970, Ser. No. 64,367
Claims priority, application Japan, Aug. 22, 1969, 44/65967
Int. Cl. C10c 3/10
U.S. Cl. 259—148 1 Claim

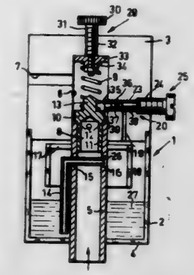


A process for producing cutback asphalt mixtures having any desired cutback asphalt mixing ratio by measuring a dope consisting of a petroleum type or coal type solvent alone or said solvent and any additive required for the production of cutback asphalt per one batch and adding the same to one batch of molten asphalt during its flow from a kettle to a mixer in any existing batch type mix plant without previously preparing a cutback asphalt in the kettle and then mixing one batch cutback asphalt thus produced with one batch of a measured aggregate in the mixer.

3,666,245
DEVICE FOR MIXING A GAS CURRENT UNDER PRESSURE WITH AN ATOMIZED MIST OF LIQUID FLUID, SUCH AS LUBRICATING OIL

Svante Roland Edwardson, Solna, Sweden, assignor to AB Destatus, Hagersten, Sweden

Filed Feb. 1, 1968, Ser. No. 702,404
Claims priority, application Sweden, Feb. 14, 1967, 2066/67
Int. Cl. F16n 7/34, 27/00; B01f 5/20
U.S. Cl. 261—55 3 Claims

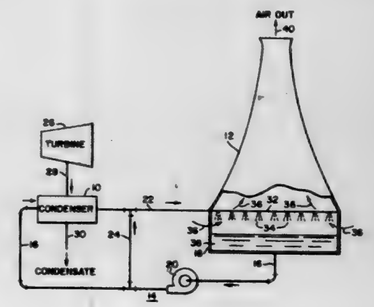


A device for mixing a gas current under pressure with an atomized mist of liquid, such as lubricating oil, having a casing partially filled with a supply of liquid, a through duct for the gas current, said duct extending through the casing and having a pressure reducing valve, a bypass for a partial gas current connecting the upstream side with the downstream side of the valve and including i.a. the unfilled portion of the casing, and a suction tube opening into a first atomization area in the bypass and adapted to discharge liquid drawn from the supply in the casing into the partial gas current flowing through the bypass, in which a second, controllable atomization area is provided connected in parallel with the valve in the through duct and in series with the first atomization area to introduce the partial gas current enriched by the liquid into the gas current flowing through the duct. The outlet opening of the bypass has a valve seat cooperating with a portion of the valve in a manner such as progressively to close the outlet of the bypass in response to opening movements of the valve.

3,666,246
COOLING SYSTEM

Paul Cohen, Madison, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

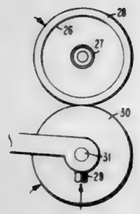
Filed Apr. 7, 1970, Ser. No. 26,198
Int. Cl. B01f 3/04
U.S. Cl. 261—151 10 Claims



A cooling system suitable for a power plant which includes a steam condenser, for transferring heat from the steam to an

aqueous solution; a cooling tower for spraying or distributing thin streams of the aqueous solution in the presence of ambient air to transfer heat to the air; and means for recirculating the aqueous solution between the condenser and the cooling tower including bypass means for controlling the solution temperature; the aqueous solution containing compound in an amount approaching saturation at room temperature, for example, from about 50 to about 60 grams of magnesium chloride per 100 grams of water, the solution being characterized by very low water vapor pressure when used as the heat dissipating fluid medium in a spray type cooling tower.

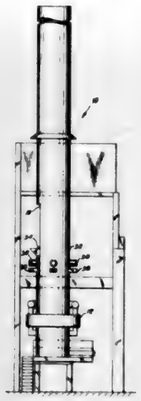
3,666,247
FUSING DEVICE AND METHOD
Willard K. Banks, Cupertino, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 29, 1969, Ser. No. 888,666
Int. Cl. G03g *13/20, 15/20*
U.S. Cl. 263—6 E **3 Claims**



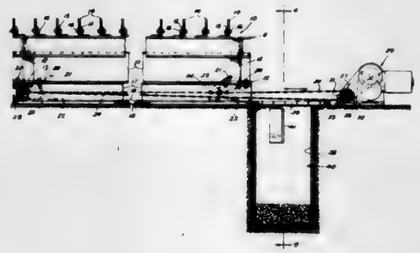
A fusing device is described for fixing resinous powder images to a substrate such as paper comprising a rotating heating element in contact with a rotating backup member. Pressure means applies a meshing force between the heated member and backup member so that it is not necessary for the heated member in contact with the powder image to carry an offset preventing liquid on its surface. The fusing device is employed in reproduction apparatus, such as electrophotographic apparatus.

3,666,248
AFTERBURNERS FOR CUPOLA FURNACES
Ronald J. Frundl, Livonia; Victor W. Hanson, Westland; Robert M. Jamison, Detroit, and Orlan M. Arnold, Grosse Pointe Park, all of Mich., assignors to Ajem Laboratories, Inc., Livonia, Mich.
Continuation-in-part of application Ser. No. 707,250, Feb. 21, 1968, now Patent No. 3,545,918. This application Sept. 11, 1970, Ser. No. 71,463
Int. Cl. F27b *1/00*
U.S. Cl. 263—29 **16 Claims**

An in-bed burner system and arrangement for stack furnaces wherein a series of burners are mounted on the stack below the charge door opening to direct a jet of burning gases into the stack below the top surface of the charge bed. Supplementary air is supplied to the stack from a position adjacent the burners to support relatively complete combustion of the products of combustion rising in the stack. Oxygen can augment or replace the supplementary air. The in-bed burners and supplementary air effect burnout of carbon monoxide in the stack exhaust gases and maintain a relatively high temperature in the top portions of the charged bed to thermally crack and burn out organic materials present in the charge.



3,666,249
SLAG SCAVENGER FOR FLAME BURNING TABLE
Cameron MacLeod, Jr., Glen Moore, Pa., assignor to Morris, Wheeler & Co., Inc., Philadelphia, Pa.
Filed June 5, 1970, Ser. No. 43,905
Int. Cl. F23j *1/02*
U.S. Cl. 263—45 **11 Claims**



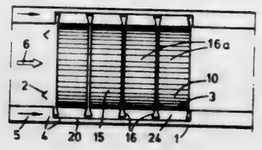
Reciprocating scoop scraper for removing slag from below a flame burning table for cutting steel plate. Synchronized chain drives for scraper are sheltered by flanges of table bed rails and move scraper over warp and heat resistant level bed, discharging slag into lift-out bucket in slag pit. Power drive includes automatic reversing feature, and manual cycling for sequential cycles.

3,666,250
FURNACE AND METHOD OF MAKING SAME
Joseph F. Hensenne, Bonniers, Belgium, assignor to Elphiac, Brussels, Belgium
Filed Sept. 9, 1970, Ser. No. 70,865
Claims priority, application Belgium, Sept. 11, 1969, 78956
Int. Cl. F23m *5/00*
U.S. Cl. 263—46 **5 Claims**

A furnace and a method of manufacturing such a furnace wherein a refractory concrete base is prepared at the bottom of a cylindrical tank, an induction coil is then placed over the base and thereafter puddled clay is packed inside the coil to form a crucible. The base is prepared separately in a removable bottom cover which is fixed to the cylindrical part and a further removable bottom cover is prepared for replacement purposes.



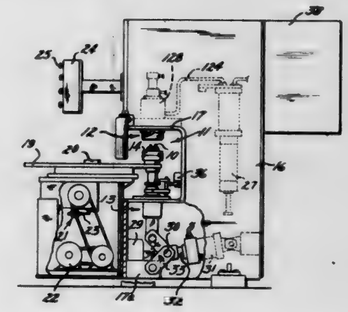
3,666,251
WALL FOR HOT FLUID STREAMS
David Roberts McMurtry, and Derek Percival Harris, both of Bristol, England, assignors to Rolls-Royce Limited
Filed June 15, 1970, Ser. No. 46,437
Claims priority, application Great Britain, June 19, 1969, 30,996/69
Int. Cl. F23m *9/00*
U.S. Cl. 263—50 **5 Claims**



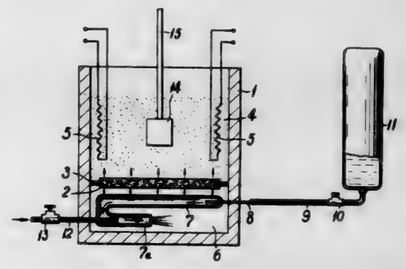
The disclosure of this invention pertains to a heat shield for jet pipes in gas turbine engines. The heat shield comprises a sheet of heat-resisting alloy having flat portions joined by parallel folds and wherein both the flat portions and the folds are formed into corrugations extending at right angles to the folds. In this way the heat shield is two-dimensionally expansible to accommodate differential expansion between the shield and a support structure to which the shield is secured. The shield is impermeable so that cooling air at the "cold" side of the shield may be of lesser pressure than the hot gases in the jet pipe.

3,666,252
APPARATUS FOR RAPID HIGH ENERGY REMOVAL OF SUPERFLUOUS PROJECTIONS
Edwin E. Rice, Ann Arbor, Mich., assignor to Chemotronics, Incorporated, Ann Arbor, Mich.
Filed May 25, 1970, Ser. No. 40,992
Int. Cl. C21d *1/82*
U.S. Cl. 266—2 R **10 Claims**

A machine or apparatus for the rapid high energy (transient thermal) treatment of articles requiring removal of superfluous projections (burrs and the like) is described in which a closed chamber is formed by action of the device to contain the thermal energy and article. The closed chamber encloses void volumes adjacent to the surfaces of the articles having superfluous projections. Closure elements acting with an article support element are actuated in forming the closed chamber or vessel. At least one of the closure elements is movable for closure toward and away from the other closure element. Preferably the movable closure element actuates the article support element in a holder such that a closed chamber is formed around the article. The movable closure element moves the support element in the holder in forming the closed chamber such that when a transient thermal energy release is generated in the chamber the holder does not bear any direct loading from the energy release. Preferably, a combustible gaseous composition is injected under pressure into the chamber void space between the closed chamber cavity and articles and a rapid thermal energy release reaction is initiated after achievement of suitable charge pressure. The device of the present invention fully contains the shock of the rapid thermal energy release and the consequent pressure rise and the result of the confined chamber reaction is the removal of superfluous projections from the parts placed in the chamber. The device includes sealing means between the article support element and the closure element functioning to form the chamber. The sealing means is preferably a replaceable seal which is protected by a mated or precision fit of male and female parts between the seal and the chamber. Fuel passage means are also provided leading to the chamber cavity with valving securing the chamber against exhaust of the reaction products or residue during the reaction. The machine is adapted for sequential treatment of articles in tooling which forms the chambers and which tooling can be varied to accommodate different article space requirements. A coolant may be utilized for the tooling where required by the cycle rate of the device.



3,666,253
FLUIDIZED BED FURNACE
Yuri Yoshio, 11-3, Gohonga 2-chome, Meguro-ku, Tokyo, and Tanaka Yukio, 16, Shimouma 4-chome, Setagaya-ku, Tokyo, both of Japan
Filed Dec. 24, 1970, Ser. No. 101,266
Claims priority, application Japan, Dec. 26, 1969, 44/104328
Int. Cl. C21d *1/06*
U.S. Cl. 266—5 E **5 Claims**



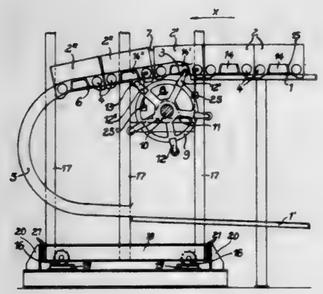
A fluidized bed furnace comprising a furnace body including an upper section and a lower section separated by a gas

permeable gas distributor, a fluidized bed contained in said upper furnace body section, electric heating means supported within said upper furnace body section for heating said fluidized bed, a pressure chamber provided in said lower furnace body section for receiving a mixture gas therein under a predetermined pressure, an evaporator means provided in said pressure chamber for receiving liquefied hydrocarbon gas and for evaporating the liquefied gas, and an air supply line extending through one wall of said furnace body in the lower section thereof into said evaporator means whereby said hydrocarbon gas from the evaporator means and air from said air supply line are mixed together and the mixture gas is passed through said gas distributor to heat said fluidized bed in cooperation with the electric heating means and at the same time, said gas distributor is maintained at a low temperature while the fluidized bed is maintained in a nonoxidation atmosphere.

3,666,254
SINTERING MACHINE

Walter Stanke, Essen, Germany, assignor to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed May 20, 1970, Ser. No. 39,057
Claims priority, application Germany, May 30, 1969, P 19 27 537.7
Int. Cl. F27b *21/06*
U.S. Cl. 266—21 10 Claims



A sintering machine including a travelling grate formed by a plurality of pallets which are moved along an endless path defined by an upper and a lower support portion connected at the discharge end of the machine by an arcuate portion. The pallets are pushed along the upper support portion toward the discharge end, and the pallets are arranged end-to-end with the exception of the safety gap between the pallets which are at any instant at the junction of the end of the upper support portion and the arcuate portion adjacent thereto. Means are provided which engage the pallet located at any instant upstream of the safety gap for smoothly moving the pallet into engagement with the pallet downstream of the gap.

3,666,255
HIGH FLOW HAND-HOLDABLE SCARFING TORCH

Rudolph H. Kohler, Amawalk, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 19, 1970, Ser. No. 12,664
Int. Cl. B23k *7/06*
U.S. Cl. 266—23 P 2 Claims

A hand-holdable scarfing torch capable of utilizing high oxygen flow rates and providing a 30 to 50 percent increase



in scarfing pass width as compared with existing scarfing torches of comparable thrust.

3,666,256
ADJUSTABLE SHOCK ABSORBER

Larry C. Ellis; William J. Chorkey, both of Farmington, and Robert J. Heideman, Detroit, all of Mich., assignors to Ace Controls, Inc., Farmington, Mich.

Filed Dec. 4, 1969, Ser. No. 882,081
Int. Cl. B60g *11/56*; F16f *9/34*
U.S. Cl. 267—34 9 Claims



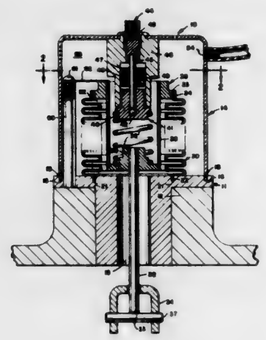
An adjustable fluid shock absorber including, a shock absorber body provided with an accumulator chamber and a piston chamber, a piston rod having its inner end slidably mounted in said piston chamber and its outer end extending outwardly of said body to an initial position for engagement by a member to be decelerated, fluid passage means between said accumulator chamber and said piston chamber, said chambers and passage means being filled with a fluid, a metering slot means interconnecting said fluid passage means with said piston chamber for metering the amount of fluid forced from said piston chamber to said accumulator chamber when a shock load is impressed on said piston rod, and, means for returning the piston rod to the initial position after a shock load is removed from the piston rod and for normally maintaining the piston rod in the initial position.

3,666,257
NEGATIVELY PRELOADED THRUST UNIT

Johannes Sorteberg, Sorteberg Controls Corp., 540 Connecticut Avenue, South Norwalk, Conn.

Filed May 15, 1970, Ser. No. 37,501
Int. Cl. F16f *5/00*
U.S. Cl. 267—170 7 Claims

A pressure-responsive load cell comprises an output thrust member coaxially positioned within an externally pressurized bellows. The thrust member is attached to one end of the bellows, passes through and extends beyond the opposite end of the bellows. The portion of the thrust member within the bellows is a hollow cylinder in which a compression spring is located to provide a bias thrust towards the output end of the thrust member. In order to stabilize this inherently unstable configuration and to keep the assembly friction free, a thin, flat, narrow, very flexible metal guide is attached to the end of the bellows to which the thrust member is attached. To increase stability, a second such guide member may be em-

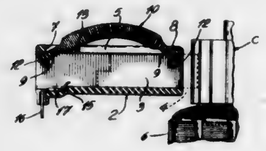


ployed. The second guide may be in the same plane as the first guide and separated therefrom by an angle of less than 180° to prevent positive biasing of two guides in one direction and to insure smooth movement of the guided assembly.

3,666,258
ELECTRIC MOTOR BRUSH SPRING

Paul Emile Gaudry, 40 Ouimet Street, Laval des Rapides, Quebec, Canada

Filed Oct. 9, 1970, Ser. No. 79,511
Int. Cl. F16f *13/00*
U.S. Cl. 267—179 1 Claim



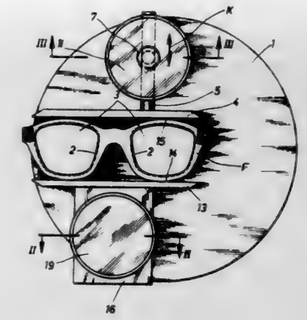
A brush holder having a fine pitch extension-like coil spring which is used flexurally as a brush spring and has integrally formed ends adapted for slidable retention in a slot-like track adjacent and parallel to the brush.

3,666,259
APPARATUS FOR FASTENING A SPECTACLE GLASS MOUNT OR LENS MOUNT ON A WORK OR CLAMPING TABLE

Fritz Kotting, Sturzelberg, Germany, assignor to Firma Wernicke & Co., Dusseldorf-Eller, Germany

Filed Oct. 9, 1969, Ser. No. 865,085
Claims priority, application Germany, Nov. 5, 1968, G 68 05 428
Int. Cl. B25b *1/02*
U.S. Cl. 269—90 4 Claims

The invention relates to an apparatus for fastening a glass mount on a work or clamping table of a scanning, grinding,

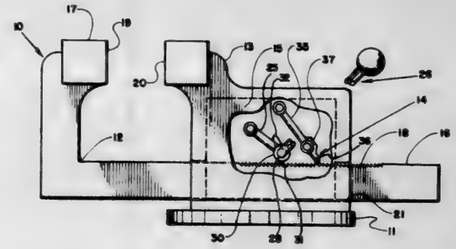


etc. machine, with an adjustable bar or rule bearing against one section of the mount.

3,666,260
VISE

Herman A. Myers, Lake Lynn, Pa., assignor to Insta-Snap, Inc., Monongahela, Pa.

Filed July 2, 1970, Ser. No. 51,818
Int. Cl. B25b *1/02*, *1/14*, *5/16*
U.S. Cl. 269—214 1 Claim



An instant lock power vise comprising a sliding jaw having a shaft portion slidably positioned through an opening in a rigid jaw. The rigid jaw contains a housing chamber in which a floating link and toothed cam, in combination with a breaking dog link, engage teeth along the shaft of the sliding jaw to permit rapid locking adjustment. A handle engages the toothed cam to permit an increased grip or a complete disengagement of the locking mechanisms, depending upon the direction and the extent to which the handle is moved.

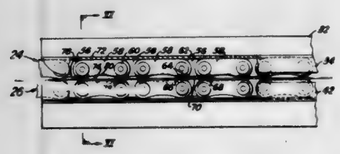
3,666,261
APPARATUS FOR CONVEYING ENVELOPE BLANKS THROUGH THE SEAL FLAP ADHESIVE DRYING SECTION OF AN ENVELOPE MAKING MACHINE

Herbert W. Helm, Hollidaysburg, Pa., assignor to F. L. Smithe Machine Company, Inc., Duncansville, Pa.

Filed Sept. 17, 1970, Ser. No. 73,118
Int. Cl. B65h *29/12*
U.S. Cl. 271—45 10 Claims

Envelope blanks arranged in overlapped relation with the seal flap portions exposed are conveyed past a seal flap gummer mechanism where a roll applicator continuously applies a liquid gum adhesive to the seal flap portions of the envelope blanks. The overlapped envelope blanks are slightly separated to space the portions of the seal flaps having the

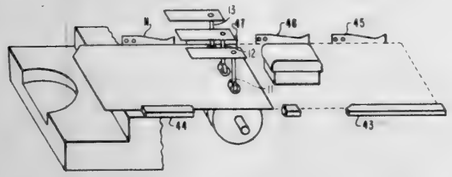
wet adhesive thereon to prevent the blanks from adhering to each other. The overlapped and slightly separated envelope blanks are then conveyed by two pairs of endless chains through the drier section of the envelope machine to dry the wet seal flap adhesive. Each pair of endless chains has an upper chain with a conveying section positioned in juxtaposition with the upper conveying section of the lower chain. The pairs of chains are positioned in spaced parallel relation and the respective conveying sections frictionally engage the side flap portions of the envelope blanks therebetween and convey the overlapped blanks through the drier section. The chains have laminated block links connected to adjacent lines by pairs of link plates. Both the link and link plates have a generally planar or flat surface and an upper arcuate surface with raised end portions and a recessed intermediate portion. The chains formed from the link blocks and link plates thus have a generally flat surface and a curved surface with outwardly extending spaced, raised portion. The conveying section the the upper chains have the curved surface with the spaced, raised portions engaging the overlapped envelope blanks and the conveying sections of the lower chains have the flat surface engaging the envelope blanks. The lower chains are coated with a silicone rubber to increase the friction between the envelope blanks and the conveying section of the chains without marking the envelope blanks and preventing the envelope blanks from slipping during transport through the drier section.



3,666,262
MAGNETIC CARD TRANSPORT

Raymond L. Fowler, Lexington, Ky.; Edward W. Parken; Larry H. Robbins, both of Austin, Tex., and Joe W. Woods, Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 28, 1970, Ser. No. 76,128
Int. Cl. B65h 9/16
U.S. Cl. 271—52 **5 Claims**



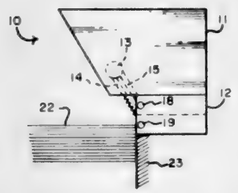
A magnetic card transport which includes three drive rollers. A forward drive roller for driving the magnetic card toward the entry throat for recording character by character and for ejecting the card from the transport; a reverse drive roller for positioning the card in an opposite direction for read checking a previously recorded character; and a high speed reverse drive roller for positioning the card at the beginning of a track during initial entry from the throat and from the end of a previously recorded track. The three drive rollers continuously rotate beneath the card and the card is caused to move by application of a pinch roller to the card to press it into rolling contact with its associated drive roller. A fixed guide rail is provided and the card is biased against the fixed guide rail by means of guide springs. Further, to prevent misalignment of the card during reading and writing the pinch rollers associated with the forward and reverse drive rollers are canted such that the resultant moments of force are in a direction to bias the card against the fixed drive rail.

The entry/exit throat of the card transport, the drive rollers and the magnetic head are located such that optimum utilization of the recording area on the card is accomplished. In addition, a dual card switch located near the innermost extremity of the card bed is positioned such that it is not contracted during normal movement of the card, but in the event an operator attempts to insert another card and thereby force the original card further into the machine and out from under the pinch rollers, the switch is operative to signal the logic that an eject cycle must be entered into and the mechanical spring of the switch causes the card which tripped the switch to be flipped back into engagement with the drive rollers such that that card is also ejected.

3,666,263
PNEUMATIC LEVEL SENSING DEVICE

Richard S. Gluskin, Wayne, Pa., assignor to The United States of America as represented by the Secretary of the Army

Filed Aug. 17, 1970, Ser. No. 64,521
Int. Cl. B65h 1/18
U.S. Cl. 271—56 **3 Claims**

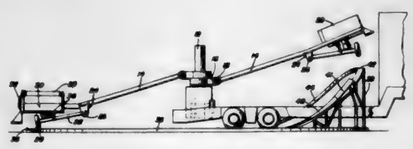


This device relates to a level sensing assembly useful in card or document transport systems. Fluid pressure is supplied to various orifices and interact therein. As cards or documents are stacked, the cards interrupt the flow of fluid thereby producing output control signals. Orifices are placed one above the other thereby enabling the output signals to control a lowering, raising or feed device to keep the level of the documents between the orifices or at a predetermined level.

3,666,264
ROUNDABOUT AMUSEMENT RIDE WITH JUMP RAMP

Norman Bartlett, M-601 2910 Point East Drive, North Miami Beach, Fla.

Filed Sept. 24, 1970, Ser. No. 75,084
Int. Cl. A63g 1/34
U.S. Cl. 272—29 **4 Claims**

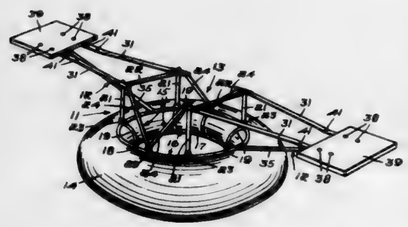


An amusement ride of the roundabout type with a plurality of radiating arms each having an inner end connected to a central support for vertical swinging movement and a passenger carrier at the outer end. The passenger carrier is supported from a circular pathway by a wheel and cushioning assembly with the pathway including a curved jump ramp, safety bridge and landing ramp to simulate the action of a ski jump and provide a pathway closely underlying the wheel of the passenger carrier but spaced therefrom as it moves from the jump ramp to the landing ramp.

3,666,265
WATER SEESAW DEVICE

Harvey F. Ammerman, 125 Edgell Road, Framingham, Mass., and Alexey P. Radsky, Riverside Drive, Augusta, Maine

Filed Mar. 18, 1970, Ser. No. 20,550
Int. Cl. A63g 11/00
U.S. Cl. 272—56 **7 Claims**

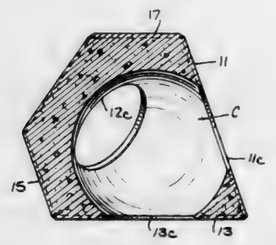


Disclosed is an amusement device with a flat bottomed, buoyant base retaining oppositely directed, cantilevered seat assemblies. With the device in a balanced position, the seat assemblies lie a substantial distance above surface of a supporting body of water. Consequently, occupants of the seat assemblies engaged in seesaw activity can attain relatively high magnitudes of acceleration and velocity before becoming submerged.

3,666,266
PLAYGROUND MODULE

Isamu Noguchi, 33-38 Tenth Street, Long Island City, N.Y.

Filed Mar. 5, 1969, Ser. No. 804,531
Int. Cl. A63b 9/00
U.S. Cl. 272—60 **5 Claims**

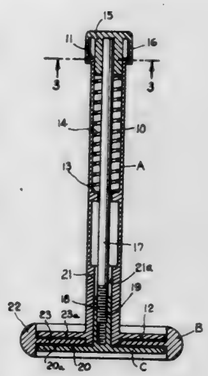


A structural module which lends itself to the construction of playground edifices for climbing and crawling. The module is in the form of a tetrahedron whose four corners are truncated to define four triangular minor faces that are disposed in parallel relation to four major hexagonal faces, the module having a spherical central cavity. The radius of the sphere is greater than the distance between the geometrical center of the module and any major face thereof, circular ports in the major faces of the module being formed by the intersection of the spherical cavity and the major faces. A group of such modules may be interfitted in various ways, side by side as well as one above the other, to create an edifice in which one major face of each module abuts a major face of an adjacent module and in which the ports of the abutting faces are in registration, thereby interconnecting the cavities of the modules to produce a labyrinth.

3,666,267
WRIST EXERCISER

James C. McKinney, 122 Covington Road, Greenville, S.C.

Filed Oct. 6, 1969, Ser. No. 863,853
Int. Cl. A63b 21/22
U.S. Cl. 272—67 **3 Claims**

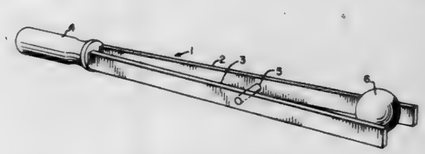


An exercising device for the hands, wrist and forearms including an elongated bar having an enlarged flange integral with one end thereof. An enlarged rotatable member is carried at right angles to the bar in frictional contact with the flange. A friction producing member is carried between the flange and the rotatable member resisting forces exerted by the hands tending to turn the bar with respect to the rotatable member. An adjustable spring is provided for varying the frictional contact between the flange and the rotatable member.

3,666,268
SKILL AND AMUSEMENT DEVICE

Amerigo E. Candusso, 748 Alameda Avenue, Cuyahoga Falls, Ohio

Filed Feb. 25, 1970, Ser. No. 14,016
Int. Cl. A63b 67/14
U.S. Cl. 273—109 **8 Claims**



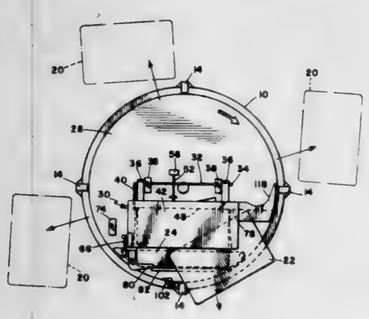
A skill and amusement device for manipulating a rolling ball in which a pair of rails are connected to a handle at one end and extend at a diverging angle toward an open end opposite the handle. A transverse spacer member is located near the longitudinal center of the guide rails. The spacer may be adjustable to vary the angle of divergence of the rails. The body member is held by the handle with the rails inclined downwardly to permit a ball to roll along the tops of the rails toward the open end. Near the open end the rails are spaced apart sufficiently to permit the ball to pass between the rails. At the instant the ball starts to pass downwardly between the rails, the body member is quickly rotated 180° so that the bottom surfaces of the rails now become the top surfaces and the angle of inclination of the rails is reversed to permit the ball to return toward the handle along the top of the rails. This manipulation can be repeated over and over until the player drops the ball. Other variations are included in the invention such as spiral tracks, wavey tracks, obstacles in the tracks and deflectors at the open end of the tracks.

3,666,269
SPHERICAL GAME
David W. Gilchrist, 215 W. Water Street, Elmira, N.Y.
Filed June 5, 1970, Ser. No. 43,744
Int. Cl. A63b *67/00*
U.S. Cl. 273—115 5 Claims



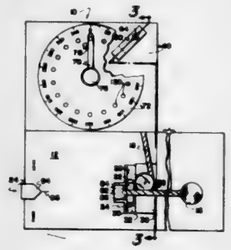
A maze-like game featuring a non-linear, three-dimensional surface across which a ball having a relatively small distance is caused to move to follow a premarked path which is traced between and through certain holes communicating from the surface to a point exterior to the game.

3,666,270
CARD DEALER
Frank A. Mazur, 3150 Bonita Mesa Road, Bonita, Calif.
Filed Feb. 8, 1971, Ser. No. 113,339
Int. Cl. A63f *1/14*
U.S. Cl. 273—149 R 8 Claims



A rotary dealer for playing cards, adapted to be placed more or less centrally of a playing surface and capable of receiving a deck of cards and distributing or dealing the cards into the required number of hands at player's stations, the magazine for the cards being tiltable upwardly for easy loading and the cards being dealt from the top of the deck by initially skewing the top card radially outward from the magazine to be arrested by one of the stops spaced peripherally on a fixed base so that the skewed card is ejected longitudinally as well as radially outwardly and falls at the corresponding player's station.

3,666,271
GOLF PRACTICE DEVICE
Peter Honnef, 32 Harding Street, Wethersfield, Conn.
Continuation-in-part of application Ser. No. 752,226, Aug. 13, 1968. This application Jan. 31, 1971, Ser. No. 106,005
Int. Cl. A63b *69/36*
U.S. Cl. 273—185 C 8 Claims



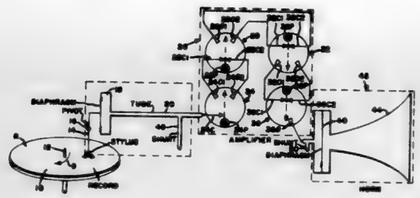
The golf practice device disclosed utilizes a tethered golf ball for practicing or playing a simulated game of golf. A rotatable drum is mounted on a base and a tether secured to the golf ball is guided from the golf ball over a roller and pulley on the base to the rotatable drum where the tether is attached so it can be wound onto the drum and subsequently paid out from the drum when the golf ball is hit with a conventional golf club from a tee on the base. An adjustable brake is coupled to the rotatable drum to impose braking forces on the drum and a distance indicator coupled to the drum for rotation with the drum is used to measure the force with which the golf ball is hit. A hook and slice indicator having tether position sensing members located adjacent the roller and straddling the tether is actuated by the tether when the ball is hit to indicate the direction of flight of the ball. Both the distance indicator and the hook and slice indicator may be connected to an electrical display arrangement.

3,666,272
COMPOSITIONS OF MATTER AND SOLID GOLF BALLS MADE THEREFROM
James L. Walker, Pompton Lakes, and Chester T. Chmiel, Newfoundland, both of N.J., assignors to Uniroyal, Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 561,016, June 28, 1966, now abandoned. This application June 7, 1967, Ser. No. 644,065
Int. Cl. C08d *9/08*; C08f *45/04*; A63b *37/00*
U.S. Cl. 273—218 12 Claims

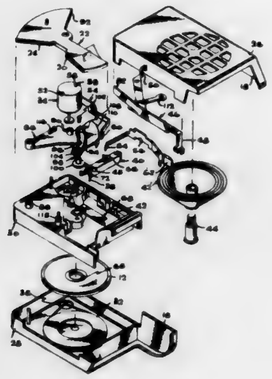
This invention relates to both a composition of matter and a unit construction or solid golf ball made therefrom. The composition, which is comprised of (1) a polybutadiene elastomer, (2) a gum plastic, (3) filler, (4) a polyunsaturated co-curing monomer ester, and (5) a source of free radicals, is readily molded into the golf ball form.

3,666,273
FLUIDIC SOUND REPRODUCTION SYSTEM
Robert A. Kantola, Scotia, N.Y., and Norman H. West, Decatur, Ill., assignors to General Electric Company
Filed Jan. 13, 1970, Ser. No. 2,473
Int. Cl. G11b *9/00*
U.S. Cl. 274—6 7 Claims

To economically reproduce sound from a record, a fluidic sound reproduction and amplification system is provided. This system embraces a phonograph pickup, a fluidic amplifier and an output horn coupled together to provide low-cost audio amplification with virtually unlimited life.

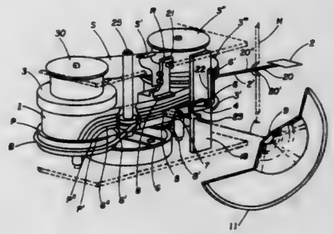


3,666,274
EASY LOADING TOY PHONOGRAPH
James H. Fox, Torrance; Darryl R. Dworkin, North Hollywood, and Han Chung Leung, Los Angeles, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 21, 1970, Ser. No. 100,250
Int. Cl. G11b *25/04*
U.S. Cl. 274—9 B 12 Claims



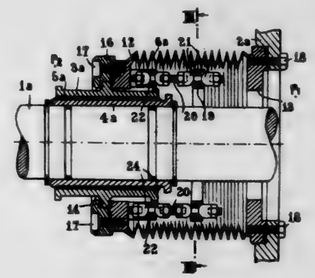
A relatively simple toy phonograph for playing interchangeable disc records including a control lever with an eject knob for ejecting a record and a replay knob for replaying it, both on the same surface as the slot through which the record moves. When the replay knob is depressed, a first camming portion thereon pivots a lever that lifts the tone arm and a second portion thereon moves the tone arm to the outer edge of the record to replay it. When the eject knob is depressed, it pivots an eject lever which has camming surfaces that raise a spindle to release the record, pivot the lever that lifts the tone arm, push against the rim of the record to eject it, push the tone arm to the periphery of the turntable, and open the motor energizing circuit. When a new record is inserted, it pushes the eject cam to automatically start the mechanism to play the new record. An electrically conductive spring member is provided that has one arm at the battery case for contacting a battery terminal, another arm in contact with an electric motor terminal, and a pair of additional arms that function as mechanical springs.

3,666,275
PHONOGRAPH APPARATUS
John C. Heine, Cambridge; Edward M. Kerwin, Jr., Weston, both of Mass., and Colin G. Gordon, Ayr, Scotland, assignors to Bolt Beranek and Newman, Inc., Cambridge, Mass.
Continuation of application Ser. No. 613,874, Feb. 3, 1967, now abandoned. This application Jan. 23, 1970, Ser. No. 5,349
Int. Cl. G11b *25/06*
U.S. Cl. 274—11 R 5 Claims



This invention embodies a linearly driven phonograph record tape having substantially parallel record grooves, and a novel apparatus for selecting the groove to be played by appropriate spring-drive tensioning means.

3,666,276
DEVICE FOR THE SEALING OF A ROTATABLE SHAFT
Robert Hubler, Paris, France, assignor to Societe D'Etudes et de Developpement des Industries Modernes (S.E.D.I.M.), Le Plessis Robinson (Hauts de Seine), France
Continuation-in-part of application Ser. No. 635,470, May 2, 1967, now abandoned. This application Dec. 11, 1969, Ser. No. 884,201
Int. Cl. F16j *15/16*; F16r *41/00*
U.S. Cl. 277—30 3 Claims



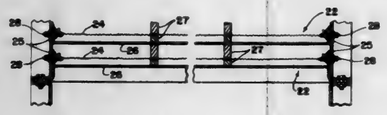
A sealing device affording a moderate leakage for the passage of a rotary shaft extending through the wall of a casing in which the internal fluid pressure differs from the external pressure, this device comprising in combination a tubular socket surrounding said rotary shaft, the inner surface of said socket having a small annular clearance with respect to the outer surface of said rotary shaft, so that these two surfaces provide therebetween an annular passage permitting a limited fluid flow between said casing and the surrounding atmosphere. At least one of the two registering cylindrical surfaces, namely the inner surface of said socket and the outer surface of the corresponding portion of said shaft, is provided with a lining of a material having a low coefficient of friction. A bellowsforming sleeve of flexible material connects said socket to the wall of said casing through which said rotary

shaft extends and said socket is restrained against movement in longitudinal direction.

3,666,277
EDGE SEAL STRIP FOR A TENSION SCREEN

Louis E. Hubach, Aurora, and Edgar E. Hardner, Willoughby, both of Ohio, assignors to W. S. Tyler Incorporated, Mentor, Ohio

Original application Dec. 24, 1968, Ser. No. 786,670, now Patent No. 3,557,953. Divided and this application Aug. 18, 1970, Ser. No. 64,742
Int. Cl. B65d *53/00*; F16j *15/00*
U.S. Cl. 277—166 **5 Claims**



An elastomeric V-shaped seal strip for sealing between the edge of a material separating screen and a supporting side wall includes apertures which extend through the apex of the V to receive shafts of screen tensioning bolts. The shafts substantially bisect the angle formed between the diverging legs of the V to provide equal tensioning pressure for each leg. A concave sealing surface extending longitudinally along the length of the seal strip where the legs merge serves to seal against the edge of the screen. Convex sealing surfaces on the distal ends of the legs serve to seal against the side wall. The flexing butterfly shaped seal strip bridges the gap between the screen and side wall and allows tightening or loosening of the tensioning bolts without leakage of material from above the screen around its edges.

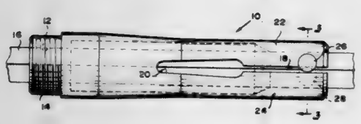
ERRATUM

For Class 277—234 see:
Patent No. 3,666,001

3,666,278
MACHINE TOOL FEED CHUCK

Earl C. Andrews, Bresport, N.Y., assignor to Hardinge Brothers, Inc., Elmira, N.Y.

Filed Mar. 26, 1970, Ser. No. 22,889
Int. Cl. B23b *31/12*
U.S. Cl. 279—41 **7 Claims**

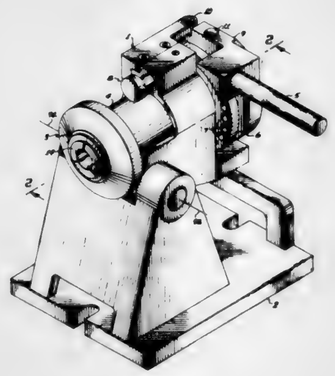


This invention is a machine tool feed chuck including a cylindrical body having a longitudinal bore through which a bar passes. The body is provided with opposed longitudinal slots forming leaves comprising jaws for holding the bar under tension. The leaves are urged toward each other at one end of the cylindrical body in order to obtain tension on the bar. In order to reduce the amount of deflection of the leaves between the working and inoperative positions, stop plugs are mounted in the leaves of the cylindrical body, the stop plugs extending across the slots into engagement with a portion of the opposite leaf, thereby preventing the leaves under tension from closing fully at the front end, and holding the chuck partially open when in the inoperative position.

3,666,279
COLLET CLOSING MECHANISM FOR A MACHINE TOOL

Robert L. Coope, 1830 West Virginia Avenue, Phoenix, Ariz.

Filed Sept. 8, 1970, Ser. No. 70,110
Int. Cl. B23b *31/20*
U.S. Cl. 279—50 **3 Claims**

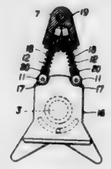


In order to pull a split collet into the work holding position and to permit rapid release of a work piece, a toggle mechanism is utilized to apply a closely regulated force to the collet to move it in the appropriate longitudinal direction. The collet is inserted into the forward end of a spindle having an axial bore and a draw tube is inserted into the opposite end of the spindle and is threaded onto the collet in the usual manner. After the workpiece is inserted, the toggle mechanism is activated to pull the draw tube, and hence the collet, slightly rearwardly such that an external taper on the collet is brought into contact with an internal taper on the spindle to tighten the collet onto the work piece. When the machining operation is completed on the work piece, the toggle mechanism is operated in the opposite direction to release the collet from the internal taper such that it can expand and release the work piece. The toggle mechanism includes a closer sleeve which can be moved rearwardly and forwardly by a lever. The closer sleeve fits slidably over the rear portion of the draw tube and is provided with three cam surfaces extending generally outwardly and rearwardly from the periphery of its axial bore. A back plate, which is secured to the draw tube behind the closer sleeve, has the captive ends of three forwardly directed toggle links pivotally secured within forwardly opening recesses. The free ends of the toggle links are provided with rollers which function as cam followers on the cam surfaces of the closer sleeve. A stationary stop disposed forward of the closer sleeve has a rearwardly extending hub portion which functions as a part of the cam surfaces the rollers follow. The rollers and the cam surfaces cooperate such that when the closer sleeve is moved to the rear, closed position, the rollers force the toggle links into an attitude parallel to the draw tube axis thereby forcing the back plate, and hence the draw tube and collet, slightly rearwardly. When the closer sleeve is moved to the forward, open position, the rollers are forced radially outwardly to pull the back plate, and hence the draw tube and collet, slightly forward to release the collet. Radiused points on the cam surfaces bring about the toggle action during the opening and closing operation to insure a self-locking characteristic to the mechanism.

3,666,280
SKI BINDING

Thomas G. Smolka, Wien-Mauer, and Johann Zelinka, Wien, both of Austria, assignors to Wiener Metallwarenfabrik Smolka & Company, Schwechat, Austria

Original application Dec. 16, 1968, Ser. No. 783,891. Divided and this application Sept. 8, 1970, Ser. No. 70,419
Claims priority, application Austria, Dec. 14, 1967, A 11 285/67
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **5 Claims**

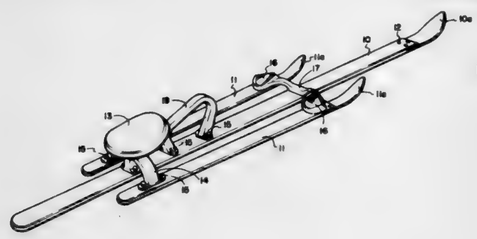


A releasable ski binding utilizing a toggle structure wherein one toggle arm constitutes engaging means for the ski boot and the other toggle arm provides resilient resistance for the over-center action. Same can be utilized for either a toe binding or a heel binding.

3,666,281
SLED FOR SNOW OR WATER

William Charles Billings, 95 Rose Lane, Redding, Calif.

Filed Dec. 22, 1969, Ser. No. 887,231
Int. Cl. B62b *13/04*
U.S. Cl. 280—12 KL **5 Claims**



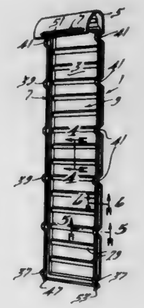
A main, ski-like runner is flanked by a pair of auxiliary, outrigger, ski-like runners and is provided with a low seat on the main runner, rearwardly thereof. Rests for the heels of the rider's feet are positioned forwardly on the auxiliary runners, and an elongate, stabilizing hand-hold extends forwardly from the seat on and longitudinally of the main runner. The auxiliary runners diverge outwardly and forwardly from the main runner and the footrests are preferably formed as forwardly sloping and outwardly turned heel-retaining pad ends of a bar secured to and extending transversely of the runners. The stabilizing hand-hold is preferably a single bar of plastic material sloping upwardly and forwardly from somewhat below seat level immediately in front of the seat.

3,666,282
TOBOGGAN

Jerome M. Buesing, Birmingham; Robert M. Paulsen, St. Clair Shores, and Clifford A. Robinette, Fremont, all of Ohio, assignors to Woodall Industries Inc., Detroit, Mich.

Filed Mar. 19, 1970, Ser. No. 20,912
Int. Cl. B26b *13/00*
U.S. Cl. 280—18 **12 Claims**

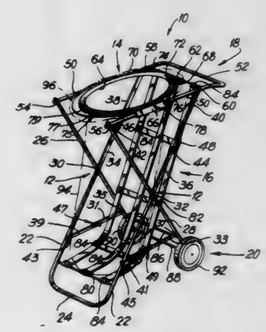
A long, flat, thin board, which may be shaped into a toboggan by the ultimate user, is formed by bonding together a pair of polyethylene sheets, the lower of which is ribbed to form runners and the upper of which is ribbed to form transverse braces, the bonded marginal edges of the sheets being arched upwardly at intervals to provide support for a rope-type handrail which is also used as a means for holding the forward end in a reversely curved upright position when it is desired to use the board as a toboggan.



3,666,283
CARRIAGE FOR WASTE DISPOSAL BAGS AND THE LIKE

David Stevens, 768 Sherman Avenue, Thornwood, N.Y., and Donald Z. Blau, 21 Carrol Street, City Island, N.Y.

Filed July 17, 1970, Ser. No. 55,903
Int. Cl. B62b *11/00*
U.S. Cl. 280—36 R **5 Claims**

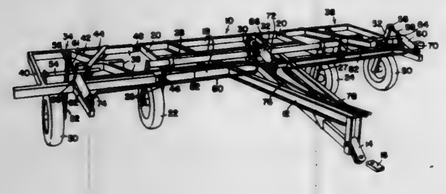


New and improved carriage for waste disposal bags and the like is provided and comprises a readily collapsible, generally upstanding scissor-like frame, handle and support means disposed generally atop said frame, wheel means attached to said frame to provide for the maneuverability of the carriage, bag attachment means removably attached to said handle and support means and operative to removably attach a bag thereto, and bag support means attached to said handle and support means and to said frame means adjacent to and beneath said bag attachment means to support a bag from said frame means.

3,666,284
HYDRAULIC DEPTH CONTROL FOR DRAWN IMPLEMENT CARRIERS HAVING PIVOTED OUTER FRAMES

George Dwight Hunter, and Richard Wayne Hook, both of Des Moines, Iowa, assignors to Deer & Company, Moline, Ill.

Continuation of application Ser. No. 577,849, Sept. 8, 1966, now abandoned. This application July 23, 1968, Ser. No. 753,337
Int. Cl. B62d 21/18
U.S. Cl. 280—43.23 17 Claims

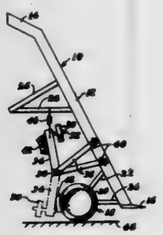


An implement carrier including a main frame and outrigger frames mounted on vertically movable wheels operated by a plurality of series-connected double-acting hydraulic cylinders. Each of the cylinders is provided with an integral bypass which automatically synchronizes the cylinders each time they are moved to their limit in one direction to raise the frame to its transport position and the last cylinder in the series when moving the frames to the working position is provided with an adjustable integral stop which limits the movement of the cylinders.

3,666,285
AUXILIARY MOVEMENT MEANS FOR HAND TRUCKS

William J. Fertig, 6144 Woodfox Court, Indianapolis, Ind.

Filed June 5, 1970, Ser. No. 43,686
Int. Cl. B62b 1/04
U.S. Cl. 280—47.12 8 Claims



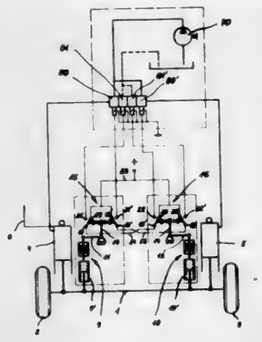
An auxiliary movement means for two-wheeled hand truck, which advantageously provides that truck may be conveniently moved in a lateral direction, that is, transversely to the usual path of the hand truck.

3,666,286
AUTOMATIC LEVELLING ARRANGEMENT FOR VEHICLES

Ortwin Engler, Gerlingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 19, 1970, Ser. No. 65,091
Claims priority, application Germany, Aug. 23, 1969, P 19 44 178.2; Apr. 9, 1970, P 20 16 963.5
Int. Cl. B60g 17/04
U.S. Cl. 280—124 F 13 Claims

Switching arrangements, either mechanical or electrical, are controlled by the vehicle body level to cause operation of means, such as electromagnetically operated valves, for supplying fluid to, or withdrawing fluid from, fluid pressure leveler, in dependence on whether the body falls below, or



rises above, the desired level. The switches for one leveler of an axle are connected to the switches of the other leveler of the same axle.

3,666,287
EXHAUST CONTROLLER AND COUPLING FOR VEHICLE LEVELER UNIT

Joseph W. Wanner, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 5, 1970, Ser. No. 78,000
Int. Cl. B60g 17/04
U.S. Cl. 280—124 F 4 Claims

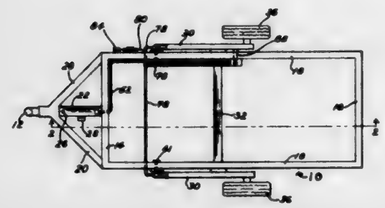


In preferred form, an exhaust controller and coupling for a vehicle leveler unit connected within a closed or semi-closed air pressure system including a pump, an inlet fitting into a pressurizable control chamber of the leveler unit. The exhaust controller is characterized by having a movable valving element operated in response to height changes of the vehicle between open and closed positions. A replaceable, resilient fitting on the leveler includes an inlet end having a flexible seat that engages the movable valving element when in its closed position; the fitting includes an exhaust end outside of the unit which is connected through a right angle elbow coupling to a return conduit from the exhaust valve assembly to the compressor inlet which is located by the elbow coupling in close spaced parallelism with the outer surface of the leveler unit.

3,666,288
SELF-ADAPTING SPRING SUSPENSION SYSTEM FOR VEHICLES

John E. Carton, 2083 Carton Way, and George A. Mertz, 1851 Carton Way, both of Grants Pass, Oreg.

Filed Sept. 9, 1970, Ser. No. 70,703
Int. Cl. B60g 11/26
U.S. Cl. 280—124 F 10 Claims

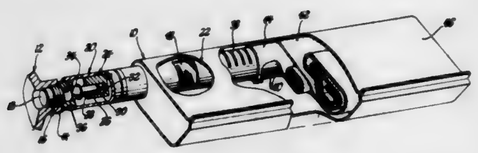


An automatically self-adapting spring suspension system is provided for road vehicles in which the springs are automatically readjusted to increase their stiffness in response to increase of load, and in response to any shock of such unusual severity that the wheels are caused to pass a predetermined point during relative approach of the wheels and chassis. Illustratively pneumatic springs are stiffened by the automatic addition of air under pressure: Provision is made for conveniently bleeding the air simultaneously and equally from the springs when a change of load, or of roughness of the road requires a reduction of spring stiffness.

3,666,289
INFLATABLE OCCUPANT RESTRAINT SYSTEM

Joseph J. Magyar, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 11, 1971, Ser. No. 105,223
Int. Cl. B60r 21/06
U.S. Cl. 280—150 AB 4 Claims

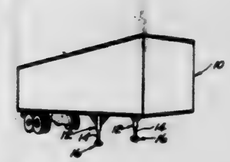


A pressure vessel containing compressed fluid has the outlet thereof sealed by a rupturable plug. The outlet communicates with a manifold which in turn communicates with one end of an elongated cylindrical diffuser. The diffuser includes longitudinal rows of partial circumferential slots. Each row communicates the diffuser with the interior of a respective inflatable occupant restraint cushion. A cylinder is supported within the manifold by radial ribs thereof engaging the interior wall of the manifold. A conical headed piston is slidable within the cylinder and the space between the piston and a closed end wall of the cylinder is filled with viscous fluid. An aperture in the closed end wall of the cylinder receives a pintle secured to the piston. The conical head of the piston is located in predetermined relationship to a fixed area orifice at the outlet of the pressure vessel. A tubular diffuser screen is inserted within the diffuser and covers the slots to the cushions. One end of the screen opens to the manifold and the other end of the screen is closed by a plug of resilient material.

3,666,290
RESILIENT LANDING GEAR FOOT

Thomas B. Dalton, and Emil E. Bundt, Jr., both of Muskegon, Mich., assignors to Westran Corporation, Muskegon, Mich.

Filed Apr. 13, 1970, Ser. No. 27,604
Int. Cl. B60s 9/00
U.S. Cl. 280—150.5 10 Claims

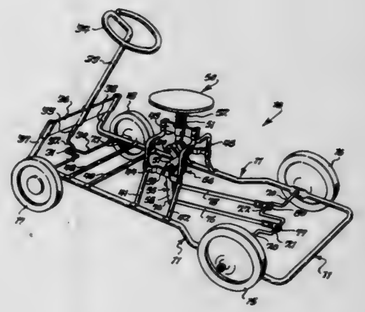


A resilient trailer landing gear foot slidably mounted on the lower end of a landing gear leg. The landing gear foot includes a resilient toroid disposed between the lower end of the leg and a ground engaging plate forming a part of the foot for providing resiliency to the foot to absorb shock loading imposed thereon.

3,666,291
OCCUPANT PROPELLED AMUSEMENT VEHICLE

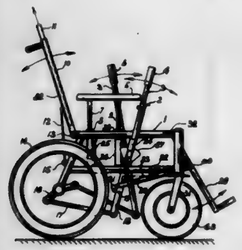
Ralph G. Ortiz, 107 North Brier Road, Tonawanda, N.Y.

Filed Nov. 16, 1970, Ser. No. 89,641
Int. Cl. B62m 1/18
U.S. Cl. 280—226 R 10 Claims



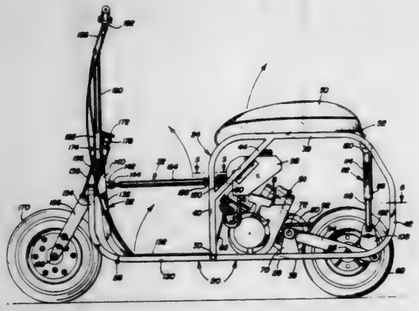
An amusement vehicle comprising an operator member such as a spring-biased seat movably mounted on a vehicle frame, in which frame supporting wheels are rotatably mounted, which operator member is adapted to be reciprocated by the rider. A motion transmission mechanism comprises a pair of links each connected at one arm portion to the operator member and pivoted in response to reciprocation of the operator member. Each link includes another arm portion which is connected to a corresponding pivot point offset from the axis of a shaft connected to at least one of the wheels, whereby the shaft and wheel are rotated as the link arm portions are moved relative to each other.

3,666,292
WHEEL CHAIR
John Bartos, Jackson Heights, N.Y., assignor to Patents and Technology Exclusives, Inc., New York, N.Y.
Filed June 11, 1969, Ser. No. 832,304
Int. Cl. B62m 1/12
U.S. Cl. 280—234 11 Claims



A foldable wheel chair with swingable chassis and leg rests driven by the occupant with the help of a lever mechanism is disclosed.

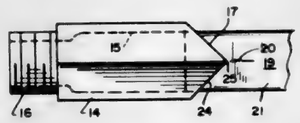
3,666,293
PORTABLE MOTOR VEHICLE
Erwin D. Schlaphoff, 967 Charter Drive, Covina, Calif.
Original application Jan. 2, 1968, Ser. No. 695,111, now Patent No. 3,548,963, dated Dec. 22, 1970. Divided and this application Dec. 8, 1969, Ser. No. 883,264
Int. Cl. B62k 21/18
U.S. Cl. 280—278 8 Claims



A portable motor vehicle that includes a front frame that carries a vertically extending bearing for a spindle. A front wheel is journaled on the spindle. Handle bars are connectable to a head of the spindle for turning the spindle and can be disconnected and moved downwardly without removing the same from the head of the spindle.

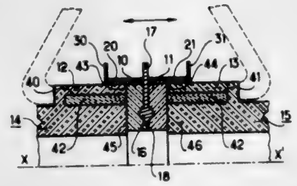
3,666,294
INLET FITTING FOR AN AUTOMOTIVE AIR CONDITIONER CONDENSER
Raymond S. Slaasted, Racine, Wis., assignor to Modine Manufacturing Company
Filed Feb. 19, 1971, Ser. No. 116,972
Int. Cl. F16l 13/04
U.S. Cl. 285—114 4 Claims

An automotive air conditioner apparatus comprising a metal refrigerant flow tube of generally oval cross section with opposite flat sides joined by opposite edges, a metal fitting having opposite ends and a fluid passage through the fitting with means on one end for receiving a flexible refrigerant conduit and an opening on the other end receiving the refrigerant flow tube thereby to connect in series the



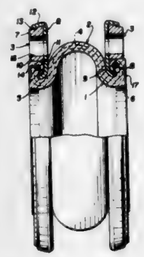
conduit, fluid passage and tube with the tube being joined to the fitting other end along a continuous joint that is at an acute angle to the longitudinal axis of the tube in order to distribute stresses tending to cause a break in the tube.

3,666,295
CONDUITS FOR LIQUID METALS
Henri Carbonnel, Antony, and Pierre Descleve, Bures-sur-Yvette, both of France, assignors to Groupement Atomique Alsacienne Atlantique (G.A.A.A.),, Le Pleissis-Robinson, France
Filed Dec. 10, 1970, Ser. No. 96,827
Claims priority, application France, Dec. 10, 1969, 6942788; Dec. 29, 1969, 6945218
U.S. Cl. 285—41 11 Claims



An improved seal for connecting liquid metal conduit sections. It comprises at least two rings made of fire-proof fibers, squeezed between the adjacent sections, with sealing means being provided between the rings in order to prevent leakage and cause the hardening or freezing of liquid metal which tends to seep between the two rings on the one hand, or between the rings and the adjacent conduit sections on the other hand. The invention can be used for very corrosive metals such as zinc and aluminum.

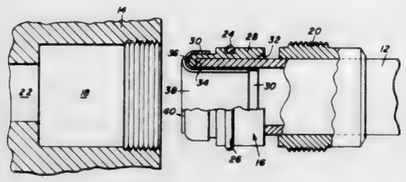
3,666,296
EXPANSION JOINTS FOR RIGID METALLIC PIPES
Pasquale Fischetti, Saronno, Italy, assignor to Pirelli, S.p.A., Milan, Italy
Filed Mar. 11, 1970, Ser. No. 18,610
Claims priority, application Italy, Mar. 13, 1969, 14043 A/69
Int. Cl. F16l 11/12
U.S. Cl. 285—45 10 Claims



The disclosure relates to an expansion joint for metallic pipes, the joint comprising a reinforced rubber body in the

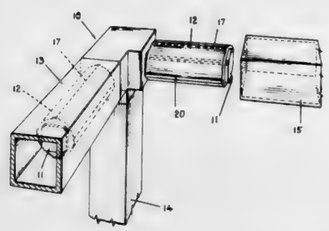
form of an annular loop having enlarged lateral edge portions and a pair of locking members for connecting the edge portions of the body to adjacent portions of the pipe ends. Each ring is provided with an undercut groove to receive a portion of the enlarged lateral edge portion. Each locking ring comprises a pair of annular elements disposed in facing contact and interlocked. The first annular element has a greater thickness and is directed towards the outer side of the rubber body. The second element extends outwardly beyond the innermost edge of the first element to thus form the undercut groove.

3,666,297
TUBE CONNECTOR FITTING
Murray Marks, Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Interior
Filed Apr. 22, 1971, Ser. No. 136,438
Int. Cl. F16l 17/06
U.S. Cl. 285—81 10 Claims



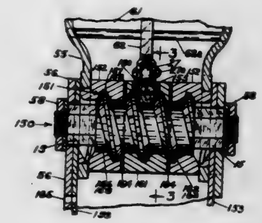
A fitting for interconnecting a tube and a fluid distribution header. O-ring and elastomeric seals prevent internal and external leakage. In one embodiment threaded connections are employed. In another embodiment concentric interlocking ridges and grooves are used.

3,666,298
CONNECTOR FOR JOINING TUBULAR MEMBERS
Frederick William Reilly, Islington, Ontario, Canada, assignor to Beautiline Limited, Downsview, Ontario, Canada
Filed Jan. 28, 1971, Ser. No. 110,397
Claims priority, application Canada, Jan. 20, 1971, 103,462
Int. Cl. E04g 7/00
U.S. Cl. 287—54 A 4 Claims



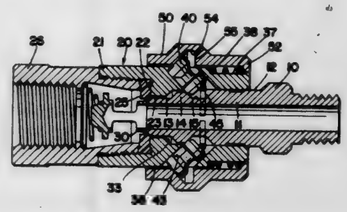
A connector for releasably joining hollow rectangular tubular members. The connector consists of a cubical body with a plurality of spigots projecting therefrom. Each spigot consists of a rigid core of polygonal cross-section enclosed within a resiliently compressible plastic casing having longitudinal ribs corresponding in number to the number of sides of the tubular member. The diameter of the spigot and casing across the ribs is less than the diameter across the diagonals of the tubular member and greater than the diameter across opposite walls of the tubular member. The locked joint is established by inserting the spigot and casing into the tubular member with the ribs aligned with the corners and, by relative rotation of the tubular member and spigot, opposed ribs are brought into an interference fit with opposed faces of the tubular member with a positive lock resulting.

3,666,299
FLEXIBLE JOINT INCLUDING BRAKING MEANS
James W. Butler, 117 Grant Avenue, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 311,785, July 26, 1963, now abandoned. This application Oct. 31, 1969, Ser. No. 873,766
Int. Cl. B25g 3/38
U.S. Cl. 287—94 17 Claims



Rotatable driving and driven elements of the screw-and-threaded-sleeve type are provided with means for securing relative rotation therebetween, together with means for enabling braking or cessation, at selected intervals, of rotation with respect to each other.

3,666,300
QUICK DISCONNECT COUPLING
John G. Russell, Highland Heights, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Mar. 26, 1970, Ser. No. 22,984
Int. Cl. F16l 37/08
U.S. Cl. 285—316 6 Claims

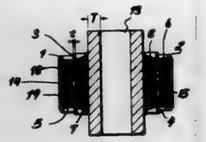


A fluid line coupling socket for quick attachment and release from a nipple, the socket having locking pins for retaining and releasing the nipple, the pins having a pair of generally oppositely facing shoulders at one end of the pins that are directly engageable by corresponding shoulders of a sleeve on the socket for moving the pins into and out of locking position.

3,666,301
PIVOT OR SUPPORT SLEEVE WITH RESILIENT LAYER
Raoul Jorn, D-8992 Hengnau, Post Wasserburg A. B., Germany
Filed Nov. 2, 1970, Ser. No. 86,167
Claims priority, application Germany, Nov. 4, 1969, P 19 55 308.3
Int. Cl. F16b 7/00
U.S. Cl. 287—85 R 4 Claims

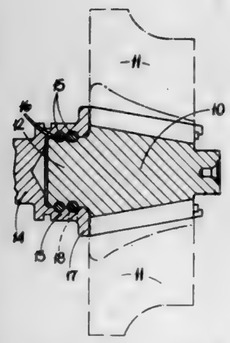
A pivot or support sleeve has an elastomeric cushion and

consists of an inner metal tube or pin and two outer metallic



half shells between which is disposed a rubber layer vulcanized to the metal bodies with which it is concentric.

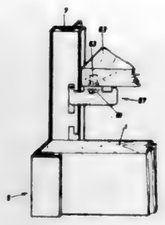
3,666,302
ROTOR ASSEMBLIES
Eric Kellett, London, England, assignor to C.A.V. Limited, Birmingham, England
Filed Nov. 2, 1970, Ser. No. 85,876
Claims priority, application Great Britain, Nov. 28, 1868, 58,221/68
Int. Cl. F16d 1/06
U.S. Cl. 287—53 R **2 Claims**



A rotor assembly comprising a metal shaft having a cup shaped portion at one end thereof, a rotor having a spigot portion for engagement with the cup shaped portion, groove means defined about one or both co-operating surfaces of said portions and a filling material occupying said groove means. The filling material is arranged to have a higher co-efficient of thermal expansion than that of the cup shaped portion of the shaft and is compressed into said groove means so as to interpose a compressive stress upon the spigot portion of the rotor.

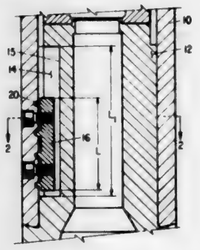
3,666,303
DEVICE FOR JOINING TOGETHER PARTS OF A PIECE OF FURNITURE
Karl Huls, Schoppenkamp 29, 4424 Stadtlohn, Germany
Filed July 16, 1970, Ser. No. 55,533
Claims priority, application Germany, Sept. 25, 1969, P 19 48 400.5
Int. Cl. F16b 5/07
U.S. Cl. 287—20.92 C **16 Claims**

A device for securing together individual parts, such as wooden panels, of a piece of furniture is formed of an elongated U-shaped member which forms a groove within which a pair of strips are provided extending along the oppositely disposed legs or flanges of the U-shaped member. T-shaped recesses are formed in the edges of the strips located along the opening to the groove in the U-shaped member and connecting members are arranged to be interlocked into these recesses. One panel of the piece of furniture can be held between the strips within the groove in the U-shaped member



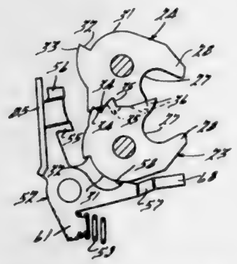
while additional parts or panels are attached to the members interlocked into the recesses in the strips.

3,666,304
SPLINE SYSTEM
Lawrence B. Wilder, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.
Filed July 21, 1971, Ser. No. 164,723
Int. Cl. F16d 1/06
U.S. Cl. 287—52.05 **6 Claims**



This invention relates to a spline arrangement for connecting a housing to an internal cylindrical member. A key member having a rectangular base is provided with anti-shear rings made integral with the base. Pockets are cut in the outer wall of the inner cylindrical member to receive the key member. Bolts extending through the housing wall pull the key member outwardly until the anti-shear rings enter mating circular grooves on the inside of the housing. Rotary torque can then be transmitted between the housing and the interior cylindrical member.

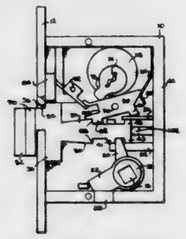
3,666,305
DOOR LATCH ASSEMBLY
William L. Schlichter, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 4, 1970, Ser. No. 95,221
Int. Cl. E05c 3/26
U.S. Cl. 292—48 **7 Claims**



A latch mechanism for a vehicle door having a pair of pivoted counterswinging latch elements adapted to be held in

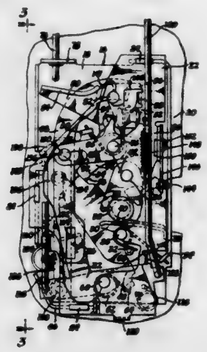
latched engagement with a striker pin by a detent means. Upon release of the detent means by a latch mechanism operator, the latch elements are free to move to an unlatched position permitting the vehicle door to be opened. The detent means is biased to be restored into engagement with the latch elements after release of the actuating means. Normally, under the biasing force, the detent means maintains an abutting relation to the peripheral surfaces of the respective latch elements and then moves further into latch element holding position as the latch elements encompass the striker. One of the latch elements is provided with an abutment on its peripheral surface positioned to engage a cam surface on a lever arm of the detent means to drive the latter into such latch element holding position in the event the normal biasing means becomes ineffective to do so for any reason.

3,666,306
LOCK WITH SAFETY BOLT
Joseph Michael Genakis, 948 West Boylston St., Worcester, Mass.
Filed Nov. 5, 1970, Ser. No. 87,147
Int. Cl. E05b 55/00
U.S. Cl. 292—169.17 **2 Claims**



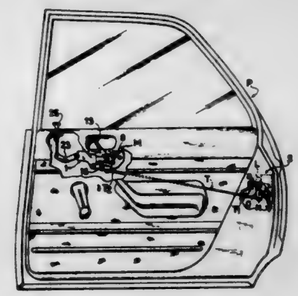
A key-operated lock having a locking bolt or tongue having a latch position and a bolt locked position, and including a locking plug with means for holding the locking plug in either tongue-locked or tongue-free condition; the locking tongue in bolt locked position extending to a greater than normal extent to present a flat flush surface to the door jamb to prevent retraction of the tongue by means of an instrument at the front of the door.

3,666,307
CLOSURE LATCH
Wieslaw S. Zaydel, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 2, 1970, Ser. No. 86,097
Int. Cl. E05c 3/26
U.S. Cl. 292—216 **4 Claims**



A vehicle body door lock includes an inverted fork bolt mounted on the lock frame for movement between latched and unlatched positions and primary and secondary detents mounted on the frame on generally diametrically opposite sides of the bolt pivot for movement between holding and released positions with respect to the bolt. Coaxially mounted with the primary detent is an operating lever which is connected to the outside push button through an intermediate push button lever. A generally J-shaped intermittent member is pivoted intermediate the ends thereof to a leg of the operating lever. The linear leg of the intermittent member mounts a tab movable between engaging and bypass positions with respect to a tab of a transfer link. One end of the link is pivoted to the secondary detent and the other end is engageable with the primary detent. The intermittent member is moved between unlocked and locked positions, respectively, corresponding to engaging and bypass positions of the intermittent member tab, by a locking lever coaxially mounted with the secondary detent and operable by a garnish button or key cylinder. The hook leg of the intermittent member includes a tab engageable by the primary detent to move the intermittent member from locked to unlocked positions upon movement of the detent by the bolt. If the outside push button is actuated prior to movement of the detent by the bolt the hook leg tab is moved out of the path of the primary detent. An inside remote handle is connected by a remote lever to the operating lever.

3,666,308
ACTUATING MECHANISM FOR A LATCH
Michel Bonnaud, Montbeliard, France, assignor to Automobiles Peugeot, Paris and Regie Nationale Des Usines Renault, Billancourt, France
Filed Sept. 11, 1970, Ser. No. 71,312
Claims priority, application France, Oct. 28, 1969, 6936996
Int. Cl. E05c 3/00
U.S. Cl. 292—336.3 **7 Claims**

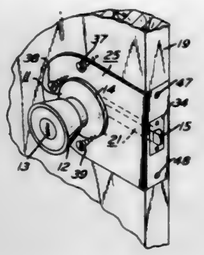


Actuating mechanism for a door latch which has a movable element assuming a latch closing position, a latch opening position and a latch locking position. A first control means controls the opening of the latch and a separate second control means controls the locking of the latch. A rocker element is operatively connected to each control means and to the movable element. A device is adapted to bring the rocker element to, and lock it in, a position in which the movable element is placed in the latch locking position when the second control means is brought to a latch locking position.

3,666,309
COVER FOR DOOR LOCK ASSEMBLY
Vincent F. Zarzycki, 9427 Kirkwood St., Philadelphia, Pa.
Filed Oct. 13, 1969, Ser. No. 865,766
Int. Cl. E05b 9/04
U.S. Cl. 292—337 **3 Claims**

A cover for a door lock assembly having a knob assembly and a bolt assembly. The cover has a pair of side plates in-

tegral with a front plate and is formed of sheet material such as sheet steel. The cover is rigidly secured to the door and

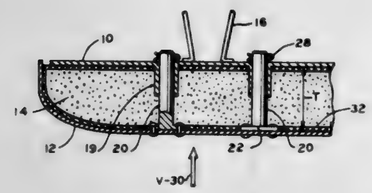


has an opening for receiving the bolt assembly and a pair of openings for receiving the knob assembly.

3,666,310
SHOCK ABSORBING BUMPER

Lester E. Burgess, Swarthmore, Pa.; Ignatius J. Niemkiewicz, Wilmington, Del.; Robert W. Cruger, Springfield, Pa., and Ronald J. Charno, Drexel Hill, Pa., assignors to Gulf & Western Industrial Products Company, Grand Rapids, Mich.

Filed Jan. 11, 1971, Ser. No. 105,589
Int. Cl. B60r *19/06, 19/08*
U.S. Cl. 293—71 R **26 Claims**



A shock absorbing bumper comprising an impact distribution plate, a core of shock absorbing material, and a backing plate. The impact distribution plate may be made of steel or a rigid plastic and may be on the outer surface of the shock absorbing material or imbedded therein. The shock absorbing core consists of a foamed plastic material such as a polyurethane cellular foam and preferably consists of a high density, tight cell polyurethane foam. Connector pins attach the impact distribution plate slidably into the backing plate so that the impact plate is supported by the backing plate against forces applied substantially parallel to the impact plate but will not directly transmit to the backing plate impact forces applied substantially perpendicularly to the impact plate. The bumper may be mounted with shock absorbing springs which deflect upon impact. The bumper may be formed with a projecting leading edge. Apertures may be provided in the backing plate to permit the escape of compressed gas from the foam.

3,666,311
SHOTGUN STICK

Earl W. McMullin, Rutland Township, Barry County, Mich., assignor to Hastings Fiber Glass Products, Inc., Hastings, Mich.

Filed July 16, 1970, Ser. No. 55,372
Int. Cl. A47f *13/06*
U.S. Cl. 294—19 R **18 Claims**

A shotgun or clamp stick for applying devices, such as clamps, to electrical lines or conductors and removing devices therefrom. The stick includes an elongated support rod having an insulating head at one end and a movable actuating handle at the other end thereof. An operating rod extends from the handle and is slidably received within the insulating head. The operating rod is connected to a clamping mechanism which is slidably disposed within the head whereby actuation of the handle causes linear movement of the operating rod for causing a corresponding movement and

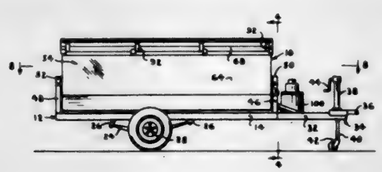


actuation of the clamping mechanism. The support rod and the operating rod are both of a telescopic construction. Releasable locking devices are provided for individually releasably fixedly locking together the telescoping parts of both the support rod and the operating rod. The support rod and the operating rod can be easily telescopically extended or shortened for permitting selective adjustment of the overall length of the clamp stick.

3,666,312
MOBILE STORAGE BOX

Richard T. Harris, 1330 Indianapolis Blvd., Lake County, Ind.

Filed Apr. 27, 1970, Ser. No. 32,164
Int. Cl. B62d *39/00*
U.S. Cl. 296—1 R **4 Claims**



This application discloses a vehicularly movable trailer for storing an oil rake of the type used for containing pollutants in water such as an oil slick. The storage box body of this invention is pivotally supported on a drawbar frame for tilting toward either side. The top of the box is provided with hinged doors having vent means and a screened bottom which supports the stored oil rake. The cover doors are further provided with a plurality of hinged leg members which have extension members pivotally connected to distal ends of the leg members which serve as side posts when pivotally raised from the leg members for supporting sections of a skimmer hose. The leg members of the cover doors are pivotally swung out to support the open side of the door in platform position which facilitates rapid removal of the oil rake.

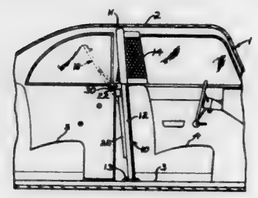
3,666,313
PARTITION FOR AUTOMOBILES

Robert E. Halstead, and Harold A. Halstead, both of c/o Novelty Carriage Works, Inc., East 6615 Main, Spokane, Wash.

Filed July 28, 1970, Ser. No. 58,857
Int. Cl. B60d *33/04*
U.S. Cl. 296—24 R **4 Claims**

A partition apparatus mounted immediately behind the front seat of an automobile for protecting those in the front seat from physical contact by persons in the rear of the vehicle. It includes an inverted roll bar having a solid transverse plate extending across the back of the front seat. A movable

partition is selectively positioned in an upper location extending across the space between the roll bar and the top of the plate. It is movable to a lowered or retracted position by

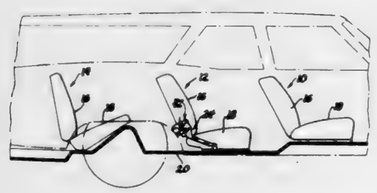


means of a pivot arm and lower slide connection, combining pivotal and translational movement to minimize projection of the partition rearward of the roll bar during movement of the partition. The partition is spring-biased to its upper position.

3,666,314
TWO-WAY FOLDING SEAT BACK

John P. Makinen, Royal Oak, and Gary A. Wise, Clair Shores, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 7, 1970, Ser. No. 95,712
Int. Cl. B60n *1/10*
U.S. Cl. 296—66 **3 Claims**

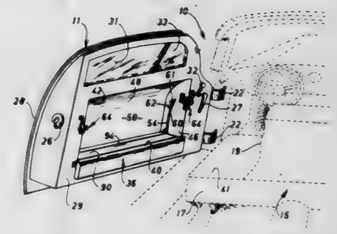


A seat assembly including a seat back and a seat cushion wherein the seat back is adapted to be folded forwardly about a first axis extending transversely to the longitudinal axis of the vehicle so as to overlie the seat cushion and provide a flat cargo platform and adapted to be folded forwardly relative to the seat cushion about a second axis which is angularly related to and intersects the first axis at a point located adjacent the aforementioned longitudinal axis so as to provide access space for a passenger entering the rear of the vehicle.

3,666,315
CONVERTIBLE SEAT-BED FOR AUTOMOBILES

Gerhard P. Reimann, 145 George St., Toronto, 2 Ontario, Canada

Filed Aug. 10, 1970, Ser. No. 62,580
Int. Cl. B60n *1/10*
U.S. Cl. 296—69 **12 Claims**

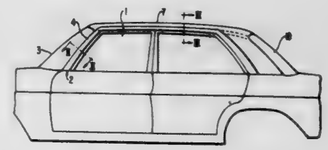


Recesses are provided within the doors of an automobile body structure to provide additional sleeping width for a person lying on a seat of the automobile. An intermediate sloping panel within each door separates the recess from an outwardly disposed window-receiving compartment. Usefully, arm rests which are adjustably mounted for movement between raised and lowered positions are provided. In their raised positions, the arm rests function as such while, in their lowered positions, they form extensions of the top surface of the seat portion of a seat of the automobile. Usefully, each arm rest can be adjusted into either of two lowered positions. In one such lowered position, the arm rest is disposed with its top surface parallel to but usefully slightly lower than the top surface of the seat for supporting the feet of a person lying on that seat. In its second lowered position, the arm rest is positioned so that its top surface extends upwardly and outwardly generally from the top surface of the seat to provide an inclined head-supporting pillow.

3,666,316
INSTALLATION FOR REDUCING THE SOILING OF SIDE WINDOWS OF A MOTOR VEHICLE

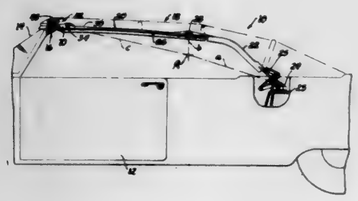
Karl Wilfert, Gerlingen-Waldstadt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Oct. 8, 1969, Ser. No. 864,606
Claims priority, application Germany, Oct. 12, 1968, P 18 02 853.0
Int. Cl. B60j *1/20*
U.S. Cl. 296—84 C **19 Claims**



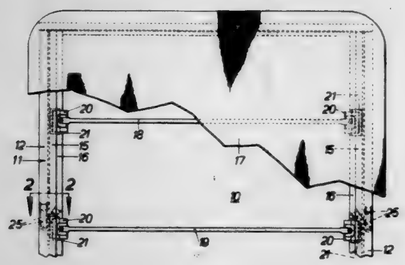
An installation for precluding the soiling of the side windows of a motor vehicle, especially of a passenger motor vehicle, in which a profiled molding is provided within the area of the column of the windshield which possesses a deflecting edge pointing in the driving direction.

3,666,317
SUPPORT MEMBERS FOR A CONVERTIBLE TOP
Stanley Podwys, Orchard Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 27, 1970, Ser. No. 93,020
Int. Cl. B60j 7/18
U.S. Cl. 296—116 2 Claims



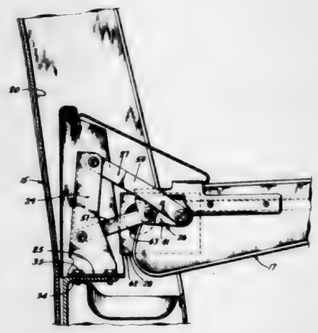
A pair of support members are respectively mounted on the forward ends of the front rail sections of an inwardly folding side rail type convertible top wherein the pivotal axes between the front and rear rail sections of each rail, between the convertible top header and the front rail section of each rail, and between a vehicle body mounted support panel and the rear rail section of each rail converge at respective points located short of infinity. When the top is in raised position, the support members extend forwardly from the front rail sections and are received between the convertible top header and the windshield header of the vehicle body. The support members are clamped between the headers by conventional convertible top latch mechanisms to support the pivotal connections between the front rail sections and the convertible top header thus rigidifying the rails.

3,666,318
OPENING ROOF FOR VEHICLES
James Butler, Kempsey, England, assignor to Weathershields Limited, Birmingham, England
Filed May 21, 1970, Ser. No. 39,474
Claims priority, application Great Britain, May 23, 1969, 26,338/69
Int. Cl. B60j 7/10
U.S. Cl. 296—137 C 8 Claims



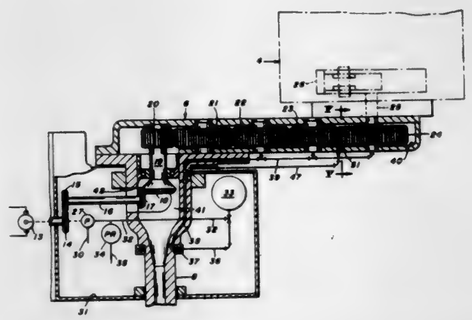
In a vehicle opening roof a longitudinally extending roof opening is adapted to be closed by a fabric covering fixed at its rear end to the roof and supported by a number of cross-members which are guided in guide flanges extending along each side of the opening. Releasable stop means incorporated for holding the covering in an intermediate open position are resiliently urged into engagement with a part of one cross-member to maintain the covering rearwardly of that cross-member in close contact with the roof.

3,666,319
POWER OPERATED ARMREST
Earle F. Moloney, Jr., 2309 Longacre Lane, Palatine, Ill.
Filed Aug. 21, 1970, Ser. No. 65,924
Int. Cl. A47c 7/54
U.S. Cl. 297—113 4 Claims



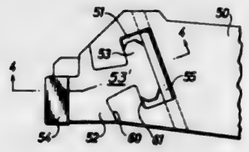
A power operated armrest for a vehicle seat having a seat back with a recess into and out of which the armrest moves between retracted and horizontally extended position, includes a hinge unit between the armrest and seat and a reversible motor coupled to the hinge unit to drive the armrest between retracted and extended positions.

3,666,320
LONGWALL MINING MACHINE
Willy Lanfermann, Bochum, Germany, assignor to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Germany
Filed Nov. 10, 1970, Ser. No. 88,371
Claims priority, application Germany, Dec. 11, 1969, P 19 62 019.0
Int. Cl. E21c 25/06
U.S. Cl. 299—53 3 Claims



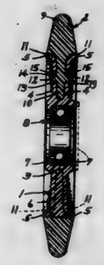
A longwall mining machine is described which has cutting rolls pivotally mounted about horizontal axes on a machine housing. The support arms enclose spur gears which are in engagement with each other and are adapted to transmit power from a drive motor in the machine housing to the cutting rolls at the free ends of the support arms. The two outermost spur gears in each arm form a gear pump which pumps the oil accumulating in the outer end of the support arm, when in a downwardly inclined position, back into an oil sump in the machine housing.

3,666,321
HOLDER FOR CUTTING TIP OF MILLING CUTTER MACHINE
Hans Per Olof Lundstrom, and Bernt Soren Liljekvist, both of Sandviken, Sweden, assignors to Sandvikens Jernverks Aktiebolag, Sandviken, Sweden
Filed July 30, 1970, Ser. No. 59,649
Claims priority, application Sweden, Mar. 24, 1970, 4011/70
Int. Cl. E21c 25/44
U.S. Cl. 299—93 3 Claims



A carbide cutting tip is mounted in a separate cartridge which is removably secured in a rotary milling cutter head, so that break-down of the tip will not endanger damage to the cutter head but only the cartridge.

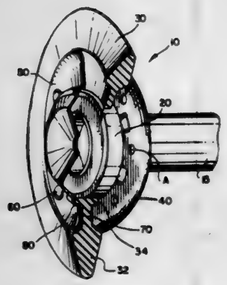
3,666,322
MOLDED PLASTIC WHEEL STRUCTURE
Roger R. Pickron, Roseau, Minn., assignor to Textron Inc., Providence, R.I.
Filed May 6, 1970, Ser. No. 35,031
Int. Cl. B60b 5/02
U.S. Cl. 301—63 PW 6 Claims



Molded wheel structure having a relatively hard rigid body and a relatively softer resilient annular member, the body including a tubular hub and a pair of axially spaced annular disk portions projecting radially from the hub and having smooth generally flat axially outer surfaces, the annular member including a rim radially outwardly of the disk portions and wall means between the disk portions.

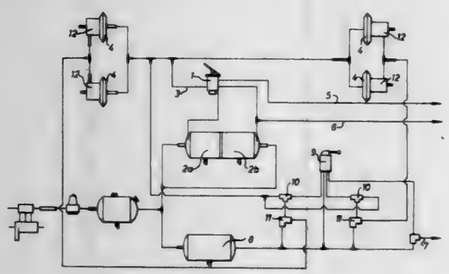
CHEMICAL

3,666,323
WHEEL CONSTRUCTION
Laurent Beaudoin and Sarto Richer, Valcourt, Quebec, Canada, assignors to Bombardier Limited, Valcourt, Quebec, Canada
Filed Dec. 23, 1969, Ser. No. 887,630
Claims priority, application Canada, Aug. 20, 1969, 60,053
Int. Cl. B60b *3/08*
U.S. Cl. 301—63 DD **6 Claims**



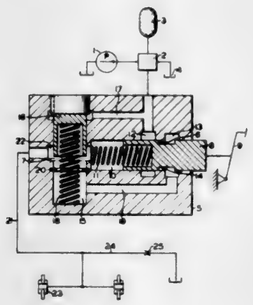
An improved bogie wheel in which the rubber tire is positively secured to the flanges by means of axially extending integral lugs that cooperate with corresponding formations or the inner faces of the flanges.

3,666,324
VEHICLE BRAKING SYSTEMS
Wilbur M. Page, Bracebridge Heath, and Ralph Coupland, Lincoln, England, assignors to Clayton Dewandre Company Limited, Lincoln, England
Filed Dec. 8, 1969, Ser. No. 883,209
Claims priority, application Great Britain, Dec. 6, 1968, 58,092/68
Int. Cl. B60t *13/26*
U.S. Cl. 303—9 **7 Claims**



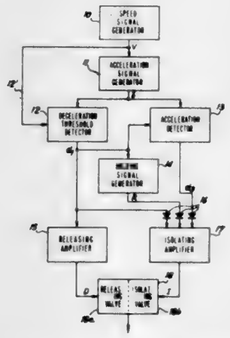
A vehicle braking system for tractor-trailer combinations and which includes air pressure-operated brake units and spring-actuated, air pressure-released brake units comprises a manually-operable control unit incorporating two graduated pressure valves controlling respectively the application of the spring brake units and the auxiliary line to the trailer brakes, and an "on-off" valve for venting all air lines to all brake units.

3,666,325
BRAKE CONTROL APPARATUS
Johannes Altmeppen, Empelde, Germany, assignor to Westinghouse Bremsen-und Apparatebau G.m.b.H., Hannover, Germany
Filed Dec. 16, 1970, Ser. No. 98,569
Int. Cl. B60t *13/16*
U.S. Cl. 303—10 **5 Claims**



The invention relates to an actuating system for a hydraulic servo brake installation to be used in a motor vehicle, more specifically a truck, possessing a brake valve located between a pressure source and the brake cylinders, which controls the flow of brake fluid continuously during the act of braking, this valve being equipped with two adjustable throttles connected in series.

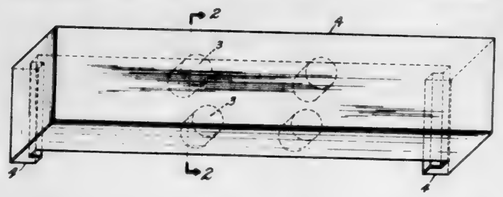
3,666,326
ANTI-SKID DEVICE FOR A VEHICLE BRAKING SYSTEM
Guy Marouby, Neuilly, France, assignor to Societe Anonyme D.B.A., Clichy, France
Filed Aug. 5, 1970, Ser. No. 62,240
Claims priority, application France, Sept. 25, 1969, 6932719
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 BE **6 Claims**



An anti-skid device for a vehicle braking system having an electronic sensing unit selectively controlling the operation of an actuating unit formed of two components. Once the braking pressure has been aplied to the braking system, one of the components is selectively activated to isolate the brake pedal from the braking system between one instant corresponding to a predetermined threshold of

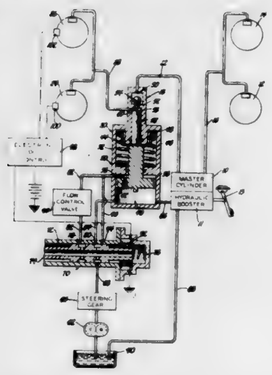
wheel deceleration and another instant corresponding to the peak value of the wheel acceleration which follows the wheel deceleration while the other component is selectively activated to progressively release the pressure in the braking system to a certain value between said one instant corresponding to said predetermined threshold of wheel deceleration and still another instant corresponding to a second predetermined threshold of wheel deceleration which is closed to the point of zero deceleration (or acceleration), the pressure in the isolated braking system being maintained to the said value until the instant corresponding to the peak value of the wheel acceleration which follows the wheel deceleration. In other words, the pressure is restored in the braking system when the coefficient of friction μ developed at the interface between the tire and the road reaches a maximum value.

3,666,327
TRACK SHOE PROTECTOR
Luis Padilla, Apartado 10–91, Managua, Nicaragua
Filed July 1, 1970, Ser. No. 51,623
Int. Cl. B62d *55/56*
U.S. Cl. 305—35 R **2 Claims**



A rubber, plastic or like block of material having integrally formed attachment lugs formed at its opposite ends for securing the block to the respective track shoes of the endless tracks of tractors and earth moving equipment to protect the roadways, display room floors, and the like over which the vehicles are driven. The underface of the block is provided with openings for housing the projecting bolt heads of the track shoes.

3,666,328
WHEEL ANTI-LOCK CONTROL SYSTEM
John R. Williams, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 9, 1970, Ser. No. 79,474
Int. Cl. B60t *8/02*
U.S. Cl. 303—21 F **4 Claims**

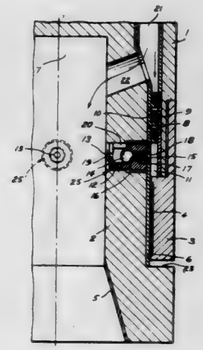


A wheel anti-lock control system wherein the size of the modulator piston supporting spring is minimized by providing a hydraulic piston supporting pressure consisting of the back-pressure created by an open center hydraulic brake booster.

ERRATUM

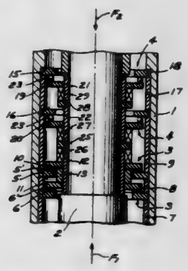
For Class 305—35 R see:
Patent No. 3,666,327

3,666,329
METHOD OF AND MEANS FOR LUBRICATING THE LOWER BEARINGS IN A DRILLING MACHINE
Jean Bell, La Tronche, France, assignor to Societe Generale de Constructions Electriques et Mecaniques (ALSTHOM), Grenoble, France
Filed Jan. 11, 1971, Ser. No. 105,308
Claims priority, application France, Jan. 16, 1970, 7001680
Int. Cl. E21b *9/08*
U.S. Cl. 308—8.2 **7 Claims**



Located between the lower drill bearing and a lubricant flow control joint in the lubricant flow passage to such bearing is a calibrated valve constructed to permit flow of lubricant directly from the bore of the turbine shaft to such flow passage when the lubricant pressure at the drilling bit is insufficient to effect adequate lubrication of the lower bearing.

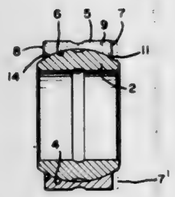
3,666,330
THRUST BEARING ARRANGEMENT FOR TURBO-DRILLS
Leonide Dicky, Grenoble, France, assignor to Societe Generale de Construction Electriques et Mecaniques (ALSTHOM), Grenoble, France
Filed Oct. 20, 1970, Ser. No. 82,437
Int. Cl. F16c *21/00, 17/04, 19/10*
U.S. Cl. 308—35 **6 Claims**



The disclosed layout of thrust bearing for a turbo-drill includes a single acting sliding thrust bearing arranged

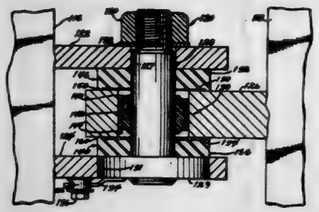
to transmit only those axial loads on the drive shaft which are directed toward the drilling bit, and a single acting roller thrust bearing capable of working in the mud flush and arranged to transmit only those axial loads on the drive shaft which are directed away from the drilling bit. This selective transmission of the axial loads is accomplished by the use of longitudinal absorbers between the drive shaft and the sliding and roller thrust bearings.

3,666,331
BALL AND SOCKET BEARING
Earl M. Curtis, Torrington, Conn., and Roger E. Pardon, Naperville, Ill., assignors to The Torrington Company, Torrington, Conn.
Filed Oct. 27, 1970, Ser. No. 84,340
Int. Cl. F16c *23/04*
U.S. Cl. 308—72 3 Claims



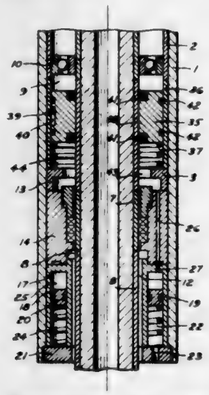
A ball and socket type of bearing including a socket containing a single fracture or dividing location and having its internal spherical surface cut away adjacent only one end face of the socket thereby allowing the socket to provide a large surface area for resisting axial loads acting to force the ball out of the socket through its other end face.

3,666,332
SELF-ALIGNING THRUST BUSHING ASSEMBLY
Keith W. Kampert, Libertyville, and Kenneth E. Houtz, Streamwood, Ill., assignors to International Harvester Company, Chicago, Ill.
Original application July 1, 1966, Ser. No. 562,266, now Patent No. 3,434,766, dated Mar. 25, 1969. Divided and this application Aug. 26, 1968, Ser. No. 778,878
Int. Cl. F16c *17/06*
U.S. Cl. 308—135 5 Claims



A self-aligning bushing assembly for carrying axial loads between two relatively rotating plane surfaces secured for rotation by a pin extending through openings in the surfaces. An annular bearing member positioned adjacent one surface, an annular resilient member of elastomeric composition secured between the bearing member and the other surface, and means for moving the surfaces toward each other to facilitate adjustment upon assembly and thereafter to compensate for wear.

3,666,333
SEALING ARRANGEMENT FOR THE CASINGS OF UNDERGROUND MOTORS
Leonide Dicky, Grenoble, France, assignor to Societe Generale de Constructions Electriques et Mecaniques (ALSTHOM), Grenoble, France
Continuation-in-part of application Ser. No. 50,200, June 26, 1970. This application Oct. 13, 1970, Ser. No. 80,345
Claims priority, application France, June 30, 1969, 6921907
Int. Cl. F16c *33/78*
U.S. Cl. 308—187.1 10 Claims



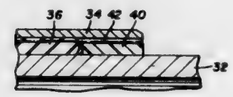
The sealing arrangement may include a conventional external sealing device having its interior in contact with the lubricant filling the bearing chamber of the motor of an underground drilling machine, a space isolated from the outer environment by a second seal and filled with a protective product under a slightly greater pressure than that of the outer enironment. The pressure on the protective product is effected by a casing fitted with a piston, one side of the space defined by the piston constitutes a part of the space filled with the protective product, and the space on the other side of the piston being in communication with the bore hole and containing a spring acting on the piston. Instead of a conventional sealing device, there may be used a sealing device capable of pressuring the lubricant so that it is placed under a slightly greater pressure than the protective product, thereby preventing possible contamination of the lubricant by the protective product.

3,666,334
ROLLER BEARINGS, ESPECIALLY NEEDLE BEARINGS
Dino Senigalliesi, Turin, Italy, assignor to Riv-SKF Officine di Villar Perosa S.p.A., Turin, Italy
Filed Mar. 8, 1971, Ser. No. 118,258
Claims priority, application Italy, Mar. 27, 1970, 68,042/70
Int. Cl. F16c *33/64*
U.S. Cl. 308—213 8 Claims



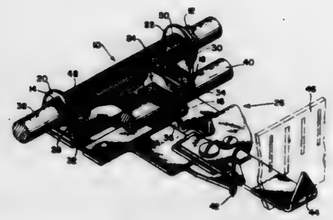
A roller bearing, and particularly a needle roller bearing having a cylindrical outer casing which has a substantially constant wall thickness throughout its length. Within the outer casing run roller bodies or needle roller bodies and these are located in positions spaced around the inside of the casing by a cage having a pocket for each roller. At each end of the outer casing there is a surface irregularity which may be a circumferential groove or a circumferential ridge, each having radial depth or height. Annular end members adapted to be located and held by the surface irregularities close off the ends of the outer casing and hold the roller cage in place.

3,666,335
HEAVY-DUTY RESILIENT ELASTOMERIC BUSHING
Arthur Mundy, Lucerne, and David L. Sievers, Logansport, Ind., assignors to The General Tire & Rubber Company, Akron, Ohio
Filed Aug. 10, 1970, Ser. No. 62,464
Int. Cl. F16c *33/22, 27/06;* F16f *1/38*
U.S. Cl. 308—238 9 Claims



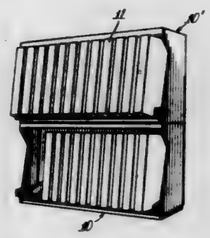
A resilient bushing of the type comprising an annular molded rubber insert radially compressed between a pair of rigid concentric sleeves is used in the center eye of a beam for a tandem axle of a truck or elsewhere where the bushing is subjected to torsional and radial deflection as well as conical motion. The conical motion causes the ends of the outer sleeve to rub and abrade the rubber insert, resulting in premature failure of the bushing. The fatigue life of the bushing can be substantially increased by replacing a portion of the insert, at each end of the bushing, with a wear-resistant ring made from a material such as cast urethane. The two rings typically grip the inner sleeve and are sufficiently thin so that the outer sleeve does not contact them when the bushing is loaded statically in the radial direction. However, they are thick enough to limit the conical movement of the sleeves.

3,666,336
BEARING
Lester R. Leidy, Jr., Oreland, Pa., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Aug. 18, 1970, Ser. No. 64,753
Int. Cl. F16c *33/20*
U.S. Cl. 308—238 8 Claims



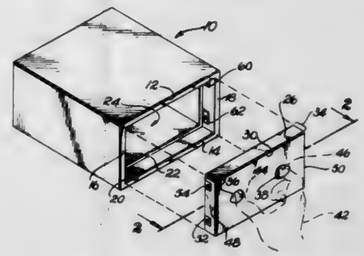
A bearing constructed from a resilient sheet having flap portions engageable with portions of a bearing support to retain convoluted parts of the bearing that are loosely mounted on the support from being rotated or moved in a horizontal direction along the support.

3,666,337
CARTRIDGE HOLDER
Stanley J. Sztorc, Westchester, Ill., assignor to National Creative Merchandising Corp.
Filed Aug. 26, 1970, Ser. No. 66,996
Int. Cl. F16b *12/00*
U.S. Cl. 312—111 16 Claims



A holder for selectively storing and presenting a plurality of cartridges, such as cassette cartridges and the like. The holder includes a housing and a carrier removably associated with the housing to store cartridges in the housing in a closed arrangement of the holder and to selectively present the cartridges for facilitated removal and placement itno the carrier in an open arrangement of the holder. The carrier and housing are arranged to dispose the carrier in an upwardly tilted disposition in the open arrangement and in a position effectively closing the front opening of the housing in the closed arrangement.

3,666,338
CHILD-PROOF CONTAINER
Ronald R. Russell, Southgate, Calif. (311 N. Lime, La Habra, Calif. 90630)
Filed Aug. 17, 1970, Ser. No. 64,541
Int. Cl. E05b; A47b
U.S. Cl. 312—215 8 Claims

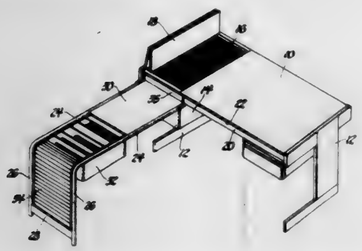


A lid or drawer is close-fit within the opening of a receptacle and is removable only by pulling the lid or drawer directly out of the opening, against the tension of spring loaded catches, by means of a pair of finger grips which are spaced apart a distance greater than the effective finger grip span of a child and less than the finger grip span of an adult. The structure is adapted to a cabinet wall and door by connecting one edge of the door to the cabinet wall with a hinge which is pivotal in a plane normal to the plane along which it opens.

3,666,339
DESK ARRANGEMENT
John W. Neufeld, Mississauga, Ontario, Canada, assignor to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada
Filed Sept. 14, 1970, Ser. No. 71,811
Int. Cl. A47b *17/00*
U.S. Cl. 312—277 4 Claims

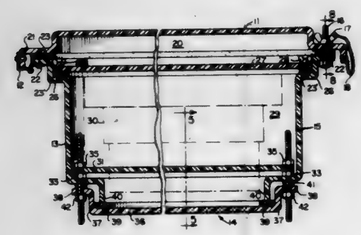
A clip-on attachment for a metal desk having a depending rail at its front edge with a horizontal groove

near the top has a pair of metal tubes extending horizontally and bent downwardly to the floor at the end remote from the desk top. A sheet metal top joins the tubes and extends vertically and horizontally to engage the groove at the edge of the main desk. Each tube at its



end carries a clamping hook extending underneath and upwardly inside the rail. The tubes may support an open top filing tray and a tambour cover is slidable along the tubes from a position over the tray to a stowed position along the vertical portions of the tubes.

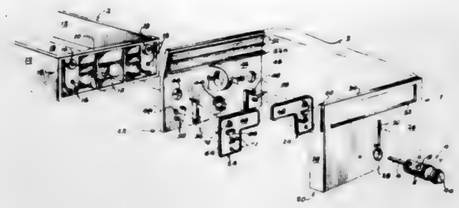
3,666,340
INSULATED AIR-TIGHT CONTAINER FOR INSTRUMENTS
Joseph D. Albeanese III, 4409 Lake Villa Drive, Metairie, La. 70002
Filed July 1, 1970, Ser. No. 51,489
Int. Cl. A47b *81/00*
U.S. Cl. 312—283 **5 Claims**



An insulated, air-tight container designed specifically for housing instruments, such as meters, gauges, etc., which are employed in an environment where such instruments would normally be exposed to detrimental atmospheric effects causing corrosion, etc., of the working parts of such instruments.

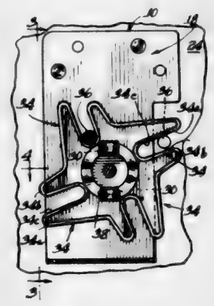
3,666,341
DRAWER FRONT CONSTRUCTION
Carl H. Little, Jamestown, N.Y., assignor to Weber-Knapp Company, Jamestown, N.Y.
Filed Nov. 13, 1970, Ser. No. 89,312
Int. Cl. A47b *88/00*
U.S. Cl. 312—330 **6 Claims**

A two-part plastic front construction for library card drawers or the like, wherein a rear half of the front carries a tray pull or handle for projection forwardly through an opening in a forward half of the front. The front is mounted on and force applied to the tray pull transferred to the card tray body by metal reinforcing brackets positioned between the halves prior to assembly thereof. The halves are provided with aligned openings to receive a card follower or holding rod mounting latch device retained therein by by a guide-retainer formed



integrally with and projecting rearwardly from the rear half.

3,666,342
OVER-CENTER LOCKING DEVICE
Donald Leslie Biesecker, Centerville, Ohio, assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Apr. 9, 1970, Ser. No. 27,063
Int. Cl. E05c *19/06*
U.S. Cl. 312—333 **5 Claims**

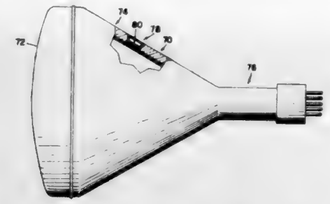


The present invention relates generally to a restraining device for preventing the unauthorized or inadvertent shifting of a horizontally slidable member and more particularly to a restraining device for use with slidable structures such as the baskets or drawers in refrigerators and the like. One embodiment of the present invention as disclosed herein comprises a support attachable to the vertical panel of a refrigerator and a rotary latch member mounted on the support. The rotary latch member includes a plurality of peripheral, equally spaced cams each of which comprise a pair of spaced cam surfaces defining a recess opening radially outwardly for accommodating a complementary shiftable cam actuating member such as a pin mounted on the side wall of a slidable drawer. Means is also provided to prevent unauthorized rotation of the latch means when the cams occupy a predetermined position.

3,666,343
METHOD OF APPLYING A RADIATION SHIELD TO A SECOND ANODE BUTTON
William H. McNeill, Auburn, N.Y., assignor to Sylvania Electric Products Inc.
Filed Oct. 14, 1969, Ser. No. 866,233
Int. Cl. H01j *9/38*
U.S. Cl. 316—20 **2 Claims**

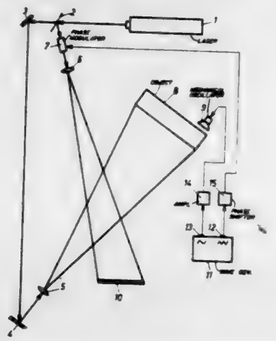
A substantially hollow anode button formed for sealing in a glass wall of a cathode ray tube envelope has a radiation shield affixed to its bottom surface of a size compatible with an aperture in its upper surface. The shield can be affixed before the button is sealed in the wall and in one method comprises the salvage area of a

formed washer which comprises a portion of the upper surface of the button. In a second method the shield is



applied as a molten metal; e.g., lead, after a tube has been exhausted and sealed.

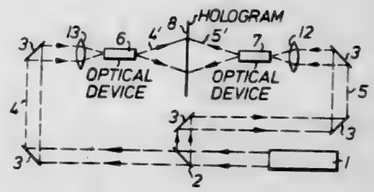
3,666,344
TIME-AVERAGE HOLOGRAPHY WITH A MODULATED REFERENCE BEAM
Francois Mottier, Zurich, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland
Filed Aug. 4, 1970, Ser. No. 60,800
Claims priority, application Switzerland, Aug. 27, 1969, 12,972/69
Int. Cl. G01n *21/46;* **G02b** *27/00*
U.S. Cl. 350—3.5 **6 Claims**



A method is provided for holographic analysis of a vibrating object which comprises the steps of producing from one and the same monochromatic coherent light source an illuminating beam which illuminates the object and a reference beam which interferes on a holographic plate with object-light scattered by the object. The reference beam is phase-modulated with a modulation function which differs from the object vibration function for the purpose of reducing large differences in intensity as between the nodal-lines and the iso-amplitude lines appearing in the reconstructed hologram, and for providing information as to the phase relationship between vibrating points of the object. The modulation function of the reference beam can be triangular when the object vibration function is sinusoidal, and both functions have the same period and can either be in phase or phase shifted.

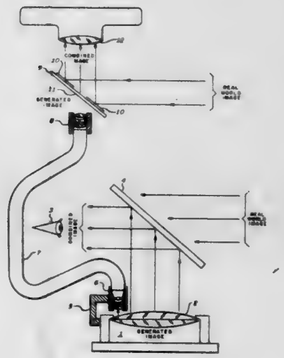
3,666,345
COUPLING DEVICE IN MODULATED COHERENT LIGHT TRANSMISSION SYSTEM
Stefan Maslowski, Aufheim, Neu-Ulm, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany
Filed Sept. 15, 1970, Ser. No. 72,448
Claims priority, application Germany, Sept. 20, 1969, P 19 47 719.1
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **17 Claims**

For coupling two optical devices together in series for the transmission of a coherent, modulated light beam, a hologram is formed by the interference of a coherent wave with the light produced by transmitting the same coherent wave in the reverse direction through the optical



device to which the light beam is to be transmitted and such hologram is placed between the two optical devices which are to be coupled.

3,666,346
HEADSUP DISPLAY WITH REMOTE RECORDER
William J. Lucas, Phoenix, Ariz., assignor to Sperry Rand Corporation
Filed Sept. 28, 1970, Ser. No. 76,114
Int. Cl. G02b *23/10, 27/10*
U.S. Cl. 350—19 **5 Claims**

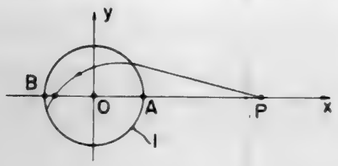


An electrically generated image is collimated, and, by means of a fiber optic bundle, transmitted to a combining means. A real world image, which is assumed to be collimated, is also presented to the combining means. The combining means comprises an apertured mirror whereby the two images are combined by reflecting and transmitting apertures. The combined image may be recorded directly on film at an immediate or at a remote location.

3,666,347
SPHERICAL LENS STRUCTURES
Ichiro Kitano, Kobe, and Hiroyoshi Matsumura, Ashiya, Japan, assignors to Nippon Selfoc Kabushiki Kaisha (also known as Nippon Selfoc Co. Ltd.), Tokyo-to, Japan
Filed Mar. 10, 1970, Ser. No. 18,223
Claims priority, application Japan, Mar. 17, 1969, 44/20,190
Int. Cl. G02b *1/00, 3/00, 5/16*
U.S. Cl. 350—96 B **5 Claims**

A glass sphere containing thallium and sodium cations is immersed in a bath of a molten salt containing at least one kind of metal cations such as potassium cations to

cause ion exchange through the glass-salt contact surface in a manner such that the concentrations of the cations, which constitute modifying oxides within the glass, vary



from the center toward the outer surface of the sphere, which thereupon becomes a spherical lens with a refractive index n representable by

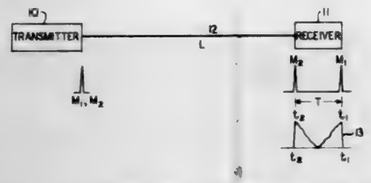
$$n = n_0\left(\frac{1}{1+(r/a)^2}\right)$$

wherein n is the refractive index at a radial distance r from the center, n_0 is the refractive index at the center, a is a positive constant, and (r/a) is less than one (unity).

3,666,348
MULTIMODE WAVEGUIDE

Enrique Alfredo Jose Marcatili, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 25, 1970, Ser. No. 75,616
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 WG **11 Claims**



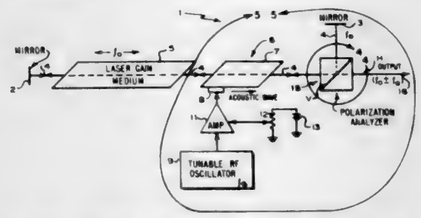
Dispersion in a multimode waveguide, due to differences in the group velocities of the different modes of wave propagation, is minimized by deliberately introducing coupling means along the guide for strongly coupling between selected pairs of said modes. In guides supportive of modes having only two different group velocities, the coupling, which can be either continuous or at longitudinally spaced intervals along the guide, has a spacial periodicity equal to the beat wavelength between the different modes. In guides supportive of modes having three or more different group velocities, the guide is proportioned such that the average group velocities of selected pairs of guided modes are approximately equal to the same means velocity, and the coupling mechanism has a spacial distribution given by the superposition of sinusoids whose periodicities are equal to the beat wavelengths between the selected pairs of modes.

3,666,349
OPTICAL RESONATOR HAVING ACOUSTO-OPTIC OUTPUT COUPLING MEANS

Laurence M. Hubby, Jr., 555 Middlefield Road, Apt. P104, Mountain View, Calif. 94040

Filed Aug. 7, 1970, Ser. No. 61,948
Int. Cl. G02f *1/24*
U.S. Cl. 350—149 **11 Claims**

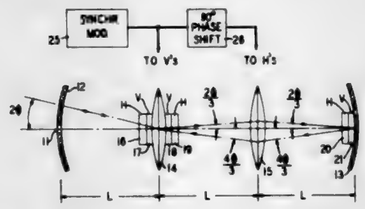
Devices employing optical resonators having a path for a resonant light beam are disclosed. An acousto-optic light filter is disposed in the resonant light path of the resonator for collinearly diffracting the light beam on the acoustic wave to shift the polarization of at least some of the resonant light within the optical bandpass of the filter from a first polarization to a second polarization. A polarization analyzing means is also disposed in the resonant light path for spatially separating the light according to the polarization thereof and for diverting light of one of the polarizations out of the resonant light beam of the optical resonator while retaining light of the other polarization in the resonant light beam. The frequency of the light coupled out of the optical resonator may be varied by varying the frequency of the acoustic wave in the acousto-optic filter, whereas the amount of light coupled out of the resonator may be varied by varying the power density of the acoustic wave within the acousto-optic element.



3,666,350
MULTIPLE-SECTION, SUBDIVIDED TWO-COORDINATE OPTICAL BEAM DEFLECTORS

Edward Allen Ohm, Holmdel, Douglas Harned Ring, Middletown Township, and Ralph Francis Trambarulo, Red Bank, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 7, 1970, Ser. No. 95,570
Int. Cl. G02f *1/20*
U.S. Cl. 350—150 **15 Claims**



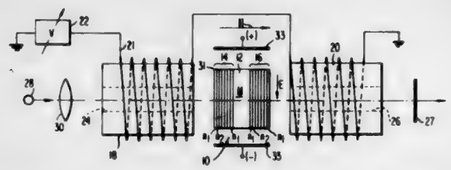
There is disclosed an apparatus for deflecting an optical beam in which electro-optic beam deflection is obtained in a multiple-section arrangement in which the deflection capability is split among several different sections which are sections of a beam waveguide, which can be made multiple-pass by end reflectors. The deflecting crystals are placed relatively near predicted beam-crossovers of the axis of the apparatus. The number of sections and their included deflecting crystals for each coordinate can be increased to a number providing either a practical length of the deflecting material with tolerable temperature rise or a reduction in the total drive power required.

3,666,351
CONTROLLABLE MAGNETOOPTICAL DEVICES EMPLOYING MAGNETICALLY ORDERED MATERIALS

Yoh-Han Pao, Cleveland Heights, Ohio, assignor to The Battelle Development Corporation, Columbus, Ohio

Continuation-in-part of application Ser. No. 746,902, July 23, 1968. This application Nov. 6, 1969, Ser. No. 874,431
Int. Cl. G02f *1/22*
U.S. Cl. 350—151 **27 Claims**

A magnetically tunable interference filter including magnetically ordered material and multiple layers for effecting optical interference. Tuning is achieved by causing a change in the index of refraction in the magnetically ordered material. In one embodiments, a magnetically ordered film is sandwiched between two high reflectance mirrors each consisting of alternate films of high and low indices of refraction. The net macroscopic magnetization of the magnetic layer is varied to tune the filter so that it transmits different wavelengths of light in accordance with the magnetization of the film. The magneto optical effect may be varied by means of an external magnetic field which may also be supplemented by an electric field for further control of the magneto-optical effect. (This embodiment may be used as a bidirectional light director.) In a second embodiment, a tunable reflectance filter is formed by alternate films of



magnetically ordered and dielectric materials. In a variation of the second embodiment, the alternate films are both of ordered magnetic nature but have different magnetic properties. An external magnetic field is applied to the filter to tune it so that different wavelengths of light are reflected from the filter. Two or more of the filters of the first or second embodiment may be combined in tandem to expand the dynamic range of tuning. In a third embodiment, a dielectric layer is sandwiched between two mirrors of the type used in the second embodiment. When the net macroscopic magnetization of such a filter is changed, the filter acts as a variable band pass filter.

Another embodiment is a light beam scanning or deflecting device incorporating a magnetically ordered medium responsive to a controllable magnetic field.

3,666,352
RATE CONTROLLED PHOTOCHROMIC LENSES OF VINYL CHLORIDE-VINYL ACETATE COPOLYMER CONTAINING A MERCURY THIOCARBAZONE COMPOUND

Charles A. Wagner, Towson, Md. (32 Virginia Ave., Shrewsbury, Pa. 17361), and Herman B. Wagner, Triangle Hill, Box 22, R.D. 1, Perkasie, Pa. 18944

No Drawing. Continuation-in-part of application Ser. No. 474,956, July 26, 1965. This application Jan. 22, 1970, Ser. No. 5,095
Int. Cl. G02c *7/10*; G02b *5/20*; F21v *9/00*
U.S. Cl. 350—160 **8 Claims**

Mercury thiocarbazone compounds dispersed in a solidified plasticized resin composition consisting essentially of vinyl chloride copolymerized with, e.g., not less than 5 mol percent of vinyl acetate and laminated in a sandwich between two transparent glass or plastic layers provide lenses with extremely rapid color responses to incident light and reversion to dark-adapted states.

3,666,353
DISPLAY SYSTEM INCLUDING STANDBY RETICLE MEANS

Arthur Sussman, Jersey City, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

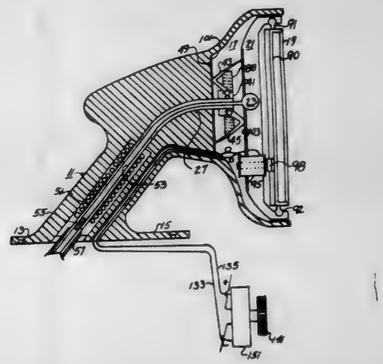
Filed Feb. 11. 1971. Ser. No. 114,556
Int. Cl. G02b *27/14, 5/16*; H01j *29/89*
U.S. Cl. 350—174 **8 Claims**

A head-up display system includes a cathode ray tube and means for projecting electronically generated information displayed on the tube to an observer. Upon failure of the tube a standby reticle containing some of the basic information normally displayed is positioned in the field of view and projected to the observer through the same projection means. The system features the use of fiber optics for providing increased accuracy and brightness with minimal space, weight and power requirements.

3,666,354
COMBINATION ELECTRICALLY AND MECHANICALLY OPERATED DAY AND NIGHT REMOTE CONTROLLED OUTSIDE MIRROR

Carl D. Russell, 1502 S. Boulder St., Tulsa, Okla. 74119

Filed Oct. 5, 1970, Ser. No. 78,011
Int. Cl. B60r *1/06*; G02b *7/18*
U.S. Cl. 350—281 **7 Claims**



This invention relates to apparatus for positioning and locking a vehicle mirror and its backing. A housing pivotally supports the mirror, its backing and case therefore, and includes a wall spaced from the case. Pivotal means in the form of a plurality of angular leg elements pivotally supported from a common support are disposed between the wall and the case for changing the position of the mirror case relative to the wall. Resilient means normally urge the case against the pivotal means to lock the mirror in set viewing position. Electromagnetic coils and a bar magnet lock the mirror in either day or night position.

3,666,355
EYEGLASS TEMPLE

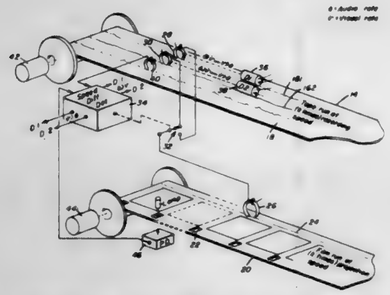
Arthur G. Griffith, 1920 Drew Ave. S., Minneapolis, Minn. 55416

Filed Feb. 16, 1971, Ser. No. 115,168
Int. Cl. G02c *5/20*
U.S. Cl. 351—118 **2 Claims**



An eyeglass temple that has an ear piece that is longitudinally slidable in the portion of the temple that is secured to the lens supporting structure and is spring loaded by a tension that exerts its pull in a line along the longitudinal center of the temple body portion. The ear-piece is an out of round shape and fits a similarly shaped but slightly larger cavity in the temple body portion so that the ear piece will not rotate.

3,666,356
SOUND MOVIES AND METHODS OF MAKING SAME
Franklin C. Williams, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 27, 1971, Ser. No. 110,226
Int. Cl. G03b *31/02*
U.S. Cl. 352—5 **4 Claims**

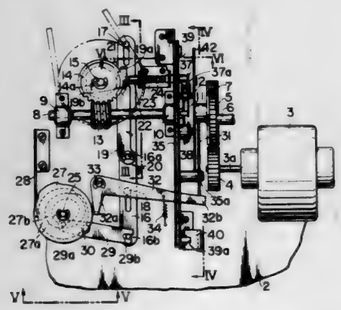


A technique is disclosed for applying a sound record made by means of a tape recorder to the sound track of an amateur motion picture film depicting action corresponding to such sound record. To effect such technique, playback of the tape is done at the tape recording speed; and recording on the film sound track is done while running the film at projection speed. The sound track is kept at true pitch, and in synch with, the filmed action by selectively excising and shifting, or gapping, the sound record whenever the sound gets more than a certain amount out of synch with the filmed action.

ERRATUM

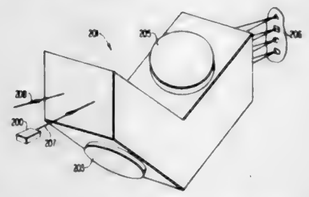
For Class 352—78 C see:
Patent No. 3,666,361

3,666,357
DEVICE FOR SELECTIVELY SWITCHING-OVER THE SPEED OF FEEDING FILM IN MOTION PICTURE PROJECTOR
Tadao Hayami, Tokyo, Japan, assignor to Kabushiki Kaisha Koparu, Tokyo-to, Japan
Filed Mar. 2, 1970, Ser. No. 15,425
Claims priority, application Japan, Mar. 17, 1969, 44/20,250
Int. Cl. G03b *21/48*
U.S. Cl. 352—180 **3 Claims**



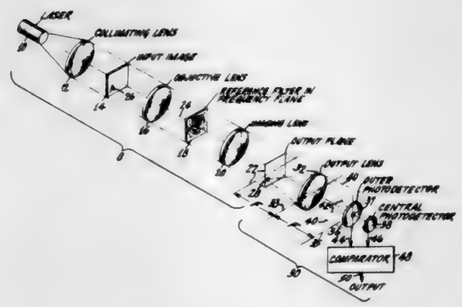
A device for selectively switching-over the speed of feeding film by effecting cyclic movement of a claw member in a motion picture projector has an intermediate lever associated with the claw member having first and second cam faces at one side and a third cam face at the other side, and pivotably attached to a coupling member manually operable for setting at three positions, namely, standard projection, slow-motion projection and stop-motion projection, and also a filter member associated with the coupling member, urged in one direction away from the light path leading to the film, so that the filter member is moved away from the light path only when the coupling member is brought into the position of the stop-motion projection.

3,666,358
REFLEX CHARACTER GENERATOR
Willard K. Banks, Cupertino, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 3, 1969, Ser. No. 881,807
Int. Cl. G03b *23/02;* **G02f** *1/28, 1/36*
U.S. Cl. 353—25 **14 Claims**



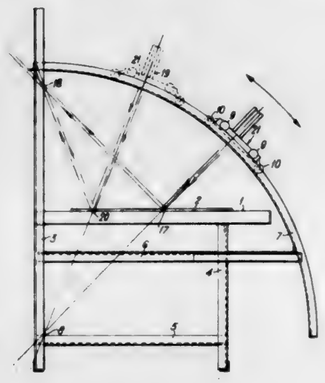
A reflex character generator comprising a light source positioned to input a light beam to a light deflector, such as a switchable total internal reflection (STIR) light deflector, at such an angle that upon reflection from a reflective character mask located after the light deflector, the reflected light beam in character form will re-enter and then exit the light deflector on a single path separate from the incoming light beam.

3,666,359
CORRELATION PEAK DETECTOR IN OPTICAL SPATIAL FILTERING SYSTEM
Walter Wright Lee, Allendale, N.J., assignor to RCA Corporation
Filed Aug. 26, 1970, Ser. No. 66,966
Int. Cl. G06k *9/08;* **G01h** *21/00;* **G01j** *1/42*
U.S. Cl. 356—71 **1 Claim**



A means is disclosed to detect a bright spot correlation peak at any position in an output plane of a double diffractometer optical correlator in which an input image is randomly located in an input plane. A lens is positioned a distance equal to its focal length F from the output plane. A central photodetector and a concentric outer photodetector are positioned at the distance F from the lens. The photodetectors are constructed so that the outer photodetector produces a larger electrical output signal when both photodetectors are uniformly illuminated. A bright spot correlation peak at any location in the output plane uniformly illuminates both of the concentric photodetectors, and a general or diffuse illumination in the output plane illuminates solely the central photodetector. A comparator receptive to electrical signals from the photodetectors provides a "match" output when the signal from the outer photodetector is larger than the signal from the central photodetector.

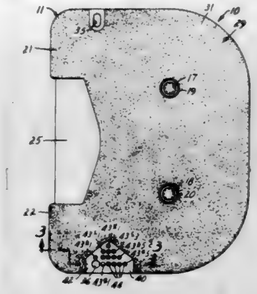
3,666,360
METHOD AND APPARATUS FOR INSPECTING A GLASS SURFACE
Harry Mills and Leslie Woods, Lancashire, England, assignors to Pilkington Brothers Limited, Liverpool, England
Filed Feb. 5, 1971, Ser. No. 112,961
Claims priority, application Great Britain, Feb. 2, 1970, 6,149/70
Int. Cl. G01n *21/00, 21/48, 21/16*
U.S. Cl. 356—72 **10 Claims**



A glass surface is inspected for defects, especially sleeks, by directing a beam of light to illuminate an area of the glass surface and to produce by reflection a beam of light passing through a stationary position above the glass surface, and traversing the incident beam about an axis disposed at the position below the glass surface of the imaginary mirror image of the said stationary position above the glass and extending parallel to the glass surface and perpendicular to the incident beam, whereby the illuminated area moves over the glass surface whilst the main reflected beam continues to pass through said stationary position. Said illuminated area is then observed from a position adjacent said stationary position, either visually or by a photomultiplier.

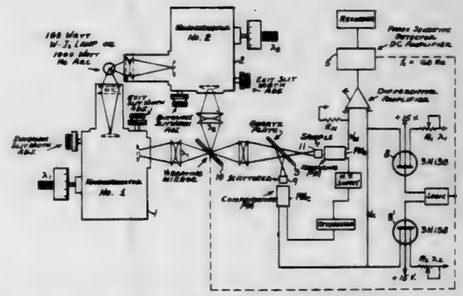
3,666,361
CODE STRUCTURE ON FILM CARTRIDGES
Paul A. H. Pankow, Burnsville, and Richard Alan Devries, New Brighton, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 2, 1970, Ser. No. 7,745
Int. Cl. G03b *23/02*
U.S. Cl. 352—78 C **13 Claims**

Code structure is provided on the exterior of a film cartridge by assigning surface irregularities of different geometric shape to different values for a film variable, and forming that surface irregularity that corresponds with film stored in the cartridge on the exterior of the cartridge. In one method for forming the code structure, the cartridge is molded with a set of surface irregularities, at least one of which includes structure that makes that surface irregularity inactive in a code adapted to be sensed by a sensing member in a camera. To form a different code, a different one of the surface irregularities includes inactivating structure; the change may be made by moving a mold piece in the mold in which the cartridge



is made or by removing the inactivating structure after the molding operation.

3,666,362
DUAL WAVELENGTH SPECTROPHOTOMETRY
Britton Chance, % Johnson Research Foundation Medical School, University of Pennsylvania, Philadelphia, Pa. 19104
Filed Dec. 22, 1970, Ser. No. 100,697
Int. Cl. G01j *3/42;* **G01n** *21/22*
U.S. Cl. 356—88 **19 Claims**

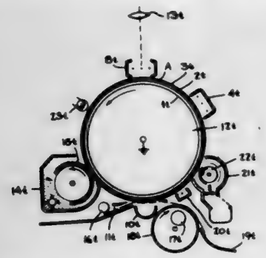


A dual wavelength spectrophotometer in which compensation is made for lamp noise by extracting a portion of the time-shared dual wavelength light beam before it enters the sample and generating a compensation signal therewith in an auxiliary photomultiplier. The compensation signal is normalized and subtracted from the measure signal in a differential amplifier over a band width including frequencies considerably above the light switch frequency.

3,666,363
ELECTROPHOTOGRAPHIC PROCESS AND APPARATUS
Hiroshi Tanaka, Katsumi Nagamatsu, Gichi Marushima, and Shinkichi Takahashi, Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of application Ser. No. 571,538, Aug. 10, 1966. This application Feb. 18, 1971, Ser. No. 116,557
Claims priority, application Japan, Aug. 12, 1965, 40/49,134
Int. Cl. G03g *13/22, 15/10, 15/22*
U.S. Cl. 355—17 **11 Claims**

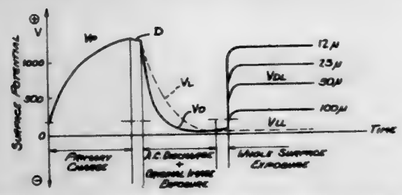
A process for forming an electrostatic image in a plate having a photoconductive layer with an insulative overlayer and being characterized in having carrier charge of a polarity corresponding to the conductivity type of the photoconductive layer injectable into the photoconductive layer and bound in the region of the interface between the insulative and photoconductive layer, wherein the insulative layer is initially charged with a polarity inducing

semiconduction in the photoconductive layer and causing charge migration therein and therethrough to the interface of the insulative and photoconductive layers. The photoconductive layer is next exposed to a pattern of image



light while the insulative overlayer is subjected to A.C. corona discharge whereby said interface charge is selectively attenuated to form said electrostatic image. The formed image is intensified in contrast by thereafter exposing the photoconductive layer to radiation.

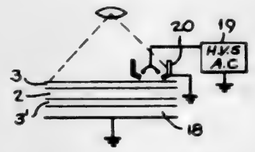
3,666,364
ELECTROPHOTOGRAPHIC APPARATUS
Giichi Marushima, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Original application Aug. 10, 1966 Ser. No. 571,538. Divided and this application Feb. 18, 1971, Ser. No. 116,394
Claims priority, application Japan, Dec. 1, 1965, 40/73,379
Int. Cl. G03g *13/22, 15/22*
U.S. Cl. 355—3 **7 Claims**



An apparatus for forming an electrostatic image including a photosensitive plate having a base, a photoconductive layer overlying said base and an insulative layer overlying said photoconductive layer, said insulative layer having a thickness of from ten to fifty microns, including means for applying a charge of one polarity to said insulative layer, means for exposing said photoconductive layer to a pattern of image radiation while applying an alternating current discharge to said insulative layer to form an electrostatic image. The electrostatic image is intensified in contrast by thereafter exposing the photoconductive layer to radiation.

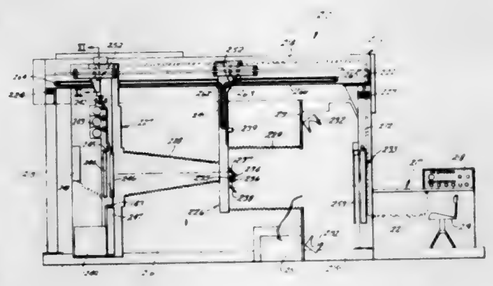
3,666,365
ELECTROPHOTOGRAPHIC PROCESS AND APPARATUS INVOLVING PERSISTENT INTERNAL POLARIZATION
Hiroshi Tanaka, Shinkichi Takahashi, and Umi Tosaka, Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Original application Aug. 10, 1966, Ser. No. 571,538. Divided and this application Feb. 18, 1971, Ser. No. 116,393
Claims priority, application Japan, Sept. 1, 1965, 40/53,471
Int. Cl. G03g *13/22*
U.S. Cl. 355—17 **14 Claims**

A process and apparatus for forming an electrostatic image in a plate having an insulative layer, a photoconductive layer underlying said insulative layer and a base, wherein the insulative layer is initially charged in one polarity and is then subjected to A.C. corona discharge



while the photoconductive layer is exposed to an image pattern. The photoconductive layer is thereafter exposed to activating light whereby an intensified electrostatic image is formed.

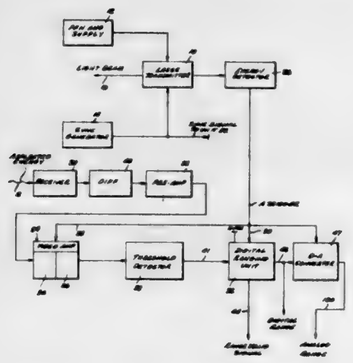
3,666,366
REPRODUCTION CAMERA
John Keeble, Ashlong Grove, and Edward Ielan Morgan, Ingrave, England, assignors to Sidney R. Littlejohn & Company Limited, London, England
Continuation-in-part of abandoned application Ser. No. 671,254, Sept. 28, 1967. This application Dec. 5, 1969, Ser. No. 882,611
Claims priority, application Great Britain, Nov. 19, 1969, 56,681/69
Int. Cl. G03b *27/76*
U.S. Cl. 355—56 **20 Claims**



A reproduction camera having a stationary copy-holder and independently movable lens and film carriages in which operation of the camera is controlled by an operator without moving from a control position and all the camera variables are selected and set under computer control and all the photographic operations are controlled by automatically operated sequence control means to achieve an end product having predetermined photographic characteristics.

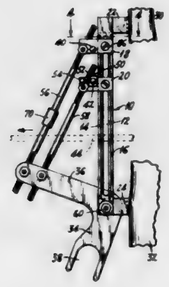
3,666,367
DIGITAL RANGE MEASURING SYSTEM
Robert P. Farnsworth, Los Angeles, and Richard W. Wyeth, Agoura, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed June 1, 1970, Ser. No. 42,295
Int. Cl. G01c *3/08*
U.S. Cl. 356—5 **8 Claims**

A digital system for measuring the range of a remote object in response to laser energy reflected from the object and for controlling the mode of operation. When logic circuits determine that a signal is a valid return signal (i.e. not noise energy) the system switches to a track mode of operation wherein it responds only to signals coincident with a relatively narrow tracking gate. If the return signal should fade (detectable signal not received) a counter, which stores the digital complement of the range information and which positions the tracking gate, is automatically recycled to the last stored range



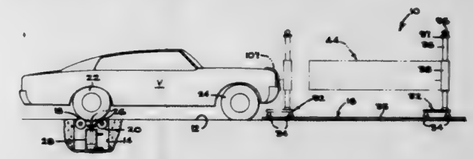
complement value. Another counter circuit counts unsuccessful transmission and reception (ranging) periods and after a predetermined number of consecutive such periods the system switches from the track to the acquisition mode.

3,666,368
ARCHERY SIGHT AND RANGE FINDER
Harold R. Sprandel, 19 Brookside Drive, Monroe, Conn. 06468
Filed Feb. 18, 1971, Ser. No. 116,307
Int. Cl. F41g *1/02*
U.S. Cl. 356—21 **10 Claims**



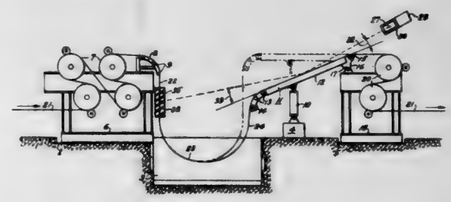
A sight and range finder for archers, consisting of an attachment having a vertical slide on which two sliders are vertically movable. The sliders have parallel, horizontal sight bars, and when moved in spaced relation, enable the archer to sight the game between them. One sight bar also has a bull's-eye sight, to zero-in on the body of the game. A pivoted finger piece on the slide can be manually adjusted, and is connected to the sliders in such a manner as to not only vertically adjust the latter but also to automatically vary the spacing between them, this being accomplished by links between the finger piece and sliders. Game which is far away and appears small, requires close spacing of the sight bars which results in their being automatically positioned vertically to a lower level, together with the bull's-eye sight, so as to provide for a higher trajectory of the arrow, and vice versa.

3,666,369
HEADLIGHT TESTER
Tracy Carrigan, Lansing, Mich., assignor to FMC Corporation, San Jose, Calif.
Filed Mar. 18, 1970, Ser. No. 20,687
Int. Cl. G01j *1/00*
U.S. Cl. 356—121 **9 Claims**



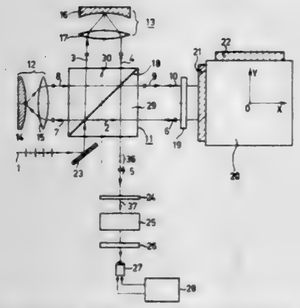
A headlight testing method and apparatus for detecting the direction of the beam of light from each vehicle headlight relative to the longitudinal axis of a vehicle and relative to the height of each light from a horizontal vehicle supporting plane. A target screen is mounted for vertical adjustment and horizontal pivotal adjustment on a carriage which is movable on a track between a target setting position adjacent the headlights and a testing position spaced from the headlights. A pair of rollers journaled about axes normal to the track support are rotated by the drive wheels of the vehicle for aligning the longitudinal axis of the vehicle into a position parallel with the track. The screen includes three vertically and horizontally adjustable targets associated with each headlight group of a vehicle to accommodate vehicles with a single headlight, double side-by-side headlights, and double vertically spaced headlights in each group. Each target has a pointer which is adjusted to contact the center of the associated headlight when the target is in its target setting position and a horizontal reference bar for referencing the position of the high intensity light beam when the screen is in the testing position.

3,666,370
STRIP FLATNESS INSPECTION METHOD
Elwood F. Seasholtz, Bethlehem, Pa., assignor to Bethlehem Steel Corporation
Filed July 15, 1970, Ser. No. 55,129
Int. Cl. G01n *21/16*
U.S. Cl. 356—200 **3 Claims**



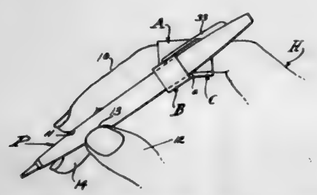
A method of visually inspecting portions of moving steel sheet or strip in a continuous processing line, wherein the strip is supported in a substantially horizontal position, the angle of elevation at which the strip is supported is adjusted within a range from about horizontal to 25° below horizontal, a diffused light source of specified width is positioned on the side of the strip opposite an observer, and the light from said source is directed diagonally across the strip and is caused to impinge directly thereon at a low angle. The strip is then viewed along its rolling direction at a specified low angle above the plane of the strip. A second diffused light source permits a vertical strand of strip adjacent a free loop of the strip to be viewed across the strip at right angles to the rolling direction for a further inspection of the strip.

3,666,371
APPARATUS FOR MEASURING THE RELATIVE DISPLACEMENT OF AN OBJECT
Hendrik de Lang, Emmasingel, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 4, 1971, Ser. No. 112,722
Claims priority, application Netherlands, Feb. 7, 1970, 7001770
Int. Cl. G01b 11/00
U.S. Cl. 356—167 4 Claims



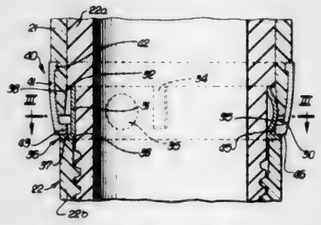
An apparatus is discussed for measuring the relative displacement of an object, in particular a measuring slide, with respect to a fixed reference point by means of at least one optical element which is rigidly secured mechanically to the object and reflects radiation from a source of radiation which emits two beams of radiation polarized at right angles to one another which beams are divided in two spatially separated sub-beams by a polarisation-sensitive beam splitting mirror the optical element having been inserted in the path of one sub-beam so as to extend at right angles to the direction of this sub-beam, a reflector having been inserted on the path of the other sub-beam, which sub-beams are combined and then are applied to a radiation detector from which an electrical signal is derived which is a measure of the displacement. It is set forth that for this purpose there is inserted in the path of the sub-beam which is reflected at the optical element, which element is a high-precision plane mirror, an $n\lambda/4$ plate (where n is an odd integer) which is arranged in diagonal orientation and is traversed four times by the respective sub-beam, for which purpose this sub-beam after twice having traversed the $n\lambda/4$ plate is reflected, by way of the polarisation-sensitive beam-splitting mirror, at a retrodirective element.

3,666,372
MANUAL COUPLER FOR WRITING INSTRUMENTS
William J. Lipkowski, 1736 253rd St., Lomita, Calif. 90717
Filed Jan. 14, 1970, Ser. No. 2,740
Int. Cl. B43k 23/00
U.S. Cl. 401—8 4 Claims



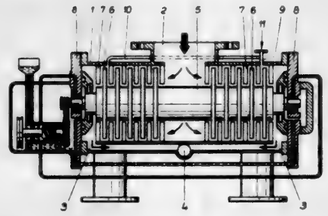
A coupling adapted to flexibly connect a writing instrument to a person's hand, thereby to have a remote position where it is immediately accessible and in a tactile position where it is manipulatable. The coupling is preferably a one piece device having hinged and thereby relatively movable bodies, one body releasably engageable with a finger of the hand and the other releasably engageable with the writing instrument. In the first mentioned position the writing instrument is held clear of and parallel to the finger to which it is connected, the index finger; and in the second mentioned position the writing instrument is dexterously manipulatable between the tactile tips of the thumb and one or more adjacently placed and opposed fingers.

3,666,373
WRITING INSTRUMENT CAP SECURING MEANS
Meuriel F. Reed, Los Angeles, Calif., assignor to The Gillette Company, Boston, Mass.
Filed May 6, 1969, Ser. No. 822,253
Int. Cl. B43k 9/00
U.S. Cl. 401—247 3 Claims



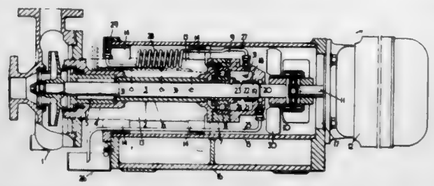
In a writing instrument including a barrel or body and a cap, an improvement in means for releasably securing the cap to the barrel or body when the instrument is not in use including the provision of a radially inwardly directed lip fixedly carried by the open end of the cap which receives the forward end of the barrel, a cylindrical ring fixedly secured on the barrel and including at least three projections or dimples generally equally spaced about the circumference of the ring, the ring being smaller in diameter than the diameter of the cap lip and the radially outermost portions of the dimples on the barrel ring defining a diameter greater than the diameter of the cap lip so that the cap may be forcibly axially mounted over the barrel ring projections to provide an audible, positive, snap fit.

3,666,374
ROTARY MOLECULAR VACUUM PUMP
Willi Becker, Braunfels, Germany, assignor to Arthur Pfeiffer Hochvakuumtechnik GmbH
Filed Nov. 13, 1969, Ser. No. 876,250
Claims priority, application Germany, Nov. 20, 1968, P 18 09 902.0
Int. Cl. F01d 3/02
U.S. Cl. 415—100 7 Claims



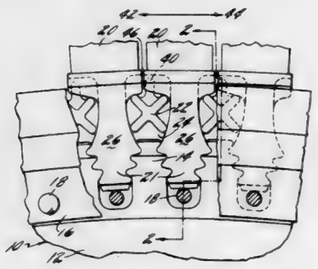
A rotary molecular vacuum pump having either one multistage compression set, or a plurality of multi-stage compression sets connected in parallel, between the pre-vacuum side and the high vacuum side of the pump has at least one gas inlet which communicates with the multi-stage compression set, or with each such set, at an intermediate position between the pre-vacuum and high vacuum sides of the pump.

3,666,375
PUMPING A HIGH OR LOW TEMPERATURE FLUID
Ernest H. Priest and Gordon M. Priest, Billingshurst, Sussex, England
Filed Aug. 26, 1969, Ser. No. 853,059
Int. Cl. F04d 1/00, 29/00
U.S. Cl. 415—112 3 Claims



Heat-transfer systems using oxidizable heat-transfer fluids have oxidation problems around the pump shaft seal. According to this invention, the problem is solved by having the seal at the remote end of a barrier section connected to the casing of the pump so that the barrier section can be cooled to keep the seal cool enough.

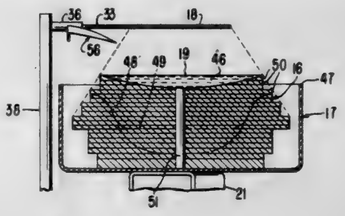
3,666,376
TURBINE BLADE DAMPER
Nicholas Damlis, Tolland, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Jan. 5, 1971, Ser. No. 104,057
Int. Cl. F01d 5/16
U.S. Cl. 416—219 5 Claims



A vibration damper for use in a turbine rotor of a high temperature gas turbine is disclosed. The damper which is X shaped in overall cross section with a pair of damping legs, a protruding assembly lug, and a pair of positioning legs is located in the turbine rotor in a cavity formed between the extended necks of a pair of adjacent turbine blades in one direction and end cover plates in the other direction.

3,666,377
HIGH VACUUM GETTERING PUMP
David D. Robertson, Palo Alto, and William R. Wheeler, Saratoga, Calif., assignors to Varian Associates, Palo Alto, Calif.
Filed June 2, 1969, Ser. No. 829,386
Int. Cl. F04b 37/02
U.S. Cl. 417—49 15 Claims

A high vacuum gettering pump is described which is capable of providing a high vaporization rate of a getter material. The pump includes a high thermionic emission cathode filament disposed over a surface of a bulk supply of a getter material such as titanium. The getter material is contained within a cup-shaped heat shield and has a peripheral configuration minimizing the amount of material at the sides of the body of getter material which will not be melted by thermionic emission from the filament when a high operating potential is applied between the filament and the getter material body. A shield is also provided blocking line-of-sight travel of vaporized getter material to a portion of the filament which does not reach a high enough temperature to prevent condensation of the getter material. The shield is tapered inwardly and curved away from the filament adjacent an unshielded portion thereof to minimize the effect caused on the operation of the filament by the build-up of getter material on the shield.

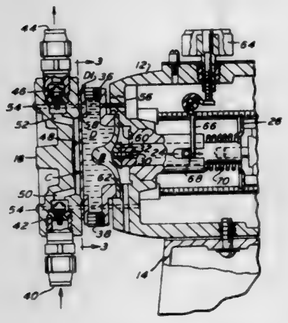


3,666,378
FRICTION ANCHOR FOR FLUID OPERATED DOWNWELL PUMPS
Peter S. Bloudoff, Whittier, Calif., assignor to Armco Steel Corporation, Middletown, Ohio
Filed Oct. 16, 1970, Ser. No. 81,468
Int. Cl. F04b 47/10
U.S. Cl. 417—358 15 Claims



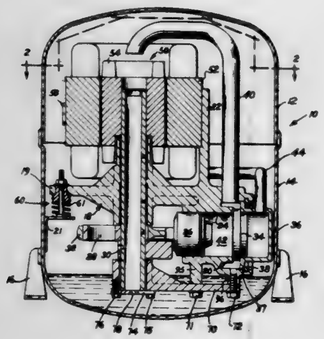
A friction anchor for fluid operated downwell pumps which precludes gross movement of the pump in operation so as to prevent chafing of the seals on the outside diameter of the pump which establish and maintain the hydraulic circuitry. The friction anchor includes a long, thin-walled, expandable sleeve on the pump which fits closely with the mating gripping surface of a seal on the well casing or housing sleeve. When the pump becomes operational, high pressure from the operating fluid is applied on the inside of the expandable sleeve and an actual interface fit between the expandable sleeve and the casing or housing sleeve seal is simulated.

3,666,379
TANDEM DIAPHRAGM METERING PUMP FOR CORROSIVE FLUIDS
Lawrence R. Mitchell, Fort Lee, and William C. Conkling, Essex Fells, N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.
Filed July 17, 1970, Ser. No. 55,640
Int. Cl. F04b *43/06, 45/00*
U.S. Cl. 417—395 6 Claims



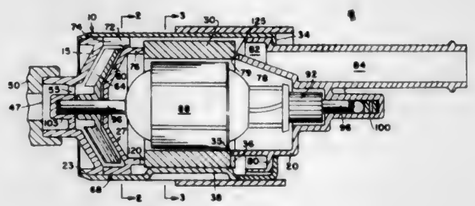
A diaphragm type metering pump, especially adapted for handling corrosive fluids, incorporates a slack resilient diaphragm disk made of a chemically inert polymer, such as polytetrafluorethylene, which is spaced from the primary positive displacement diaphragm. A liquid medium fills the space between the two diaphragms and transmits reciprocable motion of the primary diaphragm to the slack secondary diaphragm which is in operative contact with the fluid being pumped.

3,666,380
COMPRESSOR BLOCK WITH BANDED MOTOR
Charles B. Ellis, Fort Worth, Tex., assignor to Lennox Industries, Inc.
Filed Sept. 1, 1970, Ser. No. 68,622
Int. Cl. F04b *17/00, 35/04*
U.S. Cl. 417—415 8 Claims



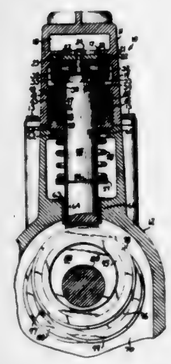
A refrigerant compressor having a compressor block with a lower portion defining a crankcase and an upper fragmentary annular portion defining a mounting for the electric drive motor. The electric drive motor is banded to the upper fragmentary annular portion in such manner that it can be readily removed to permit repair or maintenance of the electric drive motor.

3,666,381
SUBMERSIBLE FUEL PUMP
Ralph E. Ulm, Claude F. Phillips, Michael J. Sullivan, Larry C. Collins, and William Russell Parrent, Fairfield, Ill., assignors to Airtex Products, Division of United Industrial Syndicate, New York, N.Y.
Filed May 20, 1970, Ser. No. 37,951
Int. Cl. F04b *17/00, 35/04*
U.S. Cl. 417—423 16 Claims



A rotary electric fuel pump using a permanent magnet motor is constructed of parts having a simple geometric pattern for mass production by sheet metal stamping and plastic molding. The construction provides for housing a cylindrical magnet stator for a motor field and a high-speed armature. The fuel medium being pumped flows over the magnet effecting cooling, with some diverting of flow through the armature for cooling. A further feature resides in the construction of an impeller having flow passage to the stator slots phased in such a manner that peak flow pressure at the slots is evened out around the impeller. Thus, the impeller vane spacing is related to that of the stator slots other only one flow pressure peak occurs at a time, and such peaks occur sequentially at wide spaced points around the rotary axis. This minimizes electric current peaks and brush sparking as well as bearing wear. The construction is fully sealed for submerged use in fuel tanks.

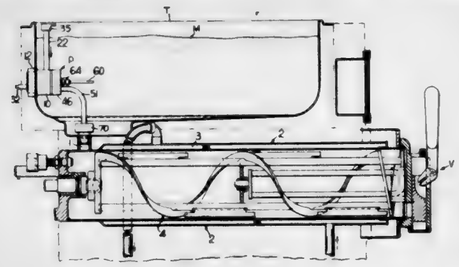
3,666,382
PUMP
Robert F. Rasmussen, Minneapolis, Minn., assignor to Roseville Engineering, Inc., St. Paul, Minn.
Continuation-in-part of application Ser. No. 810,681, Mar. 26, 1969. This application Mar. 24, 1970, Ser. No. 22,176
Int. Cl. F16j *15/00*; F04b *21/02, 39/10*
U.S. Cl. 417—533 12 Claims



A housing having three in-line cylindrical openings formed therein with an outlet and inlet in communication with each of said openings, an insert positioned in each

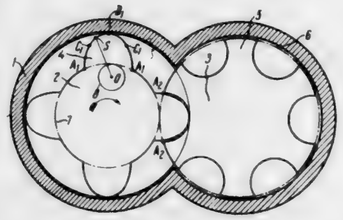
of said openings for forming outlet valve means, a second insert positioned in each of said openings for forming inlet valve means, packing positioned in each of said openings and cooperating with the inserts to define a cylinder, and a plunger mounted in each of said cylinders for reciprocating movements. The further improvement including means subject to fluid outlet pressure operating on the packing to maintain a compression force on said packing. Said three plungers being reciprocated sinusoidally by means of eccentric members attached to a drive shaft.

3,666,383
POSITIVE DISPLACEMENT, GEAR TYPE PUMP
Bernfried M. Werner, Pompano Beach, Fla., assignor to Louis A. M. Phelan, Pompano Beach, Fla.
Filed July 29, 1970, Ser. No. 59,191
Int. Cl. F01c *1/08, 1/18, 21/00*
U.S. Cl. 418—15 14 Claims



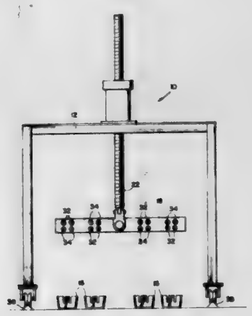
A positive displacement, gear type pump having a pair of gears in constant mesh for mixing and feeding air and a confection mix prior to delivery into a freezing cylinder. The pump operates at a relatively high speed so as to thoroughly mix the air and confection mix and provide a highly aerated mix to be frozen. The entire pump can be quickly and easily assembled and disassembled for frequent cleaning. The pump assembly can be easily mounted in the mix tank and is self-sealing with the wall thereof. The ratio of the air to the confection mix can be readily adjusted by adjusting the amount of air taken into the pump.

3,666,384
SCREW-ROTOR MACHINE FOR COMPRESSIBLE FLUIDS
Pavel Evgenievich Amosov, Kronverkskaya ulitsa 29/37, kv. 87; Leonid Mikhailovich Imyanitov, 6-ya Sovetskaya ulitsa 33, kv. 4; Vitaly Konstantinovich Smekhov, Ulitsa Kolomenskaya 33/40, kv. 25; and Valery Leonidovich Trofimov, Ulitsa Matrosova 12, kv. 8, all of Leningrad, U.S.S.R.
Filed Oct. 20, 1970, Ser. No. 82,297
Int. Cl. F01c *1/16, 1/24*; F04c *1/10*
U.S. Cl. 418—201 1 Claim



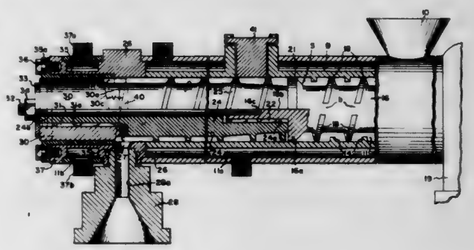
A screw-rotor machine for compressible fluids, wherein the profile of the head of each of the driving rotor lobes is defined by two lengths of epicycloids interconnected by a conjugate curve. The conjugate curve is a length of the elongated hypocycloid formed during rolling of a base circle along the inner side of a driving rotor rolling circle by a point located outside the base circle whose radius is larger than zero but smaller than the radius of the rolling circle.

3,666,385
APPARATUS FOR MAKING PRESTRESSED CONCRETE MEMBERS
Robert S. Baker, 511 Hibiscus Drive, Temple Terrace, Fla. 33617
Filed July 3, 1969, Ser. No. 838,945
Int. Cl. B28b *7/08*
U.S. Cl. 425—111 2 Claims



An apparatus for forming prestressed concrete products. A stress frame including properly tensioned tendons is lowered over a casting form which does not feel the tension. The concrete is poured, compacted, and allowed to reach a pre-set condition in which it is self-supporting yet plastic. The stress frame, with the product attached thereto, is then separated from the casting form, and the product undergoes final curing with all its exterior surfaces exposed. The tendons are then released, transferring tension to the concrete product.

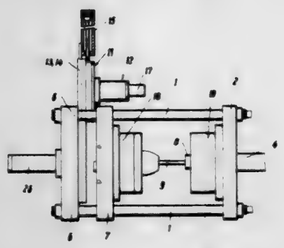
3,666,386
DIRECT RADIALLY EXTRUDING MIXER
Larry N. McElroy and Varo A. Shores, Saginaw, Mich., assignors to Baker Perkins Inc., Saginaw, Mich.
Filed Feb. 11, 1970, Ser. No. 10,387
Int. Cl. B29f *3/02*
U.S. Cl. 18—12 SA 8 Claims



A direct extrusion mixer including a barrel forming a mixing passage or chamber having a material receiving inlet and a radially disposed extrusion outlet. A reciprocating and rotating mixer shaft is accommodated in the passage and includes gapped flights rearwardly of the extrusion outlet cooperating with kneading teeth on the barrell wall for mixing the material and forwarding the material toward the extrusion outlet. To eliminate output surges

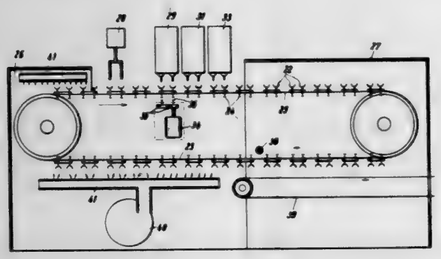
in the extrudate caused by the oscillating motion of the mixer shaft, the shaft has a plug with a symmetrical axially inclined rear face, the portion of the face immediately adjacent the outlet being substantially in radial alignment with the forward edge of the outlet at all times.

3,666,387
MOLD CLOSURE MEANS
Wilhelm Cyriax, W. R. Neustadter Str. 81, Kottingbrunn, Austria
Filed Nov. 26, 1969, Ser. No. 880,115
Claims priority, application Germany, Dec. 13, 1968, P 18 15 712.5-24
Int. Cl. B29f *1/06*
U.S. Cl. 425—242 **2 Claims**



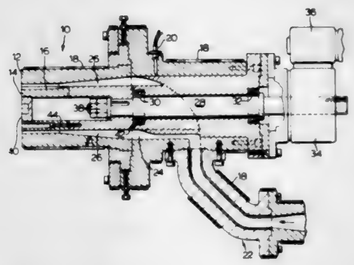
An expandable unit, carried on a fixed end plate of an injection-molding machine to exert mold-closing pressure upon a movable platen, comprises a pressure box on the end plate whose piston supports an elongate thrust member composed of threadedly interconnected portions to enable adjustment of its effective length. The entire unit is transversely slidable along a track on the end plate into a retracted position beyond the outline of the movable platen whereby the latter more closely approaches the end plate upon the opening of the mold.

3,666,388
APPARATUS FOR PRODUCING HOLLOW SWEET MEATS
Hugo Oberwelland and Uwe Klahn, Halle, Germany, assignors to August Storck G.m.b.H., Halle, Germany
Filed Jan. 28, 1970, Ser. No. 6,449
Int. Cl. A23g *3/12, 1/20*
U.S. Cl. 425—261 **4 Claims**



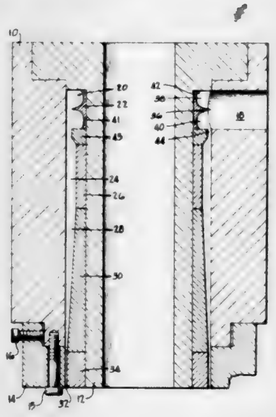
A method of and apparatus for producing hollow sweetmeats by spinning an open top mould containing a measured quantity of castable confectionary material or dispensing such a quantity of material into an open top mould from a rotating dispenser so that a hollow body corresponding to the internal shape of the mould is formed by centrifugal force acting on the castable material, cooling the body until it is set, and ejecting the body from the mould.

3,666,389
EXTRUSION APPARATUS FOR MAKING CONDUIT PIPE
Robert S. Nelson, Islington, Ontario, Canada, assignor to Dominion Gasket & Manufacturing Co. Limited, Toronto, Ontario, Canada
Filed Nov. 24, 1969, Ser. No. 879,387
Int. Cl. B29d *23/04*
U.S. Cl. 425—324 **2 Claims**



This disclosure relates to a machine for extruding pipe with an internal helical rib that has an extruding head with an annular extruding opening defined in part by a rotating core. The core is formed with a groove so that as plastic is forced through the head, the internal surface is formed with a helical rib due to the action of the rotating groove.

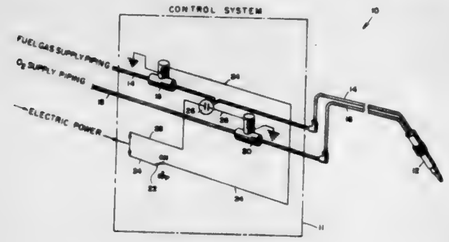
3,666,390
EXTRUSION DIE
Milo Gerow, 108 Ohio Ave., Beach Haven, N.J. 08008
Filed Sept. 2, 1969, Ser. No. 854,646
Int. Cl. B29d *23/04*
U.S. Cl. 425—380 **10 Claims**



A tubular extrusion die includes a pressure chamber and regulating passage in the flow passage between the entrance port of the die and the annular die lips where the extrusion material is shaped as it leaves the die. The pressure chamber includes a plurality of annular pressure channels in which the upper communicates with the lower, and which is arranged to control the annular distribution

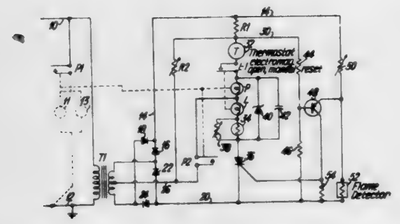
of flow (pressure, velocity and volume) of extrusion material to the die lips. The cross-sectional area of the regulating passage of the pressure chamber is less than or equal to that of the entrance port.

3,666,391
ANTI-FLASHBACK DEVICE
Charles A. Van Horn, Country Club Hills, Ill., assignor to Chemetron Corporation, Chicago, Ill.
Filed Apr. 27, 1970, Ser. No. 32,296
Int. Cl. F23n *1/02*
U.S. Cl. 431—12 **16 Claims**



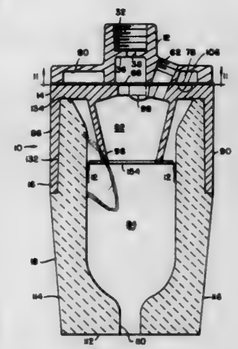
Flashback, backfire, and carbon deposits in an oxy-fuel torch are prevented by placing the flow of oxygen under the control of a pressure responsive switch connected to the fuel line. When the fuel is turned off, this switch maintains the flow of oxygen so as to prevent a carbonizing flame from developing before the residual fuel is consumed, but cuts off the flow of oxygen before dangerous concentrations of oxygen can develop in the fuel line. At the time of ignition, this same pressure switch prevents oxygen from entering the fuel line before the flow of fuel is established and thereby prevents flashback and backfire.

3,666,392
SAFETY SHUTOFF
Helmut D. Julinot, Toronto, Ontario, Canada, assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed July 16, 1970, Ser. No. 55,393
Claims priority, application Canada, Mar. 2, 1970, 076,241
Int. Cl. F23n *5/14*
U.S. Cl. 431—78 **4 Claims**



Circuitry initiates two shorter and longer timed but variable intervals when a furnace thermostat switches to call for heat. The circuitry effects the switching to initiate combustion at the end of the shorter timed interval; but, in the event that no combustion has commenced by the end of the longer timed interval, the circuitry prevents the combustion thereafter until a reset operation has been performed. Preferably the reset is mechanical. If combustion starts before the end of the longer timed interval, the timing of the longer timed interval ceases.

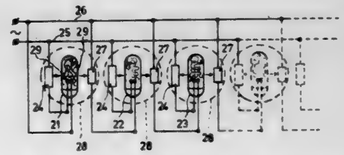
3,666,393
BURNER STRUCTURE AND METHOD
Theodore E. Davies, Hudson, Ohio, assignor to The North American Manufacturing Company, Cleveland, Ohio
Filed Feb. 2, 1970, Ser. No. 7,451
Int. Cl. F23n *3/00*; F23r *1/02*
U.S. Cl. 431—90 **14 Claims**



A burner for heating metal in a furnace or the like including a body member having air and gas metering orifices therein, a tile having an axially extending secondary combustion chamber therein, a tile mounting member secured to one end of the tile providing a primary combustion chamber for the burner and having axially extending openings with slanted sides therethrough extending into the primary combustion chamber and the secondary combustion chamber in the tile, and a gasket positioned between the body member and tile mounting member for directing primary and secondary air through the tile mounting member openings into the combustion chambers in a ratio depending on the area of the openings and imparting a swirl to the air in accordance with the alignment of the openings through the gasket and the openings through the tile mounting member.

Upstream and downstream pressure taps are provided in the body member for ascertaining air and gas flows. A flat annular member having openings therethrough is positioned between the secondary air and the secondary combustion chamber in one modification of the burner disclosed to stabilize the burner flame. The burner may be mounted in the roof, hearth or the wall of a furnace and when mounted in the wall of a furnace, a venturi tile may be positioned axially of the burner to insure high entrainment and recirculation of furnace gases.

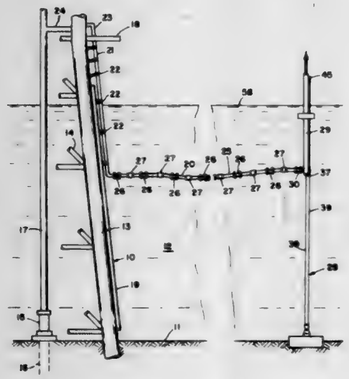
3,666,394
MULTIFLASH LAMP UNIT
Johannes Gerardus Bok and Wilhelmus Polycarpus de Graaf, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed May 18, 1970, Ser. No. 37,976
Claims priority, application Netherlands, May 30, 1969, 6908333
Int. Cl. F21k *5/02*
U.S. Cl. 431—95 **2 Claims**



A device for the series ignition of combustible flashbulbs which are essentially connected in parallel with one

another. Each flashbulb is in series with a switching element which responds to the energy emitted during flashing of said flashbulb, and permanently interrupts the electric connection between the bulb and the circuit.

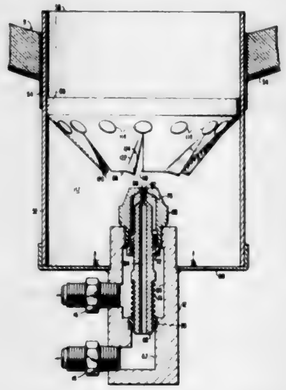
3,666,395
OFFSHORE GAS FLARE APPARATUS
James W. Kubasta, Metairie, La., assignor to Shell Oil Company, New York, N.Y.
Filed July 29, 1970, Ser. No. 59,247
Int. Cl. F23c *9/00*
U.S. Cl. 431—202 5 Claims



Apparatus for conducting waste gas produced from an offshore well extending into the floor of a body of water to a remote location. A platform structure rests on the water floor and includes a gas line in selective fluid communication with the well, the gas line leading to the remote location. A gas flare pipe is buoyantly supported in a vertical position at the remote location and is in fluid communication with the gas line. The support for the pipe includes a relatively short spar buoy anchored to the floor of the body of water through an elongated flexible cable pivotally attached thereto. In this manner, waste gas from the well may be burned off (or vented to the atmosphere) while the support allows for movement of the gas flare pipe with water motion.

3,666,396
COMBUSTION APPARATUS
Eugene C. Briggs and William C. Wellbaum, Dayton, Ohio, assignors to Koehring Company, Milwaukee, Wis.
Filed Mar. 29, 1971, Ser. No. 128,726
Int. Cl. F23q *3/00*
U.S. Cl. 431—264 10 Claims

The generator of a compact absorption cycle chiller is heated by oil fired combustion apparatus made up of a burner assembly mounted on the heat receiver for the generator and a fluid supply and control assembly separately mounted within the chiller housing. Both assemblies are accessible for servicing from one side of the housing and they are connected by fluid conduits and electrical cables. The burner assembly includes an aspirator nozzle projecting into the outer end of the burner tube, an auxiliary air inlet into an upper side of the burner tube near the nozzle tip and a coned flame retention head the small end of which is completely open and faces the nozzle tip. Perforated air deflectors curve outwardly from the auxiliary air inlet to distribute the air throughout the zone behind and around the coned flame retention head. Slots each having an outwardly inclined vane adjacent one of its margins extend longitudinally of the head and open at both the periphery and the small end of the head to direct auxiliary air from this zone into an axially swirling pattern of motion within the head, and additional



openings of circular configuration are disposed in a ring about the conical head in the vicinity of but spaced from its large end to direct auxiliary air toward the axis of the head.

3,666,397
TRANSFER PRINTING WITH FIBRE-REACTIVE DYES
Keshav V. Datye, Goregaon-Bombay, India, and Branimir Milicevic, Riehen, and Hermann Werdenberg, Basel, Switzerland, assignors to Ciba-Geigy AG
No Drawing. Filed Mar. 13, 1969, Ser. No. 807,104
Claims priority, application Switzerland, Mar. 22, 1968, 4,278/68; Jan. 21, 1969, 840/69
Int. Cl. D06p *1/38*
U.S. Cl. 8—2.5 13 Claims

A dyeing or printing process wherein a natural or synthetic or semi-synthetic material, is kept in contact in the wet state, for 20 to 220 seconds, on one side with a support having a colour print produced with at least one fibre-reactive dyestuff with or without a disperse dyestuff and, on the other side, with a support heated to at least 100° C.

3,666,398
METHOD OF DYEING SHAPED ORGANIC MATERIALS FROM LIQUID AMMONIA DYE BATHS
Joseph P. Tratnyek, 476 Concord Road, Sudbury, Mass. 01776
No Drawing. Continuation-in-part of application Ser. No. 687,439, Dec. 4, 1967. This application Feb. 1, 1971, Ser. No. 111,743
Int. Cl. D06p *1/68, 3/00*
U.S. Cl. 8—4 10 Claims

A dye system in which materials are bathed in a dyebath formed of a dye dissolved in substantially anhydrous liquid ammonia.

3,666,399
ENZYMATIC PEROXYDIPHOSPHATE HYDROLYSIS
Harry Marcus Castrantas, Trenton, N.J., assignor to FMC Corporation, New York, N.Y.
Filed July 31, 1970, Ser. No. 60,003
Int. Cl. D06l *3/02*
U.S. Cl. 8—111 7 Claims

This invention provides a safe, controlled peroxymonophosphate-generating composition comprising peroxydiphosphate and a phosphatase enzyme-containing substance. The composition is used by addition of water, which causes peroxymonophosphate to be generated at a safe, controlled rate by the enzyme-induced hydrolysis of the peroxydiphosphate.

3,666,400
SIZING OF YARNS AND FIBERS WITH COMBINATIONS OF POLYMERS AND CROSSLINKING AGENTS
John T. Lofton and Robert J. Harper, Jr., Metairie, and Eugene J. Blanchard, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Continuation-in-part of application Ser. No. 756,323, Aug. 29, 1968. This application Mar. 10, 1970, Ser. No. 18,292
Int. Cl. D06m *13/52, 15/70*
U.S. Cl. 8—115.6 5 Claims

This invention relates to a process for producing a durable-press fabric having a superior abrasion resistance. Cellulosic textile yarns are sized with a combination of a permanent polymer, a temporary polymer and a crosslinking agent prior to weaving. The permanent polymer includes polyurethanes, polyacrylates, butadiene-styrene copolymers, butadiene-acrylonitrile copolymers, and ethylene-vinylacetate copolymers. A temporary polymer is polyvinyl alcohol. Crosslinking agents include dimethylol dihydroxy-ethylenurea (DMDHEU), dimethylol methoxyethylcarbamate, methylol melamine, and dimethylol propyleneurea.

3,666,401
TREATMENT OF TEXTILES TO IMPART WRINKLE-RESISTANT AND FIRE-RESISTANT PROPERTIES
Joseph A. Cahill, Philadelphia, and Joseph A. Meyers III, Springfield, Pa., assignors to Atlantic Richfield Company, Philadelphia, Pa.
No Drawing. Filed Dec. 11, 1970, Ser. No. 97,313
Int. Cl. D06m *13/28, 13/54*
U.S. Cl. 8—116.2 8 Claims

Fire resistance and wrinkle resistance are imparted to cellulosic textile materials without adversely affecting other properties by impregnating the material with an unsymetrical cross-linking agent that contains a vinyl group and a group that is chemically reactive toward cellulosic hydroxy groups, reacting the aforesaid reactive group with the cellulose in the presence of a chemical catalyst without reacting the vinyl groups, washing to remove unreacted chemicals, impregnating with N,N',N''-triallyl phosphoric triamide and co-polymerizing the latter with the vinyl groups of the unsymetrical cross-linking agent by means of high energy ionizing irradiation.

3,666,402
COMPOSITIONS AND METHOD FOR FLAME-PROOFING CELLULOSIC MATERIALS WHILE SIMULTANEOUSLY IMPARTING WRINKLE RESISTANCE, AND ARTICLES THEREBY PRODUCED
Joseph A. Meyers III, Springfield, and Joseph A. Cahill, Philadelphia, Pa., assignors to Atlantic Richfield Company, Philadelphia, Pa.
No Drawing. Filed Oct. 30, 1970, Ser. No. 85,815
Int. Cl. D06m *13/44*
U.S. Cl. 8—116.2 8 Claims

Fire resistance and wrinkle resistance are imparted to cellulosic materials by treatment with N,N',N''-triallyl phosphoric triamide without adversely affecting other properties of the cellulosic materials. The treating compositions and the treated article are also disclosed.

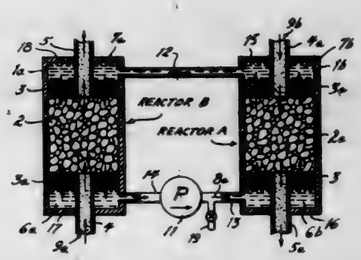
3,666,403
PROCESS FOR DYEING MODIFIED POLYESTER FIBERS IN THE PRESENCE OF QUATERNARY AMMONIUM SALTS
Shiro Shimauchi, Takatsuki-shi, Osaka-fu, Norihiro Minamura, Takeshi Matsui, and Kenji Ito, Ibaraki-shi, Osaka-fu, and Takue Shima, Shoji Kawase, and Masataka Oshima, Yamaguchi-ken, Japan, assignors to Teijin Limited, Osaka, Japan
No Drawing. Filed Mar. 4, 1969, Ser. No. 804,294
Claims priority, application Japan, Mar. 14, 1968, 43/16,906; Apr. 5, 1968, 43/22,510; June 3, 1968, 43/56,828; July 19, 1968, 43/51,277; July 30, 1968, 43/54,071; Aug. 22, 1968, 43/60,034; Aug. 23, 1968, 43/60,356; Aug. 28, 1968, 43/61,638; Sept. 26, 1968, 43/69,736
Int. Cl. D06p *5/06*
U.S. Cl. 8—172 3 Claims

A method of dyeing a textile fiber selected from the group consisting of the modified polyester, polyvinyl chloride, acrylonitrile and cellulose acetate fibers, said method comprising dyeing said fiber with an anionic dyestuff in the presence of at least one compound selected from the group consisting of specific tertiary amines, quaternary ammonium salts, sulfonium salts, tertiary phosphines, and quaternary phosphonium salts.

3,666,404
METHOD OF INHIBITING CORROSION IN AQUEOUS SYSTEMS WITH HIGH MOLECULAR WEIGHT ALKYLENE OXIDE POLYMERS
Chin M. Hwa, Arlington Heights, Charles M. Bodach, Morton Grove, and C. D. Schroeder, Arlington Heights, Ill., assignors to Chemed Corporation, Cincinnati, Ohio
No Drawing. Filed Nov. 5, 1969, Ser. No. 874,397
Int. Cl. C23f *11/10, 11/18*
U.S. Cl. 21—2.7 8 Claims

High molecular weight polymers of ethylene oxide or copolymers of ethylene oxide with minor amounts of propylene oxide having a weight average molecular weight of at least about 100,000 but nevertheless water soluble at the concentrations and under the conditions of use, inhibit corrosion of metal surfaces in aqueous systems. Combination of such polymers with known corrosion inhibiting materials and compositions synergistically improves the effectiveness of the latter.

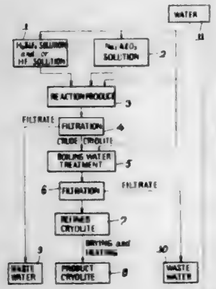
3,666,405
METHOD OF REMOVING CARBON DIOXIDE FROM GASEOUS MIXTURES
August Winsel, Kelkheim, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, and Varta Aktiengesellschaft, Frankfurt am Main, Germany
Filed Apr. 11, 1967, Ser. No. 630,128
Claims priority, application Germany, Apr. 16, 1966, S 103,215
Int. Cl. B01d *53/34;* H01d *27/00*
U.S. Cl. 23—2 R 9 Claims



Heterogeneous chemical or electrochemical reaction between substances contained in or forming at least two

separate fluid phases, or the transfer of one or more substances from one fluid phase to another fluid phase, is effected by contacting the fluid phases with each other while they are contained as separate phases and under different hydrostatic pressures, in the pores of porous structure in a novel apparatus.

3,666,406
METHOD FOR MANUFACTURING CRYOLITE WITH HIGH PURITY
Yukio Kitano, Yokohama, Japan, assignor to Showa Denko Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 28, 1970, Ser. No. 67,681
Claims priority, application Japan, Sept. 1, 1969, 44/68,677; July 21, 1970, 45/63,220
Int. Cl. C01f 7/54
U.S. Cl. 23—88 2 Claims



Impure hydrofluoric acid or hydrosilicofluoric acid containing phosphoric acid, silicic acid, sulfuric acid, iron and so forth or a mixture of such acids is reacted with the aqueous solution of sodium aluminate at a temperature at or below 55° C. The resulting crude cryolite is subjected to refining with boiling water to remove impurities. Thus, a highly pure cryolite is manufactured.

3,666,407
PROCESS FOR PRODUCING SYNTHETIC HECTORITE-TYPE CLAYS
Justus K. Orlemann, Easton, Pa., assignor to Pfizer Inc., New York, N.Y.
No Drawing. Filed Jan. 28, 1971, Ser. No. 110,751
Int. Cl. C01b 33/28
U.S. Cl. 23—111 4 Claims

Synthetic hectorite-type clay materials are prepared by calcining a mixture of Li_2CO_3 and talc, mixing with an aqueous solution of a sodium silicate and Na_2CO_3, and hydrothermally treating the resulting mixture. Subsequent drying is optionally provided.

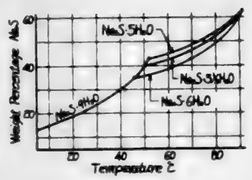
3,666,408
PROCESS FOR THE PRODUCTION OF OXIDES OF NITROGEN
Aristid V. Grosse, 456 Glyn Wynn Road, Haverford, Pa. 19041; Charles S. Stokes, 127 Madison Road, Willow Grove, Pa. 19090; and Edward W. Smith, 402 Longwood Drive, Exton, Pa. 19341
Continuation-in-part of application Ser. No. 805,069, Dec. 27, 1968, which is a continuation-in-part of application Ser. No. 639,880, May 19, 1967. This application Feb. 16, 1970, Ser. No. 11,474
Int. Cl. C01b 21/30
U.S. Cl. 23—163 2 Claims

An improved process for producing oxides of nitrogen such as nitric oxide which includes (a) reacting nitrogen plasma with oxygen plasma, the plasma having been formed by an electric arc discharge, and (b) cooling the resulting gaseous reaction mixture from the plasma state to a temperature below the dissociation temperature of nitric oxide by (1) expanding the gaseous mixture at an expansion ratio in the range of from 30:1 to 200:1, the expansion beginning prior to the loss of the plasma state, and (2) contacting the expanded reaction mixture with cooler recycle gas.

3,666,409
METHOD OF STABILIZING SODIUM HYDROSULFITE
Yoshio Yoshikawa and Yasuhiro Sakai, Tokyo, Japan, assignors to Mitsubishi Edogawa Kagaku Kabushiki Kaisha, Tokyo, Japan
No Drawing. Filed Aug. 25, 1969, Ser. No. 852,891
Claims priority, application Japan, Jan. 31, 1969, 44/6,626
Int. Cl. B01d 17/66
U.S. Cl. 23—116 22 Claims

Sodium hydrosulfite is stabilized by using an aliphatic amine containing five or more carbon atoms.

3,666,410
METHOD FOR THE CONTINUOUS CRYSTALLIZATION OF SODIUM MONOSULFIDE ESSENTIALLY AS $Na_2S.5H_2O$
Yoshio Aoyama, 37 Chayamachi, Osaka, Japan; Nobuyuki Mikasa, 20–1 Aza Minamikeda, Kawamo, Takarazuka, Japan; and Shuuzo Nakatani, 4233 Mitsu, Akitsumachi, Hiroshima Prefecture, Japan
Continuation-in-part of application Ser. No. 677,384, Oct. 23, 1967. This application Dec. 3, 1969, Ser. No. 881,908
Claims priority, application Japan, Oct. 25, 1966, 41/70,524
Int. Cl. C01b 17/22
U.S. Cl. 23—134 3 Claims



Crystalline $Na_2S.XH_2O$, in which X is 6 or less, of high purity and large grain size, is produced continuously by establishing a circulation of aqueous mother liquor through a crystallizing zone and a reaction zone, which circulation always has a concentration of Na_2S, based on the water, in excess of 35% by weight, and a temperature in excess of 46° C. In the reaction zone the temperature is kept enough above 46° C. to keep crystals from forming. On the way to the crystallizing zone the liquor is cooled to a temperature close enough to 46° C. to supersaturate it, but is introduced into the crystallizer, where crystals are already present, during the short time lag before crystals commence to form. Form the top of the crystallizer most of the spent mother liquor is returned to the reaction zone, the remainder being removed with the crystals from the bottom of the crystallizer. The make-up of pure Na_2S solution is provided by reacting equimolar amounts of NaOH and NaHS in the reaction zone with the required amount of additional water. The heat of this reaction, with or without further heat, is employed in raising the temperature in the reaction zone to keep crystals from forming there. To restrict water of crystallization in the crystals to 5.5 or 5.0 moles, the process is operated at concentrations of Na_2S, based on the water, in excess of 40% and 43%, by weight, respectively, and at temperatures in excess of 50° C. and 52° C., respectively.

3,666,411
PROCESS FOR MANUFACTURE OF ALUMINA HYDRATE
Carroll Wayne Collier, 507 E. 2nd St., Harrison County, Miss. 39571
Filed Sept. 24, 1969, Ser. No. 860,762
Int. Cl. C01f 7/42; B01j 11/06, 11/60
U.S. Cl. 23—143 3 Claims

Preparation of particulate hydrated alumina by commingling particles of metallic aluminum and an aqueous solution of an alkali metal cyanide, tetraborate or hydroxide at a reacting temperature, the ratio of gram moles of electrolyte to gram atoms of aluminum being between about 0.1 to 1 and 1 to 1. The resulting products have an apparent bulk density of 0.2 to 0.5 gram/cc.

3,666,412
DISPERSED PHASE ACTIVATED AND STABILIZED METAL CATALYSTS
Donald M. Sowards, Claymont, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 21, 1968, Ser. No. 769,059
Int. Cl. C01b 21/26, 33/20
U.S. Cl. 23—162 11 Claims

Catalytic systems comprising a catalytic metal, such as platinum or nickel, which have dispersed therein small particles of a non-metal, such as thoria, silica, or zirconia, have been found to have good activity and durability The catalyst systems are useful in those environments where metal catalysts are conventionally used such as in ammonia oxidations and methane reforming.

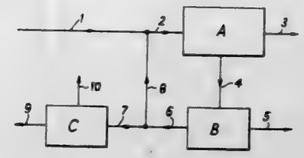
3,666,413
METHOD OF PRODUCING WET PROCESS PHOSPHORIC ACID
Ralph E. Bergstrom, Chicago, Ill., assignor to Whiting Corporation
Continuation-in-part of application Ser. No. 607,692, Jan. 6, 1967. This application Aug. 25, 1969, Ser. No. 857,276
Int. Cl. C01b 25/22
U.S. Cl. 23—165 15 Claims

An improved method and apparatus for manufacturing wet process phosphoric acid wherein the reactants which include phosphate rock and sulfuric acid are reacted in a combination reactor and cooler unit containing a body of reaction slurry having a substantially uniform level of calcium sulfate supersaturation throughout. The body of reaction slurry is circulated in a primary flow circuit in which substantially the entire body is exposed to a subatmospheric pressure maintained in the combination reactor and cooler unit at a first rate of flow at least equal to 20% of the total mass of reaction slurry per minute and preferably from 100% to 200% of the total mass of reaction slurry per minute. Simultaneously, a portion of the body of reaction slurry is circulated through a secondary flow circuit at a flow rate not greater than 50% of the first flow rate and preferably not greater than 10% of such first flow rate. While in such secondary flow circuit, the reaction slurry is heated to increase the temperature not more than 20° F., and preferably not more than 5° F., above the average bulk temperature of the body of reaction slurry. The residence time of the reaction slurry in the secondary flow circuit during and after heating does not exceed 30 seconds and preferably is not greater than 10 seconds. The heated reaction slurry is returned to the combination reactor and cooler unit at a location at which it will be substantially instantaneously cooled by contact with said circulating body of reaction slurry contained therein, resulting in an additional heat input into said body of reaction slurry without adversely affecting the substantially uniform level of calcium sulfate supersaturation therein.

3,666,414
METHOD OF PRODUCING TRANSPARENT OR OPAQUE FUSED SILICA OR GLASS WITH A HIGH SILICON CONTENT
Otto Bayer, Burscheid, Germany, assignor to Heraeus-Schott Quarzschmelze G.m.b.H., Hanau am Main, Germany
No Drawing. Continuation of abandoned application Ser. No. 721,073, Apr. 12, 1968. This application Mar. 15, 1971, Ser. No. 124,434
Int. Cl. C03c 3/04; C01b 33/12, 33/16
U.S. Cl. 106—52 11 Claims

Treating the siliceous raw product for the production of transparent or opaque fused silica or of glass with a high silicon content by means of a silicon halide so as to avoid bubbles, shrink holes or the like.

3,666,415
SYNTHESIS OF AMMONIA
Alexander Harmens, Altrincham, England, assignor to Petrocarbon Developments Limited, Wythenshawe, Manchester, England
Filed Sept. 16, 1970, Ser. No. 72,510
Claims priority, application Great Britain, Sept. 30, 1969, 48,080/69
Int. Cl. C01c 1/04
U.S. Cl. 23—199 5 Claims



In a process for the synthesis of ammonia by reaction of nitrogen with hydrogen in a reactor with recycling of unreacted gases, the hydrogen is derived from helium-containing natural gas and the impurities content of the process gas fed to the reactor is maintained constant by withdrawing a purge gas stream from the recycled gases, treating it to remove methane and argon, removing a helium-containing bleed stream before or after said treatment and returning the remainder of the purge stream to ammonia reactor.

3,666,416
MAGNESIUM HYDRIDE PRODUCTION
Walter K. Henle, Orinda, and Edgar J. Smutny, San Francisco, Calif., assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed Nov. 25, 1970, Ser. No. 92,900
Int. Cl. C01b 6/04
U.S. Cl. 23—204 6 Claims

Magnesium hydride having high-surface area and high-chemical activity is produced by hydrogenating a mixture of magnesium and a conjugated diene in the presence of tetrahydrofuran.

3,666,417
PROCESS FOR PRODUCTION OF CARBON FIBERS
Tadashi Araki, Hitoshi Takita, and Kiro Asano, Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
No Drawing. Filed May 15, 1970, Ser. No. 37,865
Claims priority, application Japan, May 17, 1969, 44/37,725
Int. Cl. C01b 31/07
U.S. Cl. 23—209.1 5 Claims

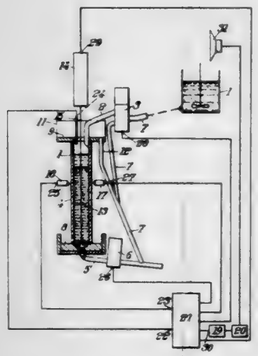
A process for the manufacture of superior carbon or graphite fibers from polymethyl vinyl ketone, as raw material, which comprises the steps of melt-spinning fibers

therefrom, stretch-orienting the fibers in the axial direction thereof cyclizing the compound material constituting the fibers by dehydration, and carbonizing the cyclized fibers. The carbon fibers thus obtained are readily convertible into graphite fibers by a simple additional process of graphitization. Desirably, the cyclized polymethyl vinyl ketone fibers are then denatured as to have sufficient heat resistivity to undergo the ensuing step of carbonization without suffering either degasification or deformation.

3,666,418
SULPHUR EXTRACTION PROCESS
Hans Joachim Wernicke, Neuenhain, Taunus, Fuchsbohl, and Hermann Reitzenstein, Aschau, Chiemgau, Germany, assignors to Messer Griesheim G.m.b.H., Frankfurt am Main, Hanauer Landstrasse, and Uhde, Friedrich G.m.b.H., Dortmund, Germany
Filed Aug. 17, 1970, Ser. No. 64,206
Claims priority, application Germany, Aug. 16, 1969, P 19 41 703.9
Int. Cl. C01b *17/04*
U.S. Cl. 23—225 P **4 Claims**

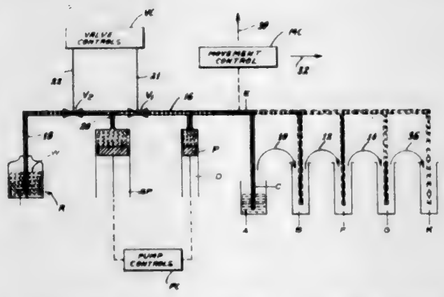
A process for obtaining sulphur from hydrogen sulphide containing gases by the reaction of said gases with sulphur dioxide thereby producing sulphur and water. The necessary amount of sulphur dioxide is produced by the combustion of sulphur with oxygen or an oxygen rich gas.

3,666,419
METHOD AND APPARATUS FOR AUTOMATICALLY CONTROLLING THE RATE OF SETTLEMENT OF A SOLID IN SUSPENSION IN A LIQUID
Paul Cahour, Seyssimet, and Jean Decrop, Jean Holder, and Alain Ledac, Grenoble, France, assignors to Commissariat a l'Energie Atomique, Paris, France
Filed Oct. 21, 1968, Ser. No. 769,120
Claims priority, application France, Oct. 24, 1967, 125,669
Int. Cl. G01n *15/04, 11/00*
U.S. Cl. 23—230 **10 Claims**



Method and device for automatically controlling the rate of settlement of a solid in suspension in a liquid medium, in particular of a precipitate formed in the liquid medium, as a consequence of a continuous chemical reaction. Parts of the suspension are periodically drawn off from said medium and delivered to a settlement cell to be subjected to a cycle of operations which comprises stopping the above delivery when the suspension has reached a set level in the cell, measuring the settling time of the interface of the precipitate and of the supernatant liquid which forms in the suspension at rest, between an upper set level and a lower set level in said cell, and discharging of the suspension from the cell.

3,666,420
APPARATUS FOR AUTOMATICALLY CARRYING OUT CHEMICAL ANALYSES
Peter Paatzsch, Hildegardring, Germany, assignor to Bodenseewerk Perkin-Elmer & Co. G.m.b.H., Uberlingen (Bodensee), Germany
Filed Nov. 9, 1970, Ser. No. 87,956
Int. Cl. F16k *19/00*; G01n *1/14*
U.S. Cl. 23—253 R **2 Claims**

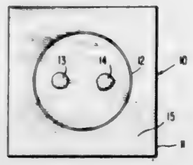


A measuring sample transfer or "dosing" device for use in an automatic analysis apparatus of the type in which each of a series of sample vessels contains a different liquid sample, and measured amounts of sample from each sample vessel are to be transferred into a plurality of reaction vessels associated with each such sample vessel. The disclosed sample "dosing" device includes a first sample measuring pump directly connected to the sample intake (and discharge) line (which is to be introduced into a sample vessel to take up sample and then into each of its associated reaction vessels in turn to discharge a measured amount of the sample), and is connected by a separate supply line having a first and second control valve to a supply of wash liquid (or reagent); and a (second) scavenging pump is connected to this supply line at a point intermediate these two valves. With the system filled with wash liquid but both pumps in their discharge (empty) position, the first valve is closed and the (first) measuring pump sucks up sample from the sample vessel through its intake line, while the scavenging pump is filled with wash liquid by means of the supply line. If the sample intake line is of greater volume than the intake stroke of the sample pump, then no sample reaches the pump itself. The intake line is then introduced into each associated reaction vessel in turn and a measured amount of sample is discharged in each such reaction vessel. Finally, the first valve is opened while the second valve is closed, a discharge of the scavenging pump clears the intake line of any residual sample (either into the last reaction vessel or an additional waste vessel). The cycle than may be repeated for the next sample vessel without danger of contamination by the sample just transferred.

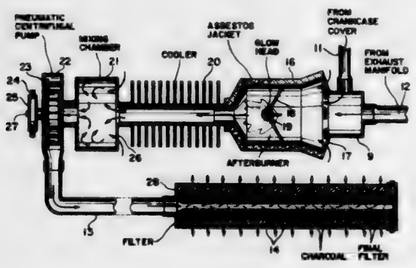
3,666,421
DIAGNOSTIC TEST SLIDE
Richard Thompson Price, Verona, N.J., assignor to Organon, Inc., West Orange, N.J.
Continuation-in-part of abandoned application Ser. No. 818,366, Apr. 22, 1969. This application Apr. 5, 1971, Ser. No. 131,172
Int. Cl. G01n *33/16*
U.S. Cl. 23—253 TP **20 Claims**

A test slide for the performance and observation of an immunochemical or diagnostic test on its surface, which

surface is insoluble in, impermeable to, non-absorbent to, and wettable by, water, carries on the surface at least one circumscribed test area containing in close proximity at least two deposited solid dried immunochemical reagents providing an accurate predetermined amount of an antigen and an antibody, which upon moistening with a liquid to be tested are reconstituted to the test reagents and then united to form a spot of reaction mixture.



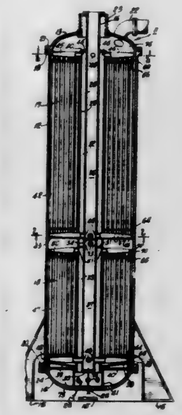
3,666,422
POLLUTION CONTROL SYSTEM
Joseph Rossel, 253 10th Ave., New York, N.Y. 10001
Filed Feb. 12, 1971, Ser. No. 114,925
Int. Cl. F01n *3/14*
U.S. Cl. 23—277 C **6 Claims**



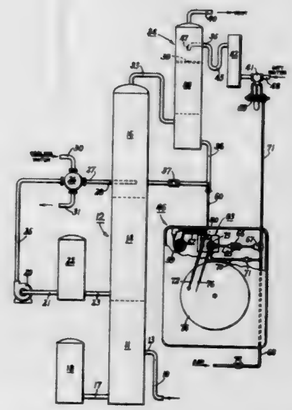
A pollution control system for connection to the exhaust of an automobile or heating plant consuming fossil fuels consisting of an afterburner compartment including a glow head disposed within the afterburner compartment for igniting unburned exhaust gases. The afterburner compartment also includes an air inlet to permit oxygen to mix with the unburned exhaust gases to aid in their ignition. At the output of the afterburner compartment is included a cooling and mixing chamber so that the exhaust gases can be fed into a pneumatic pump where they will be applied to a filtering system preferably consisting of charcoal before the gas enters into the atmosphere.

3,666,423
HEAT EXCHANGE APPARATUS
James R. Muenger, Beacon, N.Y., assignor to Texaco Inc., New York, N.Y.
Filed Nov. 26, 1969, Ser. No. 880,255
Int. Cl. B01j *9/04*
U.S. Cl. 23—288 L **3 Claims**

A heat exchange apparatus for a catalytic system comprising a closed cylindrical vessel containing an axial spine which extends substantially the length of said vessel, and a heat exchange means which is embedded in catalyst within said vessel, and is supported by said axial spine on a removable unit and is in communication therewith. Fresh feed gas is introduced into and discharged from said heat exchange means by way of said axial spine, finally being discharged into a chamber at the bottom of the vessel. The preheated feed gas stream is then passed from the bottom of the chamber up through the catalyst on the outside of said heat exchange means in indirect concurrent heat exchange with the fresh feed gas flowing within the heat exchange means and is finally discharged from an exit port in the top head of the vessel.



3,666,424
CONSTANT CONCENTRATION HYDROCHLORIC ACID BY VARYING WATER FEED PROPORTIONALLY TO TEMPERATURE
Ernest H. Cox, Long Branch, N.J., assignor to Tenneco Chemicals, Inc.
Filed Apr. 5, 1968, Ser. No. 719,060
Int. Cl. C01b *7/08*; B01d *11/00*
U.S. Cl. 23—312 R **3 Claims**



The present invention relates to a novel method of producing aqueous hydrochloric acid at a substantially constant concentration despite variations in the rate of flow of hydrogen chloride feed gas. The gas flows continuously into and through an initial body of concentrated aqueous

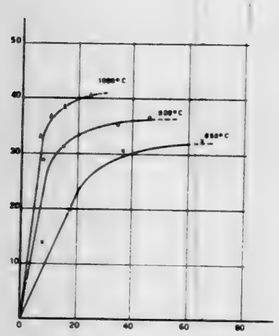
hydrochloric acid in an absorption column in which a portion of the gas is dissolved with the remainder of the gas being discharged as tail gas. The concentrated acid is cooled and maintained at a constant temperature that will provide the desired concentration of acid which is continuously discharged as product. The unabsorbed gas (tail gas) is flowed together with water to form dilute acid fed to the absorption column containing concentrated acid. The normal rate of flow of water is varied in accordance with variations in the flow of tail gas from a normal rate of flow so that the total amount water flowing into contact with the tail gas is such as to provide a product of the desired concentration. In a preferred embodiment, the rate of flow of water is varied in accordance with variations in the temperature of the dilute acid caused by variations in the amounts of tail gas and the heat generated as a result of variation in the rate of flow of feed gas.

3,666,425

METHOD OF DECANNING NUCLEAR FUEL ELEMENTS HAVING A CAN OF STAINLESS STEEL

Joseph-Gerard Wurm, Varese, and Maurice Payrissat, Ispra, Italy, assignors to European Atomic Energy Community (Euratom), Brussels, Belgium

Filed Sept. 30, 1968, Ser. No. 763,519
Claims priority, application Belgium, Oct. 31, 1967, 50,315
Int. Cl. C22b *61/04*
U.S. Cl. 23—324 4 Claims



A method of removing stainless steel cans from nuclear fuel elements by using a molten metal solvent of antimony and copper (and optionally a small amount of manganese) at a temperature of about 900° C.

3,666,426

CONTINUOUS PROCESS FOR THE PRODUCTION OF HIGH-DENSITY THORIA

Winston Burkhardt, Karthaus, Pa., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed May 1, 1969, Ser. No. 821,110
Int. Cl. C01f *15/00*
U.S. Cl. 23—328 1 Claim

This invention relates to a method for preparing thoria from an aqueous solution of thorium nitrate which comprises mixing said solution with an aqueous basic solution of ammonia continuously at a temperature in the range 180–200° F. under such conditions that the pH of the resulting slurry as would be measured at 25° C. is at a value in the range 5.0–6.5, and then filtering the resultant precipitate.

3,666,427

PROCESS FOR THE PRODUCTION OF CYANOGEN CHLORIDE TOGETHER WITH CYANURIC CHLORIDE AND TETRAMERIC CYANOGEN CHLORIDE

Edgar Enders, Cologne, Flittard, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 3, 1969, Ser. No. 803,988
Int. Cl. C01b *31/00*; C01c *3/00*; C07c *119/00*
U.S. Cl. 23—359 11 Claims

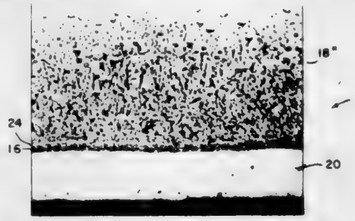
Process for producing cyanogen chloride by reacting in the liquid phase chlorine and hydrocyanic acid.

3,666,428

SILVER-CADMIUM OXIDE ELECTRICAL CONTACT MATERIALS

Frederick O. Haarbye, Indianapolis, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Continuation-in-part of appliccation Ser. No. 722,956, Apr. 22, 1968. This application Mar. 9, 1970, Ser. No. 17,456
Int. Cl. C22c *5/00*; H01h *1/02*
U.S. Cl. 29—195 8 Claims



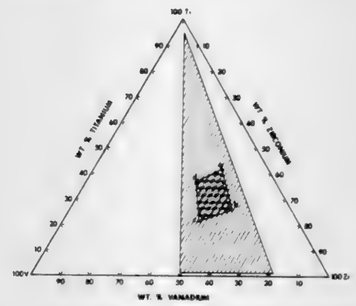
A silver layer is applied to silver-cadmium alloys by first oxidizing a portion of a silver-cadmium alloy, applying a bonding layer, and then the silver-cadmium alloy is completely oxidized.

3,666,429

METALLIZED AND BRAZED CERAMICS

Albert Evan Campbell, Jr., and Andrew O. Jensen, Arcadia, Calif., assignors to Xerox Corporation, Rochester, N.Y.

Continuation-in-part of application Ser. No. 646,186, June 15, 1967. This application Sept. 29, 1969, Ser. No. 861,976
Int. Cl. B32b *15/00*
U.S. Cl. 29—195 4 Claims



A process for metallizing high purity ceramic parts and/or brazing a high purity ceramic part to a refractory metal part or another ceramic part using a ternary titanium, vanadium, and zirconium alloy is described. A particularly efficacious alloy comprising 21–42% titanium, 15–33% vanadium and 36–54% zirconium yields hermetic seals when parts are bonded in accordance with the process described herein.

3,666,430

GELLED ORGANIC LIQUIDS

Desmond Wilfrid John Osmond, Windsor, and Frederick Andrew Waite, Slough, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed June 17, 1968, Ser. No. 737,395
Claims priority, application Great Britain, June 20, 1967, 28,446/67
Int. Cl. C10l *7/02*
U.S. Cl. 44—7 D 10 Claims

Gelled hydrocarbon liquid suitable for use as a fuel in internal combustion engines is made by incorporating in the liquid polymeric material which is solvated by the liquid and contains polar groups which form associative bonds and so produce a crosslinked polymer structure. The associative bonds can be broken and re-made without changing the nature of the polar groups and so the gelled liquid will flow on being subjected to mechanical treatment, such as pumping, and will revert to the gelled state on cessation or shortly after cessation of the mechanical treatment.

3,666,431

APPARATUS FOR ADVANCING GLASS FIBERS

Leo Alex Oswald, Huntingdon, Pa., assignor to Owens-Corning Fiberglas Corporation

Filed Nov. 10, 1969, Ser. No. 875,176
Int. Cl. C03b *37/00*
U.S. Cl. 65—11 W 12 Claims



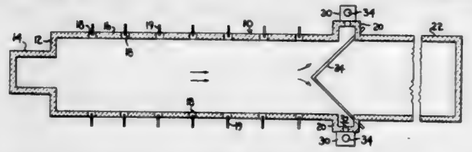
Apparatus for handling linear material such as a glass strand including a rotatably mounted member with spaced apart circumferentially disposed fingers on the member extending generally parallel to the member's axis of rotation and upon which the linear material collects as the member rotates.

3,666,432

PROCESS AND APPARATUS FOR SEPARATING FOAM FROM A MOLTEN BODY OF GLASS

Gerald E. Kunkle, New Kensington, Pa., and William E. Heidish, Huntsville, Ala., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 758,726, Sept. 10, 1968. This application Mar. 11, 1971, Ser. No. 123,297
Int. Cl. C03b *5/20*
U.S. Cl. 65—27 8 Claims



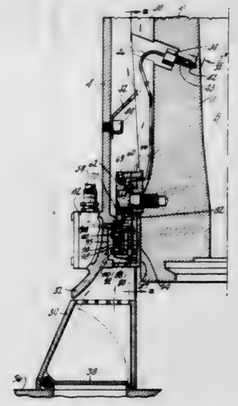
In melting high-temperature glass with volatile components such boron trioxide, there is used a furnace with a skimmer that comprises a water-cooled pipe in contact with the glass, the furnace also having means to withdraw the material retained behind the skimmer. The water-cooled pipe is positioned at an angle with respect to the side walls of the furnace; preferably two such pipes are used, such to form a V with its apex uptank, within the firing zone of the furnace. The invention provides an unobvious solution to a problem concerning the production of a sodium-boron glass for aircraft use.

3,666,433

MOLD HOLDER WITH THERMOSTATICALLY CONTROLLED MOLD

Hermann H. Nebelung, Binz-Maur, and Eginhard Jaeger, Weiningen, Switzerland, assignors to Emhart Corporation, Bloomfield, Conn.

Filed July 8, 1970, Ser. No. 53,172
Int. Cl. C03b *9/34*
U.S. Cl. 65—158 5 Claims



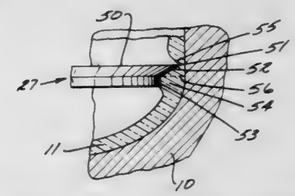
In a glassware forming machine of the Hartford I.S. type, a split blank mold is provided wtih a thermocouple type temperature sensor and the mold carries a lead-out wire and a plug part which mates with a complementary plug part and leadout wire on the mold holder to provide a signal for a control system. The plug parts not only locate one another during assembly, but also help locate the mold in the holder. The mold is air cooled and the control system includes a damper valve for controlling the flow of cooling air in response to the output of the thermocouple, and also in accordance with the closing movement of the mold holders.

3,666,434

GLASS SHAPING

Lester C. Minneman, Maumee, Ohio, assignor to Owens-Illinois, Inc.

Filed Nov. 30, 1967, Ser. No. 686,920
Int. Cl. C03b *33/10*
U.S. Cl. 65—177 2 Claims



An improvement in cathode-ray tube forming techniques wherein a glassworking tool, employed in conjunction

with a centrifugal casting operation, is provided with a glass plowing surface to facilitate the formation of a wide annular seal edge on the funnel member.

3,666,435
PHOSPHORYLATED HETEROCYCLIC COMPOUNDS AS HERBICIDES

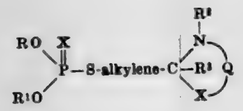
Glenn R. Price and Edward N. Walsh, Chicago Heights, Ill., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Dec. 28, 1964, Ser. No. 421,609, now Patent No. 3,580,922, dated May 25, 1971. Divided and this application Nov. 28, 1969, Ser. No. 879,948

Int. Cl. A01n 9/36

U.S. Cl. 71—87 6 Claims

Method of controlling plant life with phosphorylated heterocyclic compounds of the formula



wherein R and R' are lower alkyl; X is oxygen or sulfur; R^3 is H, lower alkyl; R^3 is H, alkyl of 1 to 3 carbon atoms; and Q is ethylene, propylene or phenylene.

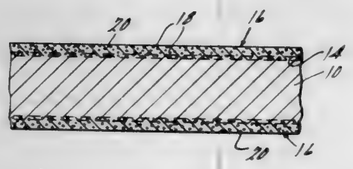
3,666,436
CERMET-TYPE ALLOY AND METHOD OF MAKING SAME

Nikolajs Bredzs, Detroit, and Forbes M. Miller, Dearborn, Mich., assignors to Wall Colmonoy Corporation

Application Feb. 19, 1969, Ser. No. 800,540, now Patent No. 3,547,673, dated Dec. 15, 1970, which is a continuation-in-part of application Ser. No. 646,654, June 16, 1967. Divided and this application July 7, 1969, Ser. No. 871,123

Int. Cl. B22f 9/00; C22c 1/10

U.S. Cl. 75—.5 R 10 Claims



An improved cermet-type alloy and method of making same which is particularly adaptable for forming protective surface coatings on heat-resistant alloys. A particulated mixture is formed containing titanium and/or zirconium reactive metal constituents that undergo an exothermic reaction upon fusion at an elevated temperature in a substantially inert atmosphere with silicon and/or boron present in the mixture forming the corresponding silicides or borides of the reacted metals in situ which are subsequently precipitated as a uniformly dispersed discontinuous phase in a continuous phase of a nickel and/or cobalt base matrix. The invention also encompasses novel powder compositions for exothermically forming the cermet-type alloys and coatings.

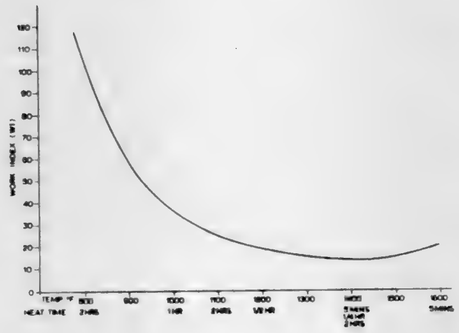
3,666,437
TREATMENT OF IRON-NICKEL-CHROMIUM ALLOY SCRAP TO FACILITATE RECOVERY OF METAL VALUES BY LEACHING

Ernest Mehl, Fort Saskatchewan, Alberta, Michael Kohut, Edmonton, Alberta, and Paul Kawulka, Fort Saskatchewan, Alberta, Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada

Filed Nov. 24, 1969, Ser. No. 879,302

Int. Cl. B22f 9/00; C22b 23/04

U.S. Cl. 75—.5 BA 8 Claims



Nickel, iron and chromium containing alloy scrap is treated to facilitate recovery of nickel and other contained non-ferrous metal values, such as cobalt and copper, by grinding and leaching. The alloy scrap is converted to a low-sulphur matte and then shotted. The shot is then heated in a neutral, oxidizing or reducing atmosphere at temperature in the range of 800° F. to 1700° F. for a period of time sufficient to substantially improve the grindability thereof. Preferably the heating is conducted at 1400° F. for 30 minutes.

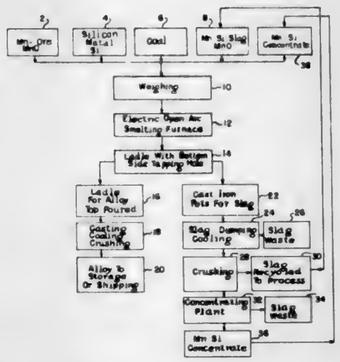
3,666,438
PROCESS FOR THE PRODUCTION OF MANGANESE-SILICON ALLOY

Ivo Madronic, Marietta, Ohio, and Akgun Mertdogan, Homewood, Ill., assignors to Interlake, Inc., Chicago, Ill.

Filed Nov. 16, 1970, Ser. No. 89,904

Int. Cl. C22d 7/06

U.S. Cl. 75—10 9 Claims



A process for the production of a manganese-silicide alloy having a low carbon content including smelting manganese ore, silicon metal and a manganese-silicon slag in an electric furnace with sufficient carbonaceous reductant to provide a melt of manganese-silicide allow and a throw-away slag, introducing the melt into a ladle, and then separately removing the alloy and throw-away slag from the ladle. The carbon is used as an exclusive reducing agent and the silicon is used only for alloying purposes. In the invention, the throw-away slag contains manganese values and is recycled, thus making possible the direct use of manganese ore as the manganese bearing material.

3,666,439
METHOD OF DECARBURIZING ALLOY STEELS

Sundaresan Ramachandran, Natrona Heights, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Mar. 2, 1970, Ser. No. 15,914

Int. Cl. C21c 7/10, 5/32, 5/34

U.S. Cl. 75—49 7 Claims

A control method for decarburizing alloy steels such as stainless steel initiated with a reduced flow of diluent gas such as argon. The composition of the effluent gases issuing from the decarburization vessel are monitored to provide an indication of the undesirable oxidation of certain metallic values within the bath being decarburized, such as chromium. The method includes maximizing the flow and thus, the conversion of oxidizer to carbon monoxide and minimizing the flow of the diluent gas in order to promote economy of operation. The concept contemplates increase in the flow of diluent gas upon the observance of excessive oxidation of metallics to promote the maximum oxidation in the carbon within the bath.

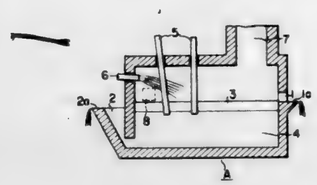
3,666,440
METHOD OF RECOVERING COPPER FROM SLAG

Hiroshi Kono, Kagawa-gun, and Takeyoshi Shibazaki, Urawa, Japan, assignors to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Mar. 13, 1970, Ser. No. 19,260

Int. Cl. C22b 9/10, 15/14

U.S. Cl. 75—76 5 Claims



Copper is recovered from copper-containing slag by putting the matte and slag in a molten state together in a slag treating furnace at a volume ratio of more than 1:5, the melts in the furnace being maintained under agitation so that the slag and matte are in intimate contact so as to efficiently transfer copper from the slag to the matte.

3,666,441
PROCESS FOR DECOPPERIZING LEAD

Geoffrey Milner, Stockton-on-Tees, England, assignor to The Power-Gas Corporation Limited, Teesside, England

Continuation-in-part of application Ser. No. 433,651, Feb. 18, 1965. This application Nov. 8, 1968, Ser. No. 774,300

Int. Cl. C22b 13/06

U.S. Cl. 75—78 12 Claims

Decopperizing lead bullion, particularly lead bullion containing more than 2% copper, by adding to the molten lead bullion a sulfur containing compound sufficient to react with the copper to produce cuprous sulfide, allowing the reaction mixture to settle into a first lower layer of molten lead bullion of reduced copper content and an an upper layer of matte containing cuprous sulfide and lead sulfide. Thereafter, the molten lead bullion is isolated and cooled to form a further upper layer of matte containing cuprous sulfide and lead sulfide and a further lower layer of molten lead bullion of further reduced copper content and the latter is then isolated.

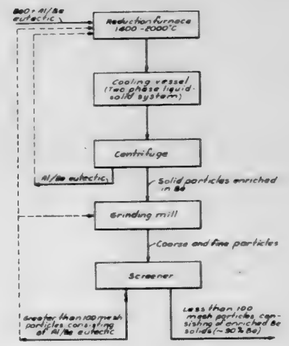
3,666,442
PREPARATION OF BERYLLIUM

Gilbert S. Layne and James O. Huml, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 26, 1968, Ser. No. 779,106

Int. Cl. B03b 9/04; C22b 7/00

U.S. Cl. 75—84 10 Claims



A method for preparing a beryllium enriched material which comprises: comminuting an aluminum-beryllium alloy to obtain a coarse particulate fraction of an aluminum-beryllium eutectic composition and a fine particulate fraction comprising beryllium; and separating the coarse particulate fraction from the fine particulate fraction.

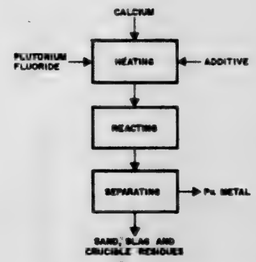
3,666,443
PLUTONIUM PRODUCTION

William V. Conner, Nederland, Colo., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 5, 1969, Ser. No. 874,190

Int. Cl. C22b 61/04

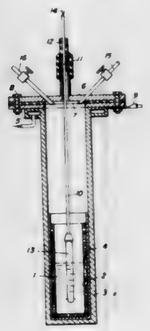
U.S. Cl. 75—84.1 1 Claim



The process for the reduction of plutonium fluorides to plutonium metal comprising heating to the reaction temperature a mixture of plutonium fluorides and calcium

metal together with an additive selected from the group consisting of magnesium fluoride and calcium chloride, allowing the mixture to react to form a plutonium metal button, and physically separating the plutonium metal button from the reaction slag.

3,666,444
ELECTROWINNING OF BERYLLIUM
Morton M. Wong, Reno, Nev., assignor to the United States of America as represented by the Secretary of the Interior
Filed Dec. 5, 1968, Ser. No. 781,445
Int. Cl. C22b *35/00*; C22d *3/10*
U.S. Cl. 75—84.4 11 Claims



A method of electrowinning beryllium from a fused salt electrolyte containing beryllium fluoride comprising electrolyzing at a temperature below the melting point of the beryllium, followed by heating a mixture of the fused salt and beryllium metal to a temperature above the melting point of beryllium to coalesce the beryllium. The beryllium metal finds utility in a variety of applications where high melting temperature, light weight, high strength, good thermal conductivity, low thermal neutron absorption cross section, and high scattering cross section are required, e.g., in space vehicles and nuclear reactors.

3,666,445
AUXILIARY COMPOSITION FOR STEEL-MAKING FURNACES
Joseph K. Stone and Peter J. Beck, Berkeley, and Edward J. Prince, Oakland, Calif., assignors to Kaiser Industries Corporation, Oakland, Calif.
No Drawing. Original application Dec. 26, 1967, Ser. No. 693,123, now Patent No. 3,579,325, dated May 18, 1971. Divided and this application July 13, 1970, Ser. No. 61,038
Int. Cl. C21c *7/00*
U.S. Cl. 75—94 10 Claims

A composition for charging to a metallurgical furnace, such as an oxygen steel furnace which is a heat- and flux-producing agent consisting essentially of a granular admixture of from 5% to 95% calcium carbide and from 95% to 5% silicon carbide. Both components provide fuel to enable the use of higher amounts of scrap metal; and in one embodiment the silicon carbide and calcium carbide are admixed in a ratio to give an eventual slag of suitable lime-silica ratio. The admixture of silicon carbide and calcium carbide is advantageously admixed with a minor amount of a hydrocarbon bonding agent which is at least semi-solid at ordinary room temperatures, such as tar or pitch, and formed into compacts, e.g. pellets or briquettes. Powdered aluminum metal can also be incorporated.

3,666,446
PROCESS FOR SOLVENT EXTRACTION OF METALS
Lorne F. Cook, Hockessin, and Wallace W. Szmokaluk, New Castle, Del., assignors to The Pyrites Company, Inc., Wilmington, Del.
Filed Nov. 12, 1969, Ser. No. 875,676
Int. Cl. C22b *23/04, 15/00*
U.S. Cl. 75—101 BE 13 Claims

Solvent ion exchange reaction in which the pH of the metal-bearing liquor is regulated by an ion exchange reaction where hydrogen ions in the aqueous liquor are exchanged for metal cations in an ion extractant. Process enables loading an ion extractant with metals in the metal-bearing liquor without interstage pH adjustment. The loaded ion extractant is treated with a ligand to strip the extractant and render it capable of reuse.

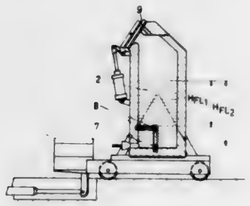
3,666,447
REMOVAL AND RECOVERY OF COPPER FROM SUBSTANTIALLY CYANIDE-FREE ALKALINE WASTE SOLUTIONS
Edward B. Saubestre, Hamden, Conn., assignor to Enthone, Incorporated, New Haven, Conn.
No Drawing. Filed Mar. 25, 1970, Ser. No. 22,679
Int. Cl. C22b *15/12*
U.S. Cl. 75—108 1 Claim

Process for the removal of substantially all copper from a substantially cyanide-free alkaline waste solution containing ionic copper, a reducing agent, for example formaldehyde, for the ionic copper which is added to the solution if not already present therein, and usually a complexing agent for the ionic copper. The process also provides for the recovery of marketable zero valent metallic copper. The alkaline waste solution is contacted with a material or metal catalytic to the reduction of the ionic copper by the reducing agent to zero valent metallic copper, and the catalytic contacting continued until the desired amount of copper is precipitated as zero valent metallic copper. The metallic copper precipitate is then separated, for instance by filtration, from the solution. Exemplary of the catalytic metals for use in catalyzing the reduction of the ionic copper to zero valent metallic copper are palladium, platinum, gold and silver.

3,666,448
COPPER/IRON/ALUMINIUM ALLOYS
Robert James Goodwin, Hadleigh, and Geoffrey Greetham, Ipswich, England, assignors to National Research Development Corporation, London, England
No Drawing. Filed Nov. 3, 1969, Ser. No. 873,632
Claims priority, application Great Britain, Nov. 5, 1968, 52,338/68
Int. Cl. C22c *9/06, 39/02*
U.S. Cl. 75—122 5 Claims

Copper/iron/aluminium alloys of the basic composition (weight percentage) 35 to 75 copper, 20 to 50 iron and 5 to 15 aluminium and comprising a matrix of a copper-rich solid solution phase which contains a dispersed iron-rich solid solution phase, have at least one alloy element additionally present to ennoble the iron-rich phase and/or to provide an adherent protective film on the iron-rich phase. Additions selected from the group nickel, chromium, tungsten, molybdenum and cobalt, are more likely to act as ennobling elements and those selected from the group titanium, niobium, tantalum, zirconium and silicon, are more likely to be film-forming agents. Preferably not more than about 15 percent of each additive element is present. In the case of nickel, the range of 3 to 12 (weight) percent is preferred and in the case of chromium, 3 to 9 (weight) percent is preferred.

3,666,449
METHOD FOR THE INTRODUCTION OF VOLATILE ADDITIVES INTO A MELT
Anton Alt, Mettmann, Germany, assignor to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland
Filed Jan. 22, 1969, Ser. No. 793,065
Claims priority, application Switzerland, Jan. 26, 1968, 1,274/68; Dec. 3, 1968, 17,961/68
Int. Cl. C21c *1/08, 1/10, 7/02*
U.S. Cl. 75—130 B 12 Claims

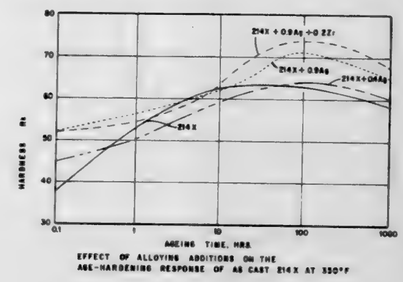


Introduction of vaporizable additives, such as magnesium, into an iron melt in which the vaporization is initiated by a tilting movement of a treatment vessel. The vaporizable material is contained in a separate compartment which can be externally charged and which, in one position of the vessel segregates the additive from the melt, but on tilting the vessel, permits communication with the melt through openings located at different levels. The vapor bubbles formed ascend through the melt with such a size and in such a number that at least a portion of the bubbles escape from the surface of the melt. The vapor bubbles have a great surface area to provide, for example with magnesium, a yield of at least 30% and preferably more than 40% of the additive in the melt while the velocity of the ascending vapor bubbles is such as to produce a flushing action on the melt resulting in a reduction of the reaction products and residual undesirable impurities in the melt.

3,666,450
PHOTOCONDUCTIVE TERNARY ALLOY OF CADMIUM, SELENIUM AND MERCURY
Tadao Nakamura, Shigeaki Nakamura, and Tadao Kohnashi, Osaka, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan
Filed Mar. 10, 1970, Ser. No. 18,248
Claims priority, application Japan, Mar. 14, 1969, 44/21,073
Int. Cl. C22c *7/00, 17/00*
U.S. Cl. 75—134 H 8 Claims

A novel photoconductive crystalline ternary alloy prepared from a host material containing cadmium, selenium and mercury and doped with an activator and coactivator, said host material being fired at least once until the crystallization thereof is complete and a photosensitivity peaking up in the infrared spectral range is attained. The activator is selected from any of *Ib* group elements consisting of copper and silver, and the coactivator is selected from any of VII*b* group elements consisting of chlorine, bromine and iodine or from any of III*b* group elements consisting of aluminum, gallium and indium.

3,666,451
ALUMINUM ALLOY
Henry Dale Bewley, Paducah, Ky., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed Aug. 13, 1970, Ser. No. 63,457
Int. Cl. C22c *21/02*
U.S. Cl. 75—147 2 Claims



EFFECT OF ALLOYING ADDITIONS ON THE AGE-HARDENING RESPONSE OF AS CAST 214 X AT 330°F

A castable, age-hardenable, aluminum-base alloy consisting essentially of, in weight percent, 3.0 to 4.5 magnesium, 0.6 to 1.8 silicon, 0.4 to 1.5 silver, 0 to 0.5 zirconium, and the balance aluminum.

3,666,452
HIGH-STRENGTH LOW-ALLOY STEELS
Michael Korchynsky, John David Grozier, and John L. Mihelich, Bethel Park, John R. Bell, Scott Township, Allegheny County, and Leon Luyckx, Peters Township, Washington County, Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
No Drawing. Filed July 16, 1969, Ser. No. 842,345
Int. Cl. C22c *39/50, 39/54*; C21d *7/14*
U.S. Cl. 75—123 E 6 Claims

Fully killed high-strength low-alloy steels consisting essentially of .12% to .20% carbon, 1.10% to 1.65% manganese, .05% to .20% vanadium, .005% to .025% nitrogen, .04% maximum phosphorus, .025% maximum sulfur, .60% maximum silicon and balance iron are characterized in a hot-rolled finished condition by yield strengths in excess of 80,000 p.s.i., ultimate tensile strengths in excess of 95,000 p.s.i., ductilities as measured by percent elongation (2 inches) in excess of 18% and good toughness. The steels are hot-rolled finished in the temperature range 1550° F. to 1650° F., cooled at a rate within the range 20° F. to 135° F. per second and collected by coiling or piling within a temperature range of 1025° F. to 1175° F. The steels modified by the incorporation of .01% to .10% of a rare earth are further characterized by improved formability.

3,666,453
TITANIUM-BASE ALLOYS
Richard Ernest Goosey, Aldridge, England, assignor to Imperial Metal Industries (Kynoch) Limited, Birmingham, England
No Drawing. Filed Sept. 11, 1970, Ser. No. 71,331
Claims priority, application Great Britain, Sept. 24, 1969, 47,049/69
Int. Cl. C22c *15/00*
U.S. Cl. 75—175.5 9 Claims

Creep resistant titanium alloys containing aluminium, zirconium, tin, silicon, hafnium and optionally molybdenum and beta stabilisers.

3,666,454
METHOD OF MAKING LARGE SINTERED POWDERED METAL PARTS WITHOUT DIES
Myron C. Sarnes, Northville, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.
Filed Dec. 4, 1970, Ser. No. 95,266
Int. Cl. B22f 3/10
U.S. Cl. 75—200 3 Claims

A container of infiltratable metal, such as brass or copper, and of the approximate shape desired for the finished part, is stamped or otherwise formed, filled with the metal powder of which the part is to be made, placed in a sintering oven and sintered. During sintering, the container holds the particles of the powder together until they coalesce, whereupon the continued application of heat causes the container to melt and the metal of which it is composed to flow into the interstices between the powdered metal parrticles, thereby infiltrating the part. The part can then be further densified, if desired, by forging, and teeth formed.

3,666,455
PROCESS FOR PRODUCING ANISOTROPIC GRAPHITE-METAL COMPOSITES
Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Original application Mar. 22, 1965, Ser. No. 441,905, now Patent No. 3,492,197, dated Jan. 27, 1970. Divided and this application Nov. 12, 1968, Ser. No. 775,107
Int. Cl. B22f 7/00
U.S. Cl. 75—201 5 Claims

An anisotropic graphite-metal composite of vermicular expanded graphite containing from 5 to 75 weight percent, based on the total weight of the composite, of a metal powder having a particle size less than 100 mesh and compressed to a density of 10 to 120 pounds per cubic foot. Such composites are prepared by admixing vermicular expanded graphite with from 5 to 75 weight percent of silver, copper, nickel, zinc, lead, silicon, iron or boron having a particle size of less than 100 mesh and compressing the mixture to a density of from 10 to 120 pounds per cubic foot. To achieve additional strength the compressed composite is heated to sinter the metal powder.

3,666,456
METHOD OF MAKING COMPOSITE WEAR RESISTANT ARTICLES, SUCH AS FACE SEALS
John Haller, Northville, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.
Original application Aug. 4, 1969, Ser. No. 847,183, now Patent No. 3,594,011. Divided and this application Sept. 14, 1970, Ser. No. 71,899
Int. Cl. B22f 5/00
U.S. Cl. 75—208 5 Claims

A shallow groove in the flange of an annular radially-flanged briquette of powdered base metal, such as powdered iron, is filled with powder of a wear-resistant metal alloy of high retentive hardness, and this assembly heated to a sufficiently high temperature to simultaneously sinter the base metal briquette and melt the superalloy type powder, which thereupon bonds itself with the iron. The periphery of this composite body is then ground away to expose the superalloy type metal alloy and then finish-machined on its annular face to grind away the edges of the groove and reduce them to the level of the surrounding base metal, a slight inward taper being preferably imparted to the inner part of the hard metal portion.

In a modification, a separate annular briquette of metal alloy powder of wear-resistant high-retentive hardness is prepared in a size adapted to mate with the groove of the base metal briquette and inserted therein. Thereupon the base metal briquette and the hard metal insert are simultaneously heated to sinter the iron powder briquette and melt the hard metal alloy so that it bonds itself to the sintered powdered iron base metal. The resulting annular blank is then machined by grinding as in the principal form of the invention.

3,666,457
PHOTOGRAPHIC PRODUCT, COMPOSITION AND PROCESS
Mary J. Youngquist, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Oct. 2, 1969, Ser. No. 863,361
Int. Cl. G03c 1/42, 5/54
U.S. Cl. 96—29 R 18 Claims

A combination of a reductone silver halide developing agent such as an anhydro dihydro amino reductone silver halide developing agent, with an aminomethyl hydroquinone silver halide developing agent, such as 2-methyl-5-morpholinomethyl hydroquinone or 2-methyl-5-piperidinomethyl hydroquinone, in a photographic diffusion transfer system provides reduced stain as well as desired sensitometric properties at reduced concentration levels. This combination is especially useful in a black and white silver salt diffusion transfer system. A combination wherein the described aminomethyl hydroquinone silver halide developing agent is employed in a photographic element and the described reductone silver halide developing agent is employed in a processing composition used for developing a latent image in a diffusion transfer system is especially suitable. The described combination of developing agents can be used in combination with other photographic developing agents, such as cinnamic acid developing agents, lactone developing agents or developing agent precursors, such as coumarin developing agents or developing agent precursors, and/or pyrimidine developing agents.

3,666,458
PROCESS FOR TRANSFERRING ELECTROSTATIC CHARGE IMAGES
Reinhold Arneth, Budenheim, Hans Trittler, Wiesbaden-Schierstein, and Jurgen Emig, Mainz-Gonsenheim, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
Filed Nov. 24, 1969, Ser. No. 879,463
Claims priority, application Germany, Nov. 25, 1968, P 18 10 757.8
Int. Cl. G03g 13/18
U.S. Cl. 96—1 3 Claims

This invention relates to a process for the electrophotographic production of copies by transferring an electrostatic charge image from a photoconductor layer on a conductive support onto a dielectric layer on a conductive support, the dielectric layer being in virtual contact with the photoconductor layer, separating the layers from each other, developing the transferred latent charge image by electrophotographic dry or liquid development, and then fixing the same if desired, the photoconductor layer comprising organic charge transfer complexes and being capable, in a thickness of 8 to 15μ, of being charged to 800 to 1,600 volts and the exposed layer having a voltage of at least about 500 volts in the image areas and not more than about 300 volts in the non-image areas.

3,666,459
ELECTROPHOTOGRAPHIC PHOTOCONDUCTIVE COMPOSITION CONTAINING A STYRENE TERPOLYMER BINDER AND A CHARGE-ENHANCING ADDITIVE
Felix P. Liberti, Totowa Borough, and Stanley Field, Piscataway, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.
No Drawing. Filed Oct. 8, 1970, Ser. No. 79,257
Int. Cl. G03g 5/08
U.S. Cl. 96—1.8 10 Claims

Improved electrophotoconductive coating compositions for application to solid substrates which are to be utilized in electrophotographic operations are described; said coating compositions employing certain styrene terpolymers and a chlorinated biphenyl charge-enhancing additive.

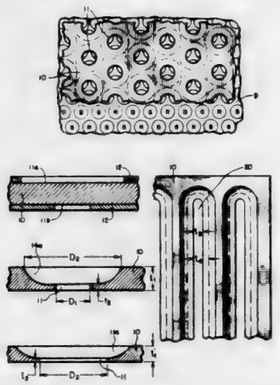
3,666,460
DIFFUSION TRANSFER ARTICLE AND PROCESS USING HUMECTANT IN EMULSION LAYER
Leonard C. Farney, Melrose, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
No Drawing. Filed Jan. 11, 1966, Ser. No. 526,673
Int. Cl. G03c 5/54
U.S. Cl. 96—29 14 Claims

Photographic products for use in diffusion transfer processes including a light-sensitive silver halide emulsion layer and wherein the emulsion layer further includes a photographically innocuous humectant in an amount sufficient to lower materially the processing time for forming the transfer image.

3,666,461
POLYMERIC MASTER PLATE AND METHOD
Clifton L. Kehr, Silver Spring, and Walter R. Wszolek, Sykesville, Md., and Frank X. Weber, Ridgewood, N.J., assignors to W. R. Grace & Co., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 674,773, Oct. 12, 1967. This application Dec. 10, 1969, Ser. No. 883,998
The portion of the term of the patent subsequent to Oct. 19, 1989, has been disclaimed
Int. Cl. G03c 5/00, 1/68
U.S. Cl. 96—35.1 2 Claims

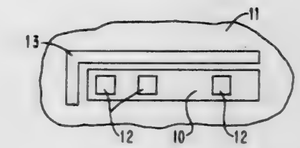
The invention disclosed is for a method of preparing a polymeric master plate having high physical strength and hardness characteristics by using a photocurable composition formed of a particular polyene complex containing at least two -ene or -yne functionality groups per molecule; and a polythiol. The polymeric master plate is prepared by selectively insolubilizing portions of the photocurable composition by exposure to actinic radiation after which uncured portions of the composition are removed from the insolubilized portions to provide ultimately a master plate useful for duplicating printing plates. A new, efficient method for preparing printing plates using the present polymeric master plate is also disclosed.

3,666,462
PROCESS OF SCREENING A SHADOW MASK COLOR TUBE
Sam H. Kaplan, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Mar. 28, 1969, Ser. No. 811,318
Int. Cl. G03c 5/00; H01j 9/14, 9/22
U.S. Cl. 96—36.1 3 Claims



The shadow mask of a shadow mask type of color picture tube is a sheet of steel of a particular thickness that is selectively etched to define a rectangular field of apertures. Each aperture has a diameter exceeding the thickness of the blank and is surrounded by an elemental area that is partially etched to constitute a recessed or reduced-thickness portion of the blank, concentric with the aperture. The tube is screened with phosphors deposited by means of a photographic process, involving the exposure of a layer of photosensitive material by actinic energy directed to the screen through the field of apertures. Thereafter, the mask is re-etched, removing a portion of the recessed elemental area to enlarge the mask apertures to a desired size relative to that of the phosphor deposits.

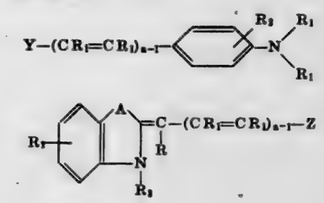
3,666,463
MASK OVERLAY COMPARISON
David S. Beynnon, Burlington, and Bruce D. King, South Burlington, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed July 6, 1970, Ser. No. 52,227
Int. Cl. G03c 5/04, 5/06
U.S. Cl. 96—41 12 Claims



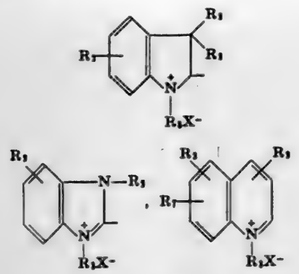
Patterns in a plurality of masks each having opaque and transparent regions are compared without altering the pattern of opaque and transparent regions in the masks. A photosensitive medium capable of indicating a different exposure condition for each mask is used for this purpose. The masks are superimposed sequentially over the photosensitive medium, and a different exposure condition is used to expose the photosensitive medium through each mask. A different amount of energy of exposure may be used for each mask or a different color of light may be used with each mask if a color sensitive photosensitive medium is employed.

3,666,464
DYE-SENSITIZED PHOTOSENSITIVE MATERIALS HAVING IMPROVED PHOTOGRAPHIC SPEED
Juergen H. H. Keller and Robert Hicks Sprague, Chelmsford, Mass., assignors to Itek Corporation, Lexington, Mass.
No Drawing. Filed Apr. 26, 1967, Ser. No. 633,689
Int. Cl. G03g 5/00; G03c 5/24, 1/00
U.S. Cl. 96—48 24 Claims

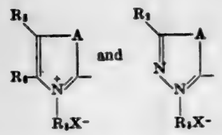
Reproduction systems having improved photographic exposure speed are achieved wherein certain classes of cyanine and hemicyanine dyes are added to photosensitive photoconductor materials comprising titanium dioxide which, when activated, are capable of producing chemical reaction when in contact with image-forming material to produce a visible image. These classes of cyanine and hemicyanine dyes are described by the following generic structural formulas:



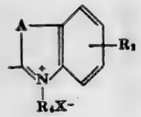
and wherein Y is selected from any of the group consisting of:



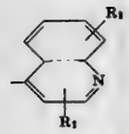
and



and Z is selected from any of the group consisting of:



and



R may be an —H or a —C≡N group; R_1 may be hydrogen, alkyl, aralkyl, aryl, and alkaryl groups and wherein any R_1 on a given molecule may be the same or different as any other R_1 on this molecule; R_2 may be hydrogen, alkyl, aralkyl, aryl, alkaryl, alkoxy, and



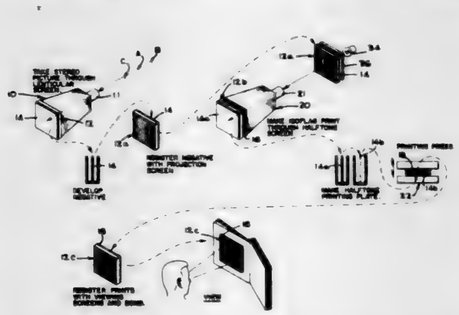
wherein R_1 is as above described and wherein any R_2 on a given molecule may be the same or different as any other R_2 on this molecule; R_3 and R_4 may be hydrogen, an alkyl, aralkyl, or an alkanol group and may be the same or different, or R_3 and R_4 may form part of the same alkylene, aralkylene, alkalkylene, or hydroxy substituted alkylene group; R_5 and R_6 may be hydrogen, alkyl, aralkyl, aryl or alkaryl groups and wherein R_5 or R_6 may be the same or different than any other R_5 or R_6 group on the same molecule and wherein R_5 or R_6 may form part of the same ring structure when on adjacent carbon atoms and as such same ring structure may form cycloalkylene or aryl groups, or substituted cycloalkylene or aryl groups; R_7 is an —OR_1 or



group and at least one R_7 group must be present; X is a monovalent acid radical, and preferably a halide group such as fluoride, chloride, or iodide group; A is a sulphur (S) or a selenium (Se) group; and *a* is a positive integer selected from the group consisting of 1, 2, 3, 4 and 5.

Improved processes using this improved photographic material comprise selectively exposing the above-described reproduction system to activating radiation. Image-forming material can be present on the substrate at the time of exposure to give a direct readout or only part of the image-forming material such as an oxidizing agent such as silver nitrate may be present on the substrate at the time of exposure, with the additional component of the image-forming material being added after exposure such as by contacting with a reducing agent such as Metol. On the other hand, it is possible to apply all of the image-forming material at a time subsequent to exposure to form a visible image. Titanium dioxide having a particle size less than about 250 millimicrons and which has been heated at a temperature between about 200° C. to about 950° C. is the preferred photosensitive material.

3,666,465
HALF TONE REPRODUCTION OF STEREOSCOPIC PHOTOGRAPHS
Douglas F. Winnek, Palo Alto, Calif.
(10450 W. Loyola Drive, Los Altos Hills, Calif. 94022)
Filed Oct. 19, 1967, Ser. No. 676,484
Int. Cl. G03f 5/00; G03c 9/00
U.S. Cl. 96—45 **8 Claims**



A printing plate film for printing stereoscopic pictures to be viewed through a vertical lenticular screen is produced by taking a stereoscopic camera negative through a small aperture lens with a screen in front of the film. The scene is scanned across the interpupilary angle with a mechanical scanning camera. A projection lenticular screen is placed in front of the camera negative and the latter is printed through a grid type halftone screen in front of a printing lenticular screen and the sensitive plate film. A mechanical scanning printer having a small aperture lens produces "isoflags" on the printing plate film. The height of the isoflags at any point is proportional to the brightness of the corresponding original image; and the plate is prepared from the plate film for printing the isoflags by any conventional printing method, such as letter press, gravure, lithography, etc. screen to re-establish the original scene as a three dimensional picture.

A method is also described wherein wide lens taking and projection cameras are employed.

3,666,466
DEACTIVATING DUAL RESPONSE PHOTOSENSITIVE COMPOSITIONS WITH VISIBLE AND ULTRAVIOLET LIGHT
Peter S. Strilko, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Nov. 26, 1969, Ser. No. 880,388
Int. Cl. G03c 5/24
U.S. Cl. 96—48 **3 Claims**

Method for deactivating a photosensitive composition, which composition is characterized by forming color on

irradiation with ultraviolet light and being deactivated against color formation on irradiation with light of longer wavelengths, e.g., visible light radiation. The method comprises exposing the surface of the photosensitive composition to be deactivated to both ultraviolet and visible light radiation, with the intensity of the ultraviolet radiation being an amount up to the maximum amount said surface of the composition can absorb without undergoing substantial color formation, the intensity of the visible light radiation being effective for deactivation, whereby the resistance of the composition to color formation on subsequent exposure to ultraviolet light is either increased or the time required to achieve a particular degree of such resistance is decreased.

3,666,467
PHOTOGRAPHIC ELEMENT
Kenneth Reynolds and Thomas David Grinter Hellings, Pinnacles, Harlow, Essex, England, assignors to Minnesota Mining and Manufacturing Company
No Drawing. Filed July 23, 1969, Ser. No. 844,182
Int. Cl. G03c 1/52, 1/64
U.S. Cl. 96—49 **11 Claims**

A photographic element having a photosensitive layer comprising, in reactive association, at least one photolytic diazonium salt and at least one palladium compound which is reducible to palladium metal by a photolysis product of said salt, the palladium metal being catalytic to the electrolytic deposition thereon of a base metal.

3,666,468
PROCESS OF COLOR PHOTOGRAPHIC PRINTING PAPER
Hiroyuki Amano and Kazuo Shirasu, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara-machi, Kanagawa, Japan
No Drawing. Filed Mar. 19, 1970, Ser. No. 21,184
Claims priority, application Japan, Mar. 19, 1969, 44/21,054
Int. Cl. G03c 5/38, 7/00, 7/16
U.S. Cl. 96—56 **12 Claims**

A stabilization composition for use in processing photographic printing papers, comprising a water-soluble aluminum salt, a polycarboxylic acid or a salt thereof, and benzoic acid or a salt thereof, is disclosed.

3,666,469
PHOTOGRAPHIC PROCESSES AND PRODUCTS USING 4,8-DIAMINO SUBSTITUTED 1,5-NAPHTHOQUINONE DYE DEVELOPERS
Stanley M. Bloom, Waban, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
No Drawing. Filed Oct. 27, 1967, Ser. No. 678,547
Int. Cl. G03c 5/30
U.S. Cl. 96—66 **11 Claims**

Novel naphthoquinone dye developers (naphthoquinone dyes which are also silver halide developing agents) and to photographic systems employing the same.

3,666,470
PHOTOGRAPHIC PRINTING ELEMENT CONTAINING FLUORESCENT DYE
Nobuo Tsuji, Tatsuya Tajima, Takushi Miyazako, Yoshinori Tsuchiya, and Fumihiko Nishio, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan
Filed July 3, 1969, Ser. No. 838,812
Claims priority, application Japan, July 4, 1968, 43/46,708
Int. Cl. G03c 1/92
U.S. Cl. 96—82 **9 Claims**

A photographic printing element containing a water-soluble fluorescent whitening dye and a water-soluble polymer of an N-vinylamide compound.

3,666,471
SILVER HALIDE PHOTOGRAPHIC SENSITIZED PAPER PRODUCING BLACK OR BLUE BLACK IMAGE
Yasushi Ohyama, Takatsuki-shi, and Kiyoshi Futaki, Senji Tosa, Yoshikazu Horiuchi, and Akira Takemura, Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan
No Drawing. Filed Oct. 29, 1969, Ser. No. 872,376
Claims priority, application Japan, Nov. 1, 1968, 43/79,276
Int. Cl. G03c 1/86, 5/46, 7/00
U.S. Cl. 96—85 **9 Claims**

A silver halide photographic sensitized paper producing black or blue black image tone after development and which is endurable against hot-glazing, can be obtained by adding a selected combination of the two sorts of blue-black toners (designated as compounds A and B) in the emulsion layer or in layers adjacent thereto. Compounds A comprise some derivatives of N-alkyl-benzoxazoline-2-thiones, N-alkyl-benzothiazoline-2-thiones, N,N'-dialkyl-benzimidazoline-2-thiones and N-alkyl-1,2-dihydro-quinoline-2-thiones, and compounds B comprise 3-alkyl, aryl or aralkyl derivatives of 4-acylamido - 1,2,4 - triazoline-5-thiones.

3,666,472
MAGNETIC PHOTO-ELECTROPHORETIC IMAGING COMPOSITION
Henry R. Till and Percy K. Watson, Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Oct. 3, 1968, Ser. No. 764,716
Int. Cl. G03c 1/00; B01k 5/00; G03g 5/00
U.S. Cl. 96—88 **3 Claims**

The subject matter of this application pertains to an electrophoretic imaging system wherein the color quality and image contrast are improved by imparting motion to the imaging suspension before or during the imaging cycle.

Motion may be imparted by applying a magnetic field to an imaging suspension containing magnetic particles. The magnetic composition is also described.

3,666,473
POSITIVE PHOTORESISTS FOR PROJECTION EXPOSURE
Lucas A. Colom, Bloomingberg, and Harold A. Levine, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
No Drawing. Filed Oct. 6, 1970, Ser. No. 78,610
Int. Cl. G03c 1/52, 1/60
U.S. Cl. 96—91 D **7 Claims**

A fast positive photoresist composition employs a mixture of phenol-formaldehyde novolak and resole resins, each having a particular molecular weight distribution as determined by their solubilities in aqueous alkaline solution, together with a conventional diazoketone type of photosensitizer.

3,666,474
SOLVENT SOLUBLE DIAZONIUM METAL SALTS AND DIAZOTYPE MATERIAL THEREFOR
Ralph G. D. Moore, Chenango Forks, N.Y., assignor to GAF Corporation, New York, N.Y.
No Drawing. Filed Sept. 11, 1968, Ser. No. 759,195
Int. Cl. G03c 1/54, 113/04
U.S. Cl. 96—91 9 Claims
Light sensitive diazonium hexafluoroarsenate and hexafluoroantimonate salts which are employed in the preparation of diazo formulations for the sensitization of base materials.

3,666,475
PHOTOGRAPHIC MATERIALS
David Ramsay Douglas, Ilford, England, assignor to Ilford Limited, Ilford, Essex, England
No Drawing. Continuation-in-part of application Ser. No. 575,518, Aug. 29, 1966. This application Apr. 28, 1970, Ser. No. 32,781
Claims priority, application Great Britain, Sept. 1, 1965, 37,360/65
Int. Cl. G03c 1/34, 1/04
U.S. Cl. 96—109 2 Claims
A photographic gelatino silver chlorobromide emulsion containing from 0.2 to 3 grams, per gram mole of silver in the emulsion, of a polyethylene oxide which has terminal end groups selected from the class consisting of hydrogen and halogen atoms, carboxyl, amino and carbamoyl groups, higher fatty alcohol residues, saturated higher fatty acid residues and alkyl phenol residues, and from 0.5 to 15 grams of wtaer-soluble hydrolysed polyvinyl acetate having a molecular weight from 5000 to 30,000 and whose residual acetate content is at least 35%.

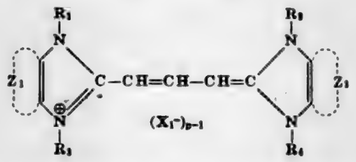
3,666,476
THIO-SUBSTITUTED[2.2.1]BICYCLIC COMPOUNDS AS ANTIFOGGANTS FOR SILVER HALIDE EMULSIONS
John Robert Dann and William Frank Fowler, Jr., Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Nov. 28, 1969, Ser. No. 880,895
Int. Cl. G03c 1/34
U.S. Cl. 96—109 35 Claims
Photographic compositions containing thio-substituted polycyclic compounds. In one aspect, the thio-substituted compounds containing a thio-substituted [2.2.1] bicyclic moiety are good antifoggants in photographic silver halide compositions.

3,666,477
ELEMENT, COMPOSITION AND PROCESS
Charles A. Goffe, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed June 3, 1970, Ser. No. 43,174
Int. Cl. G03c 1/02
U.S. Cl. 96—114.1 22 Claims
An alkylene oxide polymer, such as polyethylene glycol oleyl ether, and/or a mercaptotetrazole derivative, such as 1-phenyl-5-mercaptotetrazole, in combination with a gelatino silver halide emulsion, a heavy metal salt oxidizing agent and a reducing agent, such as a bis-naphthol reducing agent, in a photosensitive and thermosensitive element suitable for dry processing with heat, provides increased photosensitivity. A combination of a bis-β-naphthol reducing agent, a gelatino silver halide emulsion, an alkylene oxide polymer and/or a mercaptotetrazole derivative in conjunction with a stable source of silver for physical development is useful in photosensitive elements for dry processing with heat. The element can contain a sensitizing dye and an activator-toning agent. A stable developed image is provided by heating the element. Other suitable photosensitive metal salts can be used in the photosensitive element.

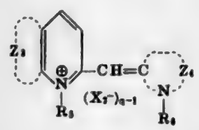
3,666,478
PHOTOGRAPHIC MATERIAL CONTAINING ALIPHATIC PERFLUORO COMPOUNDS
Margit Groh, Bourguillon, and Alfred Oetiker, Fribourg, Switzerland, assignors to Ciba Limited, Basel, Switzerland
No Drawing. Filed Sept. 18, 1969, Ser. No. 859,166
Claims priority, application Switzerland, Sept. 24, 1968, 14,256/68
Int. Cl. G03c 1/38
U.S. Cl. 96—114.5 3 Claims
Photographic material, preferably for the silver dyestuff bleaching method, is provided which contains in at least one gelatine-containing layer as a wetting agent a water-soluble, surface-active perfluoro compound. With these wetting agents a very good uniformity of the applied gelatine layers is achieved.

3,666,479
PRINT CONTAINING DIFFERENT NUMBERS OF DOTS IN LIGHT AND DARK TONAL AREAS
Raymond H. Wiese, 4536 Holly Ave., St. Louis, Mo. 63115
Filed Jan. 3, 1967, Ser. No. 606,926
Int. Cl. G03f 5/06, 5/00
U.S. Cl. 96—116 7 Claims
A method for producing a halftone screen which contains a different number of dots in different tonal areas and a contact print made from the use of this screen.

3,666,480
SPECTRALLY SENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSION
Keisuke Shiba, Akira Sato, and Tadashi Ideka, Ashigara-machi, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-machi, Kanagawa, Japan
No Drawing. Filed Oct. 29, 1970, Ser. No. 85,229
Claims priority, application Japan, Oct. 29, 1969, 44/86,580
Int. Cl. G03c 1/14
U.S. Cl. 96—124 9 Claims
A spectrally sensitized silver halide photographic emulsion containing at least one sensitizing dye represented by the following first Formula:



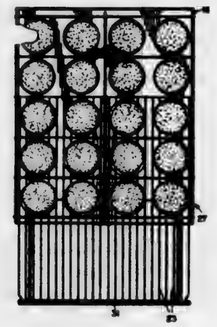
wherein R_1, R_2, R_3 and R_4 each represent alkyl groups, at least one of said R_3 and R_4 being an alkyl group having a sulfo group; Z_1 and Z_2 represent the non-metallic atomic groups necessary to complete a benzimidazole nucleus; X_1^- represents an acid anion and p represents an integer of 1 or 2, p being 1 when said dye forms an intermolecular salt; and at least one sensitizing dye represented by the following second Formula:



wherein Z_3 represents the atomic group necessary to complete a quinoline nucleus; Z_4 represents the non-metallic atomic group necessary to complete a benzothiazole or benzoselenazole nucleus substituted by a carboxylic acid, an alkoxycarbonyl, a carbamoyl, or an

acyl group; R_5 and R_6 represent alkyl groups, at least one of said R_5 and R_6 being an alkyl group having a sulfo group; V_2^- represents an acid anion and q has the same meaning as p.

3,666,481
METHOD OF PROCESSING FOODS
Charles Jere Albright, 313 W. North Ave., Chicago, Ill. 60610
Original application Jan. 25, 1968, Ser. No. 700,608. Divided and this application Feb. 12, 1969, Ser. No. 798,864
Int. Cl. A47j 37/06
U.S. Cl. 99—1 8 Claims



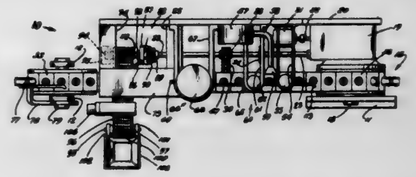
The essential concept of this invention involves one or more facilities each comprising a pair of superimposed, relatively-shiftable elements so structured as to have positioned thereon an ordered arrangement of portioned food-products subject to their being transferred, in the same ordered arrangement, onto an under-positioned support as a result of the relative shifting of the respective pair of elements; the facilites being adapted for use individually or collectively to position an ordered-arrangement of food-serving components on the under-positioned support and subsequently having the same ordered-arrangement of portioned cooked food-products superimposed on the previously-arranged food-serving components on the under-positioned support.

3,666,482
GELLED ALCOHOL-CONTAINING COMESTIBLE
Sol B. Wiczer, 3235 Sleepy Hollow Road, Falls Church, Va. 22042
No Drawing. Substituted for abandoned application Ser. No. 233,190, Oct. 22, 1962. This application Jan. 15, 1968, Ser. No. 697,623
Int. Cl. C12g 3/00
U.S. Cl. 99—30 3 Claims
Comestible product comprising a gelated beverage of highly alcoholic content and having a protective casing about the gel.

3,666,483
METHOD OF PRODUCING UNIT PORTIONS OF INSTANT COFFEE OR INSTANT TEA
Sven-Erik Tessmar, 8 Lannasbacken 124 43 Bandhagen, Sweden
No Drawing. Filed Mar. 12, 1970, Ser. No. 19,118
Int. Cl. A23f 1/08, 3/00
U.S. Cl. 99—65 4 Claims
A method of producing unit portions of instant coffee or tea which comprises the steps of mixing dry coffee or tea concentrate with a binder substance and forming the resulting coherent composition into unit portions. The binder substance comprises either a mixture of a fat which is solid or semi-solid at room temperature and an emulsifier or a mixture of a fatty acid which is solid or semi-solid at room temperature and a substance capable of forming a water-soluble salt with the fatty acid. The proportions of the dry coffee or tea concentrate to the fat or fatty acid should lie in the range from 2:1 to 1:3.

3,666,484
PROCESS FOR MAKING A SPRAY-DRIED INSTANT TEA OF DESIRED BULK DENSITY
Martin Gurkin, Bardonia, N.Y., and Gary Warner Sanderson and Harold Nathaniel Graham, Englewood, N.J., assignors to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.
No Drawing. Filed Nov. 12, 1969, Ser. No. 876,043
Int. Cl. A23f 3/00
U.S. Cl. 99—77 3 Claims
A process for making a spray-dried instant tea powder without adding foreign filler materials to the instant tea in which the tea extract is prepared from tea leaves by hot water extraction methods, controlled amounts of pectic substances derived from tea leaf are added to the extract and the mixture is spray-dried to form an instant tea powder having the desired bulk density.

3,666,485
APPARATUS FOR MAKING FOOD ITEM
Richard L. Nelson, 669 Riverside Drive, and Walter P. Nelson, 154 Fuller Road, both of Battle Creek, Mich. 49015
Continuation of application Ser. No. 793,220, Jan. 10, 1969, now Patent No. 3,538,840, which is a continuation of application Ser. No. 650,137, June 29, 1967, which in turn is a continuation of application Ser. No. 356,874, Apr. 2, 1964. This application Sept. 21, 1970, Ser. No. 73,807
Int. Cl. A23g 3/00
U.S. Cl. 99—88 5 Claims



A filled edible product is described, as for example a breadstick which is at least initially brittle, substantially unyielding and incompressible. The product is filled by first inserting in a holding means which contains a resilient product support member for resiliently gripping and supporting the stick, after which an elongated cavity is formed in the product and the cavity subsequently filled with an extrudable material such as cheese, whipped cream, custard, fruit preserves and jelly. The invention also includes an apparatus for drilling while properly supporting the product and subsequently filling the cavity formed with the extrudable material.

3,666,486
METHOD FOR INCORPORATING BREAD IMPROVERS IN CONTINUOUS BREADMAKING
William W. Hodgson, West Chester, Pa., and David J. Ash, Independence, Mo., assignors to International Telephone & Telegraph Corp., New York, N.Y.
No Drawing. Filed July 25, 1969, Ser. No. 845,059
Int. Cl. A21d 2/04, 2/16
U.S. Cl. 99—91 7 Claims
Yeast leavened baked products are prepared by continuous processes. In these continuous processes, coated

bread improvers are incorporated into the initial yeast brew step of the processes. The bread improver component remains intact within a solid, insulating water insoluble coating until it is thermally released in the final high speed mixing step to act in promoting the development of the final dough. The coating material is an edible, water insoluble triglyceride fat having a melting point of at least 90° F.

3,666,487
METHOD FOR TREATING PECTIN CONTAINING FRUIT JUICES USING PECTIN TRANSELIMINASE
Tamotsu Yokotsuka, Nagareyama-shi, and Shigetaka Ishii, Noda-shi, Japan, assignors to Kikkoman Shoyu Co., Ltd., Noda-shi, Japan
No Drawing. Filed Mar. 23, 1970, Ser. No. 22,004
Claims priority, application Japan, Dec. 8, 1969, 44/97,835
Int. Cl. A23l *1/02, 1/04*
U.S. Cl. 99—106 6 Claims

Pectin transeliminase is added to a mashed product of fruits or a juice pressed from a fruit, or a filtrate thereof.

3,666,488
METHOD FOR STABILIZING MEAT COLOR AND COMPOSITION THEREFOR
Yukihiro Nakao and Seishi Takagi, Osaka, and Hiromi Nakatani, Kyoto, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
No Drawing. Filed Feb. 25, 1970, Ser. No. 14,191
Claims priority, application Japan, Feb. 25, 1969, 44/14,134
Int. Cl. A22c *18/00;* A23b *1/00*
U.S. Cl. 99—107 4 Claims

The meat color developed by the conventional curing treatment of meat material with nitrates and/or nitrites is stabilized by the incorporation of (a) ascorbic acid and/or erythorbic acid and (b) isocitric acid into the meat material at a pH of 5 to 7, the weight ratio of the ingredient (b) to the ingredient (a) being 0.2 to 20. The meat products thus treated maintain their high quality even on exposure to light.

3,666,489
METHOD OF PREPARING A POULTRY PRODUCT
Kenneth O. Lovell, St. Louis, Mo., assignor to Ralston Purina Company, St. Louis, Mo.
Filed June 26, 1969, Ser. No. 836,806
Int. Cl. A22c *21/00*
U.S. Cl. 99—107 2 Claims



A poultry product is formed by slicing the breast portion into relatively thin slices which are preshaped and cut into a desired configuration. A stuffing material is placed on the poultry slice and thereafter the slice is rolled to confine the stuffing material within the slice. The free end of the poultry slice may then be secured to the roll by use of a binder or the roll may be frozen so as to retain the stuffing material within said roll.

3,666,490
PROCESS OF MAKING AN EDIBLE POULTRY COMPOSITION
Barron S. Whittingham, 3705 S. Robertson Blvd., Culver City, Calif. 90230
No Drawing. Continuation-in-part of application Ser. No. 752,747, Aug. 15, 1968. This application Mar. 5, 1971, Ser. No. 121,577
Int. Cl. A22c *21/00*
U.S. Cl. 99—108 1 Claim

An improved poultry food product and process is provided, whereby poultry meat is prepared so that it may be stuffed into, or otherwise enclosed, in a casing of a thin prepared intestinal or other membranous tissue type; and so that the end product may be sliced, and then fried, grilled or otherwise cooked, all without disintegration.

3,666,491
INSTANT SOUP PRODUCT AND METHOD OF PREPARATION
Ali R. Touba, Minneapolis, Minn., assignor to General Mills, Inc.
No Drawing. Filed Feb. 9, 1970, Ser. No. 9,941
Int. Cl. A23l *1/40*
U.S. Cl. 99—124 14 Claims

The crouton has an adhering layer of a dry soup base and is suitable for the instant preparation of soup by the addition of the croutons to hot water. The dry soup base layer may be applied to the crouton, for example, by coating the crouton with a bonding agent and then contacting the crouton with powdered dry soup base. The soup base layer may alternatively be applied by other methods such as co-extrusion of the crouton and soup base.

3,666,492
CHEWING GUM
James Teng, St. Louis, Mo., and Chokyun Rha, Worcester County, Mass., assignors to Anheuser-Busch, Inc., St. Louis, Mo.
No Drawing. Filed Apr. 6, 1970, Ser. No. 26,108
Int. Cl. A23g *3/30*
U.S. Cl. 99—135 4 Claims

Chewing gum made from a fatty acid ester of starch, preferably starch laurate, as the chewing gum base. The starch laurate has a degree of substitution of above about 2.

3,666,493
PREPARATION OF CHEESE AND PIE FILLINGS
John A. Bluemke, 256 South St., Elmhurst, Ill. 60126
No Drawing. Continuation-in-part of application Ser. No. 857,600, Sept. 12, 1969, which is a continuation of application Ser. No. 601,224, Dec. 12, 1966. This application June 8, 1970, Ser. No. 44,583
Int. Cl. A23c *23/00*
U.S. Cl. 99—139 4 Claims

A food composition is prepared by whipping together (a) a homogenized preparation of fat, protein, sugar and emulsifier which has been acidified with an edible acid or lactic acid producing culture and chilled, with (b) a stabilizer of sugar, starch and milk or corn syrup solids.

3,666,494
EARTHY FLAVOR COMPOSITION COMPRISING DIACETYL AND 2,4,5-TRIMETHYL OXAZOLE
Alan P. Bentz, Stamford, Conn., and Joseph F. Mezzino, Pearl River, N.Y., assignors to General Foods Corporation, White Plains, N.Y.
No Drawing. Filed Oct. 16, 1970, Ser. No. 81,519
Int. Cl. A23l *1/26*
U.S. Cl. 99—140 R 9 Claims

An earthy, potato-like or mushroom-like flavor is imparted to foodstuffs by a mixture of 2,4,5 - trimethyloxazole and diacetyl.

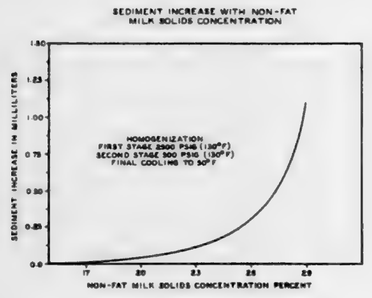
3,666,495
NOVEL SULFUR-CONTAINING COMPOUNDS AND COMPOSITIONS AND PROCESSES THEREFOR
William John Evers, Long Branch, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.
No Drawing. Filed Feb. 5, 1969, Ser. No. 796,923
Int. Cl. A23l *1/26*
U.S. Cl. 99—140 R 8 Claims

Novel 3-sulfur derivatives of furan including alkyl furan-3-thiols and bis(alkyl-3-furyl) sulfides and di- and tetrahydro derivatives thereof having meaty and/or roasted aromas and flavors; processes for producing such 3-sulfur derivatives; novel flavoring compositions containing such derivatives; and novel food compositions containing such derivatives.

3,666,496
WATER SOLUBLE, POWDERED, TERPENE-CONTAINING FLAVORS
Raymond Honey, Mount Kisco, N.Y., and James Frank Perkins, Ramsey, N.J., assignors to Firmenich Incorporated, New York, N.Y.
No Drawing. Filed Sept. 3, 1969, Ser. No. 855,049
Int. Cl. A23l *1/26*
U.S. Cl. 99—140 R 14 Claims

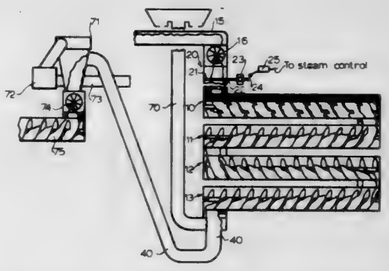
Terpene-containing flavor substances such as oils, essences, extracts, juices or concentrates, are dispersed in aqueous vehicles containing a dissolved normally solid carrier and a poly(oxyethylene)-poly(oxypropylene)-poly-(oxyethylene) block copolymer. Water is eliminated from the formulation to produce a powder in which the flavor ingredients are fixed in and upon the solid carrier. The resulting product retains the true flavor notes of the original flavor, is not subject to deterioration during storage, may be readily dissolved in water to form solutions of brilliant clarity and provides enhanced flavor qualities when incorporated in foods and beverages.

3,666,497
PREPARATION OF HIGH VISCOSITY STERILIZED PROTEIN SOLUTIONS
Aubrey P. Stewart, Jr., Clarence R. Dreier, and John D. Falk, Corning, Iowa, assignors to Allied Chemical Corporation, New York, N.Y.
Filed Sept. 9, 1969, Ser. No. 856,411
Int. Cl. A23c *3/02*
U.S. Cl. 99—212 6 Claims



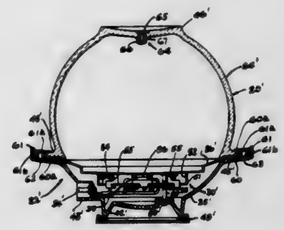
Viscous dairy products having non-fat milk solid concentrations as high as 31% by weight are prepared without the occurrence of protein coagulation causing sedimentation by adding a thickening agent to the dairy product in the later stages of sterilization and preferably adding the thickening agent after the product is sterilized.

3,666,498
TERMINAL HEATING PROCESS FOR FREEING FEED INGREDIENTS OF SALMONELLA
Monroe E. Evans, Fayetteville, N.C., assignor to Cape Fear Feed Products, Inc., Fayetteville, N.C.
Continuation-in-part of application Ser. No. 572,115, Aug. 12, 1966. This application Sept. 15, 1969, Ser. No. 857,837
Int. Cl. A23k *3/00;* A23l *3/18*
U.S. Cl. 99—216 6 Claims



A continuous, large volume terminal heating process for freeing ground, high fat and high bulk density, organic feed meal particles of salmonella without affecting moisture and nutritional content or the particle form includes steps of flash heating while tumbling the particles in dry steam to elevate their temperature, movement of the particles while maintaining them at the elevated temperature, and while continuing movement bringing the temperature down to a level at which there is no tendency for the particles to cake.

3,666,499
CORN POPPER
Russell S. Isnor, Wheaton, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Jan. 14, 1966, Ser. No. 520,694
Int. Cl. A23l *1/18*
U.S. Cl. 99—238.1 3 Claims



A corn popping appliance having a vessel portion and a cover which cooperate to form an enclosure in which corn may be popped. When the cover is inverted, it forms a receptacle of sufficient volume to use as a serving dish for the popped corn. Cooperating means on the cover and vessel portion retain them in assembled condition so that they may be inverted from the cooking to the serving position.

3,666,500

METHOD OF IMPROVING WAX-CONTAINING SELF-POLISHING EMULSIONS AND PRODUCT

Joachim Lange, Gersthofen, Otto Malitschek, Augsburg, and Fred Mader, Nordendorf, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation of abandoned application Ser. No. 746,319, July 22, 1968. This application Mar. 15, 1971, Ser. No. 124,439

Claims priority, application Germany, Aug. 5, 1967, F 53,151

Int. Cl. C08h 9/06; C09f; C09g 1/10

U.S. Cl. 106—6 2 Claims

The present invention provides non ionic aqueous self-polishing emulsions for the care of floors containing waxes carrying carboxyl groups, non ionic emulsifiers and 0.25 to 3 equivalents, calculated on the carboxyl groups, of soluble salts of zinc, aluminum or cadmium and, if desired, polymer dispersions.

3,666,501

IMPROVED BLACK WATER-BORNE COATING

Gerald Wilton Barnett, High Wycombe, and John Leslie Inshaw, Great Missenden, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Oct. 22, 1969, Ser. No. 868,605

Int. Cl. C09d 5/08, 1/00; C08h 17/24

U.S. Cl. 106—14 3 Claims

Method of improving water-borne coating composition for electrocoating having a black pigment and film-forming resin dispersed in water wherein the improvement consists essentially of a black pigment mixture of either a red or brown simple iron oxide pigment in combination with either a green or blue copper phthalo cyanine pigment.

3,666,502

LITHOGRAPHIC INKS AND SOLUTIONS FOR TREATING LITHOGRAPHIC PLATES

Gustaf L. Erikson, Shaker Heights, Ohio

No Drawing. Continuation-in-part of application Ser. No. 752,443, July 19, 1968, which is a continuation of application Ser. No. 456,557, May 17, 1965. This application Apr. 27, 1970, Ser. No. 32,380

Int. Cl. C09d 11/00, 11/06, 11/12

U.S. Cl. 106—22 6 Claims

Triacetin and hexylene glycol additives eliminate problems of scumming and greasing with lithographic inks in connection with all types of lithographic plates. These additives improve differential inkability thus giving sharper images and high resolution without sacrificing fullness of print.

3,666,503

INKS CONTAINING NAPHTHYL-AZO-α-HYDROXY-NAPHTHOIC ACID PIGMENTS AND METHOD

Frank P. Dombroski, Scotch Plains, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 640,820, May 24, 1967, now Patent No. 3,520,870, dated July 21, 1970. This application June 22, 1970, Ser. No. 48,520

Int. Cl. C09d 11/08

U.S. Cl. 106—30 4 Claims

The calcium, barium, and strontium salts of the azo compound obtained by coupling 2-naphthylamine-1-methylsulfonic acid with beta-hydroxynaphthoic acid are pigments of a desirable and unusual shade of maroon with excellent properties as to strength, gloss, transparency, etc., and form ink formulations which have superior storage stability.

The pigments are thought to be properly named as the calcium, barium or strontium salts of 2-(3'-carboxy-2'-hydroxy - 1' - naphthyl)azo-naphthyl-1-methylsulfonic acid, or mixtures thereof.

Wood rosin and/or other conditioning treatments are preferred.

3,666,504

PROCESS FOR PREPARING MOULDING SAND

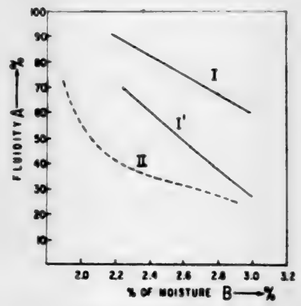
Hendrik van den Berg, 36 Isaac da Costalaan, Delft, Netherlands, and Herman G. Levelink, 34 Julianalaan, Pijnacker, Netherlands

Continuation-in-part of abandoned application Ser. No. 867,612, Oct. 20, 1969. This application Mar. 29, 1971, Ser. No. 128,689

Claims priority, application Netherlands, Oct. 22, 1968, 6815124

Int. Cl. B28b 7/34

U.S. Cl. 106—38.35 5 Claims



A process is described for preparing a moulding sand having improved properties over ordinary moulding sand as for fluidity, moisture content, cohesion and scabbing resistance by adding to ordinary moulding sand a maximum of 2% by weight of pulverized cocoa beans or parts of them such as ground cocoa shells or cocoa expellers.

3,666,505

HIGH DIELECTRIC CONSTANT CERAMIC BODIES AND COMPOSITIONS FOR PRODUCING SAME COMPRISING IRON OXIDE

Lewis C. Hoffman and Takashi Nakayama, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 733,288, May 3, 1968. This application Nov. 20, 1970, Ser. No. 91,538

Int. Cl. C04b 33/06; H01b 1/06

U.S. Cl. 106—39 R 14 Claims

Dielectric compositions comprising powder mixtures of (A) a calcined inorganic material consisting essentially of $BaTiO_3$ and an oxide selected from the group consisting of ZrO_2, Al_2O_3, SiO_2, Nb_2O_5 and mixtures thereof, (B) Fe_2O_3 and (C) a glass binder. The dielectric compositions are useful in preparing electrical capacitors, the dielectric layers of which can be formed from a dispersion of the composition in an inert liquid vehicle and applied by screen stencilling methods. Firing of such layers coated with a suitable electrode material yields capacitors having high dielectric constants and low dissipation factors.

3,666,506

BATCH FOR PRODUCING CELLULATED GLASSY BODIES FROM ROCK

James H. Cowan, Jr., and David Rostoker, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 812,365, Apr. 1, 1969. This application Sept. 28, 1970, Ser. No. 76,226

Int. Cl. C04b 33/00

U.S. Cl. 106—41 8 Claims

This invention relates to cellulated glassy bodies, having a uniform closed cellular structure and a density on the order of .4 gram/cc., made by preparing a mixture of clay, sodium hydroxide, other fluxes, and an organic cellulating agent, and then firing the mixture, preferably at temperatures less than about 950° C. (1740° F.).

3,666,507

FUSION-CAST CARBIDE CERAMIC COMPRISING FREE-SILICON

Allen M. Alper, Towanda, Pa., and Robert C. Doman, Painted Post, and Neil E. Johnson and Robert N. McNally, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

No Drawing. Filed May 15, 1970, Ser. No. 37,861

Int. Cl. B22f 3/00; C04b 35/14

U.S. Cl. 106—44 5 Claims

Dense, fine-grained, essentially crack-free toughly coherent bodies having a crystalline microstructure consisting essentially of, by weight, 10 to 89% boron carbide phase, 10 to 89% silicon carbide phase and 1 to 30% silicon phase, which latter phase is important to noted essential characteristics. Method of fusion casting employing batch mixture including elemental silicon in an effective amount at least sufficient to yield the silicon phase. Useful in a variety of situations requiring good resistance to degradation at high temperature, chemical corrosion, abrasive wear and/or impact stresses.

ERRATUM

For Class 106—52 see:
Patent No. 3,666,414

3,666,508

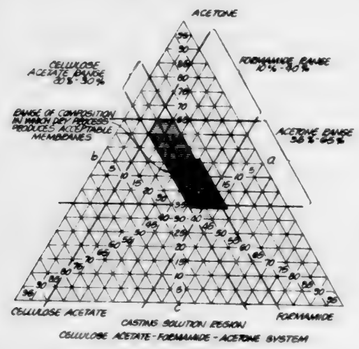
HIGH FLUX SEMIPERMEABLE CELLULOSIC DERIVATIVE MEMBRANES WITH DRY HANDLING CAPABILITIES AND THEIR METHOD OF PREPARATION

Mary Ann Justice, Los Angeles, Calif., and Joseph W. McCutchan, University Park, Md., assignors to The Regents of the University of California

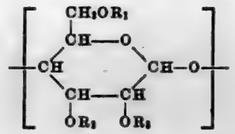
Filed May 22, 1968, Ser. No. 731,094

Int. Cl. B29d 27/04; C08b 27/42, 29/10

U.S. Cl. 106—183 12 Claims



The present invention is directed to dry semipermeable membranes which can advantageously be dry-stored and used for the selective separation of various components of a solution such as salt water. The membranes are prepared by casting a solution of a cellulosic derivatives having units represented by the formula



wherein R_1, R_2 and R_3 are selected from the group consisting of R_4 and CR_5O, wherein hydrogen R_4 is an alkyl containing from 1 to 8 carbon atoms and R_5 is an alkyl containing from 1 to 7 carbon atoms, and wherein no more than two of R_1, R_2, and R_3 can be H, to form a membrane. The membrane is then immersed in an aqueous medium for a time sufficient for the formation of a membrane possessing a tough outer skin on the side exposed to air during casting. The membrane is then dried at room temperature. A preferable cellulosic solution is composed of cellulose acetate dissolved in acetone containing formamide as an additive.

3,666,509

DRY MIX FOR MAKING HEAVY DUTY WHITE CONCRETE

Howard J. Horvitz, 21800 Shaker Blvd., Shaker Heights, Ohio 44122

No Drawing. Filed Sept. 8, 1970, Ser. No. 70,549

Int. Cl. C04b 31/02

U.S. Cl. 106—98 19 Claims

A dry mix for making white concrete which includes approximately 18 to 35% white cement, approximately 63 to 80% aggregate and approximately 0.5 to 5% titanium dioxide, the aggregate having a fineness modulus approximately in the range 3.3 to 4.2.

3,666,510

LUBRICATED THERMOPLASTIC RESIN COMPOSITIONS

Antony W. M. Coaker, St. Louis, and Richard C. Gross, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Dec. 13, 1967, Ser. No. 690,088

Int. Cl. C08f 45/38

U.S. Cl. 106—181 17 Claims

This invention relates to improved thermoplastic resin compositions which contain a long chain alkenyl substituted succinic anhydride or an ester thereof as a lubricant.

3,666,511

COMBINATION OF A CROSS-LINKED WAXY STARCH AND A CROSS-LINKED NON-WAXY STARCH

Leamon Dale Williams, Palos Heights, and Edward R. Jensen, Hinsdale, Ill., assignor to CPC International Inc.

No Drawing. Continuation-in-part of application Ser. No. 816,021, Apr. 14, 1969. This application Mar. 16, 1970, Ser. No. 20,018

Int. Cl. C08b 25/02

U.S. Cl. 106—210 7 Claims

An improved starch material suitable for making puffed, deep fat fried snack products comprising a combination of from about 30% to about 70% of a cross-linked waxy starch with from about 30% to about 70% of a cross-linked non-waxy starch. The non-waxy starch

preferably is milo starch, corn starch, or mixtures thereof. Also, a process for producing a puffed, deep fat fried snack product from this improved starch material and the resulting snack product.

3,666,512
COMPOSITIONS OF FATTY ACID ANHYDRIDES CONTAINING CATALYST
Russell Joseph Kulick, Lenox, Mass., and Edward Strazdins, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Continuation-in-part of application Ser. No. 712,601, Mar. 13, 1968, now Patent No. 3,445,330, which is a continuation-in-part of applications Ser. No. 112,781, May 26, 1961, Ser. No. 420,783, Dec. 23, 1964, and Ser. No. 490,636, Sept. 27, 1965. This application Mar. 25, 1970, Ser. No. 22,696
The portion of the term of the patent subsequent to May 20, 1986, has been disclaimed
Int. Cl. C08b *25/02*
U.S. Cl. 106—213 4 Claims

The invention provides compositions comprising hydrophobic cellulose-reacting paper-sizing carboxylic acid anhydrides and a catalyst which accelerates the rate at which the anhydride develops its sizing properties when deposited on cellulose from aqueous medium and heated.

3,666,513
TREATMENT OF MINERALS
Peter James Malden, Cornwall, England, assignor to English Clays Lovering Pochin & Company Limited, Cornwall, England
No Drawing. Filed Mar. 25, 1970, Ser. No. 22,714
Int. Cl. C09c *1/28*
U.S. Cl. 106—288 B 9 Claims

A process for improving the brightness of phyllosilicate minerals containing ferric ions in solid solution within the crystal lattice of the minerals. The process comprises the steps of bleaching by a reducing bleaching agent an intercalation complex of a phyllosilicate mineral and thereafter decomposing the intercalation complex under non-oxidising conditions.

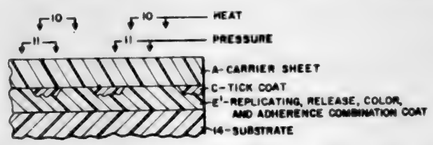
3,666,514
FIBROUS TRANSITION METAL PHOSPHATES
Paul Clifford Yates, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Apr. 1, 1969, Ser. No. 812,425
Int. Cl. C09c *1/00, 1/14, 1/31*
U.S. Cl. 106—288 B 8 Claims

This invention encompasses fibrous, colloidal, crystalline, water-insoluble phosphates having at least two transition metal ions in their +4 valence state where 20 to 98% of the metal ion content on an atomic basis is a quadrivalent ion of titanium, zirconium, hafnium, molybdenum, tungsten, tin, lead, thorium or uranium and the remaining percentage being +4 valent cerium ions with the ratio of phosphate groups to total metal atoms being from 2:1 to 1.5:1.

3,666,515
PROCESS FOR THE PRODUCTION OF CEMENT EXPANSIVE ADDITIVES
Kozi Nakagawa, Toyama, Japan, assignor to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed June 15, 1970, Ser. No. 46,363
Claims priority, application Japan, June 13, 1969, 44/46,281; June 14, 1969, 44/46,618
Int. Cl. C04b
U.S. Cl. 106—314 11 Claims

A process for producing cement expansive additives in a direct resistance heating electric furnace comprising forming a melt of an inorganic fluoride around the electrodes in the furnace, adding gradually a mixture of an inorganic fluoride and a blend of CaO—$CaSO_4$—Al_2O_3 to the melt, heating the mixture to a temperature of from 1200 to 1400° C.

3,666,516
HOT STAMP TAPE
Richard E. Dunning, 650 W. 67th Place, Hammond, Ind. 46375
Filed Oct. 12, 1971, Ser. No. 188,423
Int. Cl. B41m *3/12*; B44c *1/16*
U.S. Cl. 117—3.4 8 Claims

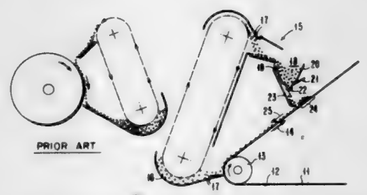


A web of indeterminate length carrying thermally transferable material, usually referred to as hot stamp tape, is structured to provide an improved simulated wood grain pattern on a substrate after transfer to the substrate of transferable portions of the tape. The web or tape may be provided in sheet form. The structure comprises "ticks" or discrete linearly oriented spots of material having low specular reflectivity coated on a matte carrier sheet, as by printing and a layer coated thereon to provide the top layer of the transferred material, which replicates the surface of the carrier sheet and the coated ticks or dots.

3,666,517
POROUS ARTICLE
Robert B. Isaacson, Rahway, N.J., assignor to Celanese Corporation, New York, N.Y.
No Drawing. Original application Nov. 16, 1966, Ser. No. 594,657, now Patent No. 3,539,374, dated Nov. 10, 1970. Divided and this application Feb. 16, 1970, Ser. No. 11,843
Int. Cl. B29d *27/00*; B32b *31/12*
U.S. Cl. 117—7 7 Claims

A method is disclosed and claimed for depositing a coating on a plastic film and thereafter subjecting the coated film to draw and annealing steps so as to produce a coated film that is characterized by a microporous, low density structure. The coated films of this invention are useful as rescue blankets, sleeping bags and the like.

3,666,518
DEVELOPMENT MEANS AND METHODS FOR DEVELOPING ELECTROSTATIC IMAGES
Erwin W. Luttman, San Jose, and Harold C. Medley, Los Gatos, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 31, 1970, Ser. No. 24,265
Int. Cl. C03g *13/08, 15/08*
U.S. Cl. 117—17.5 7 Claims

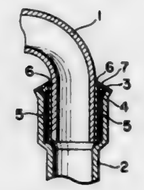


This is a method for developing electrostatic images on a moving insulating surface with developer material in which the flow of developer material moves downward and in a direction opposite to the movement of the insulating surface and which can be termed counterflow cascade development. The flow of developer material is directed onto the insulating surface such that a finishing development zone is formed at the point of entry of the developer material to a point upward therefrom. In addition, means having a controlling force over toner depleted carrier particles is positioned adjacent the finishing development zone for regulating such particles and thereby preventing them from being carried upwardly and out of the zone.

3,666,519
POLYOLEFIN SUBSTRATE DECORATED WITH A HEAT FUSED POLYESTER-ALKYD RESIN PRINTING INK
John W. Bayer, Toledo, Ohio, assignor to Owens-Illinois, Inc.
No Drawing. Application June 25, 1968, Ser. No. 739,610, now Patent No. 3,557,691, dated Jan. 26, 1971, which is a continuation-in-part of application Ser. No. 393,049, Sept. 8, 1964. Divided and this application July 9, 1970, Ser. No. 53,626
Int. Cl. G03g *13/22, 13/08*
U.S. Cl. 117—17.5 4 Claims

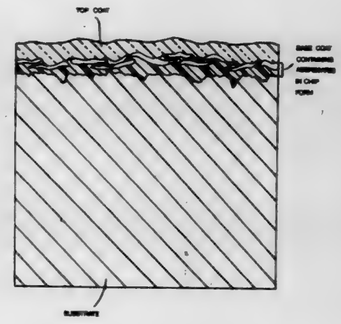
There is disclosed an article of manufacture decorated with an electrostatic printing ink composition consisting essentially of a free-flowing, heat fusible polyester-alkyd resin powder prepared by reacting a difunctional, aliphatic, hydroxy compound, e.g. a glycol, and a dicarboxylic acid or anhydride in the presence of a drying oil acid, e.g. a vegetable oil fatty acid.

3,666,520
PROCESS OF FORMING A METALLIC COPPER LAYER ON THE SURFACE OF WORKPIECE OF ALUMINUM OR ALUMINUM BASE ALLOY
Shiro Terai and Yoshihiko Sugiyama, Nagoya, Toshio Suzuki, Kasugai, and Hiroshi Irie, Nagoya, Japan, assignors to Sumitomo Light Metal Industries Limited, Tokyo, Japan
Filed Aug. 31, 1970, Ser. No. 68,313
Claims priority, application Japan, Sept. 10, 1969, 44/71,861, 44/71,862
Int. Cl. C23c *3/04*
U.S. Cl. 117—22 10 Claims



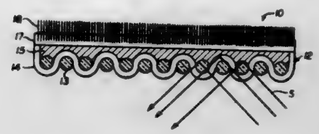
This invention relates to a process of forming a metallic copper layer of a uniform thickness on the surface of workpiece made of aluminum or aluminum base alloy by applying finely divided copper halide particles on said surface uniformly with aid of a higher aliphtic monohydric alcohol containing 6–12 carbon atoms or a cycloaliphatic mono-hydric alcohol containing 6–8 carbon atoms as the adhesive medium, and then heating said surface to a sufficient temperature to react the copper halide with the aluminum material of the workpiece at the surface of the workpiece, whereby metallic copper is liberated, deposited on and partly diffused into the surface of the workpiece and a firmly adhered copper layer of a uniform thickness may be formed on the surface of the aluminum or aluminum base alloy material and, if desired, within a sharply limited area of the surface of the workpiece.

3,666,521
COATED SUBSTRATE AND METHOD OF PROVIDING SAME
Philip L. Weyna, Crystal Lake, and Volney P. Thuma and David A. Frey, Woodstock, Ill., assignors to Morton-Norwich Products, Inc., Chicago, Ill.
Filed June 18, 1970, Ser. No. 47,544
Int. Cl. B44d *1/14*
U.S. Cl. 117—26 8 Claims



A method of applying a durable coating to a substrate such as floors, walls, furniture, metal and the like involving applying to the substrate a base coating of an aqueous copolymer dispersion, adding solid particulate aggregate to the base coat, drying the mixture and then adding a top coat of an aqueous dispersion of a cross-linkable copolymeric composition comprising an aqueous copolymer dispersion prepared from, on an overall basis, about 30 to about 60 weight percent of a combination of at least one monoethylenically unsaturated hardening monomer and at least one monoethylenically unsaturated softening monomer, and from about 1 to about 10 weight percent of a cross-linking agent, said hardening monomer comprising from about 25 to about 60 weight percent of the total monomers and being selected from the group consisting of styrene, acrylonitrile, and alkyl methacrylates, and said softening monomer comprising up to about 75 weight percent of the total monomer composition and being selected from the group consisting of alkyl acrylates containing from 1 to 10 carbon atoms in the alkyl group, and drying to form an attractive, tough and resilient coating.

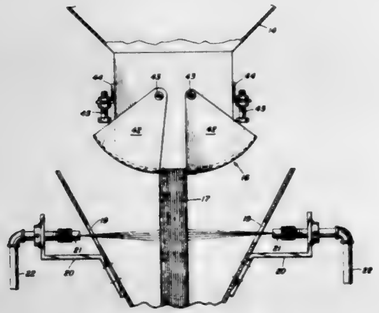
3,666,522
FLAMEPROOF FABRIC CONSTRUCTION
Stephen George, 747 Swinton Ave., Bronx, N.Y. 10465
Filed Mar. 26, 1970, Ser. No. 22,819
Int. Cl. B44c *1/08*
U.S. Cl. 117—33 8 Claims



A fabric construction providing a nap surfaced flameproof fabric subject to being made light impervious and subject to having desired decorative effects applied to the nap surface. The fabric is formed by coating or impregnating a woven fiberglass base fabric with an air impervious coating, such for example as aluminum or the

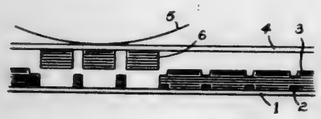
like metallic material adapted to form a light impervious barrier on the base fabric. The desired nap surface on the fabric is provided by securing flock to one side of the base fabric. The flock is secured by means of an adhesive which in the presence of heat prevents the flow of oxygen to the flock fibers.

3,666,523
PROCESS FOR COATING PARTICULATE MATERIAL WITH FINELY DIVIDED SOLIDS
Harold Henry Nau, Spencer, Iowa, assignor to American Cyanamid Company, Stamford, Conn.
Continuation-in-part of application Ser. No. 804,621, Mar. 5, 1969. This application June 2, 1971, Ser. No. 149,350
Int. Cl. B44d *1/094*
U.S. Cl. 117—33 5 Claims



A method is given for uniformly coating particulate fertilizer material with small amounts of finely divided micro and/or secondary nutrients by forming the particulate base fertilizer material in a falling curtain, spraying the base material with a binder solution, finally mixing in an agitated bed the base material with the finely divided nutrients, thus giving a product of micro and/or secondary nutrients uniformly distributed over the surfaces of the particulate base fertilizer.

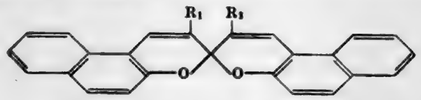
3,666,524
PRESSURE TRANSFER REPRODUCTION
Robert J. Wright, Tranmere, South Australia, Australia, assignor to Research Laboratories of Australia Pty. Limited, Eastwood, South Australia, Australia
Filed Sept. 4, 1970, Ser. No. 69,561
Int. Cl. B41m *5/10*
U.S. Cl. 117—36.4 5 Claims



In pressure transfer printing a printed substrate pattern on a base member confers differences in the bond strength of a subsequent pigmented transfer coating in relation to the base member whereby the edge definition of characters printed by contact pressure with said pigmented coating is defined by the pattern of the printed substrate coating.

3,666,525
HEAT SENSITIVE COPYING SHEET
Shiro Kimura, Teruo Kobayashi, and Sadao Ishige, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara-machi, Kanagawa, Japan
No Drawing. Filed May 26, 1970, Ser. No. 40,732
Claims priority, application Japan, May 26, 1969, 44/40,719
Int. Cl. B41m *5/18*
U.S. Cl. 117—36.8 17 Claims

Heat sensitive copying papers using a spiro compound having the Formula A



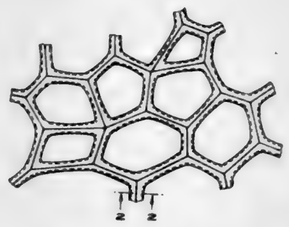
(A)

wherein R_1 and R_2 each is selected from the group consisting of a hydrogen atom, an alkyl group having from 1 to 8 carbon atoms, a carboxylic acid ester, an aralkyl group and a phenyl group, a solid organic sulfonic acid having the Formula B

$$R—SO_3H \qquad (B)$$

wherein R is selected from the group consisting of an amino group, an N-substituted amino alkyl group having from 2 to 18 carbon atoms, an unsubstituted amino alkyl group having from 2 to 18 carbon atoms, an alkyl group having from 10 to 20 carbon atoms, an alkoxy group having from 10 to 20 carbon atoms, a carboxylic acid substituted alkyl group, said alkyl group having from 6 to 18 carbon atoms, and an aromatic ring, and a thermofusible material having a melting point ranging from 50 to 180° C. are disclosed.

3,666,526
REFRACTORY POROUS BODIES
Bruce L. Ettinger, Detroit, and Samuel M. Wolosin, Oak Park, Mich., assignors to General Electric Company
Filed Jan. 6, 1966, Ser. No. 519,080
Int. Cl. C23c *13/00*
U.S. Cl. 117—46 CB 12 Claims



Porous bodies of interconnected cellular structure having extremely high strength-to-weight ratios at elevated temperaures. The porous bodies have a foam substrate of uniform cell structure, produced by the thermal decomposition of an organic foam, and a refractory coating on the substrate of a vapor-deposited pyrolytic material.

3,666,527
METHOD OF ELECTROLESS DEPOSITION OF METALS WITH IMPROVED SENSITIZER
Nathan Feldstein, Kendall Park, and Thomas Stephen Lancsek, Mercer, N.J., assignors to RCA Corporation
No Drawing. Filed July 31, 1970, Ser. No. 60,091
Int. Cl. B44d *1/092*; C23c *17/02*
U.S. Cl. 117—47 A 8 Claims

Method for autocatalytically electrolessly plating a dielectric surface with a metal such as nickel, cobalt or copper comprising sensitizing the surface with an improved sensitizing solution comprising both divalent tin ion and tetravalent tin ion, the solution having a pH less than about 1.5, treating the sensitized surface with a catalyzing solution to provide catalytic nucleating centers, and plating the metal on the catalyzed surface. The improved sensitizing solution permits plating on smooth, dense, water repellent plastic surfaces such as Teflon, Lucite, silicone rubbers and Mylar.

3,666,528
METHOD OF APPLYING FILLED POLYIMIDE COMPOSITIONS TO INTERNAL CYLINDRICAL SURFACES
Keith F. Barnhardt, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed July 16, 1968, Ser. No. 745,294
Int. Cl. B44d *1/34*
U.S. Cl. 117—49 2 Claims

Certain filled polyimide compositions are disclosed in addition to a method of applying the same in coatings of substantial thickness to internal cylindrical surfaces of compressor housings, labyrinth seal bands and the like. In a preferred embodiment a mixture of a solution of polyimide precursors and talc are centrifugally cast onto a metallic cylindrical surface such that most of the solvent is evaporated and the precursors are partially cured so as to be structurally selfsustaining. The rotation of the article to be coated is stopped and the coating is further cured under the pressure of an inert atmosphere such that residual solvent and volatile curing reaction by-products are evolved without blistering the coating.

3,666,529
METHOD OF CONDITIONING ALUMINOUS SURFACES FOR THE RECEPTION OF ELECTROLESS NICKEL PLATING
Ralph R. Wright and George S. Petit, Oak Ridge, and Calvin C. Wright, Lenoir City, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed Apr. 2, 1969, Ser. No. 812,901
Int. Cl. B44d *1/092*; C23f *1/00*
U.S. Cl. 117—50 3 Claims

Aluminum and aluminum alloys are subjected to a preplating treatment which conditions the surfaces of these metals for receiving electrolessly deposited nickel plating directly thereon. A clean aluminous surface is prepared for electroless plating by etching in an alkaline solution and then pickling in an acidic solution containing chloride ions. An alkaline solution containing hypophosphite ions is employed to activate the aluminous surface which is then provided with a thin electroless nickel strike coat by immersion in an ammonical solution containing nickel ions, hypophosphite ions, and a chelating agent. After the electroless strike coat is applied, the aluminous surface is provided with a plating of electroless nickel in a conventional, essentially halogen-free bath.

3,666,530
NOVEL SILICIOUS SILICONE BONDED MATERIALS
Walter A. Aue and Corazon R. Hastings, Columbia, Mo., assignors to Research Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 873,090, Oct. 31, 1969. This application Oct. 22, 1970, Ser. No. 83,215
Int. Cl. B32b *17/00*; C03c *17/30*
U.S. Cl. 117—54 20 Claims

There is provided a novel type of silicious material having bonded thereto silicone or polysiloxane polymers. These novel materials are produced by activating all or most of the available hydroxyl groups in a silicious surface and reacting said hydroxyl groups with silanes or siloxanes having labile groups. These silyl or siloxyl moieties are then polymerized to yield a material having a silicone polymer chemically bonded to the surface of the silicious material. These novel products are useful as a combined stationary and liquid phase in gas chromatography. They are especially useful in the chromatography of highly polar materials.

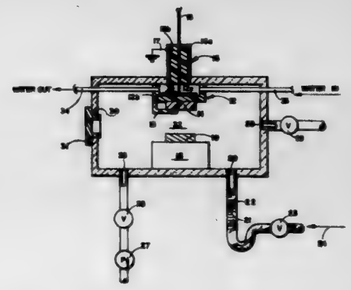
3,666,531
METAL CASTING PROCESS
Thomas G. Cocks, North Palm Beach, Fla., assignor to Nalco Chemical Company, Chicago, Ill.
No Drawing. Filed July 16, 1970, Ser. No. 55,567
Int. Cl. B28b *7/36*
U.S. Cl. 117—5.3 3 Claims

An improved refractory composition for coating ingot molds of the type comprising a refractory powder slurried into an aqueous silica-containing binder is afforded by incorporation with such refractory composition small amounts of chromium and/or vanadium and/or manganese containing salts.

3,666,532
DIMENSIONALLY STABLE MATTE-SURFACED POLYESTER DRAFTING FILM
Albert J. Reedy and Walter R. White, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 699,323, Jan. 22, 1968. This application July 2, 1970, Ser. No. 52,098
Int. Cl. B32b *27/36*; G03c *1/78*
U.S. Cl. 117—76 F 6 Claims

The eraseability of matte-surfaced polyester sheeting useful in engineering drafting is significantly improved by laying down directly on the matte surface either a thin layer of a polymeric tergel or a two layer configuration, the first layer being a terpolymer based on vinylidene chloride, an unsaturated ester, and an unsaturated carboxylic acid, and the second layer being a very thin gelatin layer.

3,666,533
DEPOSITION OF POLYMERIC COATINGS UTILIZING ELECTRICAL EXCITATION
Stuart M. Lee, Orange County, Calif., assignor to North American Rockwell Corporation
Filed Nov. 16, 1970, Ser. No. 89,970
Int. Cl. B44d *1/44*
U.S. Cl. 117—93.1 GD 1 Claim



An electric deposition process providing a glow discharge by virtue of electrical energy fields provided internal to a deposition chamber enables with one step to

provide a protective coating of a surface of a substrate material by polymerizing a dimer solid starting material. A carrier gas such as argon, xenon or krypton is used in the deposition chamber for the energy field to act upon it, provide the glow and cause the glowing gas to volatilize particles of the starting material and be deposited as the protective coating on the substrate.

3,666,534

METHOD OF MANUFACTURING GLASS ARTICLES HAVING A HEAT-REFLECTING FILM

Rolf Groth, Aachen, Germany, and Henricus Johannes Joseph Van Boort and Gerard Marie Jules De Neve, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,137
Int. Cl. B44d *1/48, 1/08*
U.S. Cl. 117—97 **8 Claims**

The invention relates to the manufacture of a glass envelope for a sodium vapour discharge lamp which envelope is provided with a film of doped indium oxide.

To obtain an envelope having both few internal mechanical tensions and a great heat reflectivity, the envelope is heated for 5 to 15 minutes at a given temperature after it has been provided with the indium oxide film, during which heat treatment the indium oxide film is contacted with a gas mixture comprising a very small percentage of oxygen.

3,666,535

METHOD OF MAKING POROUS OBJECTS

Donald D. Woolley, Alhambra, and Elden L. Goodenow, Los Angeles, Calif., assignors to The Gillette Company, Boston, Mass.

Filed Apr. 9, 1970, Ser. No. 26,849
Int. Cl. B05c *8/04*; D02g *3/36*
U.S. Cl. 117—98 **8 Claims**

Improvements in continuous methods of manufacturing elongated porous, absorbent and strong objects made of filamentary materials, provided with longitudinally extending channels through which fluid such as ink, may flow by capillary action, the filamentary material being bonded together and the size of the capillaries controlled by repeated applications of a bonding resin. Also relates to porous objects made by the method, said objects when used in writing instruments having greater durability and wear resistance, strength, resistance to feathering and longer life in the production of uniform writing traces.

3,666,536

MODIFICATION OF SURFACES WITH NITRENES

Douglas A. Olsen, Minneapolis, and A. Jean Osteraas, St. Paul, Minn., assignors to Ashland Oil, Inc.

No Drawing. Continuation of application Ser. No. 504,174, Oct. 23, 1965. This application May 18, 1970, Ser. No. 37,469
Int. Cl. C23c *11/00, 9/00*
U.S. Cl. 117—106 R **16 Claims**

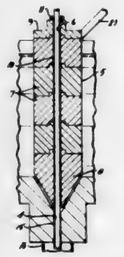
Organic and inorganic surfaces, including surfaces of metals such as stainless steel and polymers are modified by interaction with nitrenes, such as :NH generated by pyrolysis of chloramine, to produce a monomolecular-like modified surface which may exhibit modified properties of adhesion, surface tension, a low coefficient of friction, electrical resistance, corrosivity, permeability, durability and lubricity, as compared to an otherwise similar unmodified surface.

3,666,537

METHOD OF CONTINUOUSLY TEEMING AND SOLIDIFYING VIRGIN FLUID METALS

Sylvester V. Williams, Omaha, Nebr., assignor to Elwin A. Andrews, Milwaukee, Wis.

Continuation-in-part of application Ser. No. 497,177, Oct. 18, 1965. This application May 1, 1969, Ser. No. 820,847
Int. Cl. C23c *1/00*
U.S. Cl. 117—114 R **4 Claims**



Virgin fluid metal is continuously teemed and solidified from the inside outwardly by accretion upon a continuously moving solid body of the same metal.

3,666,538

PROCESS OF RENDERING A SOLID MATERIAL OIL AND WATER REPELLENT

Elemer Domba, Olympia Fields, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 848,103, Aug. 6, 1969. This application Oct. 12, 1970, Ser. No. 80,118
Int. Cl. D06m *15/00*
U.S. Cl. 117—121 **5 Claims**

The process of rendering a solid material oil and water repellent which comprises treating the material with an aqueous solution containing a fluoroamidoalkyl polysiloxane which is formed by the polymerization product of polyfluoro amido silane monomer and a copolymerizing monomer selected from the group consisting of epoxy siloxane monomer and silatranes; and drying to cure the treated material at a temperature of from 20–120° C.

3,666,539

HIGH TEMPERATURE CURING THERMOSETTING DECORATIVE COMPOSITION

Robert H. Kiel, deceased, late of Weston, Ohio, by Jessie H. Kiel, administratrix, Weston, Ohio, assignor to Owens-Illinois, Inc.

No Drawing. Continuation of application Ser. No. 688,697, Dec. 7, 1967, which is a continuation-in-part of applications Ser. No. 489,734, Sept. 23, 1965, and Ser. No. 571,986, Aug. 12, 1966. This application Apr. 20, 1970, Ser. No. 28,260
Int. Cl. C03c *17/30*
U.S. Cl. 117—124 F **16 Claims**

This invention relates to the preparation of a novel organic thermosetting resin base decorative composition having increased permanency of adhesion to a glass surface and capable of being cured at elevated temperatures up to about 2000° F. without browning or degrading thereof, said composition consisting essentially of approximately stoichiometric proportions of at least one carboxyl functional acrylic resin and at least one hydroxyl containing epoxy resin, and an ambifunctional, epoxy reactive silane present in an amount sufficient to substantially improve the permanency of adhesion of the composition to a glass surface. A further advantage of this invention is that the composition can be conveniently mixed and stored in one container until used.

3,666,540

NOBLE METAL ALLOYS

Arthur Peter Burnett, Tariffville, Conn., assignor to The J. M. Ney Company, Bloomfield, Conn.

No Drawing. Filed July 26, 1967, Ser. No. 656,048
Int. Cl. C22c *5/00*; B32b *15/04*
U.S. Cl. 117—129 **8 Claims**

Novel gold alloys having desirable properties of hardness and solidus temperature are provided which comprise about 67.0 to 87.0 percent gold, about 7.0 to 15.0 percent palladium, about 2.0 to 10.0 percent platinum, about 0.5 to 1.0 percent of iron and about 0.5 to 2.0 percent tin, all based upon the total weight of the alloy. Optional alloying elements include up to about 2.0 percent silver, 1.5 percent zinc, 1.0 percent indium and 1.0 percent rhenium.

3,666,541

PROCESS FOR COATING WITH A VINYL FLUORIDE POLYMER

Roy A. Gray and Moses L. Thomas, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Mar. 19, 1970, Ser. No. 21,224
Int. Cl. B44d *1/36*; C09d *3/78*
U.S. Cl. 117—132 CF **8 Claims**

High quality polyvinyl fluoride coatings are obtained by applying to a substrate a dispersion of polyvinyl fluoride in a latent solvent comprising sulfolane and water. Sufficient heat is then applied to coalesce the polymer and drive off the sulfolane and water.

3,666,542

PROCESS FOR THE PRODUCTION OF MICROPOROUS STRUCTURES

Koji Kigane, Nobuji Ishihara, and Atushi Kametaka, Mihara-shi, Japan, assignors to Teijin Limited, Osaka, Japan

No Drawing. Filed Jan. 28, 1970, Ser. No. 6,600
Claims priority, application Japan, Jan. 31, 1969, 44/7,088
Int. Cl. C08j *1/30*
U.S. Cl. 117—135.5 **8 Claims**

Process for preparing a microporous structure wherein a dispersion of a polyurethane having hydrophilic polyoxyethylene segments in a solvent plus water is coated on a substrate and selectively evaporated.

3,666,543

TRIS-(2-HYDROXYALKYL)-PHOSPHINE OXIDE FLAME RETARDANT ARTICLES

Ludwig Maier. 17 Tiergartenstrasse, 8802 Kilchberg, Zurich Switzerland

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,787
Claims priority, application Switzerland, Nov. 24, 1969, 17,554/69; Aug. 31, 1970, 12,973/70
Int. Cl. C09d *5/18*; D06m *13/28*; B32b *27/18*
U.S. Cl. 117—136 **3 Claims**

Tris-(2-hydroxyalkyl)-phosphine oxides of the formula

$$(RCHCH_2)_3PO$$
$$\quad\quad|$$
$$\quad\quad OH$$

in which R signifies an alkyl group having 1 to 6 carbon atoms and having 0–6 halogen substituents are provided. A process for preparing these phosphine oxides and the use thereof as flameproofing agents are disclosed.

3,666,544

METHOD OF TREATING COTTON FOR FIRE RETARDATION

William L. Kuechler, Jenkintown, Pa., assignor to Proctor & Schwartz, Inc., Philadelphia, Pa.

No Drawing. Filed Mar. 12, 1970, Ser. No. 19,107
Int. Cl. C09k *3/28*
U.S. Cl. 117—137 **5 Claims**

The method disclosed comprises the steps of first exposing the individual pores or fibers of a material as much as possible, then dispersing a desired hygroscopic powder, e.g., urea-diammonium phosphate with a free-flowing, anti-caking agent such as precipitated silica, into thorough contact with the exposed fibers, humidifying the exposed fibers to dissolve the powder and penetrate the fibers, e.g., by a fog obtained by mixing steam with saturated ambient air, and finally drying and/or curing the penetrated fibers to give rise to the desired characteristic imparted by the penetrating solution such as fire retardation. The hygroscopic powder is prepared by drying the constituents prior to pulverizing to reduce the moisture content thereof to less than ten percent, circulating hot air during the pulverizing process, and adding a free-flowing, anti-caking agent before or after the pulverizing process.

3,666,545

METHOD OF PRODUCING AN OPAQUE, LIGHT WEIGHT FABRIC AND RESULTANT FABRIC

John A. Pinatel, P.O. Box 490, Joliette, Quebec, Canada, and Georges A. Pascall, Montreal, Quebec, Canada; said Pascall assignor to said Pinatel

No Drawing. Filed July 15, 1969, Ser. No. 842,010
Claims priority, application Canada, July 26, 1968, 026,094
Int. Cl. B32b *27/36, 27/20*
U.S. Cl. 117—138.8 F **4 Claims**

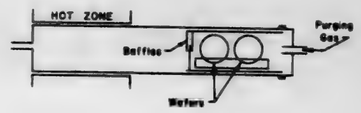
A light weight spunbonded polyester fabric having a weight of about 1.2 to 1.4 oz./yd.^{2} has applied thereto a very thin film of opaquing material consisting of a self-crosslinking acrylic emulsion polymer of a colloidal dispersion of a vinyl chloride or a polysiloxane containing 20 to 30% by weight of an opaquing filler. About 1 oz. of dry opaquing solids is applied per square yard of fabric.

3,666,546

ION-FREE INSULATING LAYERS

James L. Reuter, East Fishkill, and Jagtar S. Sandhu, Fishkill, N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.

Filed May 1, 1970, Ser. No. 33,701
Int. Cl. C23c *11/06*
U.S. Cl. 117—201 **10 Claims**



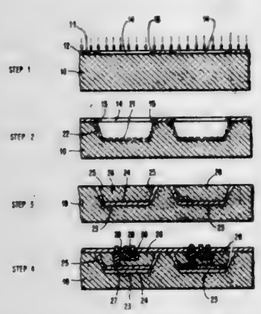
Ion contamination of insulators, such as thermally grown silicon dioxide layers on silicon wafers is virtually eliminated, if, after oxide growth, the wafers are cooled in an ion-free zone. A cylindrical, inner, quartz sleeve, preferably baffled, is interposed between the reaction tube and a wafer containing boat while a purging gas such as argon, nitrogen, helium and other inert gases is directed into the sleeve over the oxidized wafers to prevent contamination of the wafer by ions out-gassing from the walls of the reaction tube during the cooling cycle. Alternatively, the portion of the tube designated for wafer cooling is continuously baked before and during the oxide growth process and cooled simultaneously with the wafers thereby preventing the buildup of ions on the walls in the wafer cooling portion of the tube. Alternatively, a quartz sleeve is interposed between the wafer boat and reaction tube and extends from the hot zone and through the portion of the tube designated for wafer cooling. The inner sleeve is removed for wafer cooling.

3,666,547
PHOTO-CATHODES FOR ELECTRONIC DISCHARGE TUBES
Thomas Murphy, Purley, England, assignor to U.S. Philips Corporation
Filed Mar. 30, 1970, Ser. No. 23,785
Claims priority, application Great Britain, Mar. 31, 1969, 16,735/69
Int. Cl. H01j *39/06*
U.S. Cl. 117—201 4 Claims



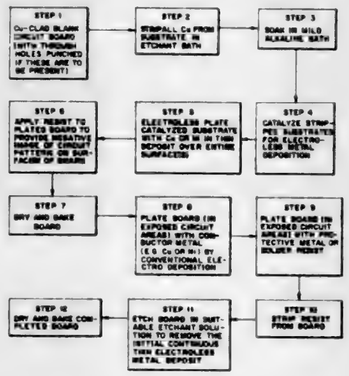
A method of manufacturing an electric discharge tube having a photocathode in which a source of the photocathode material coated with a sealant inert to the photocathode material is placed within an evacuated envelope which is then heated first to a bake-out temperature and then to a higher cathode-forming temperature.

3,666,548
MONOCRYSTALLINE SEMICONDUCTOR BODY HAVING DIELECTRICALLY ISOLATED REGIONS AND METHOD OF FORMING
Karl Brack, Fishkill, Edward F. Gorey, Beacon, and Guenther H. Schwuttke, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation-in-part of application Ser. No. 821,908, May 5, 1969. This application Jan. 6, 1970, Ser. No. 883
Int. Cl. H01l *7/00*
U.S. Cl. 117—212 8 Claims



A monocrystalline semiconductor body has a single, continuous insulating layer extending from the surface to a selected depth in the body and surrounding a region of the body to dielectrically isolate the region, which has one surface formed by the surface of the body, from the remainder of the body. The insulating layer is produced by bombarding the body with ions, which react with atoms in the body when heated to a predetermined temperature. The ions are directed through an opening in a mask and a beveled surface of the mask surrounding the opening. The beveled surface controls the penetration of the ions from the surface of the body into the body to the sub-surface layer of the ions directed through the opening in the mask. When the body is heated to the selected temperature, the embedded ions react with the atoms in the body to produce the insulating layer and dielectrically isolate the region, which is surrounded by the single, continuous layer, from the remainder of the body.

3,666,549
METHOD OF MAKING ADDITIVE PRINTED CIRCUIT BOARDS AND PRODUCT THEREOF
Harold L. Rhodenizer, Bethlehem, John J. Grunwald, New Haven, and William P. Innes, Cheshire, Conn., assignors to MacDermid Incorporated, Waterbury, Conn.
Filed May 9, 1969, Ser. No. 823,354
Int. Cl. C23c *3/02*
U.S. Cl. 117—212 9 Claims



A method is disclosed for forming printed circuit boards using the additive process. Improvement over the prior art is obtained in respect to adhesion of the conductor metal circuit to a thermoset resin substrate. In the process, a nickel or copper clad thermoset resin substrate is stripped of all metal, activated (catalyzed), a resist pattern applied to obtain the desired circuit and a conductor metal deposited on the circuit area by electroless and/or electrodeposition to a final desired thickness. At one or more points in the process the board is heated or baked. Various types of circuit boards resulting from the process are also disclosed.

3,666,550
TEXTILE MATERIALS HAVING DURABLE ANTISTATIC PROPERTIES
Tomomi Okuhashi and Shigeru Fujiwara, Hino-shi, Tokyo, Japan, assignors to Teijin Limited, Kita-ku, Osaka, Japan
No Drawing. Filed May 24, 1968, Ser. No. 731,738
Int. Cl. D06q *1/04*
U.S. Cl. 117—217 6 Claims

A textile material having durable antistatic properties, said material comprising organic textile fibers and a minor amount of electrically conductive fibers, each of said electrically conductive fibers comprising a substrate of organic synthetic fiber and a metallic coating chemically deposited thereon, said electrically conductive fiber possessing the functional properties of textile fibers.

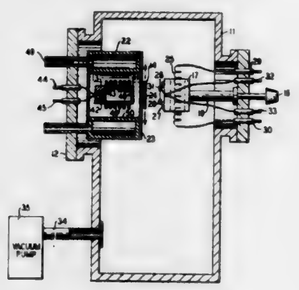
3,666,551
IMPREGNATING AND COATING COMPOSITION FOR POROUS CERAMIC INSULATION
Lawrence G. Bockstie, Jr., Bradford, Pa., assignor to Corning Glass Works, Corning, N.Y.
No Drawing. Original application Dec. 8, 1967, Ser. No. 688,974, now Patent No. 3,575,916, dated Apr. 20, 1971. Divided and this application Dec. 4, 1969, Ser. No. 882,352
Int. Cl. B44d *1/18;* H01b *3/00*
U.S. Cl. 117—218 19 Claims

A coating and impregnating composition suitable for providing a water repellent, abrasion, scratch, chip and dirt resistant coating on a ceramic insulating surface comprising a solvent, a suspension of a resin, a silicone and a partially hydrolyzed tetra-alkyl orthosilicate.

3,666,552
METHOD FOR GIVING ELECTRIC CONDUCTIVITY TO NON-CONDUCTOR
Buichiro Ayukawa, Tokyo, Japan, assignor to Shikoku Paper Manufacturing Co., Iyomishima-shi, Japan
No Drawing. Filed Nov. 16, 1970, Ser. No. 90,019
Claims priority, application Japan, Dec. 3, 1969, 44/97,092
Int. Cl. B44d *1/18;* C23c *3/00*
U.S. Cl. 117—227 50 Claims

A method for imparting electric conductivity to a non-conductor comprises depositing copper on its surface by heating the non-conductor at a temperature not exceeding 100° C. in an aqueous solution of a complex of cuprous thiocyanate and thiourea. In the case of an absorbent non-conductor, the latter can be treated with an aqueous or organic solution of the complex at room temperature, the non-conductor is made alkaline at a temperature not exceeding 100° C. by exposing it to ammonia gas, whereupon copper is deposited within and on the surface of the non-conductor.

3,666,553
METHOD OF GROWING COMPOUND SEMICONDUCTOR FILMS ON AN AMORPHOUS SUBSTRATE
John Read Arthur, Jr., Murray Hill, and Francis Joseph Morris, Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 8, 1970, Ser. No. 35,748
Int. Cl. B44d *1/18*
U.S. Cl. 117—229 13 Claims



The growth of high sheet resistance thin films of Group III(*a*)-V(*a*) semiconductor compounds is effected in an ultra-high vacuum by directing beams of the constituent elements at an amorphous substrate preheated to temperatures ranging from 250° C.–450° C. The described process is a nonequilibrium growth technique which permits the growth of non-epitaxial films of controllable thickness.

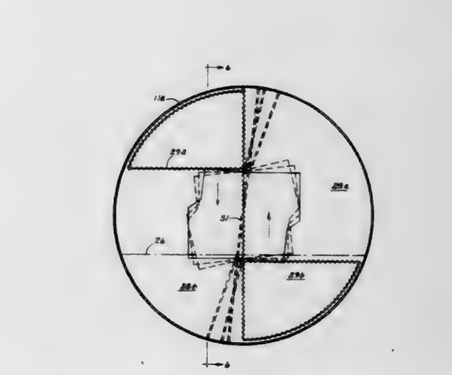
3,666,554
MANUFACTURE OF ELECTROPHOTOGRAPHIC PLATE
Kay Keiji Kanazawa and George Bryan Street, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
No Drawing. Filed Dec. 10, 1970, Ser. No. 97,007
Int. Cl. G03g *5/04, 13/22*
U.S. Cl. 117—230 4 Claims

A process for preparing an electrophotographic plate by evaporating under vacuum onto a conductive substrate held at a temperature of from 50° C. to 80° C. a layer consisting essentially of equal atomic proportions of selenium and sulfur.

3,666,555
OXIDATION RESISTANT GRAPHITE AND CARBON SHAPES
William P. Jones, McMurray, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.
No Drawing. Filed Feb. 8, 1968, Ser. No. 703,862
Int. Cl. B44d *1/20*
U.S. Cl. 117—228 6 Claims

Composite carbon shapes for use at elevated temperatures in an oxidizing atmosphere comprising carbon shapes and a coating comprising particulate aluminosilicate refractory bonded together and to the surface of the carbon shape with phosphoric acid.

3,666,556
DIFFUSION APPARATUS WITH POSITIVE FLOW CONTROLS
Clarence R. Steele, Denver, Colo., assignor to CF & I Engineers, Inc., Denver, Colo.
Filed Jan. 21, 1970, Ser. No. 4,689
Int. Cl. C13d *1/12*
U.S. Cl. 127—7 8 Claims



Drum type, liquid-confining tank mounted for rotation about a substantially horizontal axis of rotation and having a solution inlet and a pulp discharge outlet at one end and a pulp inlet and a juice outlet at its opposite end maintaining approximately a one-third fill of pulp in said tank. Partitioning means extend through the tank interior in spiral pattern inclusive of a pair of segmental division plates defining each cell, the latter having an opening formed in one plate to provide the segmental shaping and maintain a juice flow path for discharge from the cell. Means for rotating tank and cells. A screening member in each segment is closed on three sides and one end with its other end open for delivering pulp to a chute member directing it to the succeeding cell. Juice passing the screen is directed in the opposite direction to a succeeding cell.

3,666,557
NOVEL STARCH GELS AND PROCESS FOR MAKING SAME

Edward R. Jensen, Hinsdale, John E. Long, Western Springs, and Leamon D. Williams, Palos Heights, Ill., assignors to CPC International Inc.

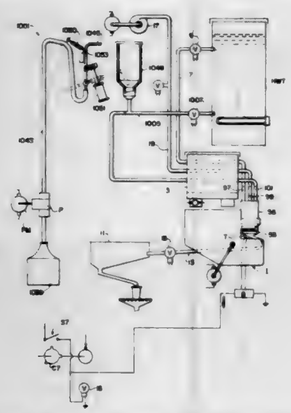
No Drawing. Filed Nov. 10, 1969, Ser. No. 875,545
Int. Cl. A23l *1/06*; C13l *1/08*
U.S. Cl. 127—32 4 Claims

Starch gels which approximate closely, in physical appearance, in mouthing characteristics, and in structure, gels made from gelatin, are prepared by subjecting an aqueous slurry of an amylose-containing starch which has a bound fat content of less than about 0.3% to a relatively high temperature (generally between about 158° F. and 220° F.) and a high degree of shear. The conditions of temperature and degree of shear should be such as to cause substantially complete disruption of the starch granules coupled with substantially no molecular degradation. The resulting starch gels can be used as extenders or complete replacements for gelatin in many applications in which gelatin is customarily employed, e.g. in food products such as molded salads and desserts, in the manufacture of hard capsules, and as encapsulating agents in the microencapsulation of sensitive materials.

3,666,558
COFFEE VENDOR

Harry H. Pryor, St. Louis, William H. Short, St. Louis County, and William V. Koeneker, St. Louis, Mo., assignors to UMC Industries, Inc., St. Louis, Mo.

Filed Sept. 10, 1970, Ser. No. 71,075
Int. Cl. A47j *31/00*
U.S. Cl. 134—1 23 Claims



A coffee vendor having a brewer for brewing fresh coffee from ground coffee and a cleaning system providing for delivery of a charge of hot water and a cleaning agent to the brewer and retaining the charge in the brewer, followed by two rinses of the brewer each involving delivery of a charge of hot water to the brewer and retaining this charge for a rinse interval, and having either an ultrasonic transducer or a mechanical system for pulsating these charges in the brewer for better cleaning, pulsation also being applicable to the charge of hot water in the brewer during brewing for better brewing of coffee.

3,666,559
SURFACE TREATMENT OF GLASS-CERAMICS

Joseph J. Domicone, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

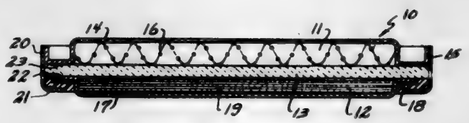
No Drawing. Filed July 2, 1970, Ser. No. 52,117
Int. Cl. C23g *1/02*
U.S. Cl. 134—3 6 Claims

A method of removing metal marks from the surface of a glass-ceramic material by treating the material with an aqueous solution of gluconic acid at elevated temperatures.

3,666,560
ELECTROCHEMICAL POWER-PRODUCING CELL

Elton J. Cairns, Downers Grove, Albert A. Chilenskas, Western Springs, Robert K. Steunenberg, Naperville, and Hiroshi Shimotake, Hinsdale, Ill., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Sept. 21, 1970, Ser. No. 73,830
Int. Cl. H01m *35/02*
U.S. Cl. 136—6 4 Claims

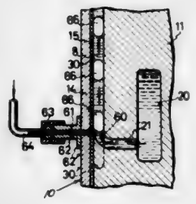


An electrochemical power-producing cell including a molten lithium metal anode, a molten selenium metal cathode, a paste electrolyte separating the anode from the cathode, an anode current collector and a single layer of niobium expanded metal formed in corrugated shape as cathode current collector. In addition means are provided for sealing the anode and the cathode from loss of lithium and selenium respectively and an insulator is provided between the anode housing and the paste electrolyte disk.

3,666,561
ELECTROLYTE CIRCULATING BATTERY

Takewo Chiku, Toyota, Japan, assignor to Kabushiki Kaisha Toyota Chuo Kenkyusho, Hisakata, Showa-ku, Nagoya-shi, Aichi-ken, Japan

Filed Feb. 26, 1970, Ser. No. 14,551
Claims priority, application Japan, Apr. 11, 1969, 44/28,545
Int. Cl. H01m *27/00*
U.S. Cl 136—86 R 9 Claims

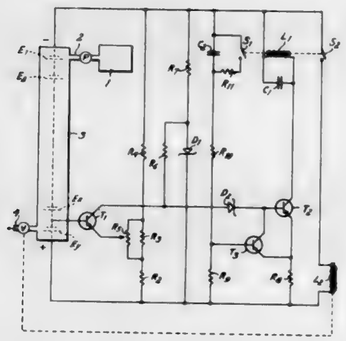


An electrolyte circulating battery having a plurality of cells electrically connected in series and supplied with circulating electrolyte, wherein there is provided a main electrolyte inlet passage and branched inlet passages leading therefrom to each cell, and branched outlet passages leading from each cell to a main electrolyte outlet passage, the branched inlet and outlet passages being made sufficiently long and of sufficiently small cross-section to prevent passage of any substantial amount of internal current between cells. Gas, such as air and oxygen, is introduced into the branched inlet end and/or outlet passages through needles to form bubbles in the electrolyte, thereby further increasing the electric resistance in said branched passages.

3,666,562
FUEL CELL WITH CONTROL SYSTEM AND METHOD

Dietrich Sprengel, Kelkheim, Taunus, Germany, assignor to Varta Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 3, 1969, Ser. No. 803,557
Claims priority, application Germany, Mar. 15, 1968, P 16 96 554.1
Int. Cl. H01m *27/12*
U.S. Cl. 136—86 B 15 Claims



A control system is provided for improving the venting of accumulated inert gas from electrochemical energy conversion means such as fuel cell batteries. The venting period is initiated by a drop in cell potential but is independent of cell potential recovery time.

3,666,563
ELECTRODE FABRICATION

Ahmad Sam, Paramus, N.J., assignor to Standard Oil Company, Chicago, Ill.

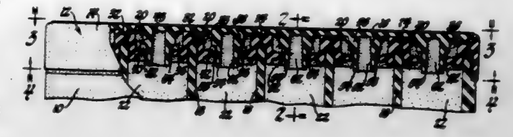
No Drawing. Filed Mar. 16, 1970, Ser. No. 20,086
Int. Cl. H01m *13/04*
U.S. Cl. 136—120 FC 8 Claims

A process for the fabrication of a fuel cell electrode, said process comprising: (1) adding an acid to a mixture of (a) supported catalyst-containing particles, (b) a material which will react exothermally with said acid when reaction is initiated, and (c) a polymeric thermoplastic; (2) heating the acid mixture to a temperature sufficient to set off said exothermic reaction between the acid and the reactive material, causing the thermoplastic to become fluid and adherent; and (3) subjecting the reacted acid mixture to pressure, thus bonding said particles together.

3,666,564
BATTERY COVER WITH INTEGRAL VENTING SYSTEM

Ralph L. Corbin, Richard A. Jones, and Robert G. Byers, Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 12, 1969, Ser. No. 857,342
Int. Cl. H01m *1/06*
U.S. Cl. 136—170 4 Claims



A multicell casing is disclosed which has a covering assembly comprising a cover member, a unitary filler cap member and a venting system for separating and collecting electrolyte from emanated gas. In the venting system disclosed, each cell has its own elongated horizontal vent chamber containing slush baffles. Each vent chamber is in fluid communication with a longitudinally extending horizontal manifold. The slush baffles are integral with the unitary filler cap member which is flushly seated within the covering member to form an upper wall for the individual vent chambers.

3,666,565
METHOD FOR PREPARING AN ELECTRODE FOR FUEL CELL

Masataro Fukuda, Toyonaka-shi, and Tsutomu Iwaki, Kyoto, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 22, 1969, Ser. No. 887,043
Claims priority, application Japan, Dec. 26, 1968, 43/667; Nov. 10, 1969, 44/28,767; Apr. 30, 1969, 44/34,373; Sept. 18, 1969, 44/75,582
Int. Cl. H01m *13/04*; C22b *3/00*; C23c *3/02*
U.S. Cl. 136—120 FC 11 Claims



An electrode for fuel cell using such a fuel hydrazine is prepared by forming a mixture containing nickel and antimony, and further containing copper, iron, etc., by reducing their salts and further reducing the mixture after a metal salt of platinum group has been added thereto. Better discharge performance and durability can be obtained than with a platinum group, though the amount of a metal of the platinum group to be added is decreased. In that case, the carriers are better carriers for the metal of the platinum group, endowing a promoter effect and having less deterioration of the electrode function.

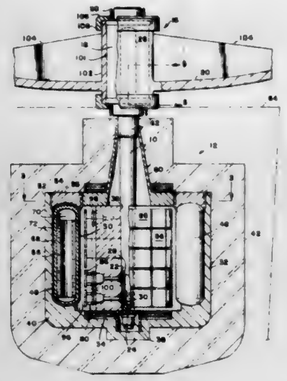
3,666,566
THERMALLY CASCADED THERMOELECTRIC GENERATOR

T. O. Paine, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Robert Flaherty, Pittsburgh, Pa.

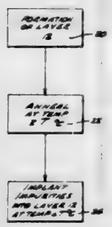
Filed July 24, 1969, Ser. No. 844,355
Int. Cl. G21h *1/10*; H01v *1/02*
U.S. Cl. 136—202 15 Claims

A thermally cascaded thermoelectric generator is disclosed. The generator includes a first stage containing high-temperature thermoelectric elements and a second stage containing lower temperature thermoelectric elements. The stages are connected in thermal series by means of an elongated heat transfer pipe containing a liquid metal and a wick. A portion of the heat radiated to the first stage from a high-temperature radioisotope source is converted to electricity. The heat rejected by the first stage is conducted to the heat pipe and absorbed by the liquid metal as latent heat of vaporization. The vapor rises to

the second stage and condenses to give up latent heat of condensation which is transferred to the second stage and is converted to electricity therein. The condensed liquid returns on the wick to the vicinity of the first stage.



3,666,567
METHOD OF FORMING AN OHMIC CONTACT REGION IN A THIN SEMICONDUCTOR LAYER
Robert G. Hunsperger, Malibu, and Ogden J. Marsh, Woodland Hills, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Jan. 15, 1970, Ser. No. 3,156
Int. Cl. H01l 7/54
U.S. Cl. 148—1.5 3 Claims

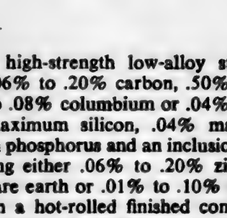


A method of providing an ohmic contact region in a thin doped semiconductor layer is disclosed. After the layer is formed in the semiconductor substrate and the substrate is annealed, impurities are implanted into the layer at room temperature, thereby creating a defect region in the layer which provides good ohmic contact to the layer.

3,666,568
METHOD OF IMPROVING PUNCHABILITY OF STEEL SHEETS
Hiroshi Shimanaka and Toshio Irie, Chiba, Toshikuni Tanda, Akashi, and Tomoyuki Ichi, Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan
Filed June 16, 1970, Ser. No. 46,619
Claims priority, application Japan, June 24, 1969, 44/49,519
Int. Cl. C23f 7/26
U.S. Cl. 148—6.2 10 Claims

A method of improving the punchability of electrical steel sheets and the like, by applying a first layer on the steel sheets, which contains one or more of chromic acid, chromates, and bichromates, and a second layer consisting of varnish on the first layer.

3,666,569
PRODUCTION OF DEEP DRAWING STEEL
Frank A. Hultgren, North Royalton, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio
Filed June 18, 1969, Ser. No. 834,369
Int. Cl. C21d 9/48; C22c 39/00
U.S. Cl. 148—12 17 Claims



Deep-drawable, aluminum-killed steel sheet is produced to be substantially non-earing by procedure wherein after hot rolling to a finish temperature of at least about 1500° F. and coiling at a temperature not higher than about 1100° F., the steel is cold reduced by an amount between about 50% and 80% and then annealed by a first step of heating to a temperature in the range between about 1030° F. and 1090° F. for at least two hours, advantageously six hours, and then heating the sheet to a temperature below the lower critical point, for softening.

3,666,570
HIGH-STRENGTH LOW-ALLOY STEELS HAVING IMPROVED FORMABILITY
Michael Korchynsky, John David Grozier, and John L. Mihelich, Bethel Park, Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
Filed July 16, 1969, Ser. No. 842,407
Int. Cl. C22c 39/54
U.S. Cl. 148—36 9 Claims

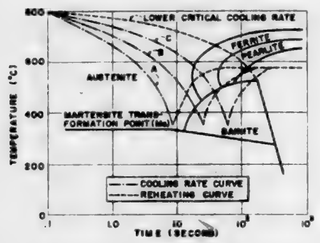


Fully killed high-strength low-alloy steels consisting essentially of .06% to .20% carbon, .50% to 1.4% manganese, .01% to .08% columbium or .04% to .12% vanadium, .05% maximum silicon, .04% maximum sulfur, .04% maximum phosphorus and an inclusion shape-control agent comprising either .06% to .20% zirconium, .01% to .10% of a rare earth or .01% to .10% mischmetal are characterized in a hot-rolled finished condition by yield strengths in excess of 45,000 p.s.i., ultimate tensile strengths in excess of 60,000 p.s.i., ductilities as measured by percent elongation (2 inches) in excess of 20%, good toughness, superior formability and reduced directionality. The steels are hot-rolled finished in the temperature range 1550° F. to 1650° F., cooled at a rate within the range 20° F. to 135° F. per second and collected by coiling or piling within a temperature range of 1025° F. to 1175° F.

3,666,571
MAGNETIC PARTICLE CORE MANUFACTURING PROCESS
Alfred M. Laing, Butler, Pa., assignor to Spang Industries, Inc.
No Drawing. Original application Mar. 21, 1968, Ser. No. 714,805, now Patent No. 3,607,462, dated Sept. 21, 1971. Divided and this application Oct. 13, 1970, Ser. No. 80,476
Int. Cl. H01f 1/24
U.S. Cl. 148—104 6 Claims

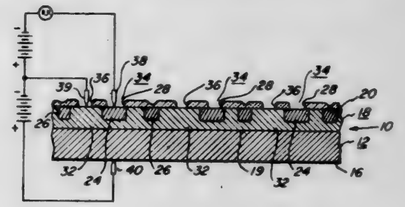
Magnetic particle cores suitable for phase shifting applications have a permeability substantially above 275 and core losses below 0.24 ohm per henry per unit of inductance at 1800 hertz are produced by a novel combination of steps including one or more of the following: reduction of pre-powder anneal additives, selective distribution of magnetic particle sizes, adding flexibility to the electrical insulation applied to the magnetic particles, elevated pressure compacting, surface etching of the pressure compacted core after hydrogen anneal, and an oxidation heat treatment following surface etching. Surface etching and oxidation combine to increase the breakstrength and improve other properties of various permeability cores, for example, from 125 through 300 permeability.

3,666,572
PROCESS FOR THE CONTINUOUS HEAT TREATMENT OF A LOW ALLOY STEEL WIRE MATERIAL
Akira Nakagawa, Tokyo, and Kazumasa Inoue, Saitama-ken, Japan, assignors to Suzuki Metal Industry Co., Ltd., Tokyo, Japan
Filed Jan. 21, 1969, Ser. No. 792,661
Claims priority, application Japan, Jan. 24, 1968, 43/3,733
Int. Cl. C21d 1/18
U.S. Cl. 148—134 5 Claims



A process for continuously heat treating a wire, rod, bar and strip material made of low alloy steel such as a chromium-vanadium, chromium-silicon and boron steel, characterized by heating the material to a temperature not lower than its A_3 transformation point, cooling the heated material at a suitable cooling rate not lower than its lower critical cooling rate, the former cooling rate being suitably determined depending on the kind of steel and the diameter or thickness of the material, to a temperature right above its Ms point, and then reheating the cooled material to a temperature not higher than its A_1 transformation point, thereby rendering the material mainly fine-pearlitic in structure; and a low alloy steel treated by the process.

3,666,573
METHOD FOR MAKING TRANSISTORS INCLUDING GAIN DETERMINING STEP
Norbert William Brackelmanns, Ironia, N.J., assignor to RCA Corporation
Filed Dec. 17, 1969, Ser. No. 885,699
Int. Cl. B01j 17/00; H01l 7/00, 7/36
U.S. Cl. 148—175 6 Claims



The method includes providing a uniformly thick base layer on a wafer of semiconductor material which is to become transistor collectors, and diffusing a plurality of separate emitter regions into the base layer. During emitter diffusion, a grid of like conductivity is diffused into the base layer and between adjacent emitter regions to isolate the active region of each transistor. A gain figure-of-merit is then measured for one transistor in the wafer, and if below a desired minimum, the emitter regions are rediffused. After achieving the desired gain, the transistors are separated from the wafer.

3,666,574
PHOSPHORUS DIFFUSION TECHNIQUE
Krishan S. Tarneja, Pittsburgh, Pa., Vito A. Rossi, Hawthorne, Calif., and James B. McNally, Irwin, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 6, 1968, Ser. No. 757,852
Int. Cl. H01l 7/36, 7/44
U.S. Cl. 148—188 8 Claims

Webbed dendritic material having clean shiny surfaces after diffusion and post-diffusion cleaning processes is made possible by embodying a diffusion process which first forms an oxide coating on the surfaces and then diffuses the impurity into the webbed dendritic material through the oxide coating.

3,666,575
SOLID PROPELLANT COMPOSITION WITH BURNING RATE CATALYST
Harold M. Fisher, Charlotte, N.C., assignor to the United States of America as represented by the Secretary of the Army
No Drawing. Filed Mar. 10, 1970, Ser. No. 18,321
Int. Cl. C06d 5/06
U.S. Cl. 149—19 8 Claims

Free radicals that catalyze the burning rate of propellants. Specifically, the free radical compound, 2,2-diphenylpicrylhydrazyl, increases the burning rate of propellant compositions comprised of the specified free radical compound and other major propellant ingredients consisting of the inorganic oxidizer ammonium perchlorate, polybutadiene binder, optional catalysts (e.g., n-butyl ferrocene or Fe_2O_3), and aluminum metal powder. Processing aids (e.g., lecithin) and curatives may be used in minor amounts in the basic formulation or as an additive to the propellant composition.

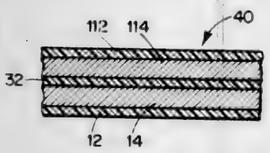
3,666,576
EXPLOSIVE COMPOSITION CONTAINING AN ENERGETIC ACRYLATE AS BINDER
Lawrence J. Engel, Green Brook, N.J., assignor to the United States of America as represented by the Secretary of the Army
No Drawing. Continuation-in-part of application Ser. No. 671,165, Sept. 27, 1967. This application Apr. 30, 1970, Ser. No. 43,619
Int. Cl. C06b *11/00*
U.S. Cl. 149—19 9 Claims

An improved energetic propellant charge, of the solid type useful in rockets and rocket motors may be formulated with a system of the polymer of tetrakis(difluoramino)amyl methacrylate and a large amount of hexakis(difluoramino)propyl ether if trimethylolpropane trimethacrylate and a peroxidic polymerization catalyst such as dicyanobenzoyl peroxide are used to crosslink the tetrakis(difluoramino)amyl methacrylate from which the polymer is derived.

3,666,577
THICKENED NITROPARAFFINS
Wesley A. Jordan, Minneapolis, Minn., assignor to General Mills, Inc.
No Drawing. Filed Dec. 23, 1969, Ser. No. 887,744
Int. Cl. C06b *7/00*
U.S. Cl. 149—89 8 Claims

A cyanoethyl ether of a galactomannan gum having a degree of substitution (D.S.) of greater than 1.9 is used to thicken nitroparaffins which are in turn used in explosives and rocket fuels.

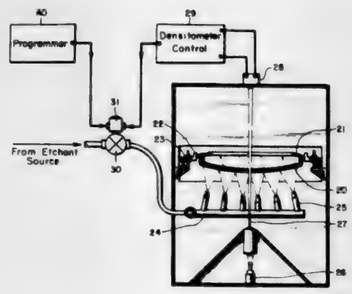
3,666,578
PRODUCTION OF HIGH MODULUS LAMINATES
Earl E. Chadsey, Jr., Sudbury, and Frank Feakes, Lexington, Mass., assignors to National Research Corporation, Cambridge, Mass.
Filed Sept. 29, 1969, Ser. No. 861,943
Int. Cl. B32b *15/08*; B44d *1/34*; C23c *13/02*; C23f *1/00*
U.S. Cl. 156—3 7 Claims



Laminates of repeating elements of stiff reinforcement are produced by coating the stiff reinforcement onto a very thin reain substrate. The resin substrate is applied in fluid form as a pre-coat to a temporary heavy substrate. The pre-coated substrate is overcoated with the stiff reinforcement to a thickness in excess of resin thickness. Then the temporary substrate is removed and the elements of resin/stiff material are laid up into a laminate. The resultant laminate is characterized by high volume fraction of the stiff material and limited weight of the resin due to its low density and limited volume fraction in the laminate.

3,666,579
ETCHING ELECTRODES
Leonard Dietch, Skokie, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed June 15, 1970, Ser. No. 46,354
Int. Cl. C23f *1/02*
U.S. Cl. 156—16 8 Claims

A shadow mask used in screening a color picture tube is re-etched in a multistation apparatus to have holes of larger size than the phosphor dots. A densitometer, positioned in an intermediate etching stage, measures the transmissivity of the mask to light and controls the etching process to achieve the desired hole size. An etchant is sprayed into that stage to maintain substantially constant



atmospheric conditions therein and thereby avoid changes in calibration of the densitometer that are attributable to varying response of the shadow mask material to the etchant or to operating conditions which otherwise lead to incorrect final hole size in the mask.

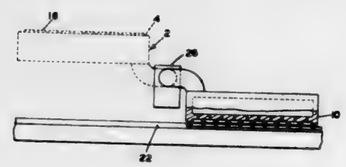
3,666,580
CHEMICAL MILLING METHOD AND BATH
John F. Kreml, Phoenix, Md., John M. Leibel, Hicksville, N.Y., and George C. Pierpont, Ellicott City, Md., assignors to Armco Steel Corporation, Middletown, Ohio
No Drawing. Filed Mar. 20, 1969, Ser. No. 809,027
Int. Cl. C23f *1/00*
U.S. Cl. 156—18 6 Claims

Chemical milling of titanium and titanium alloys by immersing the same in a bath comprising 2% to 7% by volume hydrofluoric acid, 1% to 10% by volume hydrochloric acid, with remainder water, for such time, and at such temperature as to remove a desired quantity of metal and yield a dull satinlike finish. For a best surface finish, immersion in the hydrofluoric acid-hydrochloric acid bath is followed by immersion in a bath comprising 5% to 20% by volume nitric acid and 2% to 5% hydrofluoric acid, with remainder water, this at such temperature and for such time as to cleanse the surface without, however, polishing the same.

3,666,581
METHOD OF MAKING DRIED GYPSUM ARTICLES HAVING IMPROVED STRENGTH TO DENSITY RATIO
Marvin K. Lane, Chicago, Ill., assignor to United States Gypsum Company, Chicago, Ill.
No Drawing. Filed Apr. 1, 1969, Ser. No. 812,330
Int. Cl. B32b *13/00*
U.S. Cl. 156—39 3 Claims

The process of making dried gypsum articles having an increased strength to density ratio and which can be cast from an aqueous slurry of calcined gypsum that contains less water for the same fluidity, by providing a specially sized calcined gypsum which contains 0% to 7% by weight of particles larger than 32 microns and 0% to 8% by weight of particles smaller than 1 micron, forming a slurry at usable fluidity after mixing vigorously with accelerator and casting while the sized calcined gypsum has a combined moisture content of less than 9% by weight.

3,666,582
CHIP PLACEMENT IN A GRID PATTERNED SHEET
Harold L. Kauffman, Lititz, and Richard M. Hisey, Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.
Filed Apr. 28, 1970, Ser. No. 32,561
Int. Cl. B44c *1/28*
U.S. Cl. 156—63 3 Claims



The sheet material is provided with a plurality of pockets in a grid-like pattern. A plurality of chips sized to fit in the pockets are positioned upon the sheet material. The chips are placed in a prearranged pattern before being placed upon the sheet material so that when the chips are positioned upon the sheet material they are placed directly in the pockets of the sheet material. A grid pattern template is used to secure the chips in the particular pattern desired, and this pattern is the same as that of the pockets of the sheet material. A vacuum transfer is then used to transfer the arranged chips from the template to the sheet. The chips are now consolidated to the sheet material by appropriate heat and pressure.

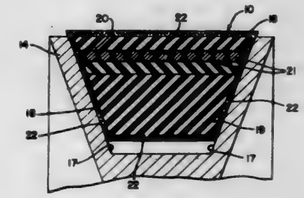
3,666,583
METHOD FOR MAKING AND ASSEMBLING SEALED TUBULAR BODIES
Yu Kun Pei and Frank Veres, Toledo, Ohio, assignors to Owens-Illinois, Inc.
Filed Apr. 22, 1970, Ser. No. 30,855
Int. Cl. B29c *25/00*
U.S. Cl. 156—82 15 Claims

Sealed sections of thermoplastic tubing, such as glass tubing, are formed by directing a cutting flame against a continuously moving length of tubing. The flame-emitting burner and the tubing move along parallel paths and at the same velocity.

A continuous length of tubing is cooled before being divided into individual sealed sections, so that the internal pressure within the sealed sections will be sufficient to cause the walls of the sections to expand when subjected to temperatures at which they are thermoplastic. Tubing sections so produced are suited for use in a process wherein they are arranged in parallelism, laterally confined and heated above their softening temperature so that their walls expand into mutual conformity to form a honeycomb-like structure.

3,666,584
METHOD OF MAKING AN EXTENSIBLE POWER TRANSMISSION BELT
Sidney R. Fix, Lincoln, Nebr., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar 5, 1970, Ser. No. 26,457
Int. Cl. B32b *31/26*
U.S. Cl. 156—84 7 Claims

An extensible belt, particularly a power transmission belt, containing a tension section of longitudinally extending individual textile cords which include synthetic thermoplastic filamentary material in their structure. The cords are simultaneously relaxed and heat-treated in the absence of applied tension and are thereby capable of an initial stretch or elongation within certain defined limits and a subsequent recovery of at least a substantial portion of the initial stretch. The cords are subsequently incorporated into the belt and the vulcanized belt is thereby made extensible within certain defined limits and capable of being stretched in order to be installed in a belt drive assembly. After the initial stretch, the belt subsequently retracts or recovers to the driving position with respect to the pulleys and retains sufficient tension to

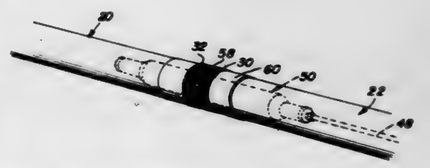


frictionally engage the pulley surfaces and perform its driving function. The self-tensioning belt of this invention eliminates the need for tensioning devices or means to adjust the drive to provide the proper tension required when conventional transmission belts are employed and is particularly useful in applications involving V-type transmission belts which are designed to operate with grooved pulleys or sheaves.

3,666,585
LAMINATED AMORPHOUS AND CRYSTALLINE POLYPROPYLENE SHEETING
Herbert S. Barbehenn and Robert F. Williams, Jr., Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Original application Nov. 22, 1968, Ser. No. 778,330, now Patent No. 3,607,616, dated Sept. 21, 1971. Divided and this application Jan. 5, 1971, Ser. No. 48,599
Int. Cl. B32b *31/00*
U.S. Cl. 156—85 1 Claim

A laminated polypropylene sheeting having physical properties comparable to those of crystalline polypropylene sheeting and comprising a core of polypropylene fiber batting impregnated with amorphous polypropylene laminated to at least one and preferably between two sheets of crystalline polypropylene is disclosed.

3,666,586
CORD REINFORCED HOSE SPLICING METHOD
Edward H. Lacey, P.O. Box 796, Trent, S. Dak. 57065
Continuation-in-part of abandoned application Ser. No. 874, Jan. 6, 1970. This application Nov. 10, 1970, Ser. No. 88,420
Int. Cl. B32b *35/00*
U.S. Cl. 156—93 6 Claims



A splice for cord reinforced hoses such as those employed in irrigation systems as a supply hose which is dragged along the supporting surface of an area being irrigated by the irrigation apparatus including an internal

and external laminated splice assembly and a procedural step including the tying of the reinforcing cords employed in the hose by the use of non-slip knots to form a splice which is as strong as if not stronger than the original hose. An internal expansible balloon member is employed to place and retain the internal lamination in place and the external lamination is bonded in place with the curing step effectively vulcanizing the internal lamination and the external lamination to the hose to provide a seal for the splice. The internal expansible member includes a resilient tubular member of elongated construction reinforced by a plurality of parallel cords embedded therein. The method of forming the splice not only secures the reinforcing cords of the hose together by tying but also forms a reinforced sealing lamination on both the interior and exterior of the hose.

3,666,587
METHOD OF MAKING A LAMINATED LIGHT-CONDUCTING FIBER MATERIAL
Kazuyoshi Nagao, Yokohama, Japan, assignor to American Optical Corporation, Southbridge, Mass.
Filed Sept. 29, 1969, Ser. No. 861,871
Int. Cl. B31f *1/00*
U.S. Cl. 156—199 **4 Claims**



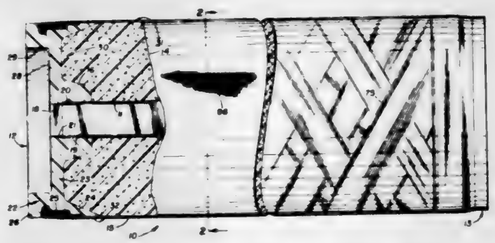
Plastic light-conducting fiber ribbons are formed of a transparent high refractive index strip of plastic material covered with thin films of relatively low refractive index plastic material. The covered strip is heated and rolled to the configuration of a multiplicity of interconnected juxtaposed fibers from which monofilaments may be cut longitudinally of the ribbon.

3,666,588
METHOD OF RETAINING AND BONDING ARTICLES
William R. Wanesky, Wescosville, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed Jan. 26, 1970, Ser. No. 5,829
Int. Cl. B32b *31/26*
U.S. Cl. 156—155 **9 Claims**

Beam-lead integrated-circuit chips are held in desired locations on substrates through the use of high purity glycerol as an adhesive. The beam leads of the chip are precoated with glycerol and the chips are placed at a desired location. If the desired location is to be permanent the chip can be bonded with conventional thermocompression bonding technique and the glycerol will be evaporated leaving no undesirable residues. Thus, the glycerol does not interfere with the bonding.

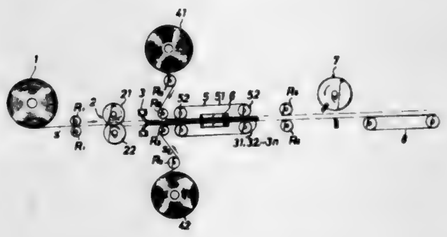
If the location is to be temporary, extremely fragile chips can be removed by lifting the chip with a heated vacuum pickup. Contact of the chip with a heated pickup evaporates the glycerol and the chip comes away from the substrate quite readily. Less fragile chips can be removed without evaporation of the glycerol.

3,666,589
METHOD FOR MAKING INDUSTRIAL ROLLS
Sterling W. Alderfer, Akron, Ohio, assignor to Teledyne, Inc., Los Angeles, Calif.
Original application July 1, 1968, Ser. No. 741,727, now Patent No. 3,571,878. Divided and this application Mar. 2, 1970, Ser. No. 18,535
Int. Cl. B65h *81/02*
U.S. Cl. 156—172 **2 Claims**



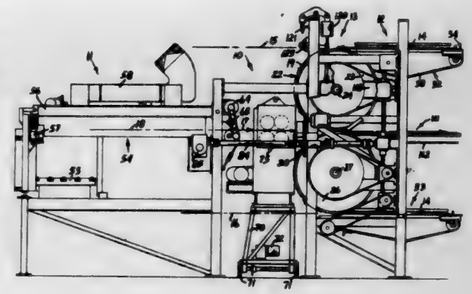
The improved industrial roll has axially spaced, preferably elastomeric, cylindrical head members with a beam extending therebetween. A core, preferably of rigid urethane foam, extends cylindrically between the head members and encases the beam. The head members and core are, in turn, encased within a skin that is preferably a filled polyester resin, the skin being locked to the head members. A coupling may be utilized to assist with torsional load transfer between the beam and each head member, and blades may be used to transfer such loads between the beam and the core. To make such a roll, the head members are positioned at the ends of a beam and a core is molded around the beam and between the head members. The resulting skeletal roll is then provided with the skin that locks the head members to the core. The apparatus for applying the skin comprises a winder for wrapping a ribbon-like skin component helically about the skeletal roll. Sufficient wraps are made completely to encase the core, and a drive mechanism employing a lost motion connection wraps additional lengths of ribbon into a lock groove in each head member to join the components together in an integral roll.

3,666,590
METHOD FOR MANUFACTURE OF CORRUGATED SYNTHETIC RESIN SHEETS
Rinosuke Susuki, Tokyo, Hiroshi Hoshi, Narashino, and Shinichi Araki, Funabashi, Japan, assignors to Raion Yushi Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 12, 1970, Ser. No. 10,797
Claims priority, application Japan, Feb. 14, 1969, 44/11,163
Int. Cl. B31f *1/24*
U.S. Cl. 156—210 **22 Claims**



A method for manufacture of corrugated synthetic resin sheets made of ordinary synthetic resins, but specially suited for manufacture of corrugated synthetic resin sheets which are developed by the same inventor and have both properties of paper and synthetic resins. The sheet is corrugated while it is advanced so that ridges and hollows of the corrugation are formed in parallel with the direction of advancement of the sheet; and a plurality of straight backing members are extended in parallel with the direction of advancement of the sheet so that they may be placed in the hollows of the corrugated sheet, whereby when a planar sheet or sheets are bonded to one or both sides of the corrugated sheet by thermal welding or by use of an adhesive agent, the planar sheet or sheets may be pressed firmly against the corrugated sheet, thereby sufficiently improving the adhesiveness and mechanical strengths and rendering corrugated synthetic resin sheets capable of sufficiently absorbing the impact in an effective manner.

Representative figure: FIG. 1.



3,666,591
METHOD OF BONDING A RESINOUS FILM TO A SUBSTRATE USING HIGH ENERGY RADIATION
Roger P. Hall, Mayfield Heights, Ohio, assignor to SCM Corporation, New York, N.Y.
No Drawing. Continuation-in-part of applications Ser. No. 682,140, Nov. 13, 1967, and Ser. No. 737,576, June 17, 1968. This application Oct. 3, 1968, Ser. No. 764,916
Int. Cl. B29c *19/02*
U.S. Cl. 156—272 **18 Claims**

A process for coating by radiation a substrate, and especially one having a metallic surface, with a substantially catalyst-free system containing a polymerizable organic unsaturated resin susceptible to free-radical catalysis; and the resulting product. In one form, a film of the resin is superimposed upon the substrate while a facing side of either the resinous film or substrate is contacted at any time prior to such radiation with an acid polymer-forming material having a mineral acid group selected from the class consisting of oxygenated sulfur-containing and oxygenated phosphorus-containing groups which are attractive to the substrate, and an organic unsaturated moiety which is sufficiently responsive to high energy radiation to react chemically with the film of the coating resin. Thereafter, the film and substrate are subjected to the high energy radiation to adhere one to the other.

The process is also adapted for coating articles with normally air-inhibited, thermosetting resins by a two-step process, wherein the resin film is first passed through one treating zone effective to impart mass integrity and thereby define a sheet, and the sheet together with the acid polymer-forming material and the substrate is then passed through another treating zone effective substantially to complete the cure of the resin and simultaneously adhere the sheet to the substrate, at least one of the treating zones comprising exposure to high energy radiation.

3,666,592
METHOD FOR AUTOMATICALLY LAYING UP PLYWOOD PANELS
Harold A. Keller and Patrick J. Young, Lewiston, Idaho, assignors to Potlatch Forests, Inc., Lewiston, Idaho
Filed Apr. 9, 1969, Ser. No. 814,581
Int. Cl. B27d *1/04*
U.S. Cl. 156—285 **4 Claims**

A method for automatically laying up plywood panels, particularly three ply, is described in which the front and back veneer sheets are fed crosswise to respective parallel vacuum drum assemblies that are rotated in opposite directions. The drums bend the sheets about the peripheries thereof and move the sheets in a 180° path to converge between the drum assemblies. A core sheet is fed between the drum assemblies to interpose between the front and back sheets. The front, core and back sheets are fed in a timed relation to align the leading edges of the sheets as they converge.

3,666,593
PROCESS FOR MAKING A POLYISOCYANATE-IMPREGNATED, PAPER-OVERLAID PANEL
Hong Man Lee, Danbury, Conn., assignor to U.S. Plywood-Champion Papers Inc., New York, N.Y.
Filed Oct. 27, 1969, Ser. No. 869,532
Int. Cl. B29c *3/00*; C09j *5/02*
U.S. Cl. 156—285 **14 Claims**



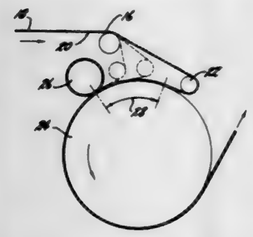
An organic polyisocyanate serves as both the impregnant and the adhesive for paper-overlaid panels. Such panels can be used for indoor and outdoor applications and especially for making concrete forms. The polyisocyanates used have a low molecular weight and can be used with or without catalysts and in solution with an inert solvent. The properties of the polyisocyanates used make it possible to combine impregnation and lamination of the overlay paper in one step as long as substantially closed conditions are used. The polyisocyanate reacting with water in the paper and substrate (especially when wood) forms carbon dioxide, the pressure of which when confined by the press will force and distribute the polyisocyanate into the substrate and paper.

Where the substrate to be overlaid is plywood, the same may be formed at the same time as the overlay is placed. The overlay paper may be kraft paper of any grade.

3,666,594
PROCESS FOR PREPARATION OF NONWOVEN FIBROUS WEB-TISSUE LAMINATE
Eugene H. Condon and James E. Robinson, Neenah, and James H. Wills, Appleton, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Mar. 30, 1970, Ser. No. 23,824
Int. Cl. B32b *7/14*
U.S. Cl. 156—291 **9 Claims**

Tissue-fiber laminates are prepared by substantially completely embedding a nonwoven fibrous web in a pat-

terned layer of a plastisol adhesive which is partially embedded in the tissue web. Embedment of the fibrous



web in the adhesive is accomplished while the adhesive is in the fluid state but at just about its gel point.

3,666,595

METHOD FOR MANUFACTURE OF COMPACTED COMPOSITE FABRICS USING THERMOPLASTIC ADHESIVES

Jackson Baner, Croydon, Pa., assignor to Collins and Aikman Corporation, New York, N.Y.

Filed Oct. 6, 1969, Ser. No. 863,966
Int. Cl. C09j 5/00
U.S. Cl. 156—324 **9 Claims**

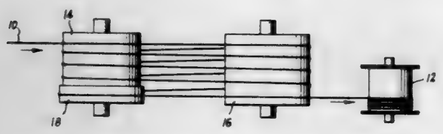
Composite textile fabrics which are dimensionally stabilized to laundering and dry cleaning and a method for producing same are provided. In the process of the present invention, an uncompacted laminate is formed from at least one ply of a textile fabric, and one or more plies of either a textile fabric or a non-textile material such as a foam. The plies are bonded together with a hot melt adhesive which has a softening point above 160° F. and which is flowable and adhesive in a temperature range above 160° F. and below the softening or decomposition temperature of the materials comprising the plies. The laminate is then heated to the above temperature range and compacted an amount sufficient to compensate for at least a substantial portion of the inherent shrinkage of the uncompacted laminate. The compacted laminate is then cooled while in the compacted form. The hot melt adhesive solidifies and holds the composite textile fabric in the compacted dimensionally stabilized form.

3,666,596

METHOD FOR IMPROVING STRIPPABILITY OF INSULATION FROM WIRE

Charles G. Morton, Chelmsford, Mass., assignor to General Electric Company

Filed July 1, 1970, Ser. No. 51,534
Int. Cl. H02g 1/12; B32b 35/00
U.S. Cl. 156—344 **4 Claims**



In order to improve the strippability of insulation from wire, the insulated wire is wound taut over two spaced-apart capstan wheels. One capstan wheel is provided with an annular section of enlarged diameter, and the last turn of the wire on its travel to the take-up reel is passed over this annular section. The conductor and insulation are stretched thereby substantially loosening or breaking the bond between the insulation and conductor, and the insulation then may be readily stripped from the wire.

3,666,597

METHOD OF CATALYZING ADHESIVE CURE

Willis E. Parnell, Oak Grove, Oreg., assignor of fractional part interest to Howard Carl Mason, Oregon City, Oreg.

No Drawing. Filed Aug. 29, 1967, Ser. No. 663,941
Int. Cl. C09j 5/04
U.S. Cl. 156—305 **9 Claims**

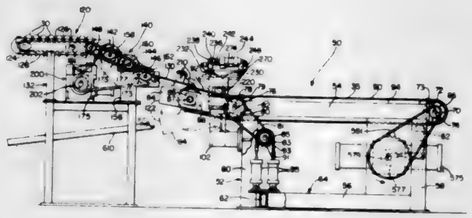
A procedure for bonding elements together, wherein the elements are assembled with a glue line between them, and the glue line comprises an adhesive and a catalyst for accelerating curing of the adhesive distributed in encapsulated form in the adhesive. Also distributed in the glue line is a somwhat less active nonencapsulated catalyst for the adhesive. After the elements have been assembled, the encapsulated catalyst is released by opening up the capsules to promote fast curing of the adhesive in localized regions distributed throughout the glue line, with final curing of the adhesive throughout the entire glue line being promoted also by the nonencapsulated catalyst.

3,666,598

APPARATUS FOR MAKING A ROLLING LOBE DIAPHRAGM

Christopher E. Christie, James R. Fedor, and Ishmael S. Harwell, Akron, and Robert S. Riggs, Stow, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 13, 1970, Ser. No. 54,420
Int. Cl. B65h 11/02, 25/32, 81/04
U.S. Cl. 156—361 **22 Claims**



Method of building an automotive vehicle type shock absorber sleeve having reinforcing cord elements in superimposed coaxial helices placed between a seamless rubbery sleeve and a covering layer of rubbery material. An apparatus for performing the method described which features a plurality of curing mandrels successively disposed to cooperate individually with a broad endless belt to wind successive layers of reinforcing cords and rubbery material about seamless tubes placed axially on each mandrel, and tower mechanisms for measuring, cutting to length, and disposing on the belt individual pieces of cord stock at appropriate angular relation with the mandrel length and belt movement directions.

3,666,599

SONIC OR ULTRASONIC SEAMING APPARATUS

Edward G. Obeda, Brookfield, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.

Filed Nov. 27, 1970, Ser. No. 93,151
Int. Cl. B29c 27/08; B23k 1/06
U.S. Cl. 156—380 **16 Claims**

A sonic or ultrasonic seaming apparatus uses a driven rotating anvil and an opposing resonator also called "horn" which is coupled to a source of sonic or ultrasonic energy. The speed of the driven anvil, and consequent workpiece feed rate, is coordinated with the velocity of the frontal surface of the resonator imparting the

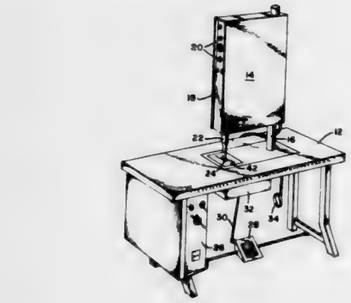
sonic or ultrasonic energy to the workpiece. This is accomplished by an electronic circuit in which the applied voltages to the power supply and to the motor for the anvil assume a predetermined relationship.

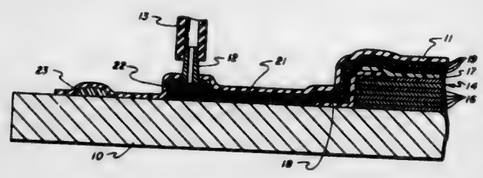
3,666,600

APPARATUS FOR FORMING LAYUP LAMINATE

Stanley Y. Yoshino, Monterey Park, Calif., assignor to North American Rockwell Corporation

Filed Mar. 10, 1969, Ser. No. 805,595
Int. Cl. B32b 31/00
U.S. Cl. 156—382 **3 Claims**





A technique is described for preparing glass fabric laminates bonded with polyaromatic resins such as polyimide. A vacuum bag layup arrangement having polyimide prepregs covered with a porous release layer and a layer of bleeder fabric having a substantial void volume is provided for accommodating a flow of solvent and resin from the prepregs. An impervious border around the layup prevents edge bleeding of the resin. Special paths to the vacuum connections are provided from the bleeder layer. A two stage pressurized curing cycle is also provided so that properties of the composite laminate are controlled and low processing costs are encountered.

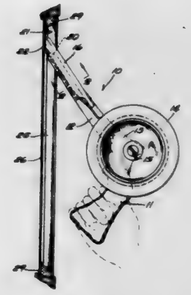
3,666,601

TAPE APPLICATOR

Ben W. Wuerch, 4203 N. 62nd St., Milwaukee, Wis. 53203

Filed Aug. 26, 1970, Ser. No. 67,013
Int. Cl. B32b 31/18, 31/20
U.S. Cl. 156—527 **7 Claims**

This tape applicator is primarily intended for applying masking tape to window glass panes, along sash muntins, preparatory to painting the muntins. The applicator comprises a tape roll support, a guide along which is trained tape unrolled from the tape roll, a tape presser at the end of the guide and a knife at the end of the guide for severing the tape after a tape strip has been applied to the glass. The guide has a transverselv curved bed narrower than the presser, and has a curvilinear dimension at least equal to the tape width.

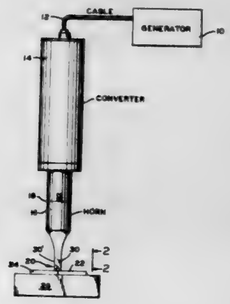


3,666,602

APPARATUS FOR JOINING THERMOPLASTIC MEMBERS BY SONIC OR ULTRASONIC ENERGY

Edward G. Obeda, Brookfield, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.

Original application Mar. 7, 1969, Ser. No. 805,206, now Patent No. 3,577,292, dated May 4, 1971. Divided and this application Mar. 25, 1970, Ser. No. 25,618
Int. Cl. B29c 27/08; B32b 31/16
U.S. Cl. 156—580 **5 Claims**



Juxtaposed thermoplastic members abutting along a common interface surface are joined by contacting both members with a sonically or ultrasonically vibrating horn having tooth-like protrusions at its output end. The protrusions are caused to penetrate through the surface of each member and, responsive to the dissipation of energy, cause softened material which is urged to flow across the interface surface to provide, upon hardening, a joint.

3,666,603

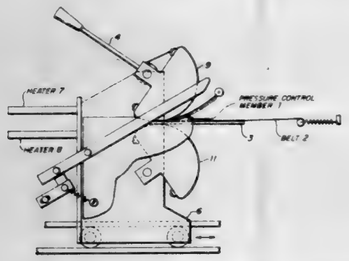
APPARATUS FOR LAMINATING PRE-EMBOSSED I.D. CARDS

Roger J. Kuhns, Lincoln, and Bruce H. MacLeod, Littleton, Mass., assignors to Avant Incorporated, Lincoln, Mass.

Filed Apr. 28, 1970, Ser. No. 32,541
Int. Cl. B30b 15/34; B32b 31/20
U.S. Cl. 156—583 **10 Claims**

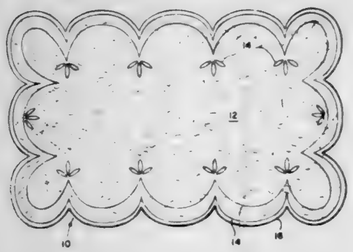
Apparatus for applying laminating pressure to heated sheets to be laminated having embossed indicia within a first area of the sheets and the absence of embossed indicia within a second area of the sheets, including a

pressure applicator means for applying laminating pressure to the heated sheets solely within the second area thereof, the pressure applicator means including a pressure



control member having a cutout portion overlaying the embossed indicia to prevent the application of laminating pressure and heat thereto, in order to enable pre-embossing of the sheets prior to lamination.

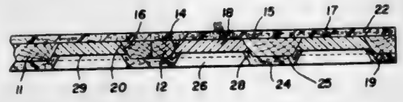
3,666,604
ORNAMENTAL ARTICLE AND METHOD OF MAKING THE SAME
Dennie Coffet, 1 W. 67th St., New York, N.Y. 10023
Filed Nov. 1, 1968, Ser. No. 772,650
Int. Cl. B44b *1/06*; B32b *5/24*
U.S. Cl. 161—2 **38 Claims**



An ornamental placemat is made of top and bottom, highly polished, thermoplastic sheets between which is placed a batt of relatively opaque thermoplastic wadding. Design lines are provided by heat sealing the sheets to the wadding, which becomes compressed and fused into a transparent mass laminated to the sheets. The resulting article is relatively opaque except along the design lines which are transparent and have an unusual highly luminous appearance. The sheets and/or the wadding may be tinted to enhance the decorative quality of the article. In a second embodiment, similar effects are obtained while omitting the bottom transparent sheet. In another embodiment, the surface of the wadding is partially embedded in the transparent top sheet.

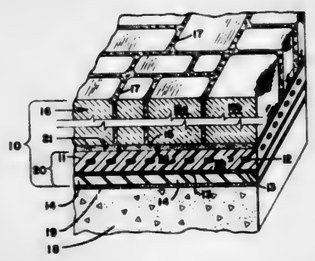
3,666,605
LAMINATED PANEL WITH AN INTEGRAL WINDOW, AND METHOD OF FABRICATION THEREOF
Walter H. Meyer, Huntington Station, and William M. Menger, Babylon, N.Y., assignors to Lunn Laminates, Inc., Wyandanch, N.Y.
Filed July 23, 1970, Ser. No. 57,555
Int. Cl. E04c *1/42, 2/54*
U.S. Cl. 161—3.5 **5 Claims**

A laminated panel has a transluoent, protective plastic layer onto which is bonded one or more blocks to form a core. At least one of the blocks has a hole therethrough into which is set a transparent pane which thereby bonds to the layer. Another plastic layer is bonded to the other side of the core. Before bonding, the layers may be in the form of a translucent thermoplastic sheet or in a translucent thermosetting plastic liquid such as a resin coating and in either form may be reinforced with a fibrous sheet



in a woven or unwoven form. The layers are bonded to the block by a suitable transparent self-setting resin adhesive. The blocks in the core which may be of plastic foam, aluminum, plywood, etc. are abutted edgewise and covered by the seamless layer which if desired may have a pigment for concealing the blocks.

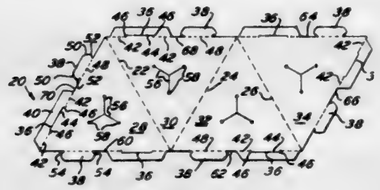
3,666,606
COMPOSITE MEMBRANE AND TILE SYSTEM
William S. Stokes, 941 Placentia Ave., Apt. F, Fullerton, Calif. 92634
Filed Feb. 18, 1970, Ser. No. 12,182
Int. Cl. B32b *3/16*
U.S. Cl. 161—37 **14 Claims**



A composite membrane and tile system, comprising an intermediate sheet of fluid impervious, synthetic polymer resin, an oriented rubber elastomeric layer adhesively bonded to the bottom of the sheet, and a layer of tile disposed atop the sheet. A grout, preferably comprising a flexible epoxy resin with an aluminum silicate extender, separates segments of the tile. The tile may be bonded to the sheet by an acrylonitrile and phenolic resin adhesive. The system facilitates installation of tile directly on architectural substrates, the membrane portion preventing fluid leakage to, and isolating the tile from movement of, the substrate.

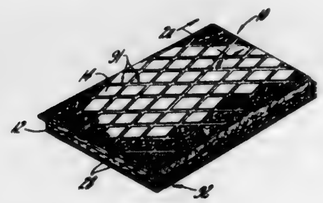
3,666,607
BLANK FOR CONSTRUCTING SOLID FORMS
Joel J. Weissman, 169 Marietta Ave., Passaic, N.J. 07055
Filed Sept. 3, 1968, Ser. No. 756,774
Int. Cl. B31d *5/00*
U.S. Cl. 161—44 **9 Claims**

A blank for constructing solid forms. The blank comprises a stiff planar sheet. The sheet has at least one polygonally shaped section. Each of the sections has a plurality of slits in accordance with the number of corners of the polygon. Each of the slits emanates from the center of a polygonal section and extends outwardly towards one of the corners of the sections. The other ends of the slits are terminated at a circular opening. The blank has fastening elements on each of its free edges which are adapted to facilitate construction of a solid form. The slits



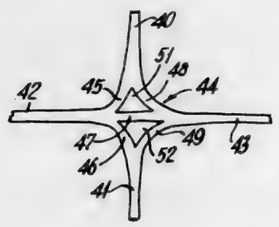
enable the securement of the solid form to another solid form having polygonally shaped sections with similarly formed slits.

3,666,608
DISPOSABLE TOWEL
William J. Mattes, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Feb. 11, 1970, Ser. No. 10,578
Int. Cl. B32b *5/00*; D04h *13/00*
U.S. Cl. 161—62 **8 Claims**



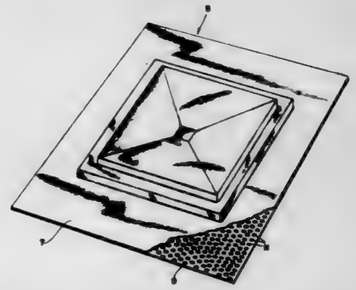
A disposable towel having a central absorbent core encased within a nonwoven high-loft material. The high-loft material has a backing layer of flexible adhesive and a multiplicity of elements which are individually looped outward from said backing layer with the ends of each loop embedded in the backing layer.

3,666,609
RETICULATE SHEET MATERIAL
Frank Kalwaites, Somerville, and Peter L. Doviak, South Brunswick, N.J., assignors to Johnson & Johnson
Filed July 15, 1970, Ser. No. 54,961
Int. Cl. B32b *3/10*
U.S. Cl. 161—109 **15 Claims**



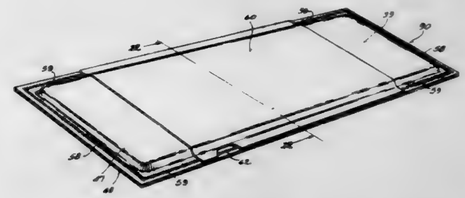
A reticulate polymer sheet material comprising intersecting filaments with the filaments integral at the intersections. The filaments between intersections have a high degree of molecular orientation. The intersections have a molecular orientation of at least 75% of the molecular orientation of the filaments.

3,666,610
GRILLE CLOTH ASSEMBLY
Sol A. Rosen, Highland Park, Ill., assignor to Assembly Cloth Company, Chicago, Ill.
Filed June 3, 1969, Ser. No. 829,904
Int. Cl. B32b *3/10, 3/26*
U.S. Cl. 161—113 **2 Claims**



A three dimensional acoustical grille cloth assembly is described comprising a shape retaining backing sheet with a decorative grille cloth front portion bonded thereto. A preferred method of forming the three dimensional grille cloth assembly by hot pressing a laminated thermoplastic backing sheet and decorative front grille cloth portion is also described.

3,666,611
ABSORBENT PAD
Curt G. Joa, Ocean Ridge, Fla. (Box 1121, Boynton Beach, Fla. 33435)
Filed Aug. 15, 1969, Ser. No. 850,482
Int. Cl. A61f *13/16, 13/20*; A61l *15/00*
U.S. Cl. 161—147 **4 Claims**



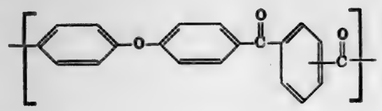
Absorbent pad having a pulp filler, wadding envelope, and body contacting cover outside the envelope which is shorter than the pad is long, thus to leave end margins of the pad uncovered. The apparatus and method for fabricating such a pad involves superimposing separate pulp mats, one of which is compressed before superimposition in order that the compressed mat functions as a flow distribution ply, subdividing the superimposed mats into discrete pad fillers with gaps therebetween, encasing the spaced pad fillers in a wadding envelope which is continuous across the gaps, cross sealing the envelope across the gaps to form a continuous wadding envelope tube with links interconnecting the spaced filler pads, and applying the body contacting cover sheet thereto.

3,666,612
HEAT-SEALABLE COPOLYKETONE FILM STRUCTURE

Rudolph J. Angelo, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 10, 1970, Ser. No. 45,236
Int. Cl. B32b 27/08
U.S. Cl. 161—165 7 Claims

A heat-sealable copolyketone film structure is provided which consists of a crystalline layer of stratum and an amorphous layer or stratum, each stratum having the composition



in which the



moiety is either



(T moiety) or

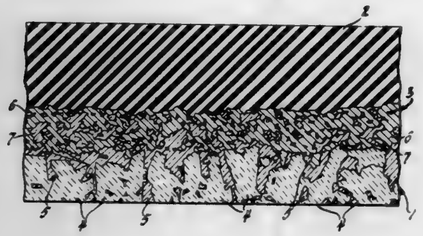


(I moiety), and the T:I ratio varies from 90:10 to 50:50 for the crystalline stratum, and from 90:90 to 0:100 for the amorphous stratum, provided that the T:I ratio of the amorphous stratum is no greater than the T:I ratio of the crystalline stratum; the above film structure is useful as a packaging film.

3,666,613
COMPOSITE CERAMIC-ORGANIC MATERIAL AND METHOD FOR MAKING SAME

Duane H. Beninga, Arvada, Colo., assignor to Coors Porcelain Company, Golden, Colo.

Continuation-in-part of application Ser. No. 563,785, July 8, 1966. This application Apr. 23, 1970, Ser. No. 31,341
Int. Cl. B32b 15/08, 25/02, 27/04
U.S. Cl. 161—168 15 Claims



In accordance with this invention there is provided an improved tough and wear resistant composite of hard ceramic bonded to rubber or other organic resin by means of a metalized layer on the ceramic which is bonded to the ceramic and to which the organic resin forms a bond thereby to greatly increase the bond strength between the ceramic and the resin.

3,666,614
GLASS-POLYCARBONATE RESIN LAMINATES

Robert Howard Snedeker, Piscataway, Kenneth Thomas Garty, Somerville, and Frank Joseph Skiermont, Bound Brook, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed June 24, 1969, Ser. No. 835,932
Int. Cl. B32b 17/10, 27/30; B60j 1/02
U.S. Cl. 161—183 19 Claims



A glass layer is bonded to a polycarbonate resin layer by using as an adhesive interlayer a composition which essentially consists of ethylene-vinyl acetate copolymer. Preferably, an organo-silicon compound is used as an adhesion promoting agent and is applied either as a primer on one or more of the lamina to be bonded to each other, or as an additive in the above-mentioned copolymer adhesive composition.

The laminated assemblies, produced as described above, may be used as structural windshields in motor vehicles.

3,666,615
COMPOSITE LAYER SHEET MATERIAL

Toshiharu Iwai and Kazukiyo Yamazaki, Fukui-shi, Japan, assignors to Nitto Denki Kogyo Kabushiki Kaisha (also known as Nitto Electric Industrial Co., Ltd.), Osaka-fu, Japan

Filed Jan. 21, 1970, Ser. No. 4,579
Int. Cl. H01b 3/40; B32b 27/26, 27/38
U.S. Cl. 161—185 8 Claims

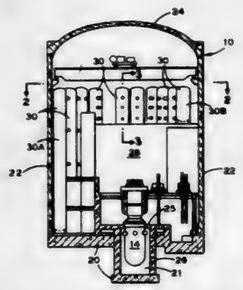


A composite layer sheet material suitable for electrical insulation is provided by combining a thermosetting resin layer and a hardening agent layer, the hardening agent being capable of hardening the thermosetting resin layer. The two above layers are separated by a contact-preventive film layer which melts on heating and allows the thermosetting resin layer and hardening layer to react. A fiber base is embedded in either the thermosetting resin layer or hardening agent layer to provide structural support for the composite.

3,666,616
VAPOR SUPPRESSING MEANS FOR A NUCLEAR REACTOR

Donald C. Schluderberg, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Jan. 7, 1970, Ser. No. 1,166
Int. Cl. G21c 9/00
U.S. Cl. 176—38 10 Claims



Apparatus for suppressing vapor pressure buildup within a nuclear reactor containment including a storage tank having a quantity of fluid stored therein and provided with a rupture disk and associated apparatus for explosively activating a disk rupturing element to release the fluid from the tank and into the containment in response to a buildup in vapor pressure within the containment.

3,666,617
FIRE RETARDANT LAMINATES

Harry W. Marciniak, Tonawanda, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

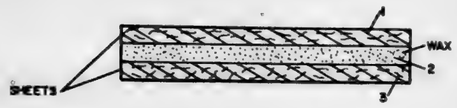
No Drawing. Continuation-in-part of application Ser. No. 686,772, Nov. 29, 1967. This application May 22, 1970, Ser. No. 39,917
Int. Cl. B32b 15/08; H05k 1/00
U.S. Cl. 161—186 14 Claims

A fire retardant, non-blistering laminate is produced by impregnating the uppermost ply of a multi-ply laminate with a resin in which the fire retardant additive is absent. If fire retardant requirements permit, one or more additional plies can be additive-free in order to provide improved strength, economy or for other purposes.

3,666,618
LAMINATE BONDED WITH AN ADHESIVE WAXY TELOMER OF ETHYLENE ON PSEUDOCUMENE

Ernest P. Block, West Chester, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Original application Apr. 12, 1968, Ser. No. 720,832. Divided and this application Oct. 7, 1970, Ser. No. 78,942
Int. Cl. B32b 27/10, 27/32; C09j 3/14
U.S. Cl. 161—235 4 Claims



Laminating wax of high adhesive characteristics especially useful in the production of intercalated products is obtained from telomer resulting from a telomerization employing pseudocumene as the telegen and ethylene as the taxogen, the reaction producing said telomer being hereinafter referred to as the telomerization of ethylene on pseudocumene.

3,666,619
KRAFT PULP AND PAPER RECOVERY PROCESS

Joseph E. Mailhos and Gerald P. Delaune, Elizabeth, La., assignors to Calcasieu Paper Company, Inc., Elizabeth, La.

Filed Apr. 8, 1969, Ser. No. 814,343
Int. Cl. D21c 11/12
U.S. Cl. 162—30 12 Claims

Waste effluents from a kraft plant are reduced by reclaiming colored liquors, white water and weak liquor sewer waters by separate procedures that are preferably integrated. Effluent colored liquors, such as evaporator condensate, blow heat condensate, and pulp decker filtrate are treated in a clarifier with calcium carbonate as a flocculating aid to settle out colloidal material and the clarifier underflow is passed to the lime mud filter cake for subsequent burning in the lime kiln. The clarified liquor is returned to the process for use as scrub waters in a recovery furnace gas scrubber and in the primary and secondary lime kiln gas scrubbers, and the underflow from the primary scrubber is used as a source of calcium carbonate in the clarifier. The white water is isolated from the plant sewer system and also treated in a clarifier with calcium carbonate. In this case, the underflow from the secondary scrubber serves as a calcium carbonate source. The clarified white water is then filtered and subsequently passed through a cation exchange unit so that it can be then used as fresh water in the kraft plant. Weak liquor from the plant sewer system is also isolated and after collection in a pond is returned as wash water to an intermediate stage in the multistage pulp washing unit. A portion of the effluent from the cation exchange unit is heated in a blow heat recovery unit and subsequently used as fresh wash water in the last stage of the washing unit while the underflow from the recovery furnace gas scrubber is used as wash water in the lime mud washer.

3,666,620
TREATMENT OF BAGASSE WITH A NONTOXIC FUNGICIDAL ACID TO PREVENT MYCELIAL DETERIORATION

Charles Leonard Wright, 42 Woodlands Ave., New Malden, Surrey, England

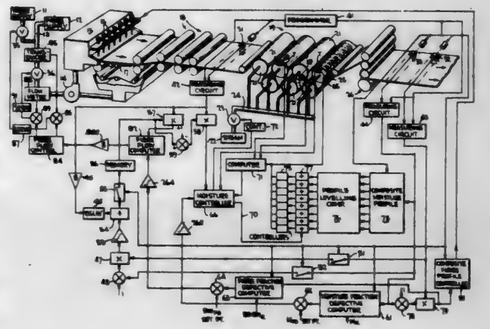
Filed Oct. 13, 1969, Ser. No. 865,713
Claims priority, application Great Britain, Oct. 16, 1968, 49,162/68
Int. Cl. D21c 1/04
U.S. Cl. 162—76 8 Claims

Bagasse intended for the production of chip board is stabilised against mycelial deterioration in storage by treating fresh bagasse from a sugar mill, after reducing the moisture content to below 50% of the weight thereof, with a nontoxic fungicidal acid in the liquid phase in an amount which reduces the pH of the treated material to 4.5 or below, preferably 3.5 to 4.5. The preferred acids are formic, acetic and propionic acids.

3,666,621
PROCESS AND APPARATUS FOR MOISTURE AND FIBER CONTENT CONTROL IN A PAPERMAKING MACHINE

William L. Adams, Dublin, Ohio, assignor to Industrial Nucleonics Corporation

Filed Feb. 16, 1968, Ser. No. 706,161
Int. Cl. D21f 5/06
U.S. Cl. 162—198 40 Claims



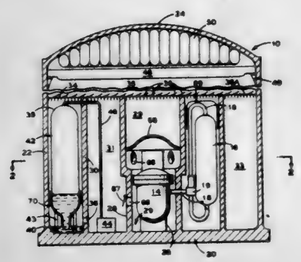
Disclosed are a system for and method of controlling processes of paper sheet manufacture. In response to basis weight signals at the process wet and dry ends, as well as a moisture signal from the dry end, a proportionality constant indicative of the sheet fiber fraction at the wet end is computed. The proportionality constant is repeatedly recomputed once every twenty minutes and is stored between recomputations. The proportionality constant is combined with a wet end basis weight output derived at

a later time than the above signals to indicate fiber content at the dry end and control fiber flowing into the paper making headbox. Control of fiber flow into the headbox and moisture removed by the drying sections is respectively in response to indications of the amount of fiber and moisture at the dry end being less than defective limits. The dryers are controlled by wet end moisture and dry end composite profile moisture. The dryers are controlled so that the inherent lag of steam units therein is compensated by heat supplied by trim dryers, having fast response times. To derive instantaneous values of average wet end basis weight, the wet end gauge is normally single pointed and only periodically scanned across the sheet.

ERRATUM

For Class 176—38 see:
Patent No. 3,666,616

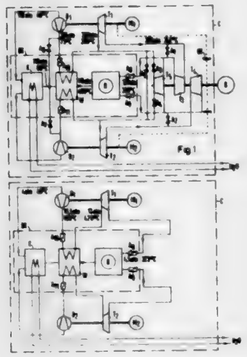
3,666,622
NUCLEAR REACTOR VAPOR SUPPRESSING MEANS
Donald C. Schluderberg, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.
Filed May 13, 1969, Ser. No. 824,044
Int. Cl. G21c *9/00*
U.S. Cl. 176—38 **8 Claims**



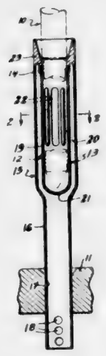
An improvement in apparatus for suppressing vapor pressure buildup within a nuclear reactor containment due to an accident in a reactor system, such as a rupture of the primary coolant system, or other event which produces vapor within the containment. The improvement is in providing an upright tank, the lower end of which is open and immersed in a pool fluid, such as water, within the containment; and providing evacuating means connected to the other end of the tank to continuously maintain the surface level of pool fluid internally of the tank higher than the level thereof externally of the tank. Since the pool fluid externally of the tank is exposed to vapor produced as a result of a vapor producing event, its surface level is lowered as pressure builds up within the containment, allowing the vapor to enter the tank and be condensed, thereby preventing the further buildup of vapor pressure within the containment.

3,666,623
GAS TURBINE INSTALLATION FOR NUCLEAR POWER PLANT
Elmar Harand and Hans-Peter Schabert, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Aug. 23, 1968, Ser. No. 755,008
Claims priority, application Germany, Aug. 26, 1967, P 16 01 656.1
Int. Cl. G21c *15/18*
U.S. Cl. 176—60 **12 Claims**

Gas turbine installation for operating with a gas having characteristics deviating considerably from those of an ideal gas, particularly for a nuclear power plant with gas-cooled reactor, includes compressor means normally operating at a given rotary speed so as to provide a given flow-through rate of the gas at a given pressure, and means utilizing released after-heat power for providing emergency or after-cooling subsequent to cut-off of the heat source or of the reactor by considerably increasing the rotary speed of the compressor means so as to provide an increased flow-through rate of the gas at a considerably reduced pressure approximating an ideal gas.



3,666,624
HYDRAULIC HOLD-DOWN FOR NUCLEAR REACTOR FUEL ASSEMBLY
Lester M. Finch and Andy J. Anthony, Pasco, Wash., assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed July 18, 1969, Ser. No. 842,898
Int. Cl. G21c *15/22*
U.S. Cl. 176—64 **1 Claim**



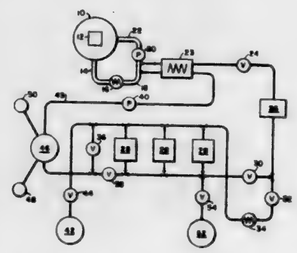
An assembly for use in a nuclear reactor includes a fuel assembly having a nose piece at its lower end and a support receptacle having a socket which receives the nose piece. Openings in the nose piece and socket conduct coolant into the nose piece perpendicular to the longitudinal axis of the fuel assembly. Leakage flow vents extend the length of the nose piece communicating with the interior of the socket below the nose piece and the exterior of the fuel assembly above the top of the receptacle to reduce the lifting effect of the coolant on the fuel assembly.

3,666,625
DEVICE FOR DETECTION AND LOCATION OF FAILED NUCLEAR FUEL ELEMENTS
Sigurd A. Nybo, Penn Hills, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 16, 1969, Ser. No. 885,407
Int. Cl. E21b *21/04*; E21c *7/00*
U.S. Cl. 176—68 **8 Claims**



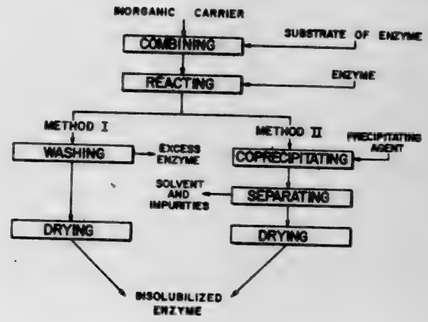
Apparatus for testing for nuclear fuel element cladding failures comprising a device such as a magnetic member suspended within the gas plenum of a clad nuclear fuel element. When a cladding failure occurs, water or ambient fluid diffuses into the plenum and reacts with the device to cause a physical displacement of the device. Means are provided for locating a change in the position of the device and thereby detecting the cladding failure. Also provided is a material for absorbing moisture in a clad nuclear fuel element.

3,666,626
METHOD AND MEANS FOR REVERSIBLY CHANGING THE BORIC ACID CONCENTRATION IN THE COOLANT OF A NUCLEAR REACTOR
Gottfried Gramer, Furth, and Gunter Wittrowsky, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Jan. 17, 1969, Ser. No. 791,893
Claims priority, application Germany, Jan. 23, 1968, S 113,825
Int. Cl. G21c *7/00*
U.S. Cl. 176—86 **7 Claims**



A method and means whereby the boric acid concentration in the primary coolant of the nuclear reactor may be reversibly changed in order to compensate for excess reactivity and to enhance load follow capability. The primary coolant, or a portion thereof, may be passed through an anion exchange bed containing a basic resin. The temperature of the influent to the bed is varied such that the coolant receives additional boric acid at higher temperatures and loses boric acid at lower temperatures.

3,666,627
METHOD OF STABILIZING ENZYMES
Ralph A. Messing, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Oct. 14, 1968, Ser. No. 767,116
Int. Cl. C07g *7/02*
U.S. Cl. 195—68 **4 Claims**



This invention relates to an improved method of stabilizing enzymes by bonding the enzymes to inorganic carriers in the presence of their substrates whereby the enzymes become insolubilized; and the product formed by the method.

3,666,628
PROCESS FOR GROWING MICROORGANISMS
Robert G. Dworschack and William R. Lamm, Clinton, Iowa, assignors to Standard Brands Incorporated, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 705,231, Feb. 13, 1968. This application Mar. 19, 1971, Ser. No. 126,289
Int. Cl. C12d *13/10*; C12b *1/20*
U.S. Cl. 195—80 R **10 Claims**

Under submerged, aerobic culture conditions, the mycelia of many microorganisms of the Streptomyces genus have a tendency to grow in the form of compact spherical masses. When small amounts of aqueous dispersible materials are present in the growth medium, the mycelia produced will be of the filamentous form. The presence of such mycelia will result in rapid growth of the microorganisms and improved enzyme production. Examples of dispersible materials are agar, carboxymethylcellulose, and diatomaceous earth.

3,666,629
APPARATUS FOR TRANSFERRING ANAEROBIC BACTERIA
Walter E. C. Moore, Blacksburg, Va., assignor to Virginia Polytechnic Institute Educational Foundation, Blacksburg, Va.
Filed June 18, 1970, Ser. No. 47,480
Int. Cl. C12b *1/02*
U.S. Cl. 195—127 **7 Claims**

An apparatus for transfer of anaerobic bacteria under oxygen-free conditions having at least one pivotally mounted discharge for discharge of an oxygen-free gas downwardly toward a tube support and a discharge for discharge of measured quantities of anaerobic bacteria toward the tube support. The gas discharge can be pivoted to a remote position.

3,666,630

PRODUCTION OF TREMORTINS A, B, AND C

Alex Ciegler and Ching Trang Hou, Peoria, Ill., assignors to the United States of America as represented by the Secretary of Agriculture

Filed May 4, 1970, Ser. No. 34,390
Int. Cl. C12d 7/00
U.S. Cl. 195—81 2 Claims

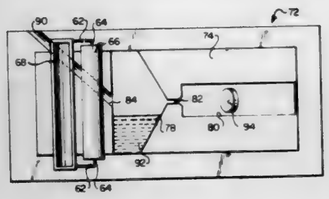
Tremortins A, B, and C are produced in high yield by culturing certain fungi, namely, *Penicillium palitans, P. crustosum, P. granulatum, P. cyclopium, P. puberulum, P. olivino-viride,* or *P. martensii.*

3,666,631

BACTERIAL CONTAMINATION MONITOR

Edward Rich, College Park, and Norman H. MacLeod, Chevy Chase, Md., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 31, 1969, Ser. No. 889,420
Int. Cl. C12k 1/10
U.S. Cl. 195—127 7 Claims



A portable testing instrument for determining the level of bacterial and other microbial (algal, protozoal, etc.) contamination within a monitored sample without the need for external electric recording devices or external power source. The invention utilizes an adenosine tri-phosphate (ATP) light reaction, the intensity of which is directly proportional to the presence of the ATP. High-speed film is used for time displaying the low level of biochemical light produced, the light exposure intensity being compared to a calibrated scale for determination of the bacterial contamination level. Additionally, the instrument incorporates a novel disposable packaging concept for storing and producing the biochemical reaction.

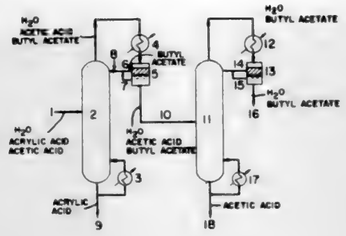
3,666,632

METHOD FOR THE SEPARATION OF ACRYLIC ACID FROM AQUEOUS SOLUTION CONTAINING ACRYLIC ACID AND ACETIC ACID

Makoto Honda, Tokyo, Yasuhiro Kubota, Yokohama-shi, Atsushi Aoshima and Tokuichi Hisamatsu, Kawasaki-shi, and Minoru Ueda, Yokohama-shi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 2, 1969, Ser. No. 863,248
Claims priority, application Japan, Oct. 8, 1968, 43/72,825; Nov. 9, 1968, 43/81,729; Nov. 14, 1968, 43/82,876
Int. Cl. B01d 3/36; C07c 57/04
U.S. Cl. 203—56 8 Claims

In the process for separating acrylic acid from aqueous solution containing acrylic acid and acetic acid, the improvement which comprises subjecting the said aqueous solution to an azeotropic distillation in the presence of at least one member selected from the group consisting of butyl acetate, ethyl butyrate, ethyl isobutyrate, ethyl methacrylate, propyl acrylate and propyl propionate as an entrainer, distilling off acetic acid and water



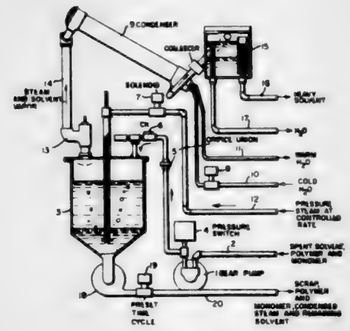
from the column head and separating acrylic acid from the column bottom.

3,666,633

RECOVERY OF CHLORINATED ALKANE SOLVENT

Andrew Michael Essex, Bridge City, Tex., and Robert Bernard Heiart, Middletown, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 28, 1969, Ser. No. 871,970
Int. Cl. B01d 1/14, 3/00, 3/34
U.S. Cl. 203—95 7 Claims



An apparatus for recovery of organic solvents at least partially immiscible with water from mixtures, the apparatus having (a) a vessel free from heating surfaces, (b) means for supplying steam into the vessel, (c) exit means for the steam and solvent, and (d) a decanter for separating water and solvent; the apparatus having electrical means for automatically and sequentially supplying the mixture, injecting steam into the mixture, and ending the injection upon maximum solvent recovery, as indicated by temperature above the vessel.

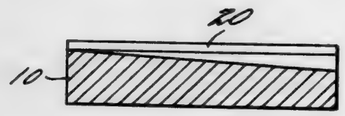
3,666,634

VARIABLE DEPTH ETCHING PROCESS

Eugene J. Szetela, South Windsor, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 30, 1970, Ser. No. 23,664
Int. Cl. C23b 5/48; B23p 1/00
U.S. Cl. 204—15 4 Claims

Variable depth etched channels are formed in a metal substrate. A pattern is formed on the substrate by standard photo-etching techniques, and a film of gold is deposited on the portions of the metal substrate which are not to be formed into channels. In one embodiment a metal overlay such as nickel is electrodeposited over the entire assembly at a variable depth. The metal overlay is then chemically etched until the overlay is completely removed. Maximum depth of the etched channels will be



related to the maximum thickness of the overlay. In another embodiment, the substrate with the gold film is put through a deplating process which will form the channels by electroremoval of substrate material.

3,666,635

METHOD FOR FABRICATING A MEMORY STRIP ARRAY

Shintaro Oshima and Toshihiko Kobayashi, Tokyo, Tetsusaburo Kamibayashi, Niza-machi, Akira Okada and Yoshihisa Komazawa, Tokyo, and Keigo Komuro, Ebina-machi, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan

Filed Apr. 13, 1970, Ser. No. 27,680
Claims priority, application Japan, Apr. 18, 1969, 44/29,649; May 30, 1969, 44/41,660
Int. Cl. C23b 5/48; C23f 17/00
U.S. Cl. 204—15 3 Claims



A method for fabricating a memory strip array, provided with a number of parallel memory strips, on a smooth surface of an insulative substratum, which a first ferromagnetic thin film and a conductive thin film are successively deposited in a superposed relationship on the smooth surface so as to obtain a composite layer; the composite layer is then etched in a chemical photo-etching process and an electrolytic-etching process to produce parallel strips of the composite layer, the respective ends of which are jointed respectively together to end lines of the composite layer; a second ferromagnetic thin film is electroplated, by the use of the end lines as an electrode, on each of the parallel strips so as to produce the parallel memory strips each having a closed magnetic circuit around a conductive thin film-strip by the first ferromagnetic thin film and the second ferromagnetic thin film; and the parallel memory strips are separated at necessary parts of said end lines so as to obtain parallel memory strips separated in a desired pattern.

3,666,636

ELECTROLYTIC CODEPOSITION OF FINE PARTICLES WITH COPPER

Thaddeus W. Tomaszewski and Lillie C. Tomaszewski, Dearborn, Mich., assignors to Udylite Corporation, Warren, Mich.

No Drawing. Filed June 19, 1969, Ser. No. 834,891
Int. Cl. C23b 5/48, 5/20
U.S. Cl. 204—16 16 Claims

Fine particles of many non-conducting materials do not codeposit readily from aqueous acidic copper electroplating baths, unless there is present in the bath aliphatic amines, especially polyamines or imines, or amino acids such as alanine or EDTA. These amino compounds are especially effective in acidic copper sulfate plating baths for the codeposition of dispersed fine, bath-insoluble, nonconducting particles. These 2-phase composite copper plates have engineering use possibilities for anti-friction and anti-seizing problems.

3,666,637

PROCESS FOR METALLIZING SUBSTRATES

John K. MacKay, Niagara Falls, Ontario, Canada, assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Jan. 30, 1970, Ser. No. 7,257
Int. Cl. C23b 5/60
U.S. Cl. 204—30 9 Claims

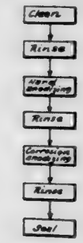
Substrates are plated with metals by subjecting the substrates to elemental phosphorus and subjecting the thus treated substrate to a metal salt bath comprising a metal salt, an amine, an alkali metal hydroxide and ammonium hydroxide. The resulting treated substrates can be electroless plated and/or electroplated by conventional techniques.

3,666,638

PROCESS FOR ANODIZING ALUMINUM MATERIALS

Frank L. Harris, 3803 Massachusetts Ave. SE., Washington, D.C. 20019, and Sidney Levine, 8505 Buckhannon Drive, Potomac, Md. 20854

Filed Apr. 21, 1970, Ser. No. 30,405
Int. Cl. C23f 7/06
U.S. Cl. 204—35 N 6 Claims



A method for producing an abrasion resistant anodic coating with a desired corrosion resistant characteristic on the surfaces of aluminum and alloys thereof comprising the steps of:

(1) initially anodizing the aluminum material in an acid bath at certain conditions of temperature, current density, voltage etc., in order to produce a dense, hard anodic coating;
(2) subject the material to another acid anodizing bath at certain temperatures, current density, voltage, etc., in order to develop a corrosion resistant anodic coating between the hard anodic coating and the base aluminum material thereby minimizing the effects of the microscopic discontinuities, and then
(3) sealing.

3,666,639

METHOD FOR COATING METALS OR INSULATING SUBSTRATES HAVING A VITREOUS BINDER

William S. De Forest, Seal Beach, Richard T. Heap, Stanton, Joseph C. Widmont, Newport Beach, and Harold Zagoria, Orange, Calif., assignors to North American Rockwell Corporation

Filed Oct. 30, 1969, Ser. No. 872,622
Int. Cl. C23f 17/00; C23b 5/64
U.S. Cl. 204—38 C 1 Claim

A plated thick film composite and method of making of same comprising the plating of thick film conductors by electrodeposition of copper, nickel, rhodium, or other

metals or combinations thereof, in an acid sulfate plating solution containing at least one of said metals onto electrically conductive metal fired ceramic containing



borosilicate base binders. The invention herein described was made in the course of or under a contract or subcontract thereunder, with Air Force.

3,666,640

GOLD PLATING BATH AND PROCESS

Paul T. Smith, Pascoag, R.I., assignor to Sel-Rex Corporation, Nutley, N.J.

No Drawing. Continuation of abandoned application Ser. No. 851,495, Aug. 19, 1969, which is a continuation-in-part of application Ser. No. 486,553, Sept. 10, 1965. This application Apr. 23, 1971, Ser. No. 137,014

Int. Cl. C23b 5/28, 5/42

U.S. Cl. 204—44 6 Claims

An electroplating bath and process for obtaining non-hazy, hard, brilliant gold deposits by the addition of a small quantity of a soluble arsenic, a soluble antimony or a soluble selenium compound to the plating solution, optionally including the addition of soluble base metal salts and chelating agents to further improve the properties of the deposit.

3,666,641

PROCESS FOR TREATING SUBSTRATES OF THIN MAGNETIC FILMS

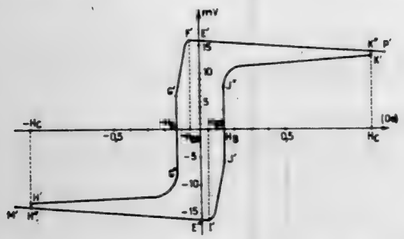
Rene Fernand Victor Girard and Marie-Claire Gidon, Grenoble, France, assignors to Societe Industrielle Honeywell Bull, Paris, France

Filed May 20, 1970, Ser. No. 39,032

Claims priority, application France, May 27, 1969, 6917172

Int. Cl. C23b 1/00

U.S. Cl. 204—141 12 Claims



A process for treating the substrate of a thin magnetic film to obtain a surface state which reduces the sensitivity of the film to stray magnetic fileds and which improves the non-destructive readout properties of the film, wherein, prior to being coated with the magnetic film, the substrate is immersed in an acid electrolytic bath and employed as an electrode in such bath, and wherein the atack on the substrate in the bath is controlled by a current of constant density along the length of the substrate.

3,666,642

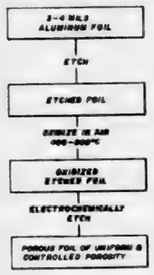
PROCESS OF FORMING ALUMINUM FOIL

Abdul Sahib Alwan, Tazewell, Va., and Ralph Antonio Ruscetta, Columbia, S.C., assignors to General Electric Company

Filed Mar. 19, 1971, Ser. No. 126,044

Int. Cl. C23b 1/00

U.S. Cl. 204—141 5 Claims



An aluminum foil of controlled and uniform porosity is provided. The porous foil is made by a process comprising a first etching of the foil, an oxidation step, and a subsequent electrochemical etching of previously eached and oxidized foil. The porous aluminum foil of the invention is particularly useful in the construction of double anode electrolytic capacitors.

3,666,643

PRODUCTION OF BENZODIAZEPINE DERIVATIVES

Shigeho Inaba, Takarazuka, Tadashi Okamoto and Toshiyuki Hirohashi, Ashiya, Kikuo Ishizumi, Ikeda, Michihiro Yamamoto, Toyonaka, Isamu Maruyama, Minoo, Kazuo Mori, Kobe, Tsuyoshi Kobayashi, Minoo, and Hisao Yamamoto, Nishinomiya, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

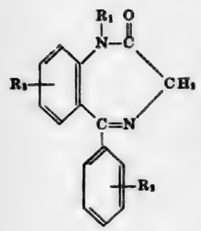
No Drawing. Filed Mar. 15, 1971, Ser. No. 124,493

Claims priority, application Japan, Mar. 19, 1970, 45/23,732

Int. Cl. C07d 53/06

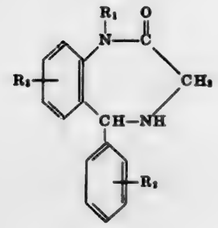
U.S. Cl. 204—158 4 Claims

Benzodiazepine derivatives represented by the formula



(I)

wherein R_1 is hydrogen, a lower alkyl or cycloalkylmethyl group; each of R_2 and R_3 is hydrogen or halogen atom, are prepared by irradiating a tetrahydrobenzodiazepine derivative represented by the formula,



(II)

wherein R_1, R_2 and R_3 are the same as defined above, with ultraviolet light or exposing the said tetrahydrobenzodiazepine derivative to sunlight.

The benzodiazepine derivatives have excellent analgetic, hypnotic, anti-convulsive and muscle relaxing activities.

3,666,644

PROCESS FOR PREPARING 2-HYDROXYALKYL-4(5)-NITROIMIDAZOLES

Janos Kollonitsch and Alan N. Scott, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 607,642, Jan. 6, 1967. This application July 31, 1969, Ser. No. 846,583

Int. Cl. C07d 49/36; B01j 1/10

U.S. Cl. 204—158 HA 8 Claims

2-hydroxyalkyl-4(5)-nitroimidazoles are prepared by chlorinating 2-alkylimidazoles to produce the 2-α-chloroalkylimidazole, nitrating this compound to produce the 2-α-chloroalkyl-4(5)-nitroimidazole, and hydrolyzing this compound to the corresponding 2-hydroxyalkyl compound. The 2-hydroxyalkyl-4(5)-nitroimidazoles are useful in the preparation of the corresponding (1-methyl-5-nitroimidazol-2-yl)-alkyl carbamates. The (1-methyl-5-nitroimidazol-2-yl)-alkyl carbamates are useful in the treatment of protozoal diseases.

3,666,645

MULTISTAGE POLYMERIZATION PROCESS WITH INDEPENDENTLY ADJUSTABLE RADIATION SOURCES

Jackson A. Ransohoff, Bethesda, Md., assignor to Neutron Products, Inc., Washington, D.C.

Filed June 1, 1967, Ser. No. 642,959

Int. Cl. C08f 1/16; C08d 1/00

U.S. Cl. 204—159.22 17 Claims

Emulsions and solutions of monomer are catalytically polymerized by irradiation by circulating a monomer containing process stream through a radiation field in a first stage, removing the heat of polymerization while maintaining temperature control, feeding from the first stage into a second process stage which is similar in operation to the first stage but with a higher proportion of polymer, and operating the second stage at a predetermined temperature, and continuing the steps of irradiation, under conditions of good temperature control until the reaction is completed or substantially completed. The volume of reactants exposed to the radiation field or the radiation dose to which the various process streams are exposed is adjusted to control the polymer content of each stage and provide for a steady flow of reactants through the system.

3,666,646

REDUCTION OF MOLECULAR WEIGHT IN POLYNUCLEOTIDES USING ULTRASONIC RADIATION

George P. Lampson, Hatfield, Alfred A. Tytell, Lansdale, Arthur K. Field, North Wales, and Maurice R. Hilleman, Lafayette Hill, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed May 15, 1970, Ser. No. 37,896

Int. Cl. B01j 1/10, 1/12

U.S. Cl. 204—160.1 3 Claims

The invention disclosed herein relates to novel multi-stranded polynucleotide complexes having interferon-inducing activity and with pharmaceutical compositions thereof; with processes for preparing said complexes; and with methods for stimulating the production of interferon in living animal cells utilizing such complexes and compositions. More particularly, it relates to double-stranded complexes of polyriboinosinic acid and polyribocytidylic acid ($rI_n:rC_n$), in which the average molecular size of the polyribocytidylic acid components of the complex is substantially less than that of the polyriboinosinic acid components, and which are produced (a) by controlled synthesis of the individual homopolynucleotides, (b) by controlled depolymerization of either homopolynucleotides or polynucleotide complexes by exposing them to sonic radiation; or (c) by controlled depolymerization of the homopolynucleotide polyribocytidylic acid, by exposeing it to ribonuclease degradation; such $rI_n:rC_n$ complexes possess maximal interferon-producing activity with minimal toxicity.

3,666,647

SEPARATION OF FRUCTOSE AND GLUCOSE

Tetsujiro Kubo, 783 Seijo-machi, Setagaya-ku, Tokyo, Japan, and Ryoki Tatuki, 16 Aza Tera-machi, Goshogawara-shi, Aomori-ken, Japan

No Drawing. Filed Feb. 5, 1970, Ser. No. 9,079

Claims priority, application Japan, Feb. 17, 1969, 44/11,053; Aug. 26, 1969, 44/66,880; Dec. 20, 1969, 44/102,095

Int. Cl. B01d 13/02

U.S. Cl. 204—180 P 6 Claims

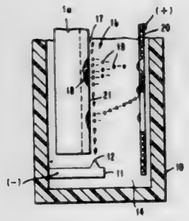
Fructose can be recovered from a sugar solution containing fructose and glucose, such as an invert sugar solution or an isomerized sugar solution, in the form of a calcium chloride double salt thereof, and then the fructose can be separated from the double salt by passing an aqueous solution of the double salt through an electrodialysing device having an ion exchange membrane, the sugar solution containing the fructose and the glucose being used as the condensing liquor.

3,666,648

IN-SITU RECLAMATION OF MASTER PATTERNS FOR PRINTING MICROCIRCUIT IMAGES ON REVERSELY SENSITIZED MATERIAL

Daniel J. Lasky, Wappingers Falls, and Harold C. Weisel, Pawling, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 5, 1969, Ser. No. 874,178
Int. Cl. B01k 5/02
U.S. Cl. 204—180 R 12 Claims



Master pattern silver emulsion images of microelectronic artwork are altered in situ so that they can be used as master patterns to provide photocopies of the reverse images. The silver is dissolved out and the remaining gelatin relief is dyed to a threshold level of opaqueness by an absorbed dye to produce the reversed master pattern image. Results of unusually fine detail resolution and contrast quality are achieved with substantial cost savings. Costs and risk of damage, due to excessive handling of the hard-to-replace masters in the alteration process, are reduced with undiminished quality of results by employing electrical means to control agitation of the silver dissolving agent. In a preferred exemplification, handling is further reduced by combining dissolution and dyeing phases of the process into one operation. Images on the reversed masters have better edge contrast quality than the original masters. This effect is used to advantage to improve masters which originally have poor edge definition.

3,666,649

POLYACRYLIC ACID IN ELECTROCOATING

Kazys Sekmakas, Chicago, and Lester A. Henning, Buffalo Creek, both of Ill., assignors to De Soto, Inc., Des Plaines, Ill.

Filed Oct. 3, 1969, Ser. No. 863,701
Int. Cl. B01k 5/02; C23b 13/00
U.S. Cl. 204—181 12 Claims

High molecular weight polyacrylic acid polymers are added in small amount to an aqueous material containing dispersed carboxy-functional resin to improve electrodeposition at the anode and to lower the gloss of the coating which is deposited.

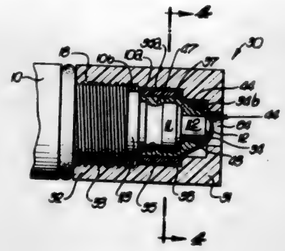
3,666,650

FLUID SENSOR CAP ASSEMBLY

Thaddeus M. Donoguian, Laguna Beach, Calif., assignor to I.M.I., Division of Becton, Dickinson and Company, Newport Beach, Calif.

Filed May 6, 1970, Ser. No. 35,187
Int. Cl. G01n 27/30
U.S. Cl. 204—195 P 3 Claims

Membrane type polarographic oxygen sensors are constructed to be uniformly rechargeable with electrolyte by introducing a selected quantity of electrolyte into a tubular cap for reception at the electrode side of a membrane in the cap; the cap is then assembled into the sensor body in such manner as to bring the electrolyte into contact with the



cathode tip, and into a predetermined volume space adjacent the tip for current carrying purposes.

3,666,651

MEASURING COMBINED ELECTRODE

Hirokuni Makabe, Higashimurayama, Tokyo, Japan, assignor to Toa Electronics Limited, Tokyo, Japan

Filed June 30, 1969, Ser. No. 837,440
Claims priority, application Japan, July 2, 1968, 43/55658
Int. Cl. G01n 27/36
U.S. Cl. 204—195 G 3 Claims



A pH measuring combined electrode including a glass electrode, a reference electrode and a thermosensitive resistance element for temperature compensation integrated into a compact miniaturized assembly. At least the inner electrode of the glass electrode is constituted by a glass-coated lead-in wire and the thermosensitive resistance element is arranged in direct proximity to the inside wall of the pH sensitive glass membrane of the glass electrode. A guard ring is preferably provided around an electrode supporting tube to assist in maintaining clearance between the lead-in wires at their juncture with the electrode assembly.

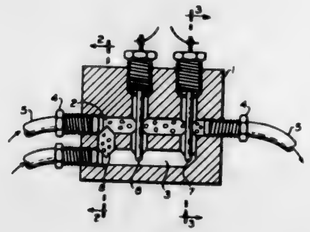
3,666,652

TITRATION POTENTIAL MEASUREMENT

Werner Krauer; Alfred Adalbert Martinelli, both of Zurich, and Friedrich Oehme, Bassersdorf, all of Switzerland, assignors to Polymetron Ltd., Glattbrugg, Switzerland

Filed Mar. 18, 1970, Ser. No. 20,673
Claims priority, application Switzerland, Mar. 21, 1969, 4280
Int. Cl. G01n 27/08
U.S. Cl. 204—195 R 3 Claims

Titration potential measurement providing means including both method and apparatus for eliminating the interference of gas accumulations in the titrated sample to interfere with accuracy of potential measurement. This is accomplished by flowing the titrated sample through a potential measuring chamber having an upper and lower flow path for the titrated sample, with two spaced electrodes extended into the lower flow path, whereby gas accumulations in the sam-



ple will rise to the upper flow path, while measurements are made in the relatively gas free portions of the sample in the lower flow path.

3,666,653

CRYOLITIC LININGS IN FURNACES FOR ALUMINUM SMELTING

Giuseppe De Varda, Milan, Italy, assignor to Montecatini Edison S.p.A., Milan, Italy

Filed July 6, 1967, Ser. No. 652,998
Claims priority, application Italy, July 6, 1966, 15623/66
Int. Cl. C22d 3/02; B01k 3/08
U.S. Cl. 204—243 R 5 Claims

Disclosed is an improvement in furnace vats for fused bath electrolysis of alumina which comprises a refractory mass of substantially pure natural or synthetic cryolite or of cryolite-alumina mixtures in which a dispersion of carbon grit is within the refractory mass. Also disclosed is a process for preparing said mass.

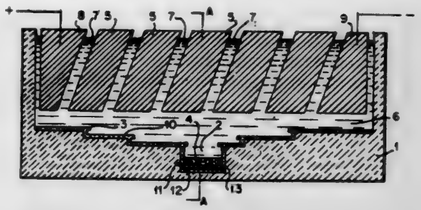
3,666,654

FURNACES WITH BIPOLAR ELECTRODES FOR THE PRODUCTION OF METALS, PARTICULARLY ALUMINUM, THROUGH ELECTROLYSIS OF MOLTEN SALTS, EQUIPPED WITH AUXILIARY HEATING FACILITIES

Giorgio Olah De Garab, 18, Via Angera, Milan, Italy

Filed Sept. 22, 1969, Ser. No. 859,790
Claims priority, application Italy, Sept. 24, 1968, 21584 A/68
Int. Cl. C22d 3/02; B01k 3/00
U.S. Cl. 204—243 R 7 Claims

A furnace with bipolar electrodes for the production of metals, particularly aluminum, through the electrolysis of molten salt baths. Electrical heating resistors, selected from



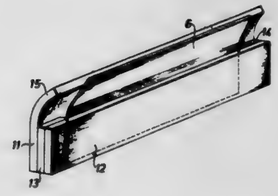
graphite fabrics, tapes and felts, are placed in the "cold" zones of said furnace.

3,666,655

DEVICE FOR HOLDING AND GUIDING A BENDABLE STRIP IN ELECTROPHORESIS

Nils Goran Nybom, deceased, Late of Kristianstad, Baisgard, Postlada 550, Sweden (by Ethel Barbro Louise Nybom, administratrix)

Filed Jan. 25, 1971, Ser. No. 109,516
Claims priority, application Sweden, Jan. 30, 1970, 1208/70
Int. Cl. B01k 5/00
U.S. Cl. 204—299 4 Claims



Apparatus for electrophoresis includes a trough from which electrolyte is conducted by means of a bendable porous strip dipping into the electrolyte to a plate having a layer thereon to be moistened by and brought into contact with the electrolyte. To properly bend and guide the strip between the trough and the layer to be moistened, one side of the strip is secured within a holder which rests within the trough and is provided with a curvilinear portion which engages the strip and simultaneously bends and the other side of the strip into a pressing engagement with the layer to be moistened with the electrolyte.

3,666,656

METHOD FOR INHIBITING FOULING IN A REFINERY PROCESS

Maurice E. Stanley, Port Arthur, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Sept. 30, 1970, Ser. No. 76,992
Int. Cl. C10g 9/16, 9/36; C23f 14/00
U.S. Cl. 208—48 AA 8 Claims

Method of treating petroleum hydrocarbon liquids to inhibit the fouling of refinery process equipment involving the addition of an anti-fouling amount of an oil-soluble addition type copolymer containing in combined form as its essential monomeric components copolymerizable ethylenically unsaturated compounds each containing only one polymerizable ethylenic linkage, at least one of which component is amine free and contains from 4 to about 18 carbon atoms, one of the components contains a basic aminonitrogen in the side chain and one of the components contains a hydrocarbon-substituted-amide in the side chain.

3,666,657

OIL STABILIZING SEQUENTIAL HYDROCRACKING AND HYDROGENATION TREATMENT

Sheldon L. Thompson, Glen Mills; Rene F. Kress; Albert T. Olenzak, both of Media, all of Pa., and Ib Steinmetz, Wilmington, Del., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 694,096, Dec. 28, 1967, now abandoned. This application Nov. 16, 1970, Ser. No. 90,073

Int. Cl. C10g 37/06

U.S. Cl. 208—58 7 Claims

A process of improving the quality stability of hydrocracked oils by hydrogenating such oils subsequent to the hydrocracking treatment. The hydrocracking conditions comprise a temperature of from 700° to 900° F. and preferably from 700° to 800° F. and a pressure of at least about −500 psi and preferably at least about 1,500 psi over a sulfided mixture of Group VI B metal and Group VIII metal as a catalyst. The hydrogenation conditions comprise a temperature of from about 600° and preferably 625° to 675° F. a pressure of at least about 3,000 psi and the same catalysts as used for the hydrocracking operation.

3,666,658

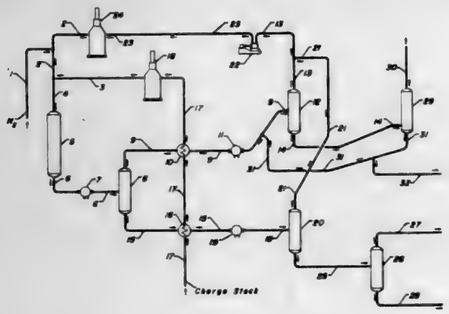
HYDROPROCESSING PRODUCT SEPARATION

Newt M. Hallman, Mt. Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 23, 1970, Ser. No. 91,969

Int. Cl. C10g 13/00, 37/00

U.S. Cl. 208—103 15 Claims



Separation of the effluent from a high temperature high pressure hydroprocessing reaction by first separating the effluent in a high pressure, high temperature separator to produce a vapor phase (I) and liquid phase (I). Vapor phase (I) is cooled and separated at a high pressure to produce liquid phase (II) and hydrogen rich phase (II). Liquid phase (I) is cooled and separated at a high pressure to produce hydrogen rich phase (III) and liquid phase (III). Hydrogen rich phases (II) and (III) are of sufficient hydrogen purity for recycle to the reaction.

3,666,659

METHOD FOR STABILIZING HYDRODESULFURIZED OIL

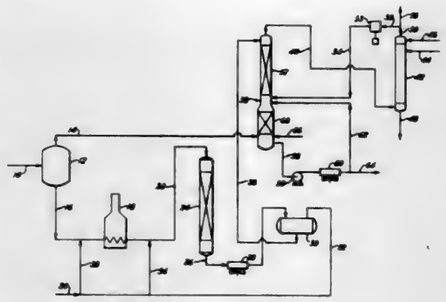
Edgar Carlson, Allison Park, Pa., and William R. Lehrian, Tokyo, Japan, assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Mar. 24, 1970, Ser. No. 22,200

Int. Cl. C10g 23/00

U.S. Cl. 208—208 R 9 Claims

A stabilized, desulfurized hydrocarbon oil is provided by separating the oil feed into light and heavy fractions, desulfurizing the heavy fraction and combining the desulfurized heavy fraction and the untreated light fraction after removing hydrogen sulfide from the heavy fraction. A hydrogen sulfide-depleted recycle stream provides for absorption of light hydrocarbons into the desulfurized heavy fraction. The stabilized, desulfurized hydrocarbon oil has a light ends content approximating that of the original oil feed.



3,666,660

PURIFICATION OF A HYDROCARBON STREAM WITH Cr^{+++} IONS IN SOLUTION

Ralph Bernheimer, East Brunswick, N.J., assignor to Esso Research and Engineering Company

Filed Apr. 30, 1970, Ser. No. 33,481

Int. Cl. C10g 29/06

U.S. Cl. 208—243 1 Claim

Polynuclear aromatic hydrocarbons, and other aromatic compounds and organic sulfur and nitrogen compounds are removed as impurities from petroleum streams by extraction with Cr^{+++} in a solution of acetone, methanol or ethanol wherein the metal ion complexes with the impurities and is withdrawn with the metal salt solution.

ERRATA

For Classes 210—47 and 210—58 see:
Patent Nos. 3,666,663 and 3,666,664

3,666,661

SOFTENING AGENT COMPOSITION FOR TEXTILES

Sumio Arai; Masaru Inouye; Yuzuro Ogata; Yukihisa Niimi, and Ukiro Nishimoto, all of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Apr. 6, 1970, Ser. No. 26,096

Claims priority, application Japan, Apr. 9, 1969, 44/27362

Int. Cl. D06m 13/18

U.S. Cl. 252—8.9 3 Claims

A softening agent composition for textiles containing an epichlorohydrin adduct of sorbitan higher fatty acid mono- or diester, which is a novel softening agent compound, and an ethoxylated product of mono-, di- or triglyceride of 12-oxy steric acid, which composition can be advantageously used as the softener in a conventional resin finishing process.

3,666,662

ALKALI METAL SUCCINAMATE COMPOSITIONS FOR LUBRICATING OILS

Warren Lowe, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 23, 1970, Ser. No. 31,412

Int. Cl. C10m 1/54

U.S. Cl. 252—33.6 11 Claims

Compositions are provided useful in lubricating oil for detergency, dispersancy, antiwear and acid neutralization, which are the reaction product of an alkali metal metaborate and a succinimide in the presence of water, the presence of excess alkali metal metaborate being contemplated.

3,666,663

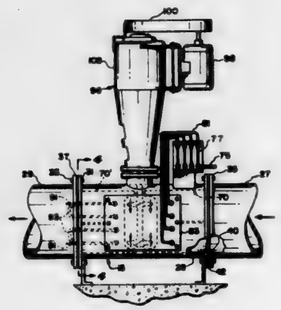
METHOD AND APPARATUS FOR DISPERSING COAGULANT INTO A WATER STREAM

James Donald Walker, Aurora, Ill., assignor to Chicago Bridge & Iron Company

Filed Nov. 24, 1969, Ser. No. 879,410

Int. Cl. B01d 21/01

U.S. Cl. 210—49 9 Claims



A chemical additive is thoroughly and almost instantaneously mixed with huge quantities of water flowing through a large pipe or flume by dividing the additive into equal smaller streams, and feeding the chemical additive streams separately but at equal rates to a plurality of points equally distributed along the cross-section of the flow and vigorously churning the combined stream at a point just downstream from this feeding of the chemical solution. The churning is preferably by opposed propellers. Two propellers on a shaft, or on each of a plurality of shafts, each impel the water in the direction toward the other. As the water leaves the churn zone, it passes between stilling vanes parallel to the general direction of flow. Flow through the unit is preferably sufficiently constricted to increase flow turbulence and to prevent bypassing of water not fully blended, but the system nevertheless avoids excessive head loss.

3,666,664

COMPOSITIONS AND METHODS FOR CONTROLLING SCALE

Walter F. Lorenc, Harvey, and Roland A. Berner, Tinley Park, both of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Filed May 12, 1971, Ser. No. 142,822

Int. Cl. C02b 5/06

U.S. Cl. 210—58 12 Claims

Compositions and methods used to inhibit scale formation and/or the formation of solid scale forming salts comprises adding to water small amounts of a synergistic combination of nitrilotriacetic acid and a specific organophosphate.

3,666,665

COMPOSITION OF FERROELECTRIC MATTER

Daniel W. Chapman, San Jose; John D. Michaelsen, Los Gatos, and Frederick J. Stryker, San Jose, all of Calif., assignors to International Business Machine Corporation, Armonk, N.Y.

Continuation-in-part of application Ser. No. 769,757, Oct. 22, 1968, now abandoned. This application Dec. 14, 1970, Ser. No. 98,088

Int. Cl. C04b 35/48, 35/50; G11b 9/02

U.S. Cl. 252—62.9 12 Claims

Ferroelectric solid solutions simultaneously containing lead, iron, niobium, bismuth, zirconium, lanthanum, and oxygen are synthesized and sintered at temperatures lower than 1,000° C. Polycrystalline layers and films of such compositions are prepared by radio-frequency sputtering, electron beam evaporation, chemical spray deposition, or centrifuge deposition. Layers of such compositions only a few microns or fractions of a micron thick when on a conductive substrate are used as non-linear elements in logic and memory devices.

3,666,666

FERROELECTRIC CERAMIC MATERIALS

Gene H. Haertling, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Dec. 17, 1969, Ser. No. 885,789

Int. Cl. C04b 35/46, 35/48, 35/50; G02f 1/26

U.S. Cl. 252—62.9 7 Claims

An electrooptic ferroelectric ceramic material of a lead lanthanum zirconate titanate solid solution having about 5 to 25 atom percent lanthanum with the ratio of zirconium to titanium varying from about 5/95 to about 95/5, hot-pressed, having an optical transmittance throughout the visible spectrum of about 100 percent for optically polished plates about 0.25 millimeters thick, with an effective birefringence of from about −0.003 to −0.03 at saturation remanence polarization to near zero as the remanent polarization is switched to electrical zero, and an effective electrooptic coefficient at saturation remanence from about 1×10^{-2} to 5×10^{-2} m²/C, and for memory applications a coercive field from about 2 to 10kV/cm.

3,666,667

ALKALINE CYANIDE-FREE AQUEOUS DESCALING COMPOSITION CONTAINING ELEMENTAL SULFUR

Theophil J. Wieczorek, West Haven, Conn., assignor to Enthone Incorporated, West Haven Industrial Park, Conn.

Filed Apr. 14, 1969, Ser. No. 816,089

Int. Cl. C02b 5/02

U.S. Cl. 252—87 22 Claims

The electrolytic removal of oxides of iron, such as rust and/or scale, from the surfaces of ferrous metals is materially accelerated by incorporating a minor amount of elemental sulfur into the alkaline cyanide-free aqueous electrolyte also containing a complexing agent capable of complexing iron ions into soluble form, and an alkaline material, and having a pH of above 10. Concentrate compositions adapted to be mixed together with water to form the electrolyte are also embodied within the invention.

3,666,668

CLEANSER, DISINFECTANT, COMBINATIONS THEREOF AND AEROSOL SYSTEMS CONTAINING SAME

Kenneth Klausner, Havertown, Pa., assignor to The Drackett Company, Cincinnati, Ohio

Filed Nov. 21, 1967, Ser. No. 684,630

Int. Cl. C11d 3/48, 1/18

U.S. Cl. 252—90 12 Claims

A compatible cleansing composition comprising pine oil, ammonium hydroxide and an ethoxylated alcohol. A disinfectant formulation particularly adapted for aerosol applications compriaing a halogenated salicylanilide and a quaternary morpholinium alkyl sulfate. Disinfectant-cleanser compositions comprising said aforementioned cleanser and disinfectant in combination. Pressurized aerosol containers containing all of the foregoing.

3,666,669

FISHERMAN'S SOAP

John Paul Noordam, Jr., 6239 South 40th St., Omaha, Nebr.

Filed May 13, 1970, Ser. No. 37,053

Int. Cl. A01k 85/00; C11d 9/38, 9/44

U.S. Cl. 252—132 2 Claims

A soap with which fishermen can wash bait and with which a fisherman can wash his hands for preventing excessive

human scent from remaining on the bait and for providing the bait with sufficient anise oil and cinnamon to substantially help in attracting fish to the bait.

3,666,670

PULVERULENT DRAIN CLEANING COMPOSITION

Daniel Eugene Gilbert, Derby; Larry Ralph Nelson; Charles Edwin Sturgeon, both of Wichita, and Robert Keith Thom, Derby, all of Kans., assignors to Vulcan Materials Company, Birmingham, Ala.

Filed Aug. 1, 1969, Ser. No. 846,968
Int. Cl. C11d 3/14; B01j 11/60
U.S. Cl. 252—160 7 Claims

A free flowing, pulverulent drain cleaning composition is made by mixing an alkali metal hydroxide such as caustic soda; a halogenated lower aliphatic hydrocarbon such as perchloroethylene, methylene chloride or methylchloroform; particulate silica; and a wetting agent.

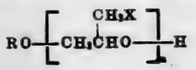
3,666,671

DETERGENT COMPOSITION AND PROCESS OF SHAMPOOING HAIR THEREWITH

Gregoire Kalopissis, Paris, and Guy Vanlerberghe, Montjay-La-Tour, both of France, assignors to Societe anonyme dite: L'Oreal, Paris, France

Continuation-in-part of application Ser. No. 780,300, Nov. 29, 1968, now Patent No. 3,578,719, Continuation-in-part of application Ser. No. 544,095, Apr. 21, 1966, now abandoned. This application Aug. 1, 1969, Ser. No. 846,929
Claims priority, application France, Nov. 22, 1965; 49902; Apr. 23, 1965, 48458; Apr. 6, 1966, 50850; Dec. 1, 1967, 130713
Int. Cl. B01f 17/42; C11d 1/72, 1/825
U.S. Cl. 252—173 12 Claims

Cosmetic shampoo and detergent compositions containing surface active compounds having the formula



in which R is a lipophile group, X is OH or halogen and n is 1–10.

3,666,672

HYDROGEN GENERATING COMPOSITIONS

Ralph H. Hiltz, Pittsburgh, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 631,858, Apr. 19, 1967, now abandoned. This application Dec. 24, 1969, Ser. No. 888,035
Int. Cl. C01b 1/03; B01j 7/00
U.S. Cl. 252—188 6 Claims

An autogeneously combustible composition that liberates hydrogen on burning contains an alkali metal borohydride and a hydrazine sulfate in proportions such that there are between about 0.5 to 2 boron atoms for each nitrogen atom.

3,666,673

METHOD OF DISPOSING OF RADIOACTIVE ORGANIC WASTE SOLUTIONS

Kenneth C. Knoll, Richland, Wash., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Dec. 24, 1969, Ser. No. 888,048
Int. Cl. C09k 3/00
U.S. Cl. 252—301.1 W 1 Claim

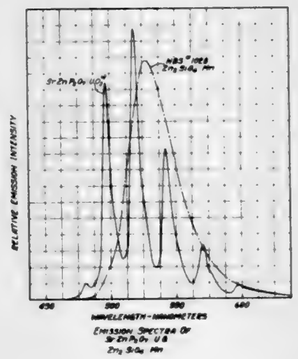
Radioactive organic waste solutions may be disposed of and the radioactive material contained therein may be concentrated by passing the wastes as a liquid or vapor into a suitable preheated oxidation catalyst in the presence of air and collecting the radioactive residue from the oxidized organic wastes.

3,666,674

URANYL-ACTIVATED STRONTIUM ZINC PYROPHOSPHATE PHOSPHORS

Mary V. Hoffman, South Euclid, Ohio, assignor to General Electric Company

Continuation-in-part of application Ser. No. 710,391, Mar. 4, 1968, now abandoned. This application Feb. 24, 1969, Ser. No. 805,972
Int. Cl. C09k 1/36
U.S. Cl. 252—301.1 R 6 Claims



Uranyl-activated strontium zinc pyrophosphate, with allowable substitution of minor amounts of barium for strontium and cadmium for zinc, efficiently produces green light having sharp emission peaks particularly suitable for reprographic work in monochrome copying of materials of various colors. Also, rare earth ions such as Eu^{+3} can be substituted for small amounts of strontium, preferably using K^{+1} for charge compensation. This adds red peaks to the emission.

3,666,675

METHOD FOR PRODUCING LUMINESCENCE USING COMPLEX LUMINESCENT MATERIALS

Zvi Dori, Meadowbrook, and Ronald F. Ziolo, Philadelphia, both of Pa., assignors to Temple University, Philadelphia, Pa.

Filed Jan. 21, 1970, Ser. No. 4,749
Int. Cl. C09k 1/02
U.S. Cl. 252—301.2 R 10 Claims

Luminescence is produced by stimulating a ligand compound wherein the ligand forming atom, either phosphorus or arsenic, is bound in a complex molecule with three organic radicals, at least one of which is phenyl or tolyl, which in turn is complexed with a metal having a closed d^{10} outer shell.

3,666,676

TERBIUM ACTIVATED RARE EARTH OXYHALIDE PHOSPHORS CONTAINING YTTERBIUM FOR REDUCED AFTERGLOW

Jacob G. Rabatin, Chardon, and Evelyn Bradshaw, East Cleveland, both of Ohio, assignors to General Electric Company

Filed Dec. 21, 1970, Ser. No. 100,448
Int. Cl. C09k 1/08
U.S. Cl. 252—301.4 R 2 Claims

Phosphors of reduced afterglow having the inclusion of a selected impurity in the phosphor lattice. More specifically, rare earth oxyhalide phosphors of reduced phosphorescence comprising lanthanum and gadolinium oxyhalide phosphors activated with terbium including the selected impurity ytterbium.

3,666,677

SHORT PERSISTENCE ZINC SULFIDE BLUE PHOSPHOR AND METHOD OF PREPARING SAME

Philip C. Fisher, Jr., and Kenneth H. Shaner, both of Towanda, Pa., assignors to Sylvania Electric Products Inc.

Continuation of application Ser. No. 816,816, Apr. 16, 1969, now abandoned. This application Apr. 29, 1971, Ser. No. 138,739
Int. Cl. C09k 1/12
U.S. Cl. 252—301.6 S 6 Claims

A phosphor composition that emits blue color under cathode ray excitation and has a reduced decay time and a process for preparing same are disclosed. The phosphor composition comprises a predominant portion of silver-activated zinc sulfide and an effective amount of aluminum oxide. The process comprises forming a mixture comprising an effective amount of an aluminum source and a predominant portion of a silver-activated zinc sulfide composition and firing the mixture in an oxidizing atmosphere at a temperature of above about 1,700° F. for a time sufficient to produce said phosphor composition.

3,666,678

PROCESS OF ENCAPSULATING BASIC NITROGEN COMPOUNDS WITH ACID-PRECURSOR GELATIN

Benjamin Mosier, Houston, Tex., and Charles E. Tippett, Dayton, Ohio, assignors to said Benjamin Mosier

Continuation-in-part of application Ser. No. 433,501, Feb. 17, 1965, now abandoned, which is a continuation-in-part of application Ser. No. 316,540, Oct. 16, 1963, now abandoned. This application Jan. 12, 1968, Ser. No. 697,306
Int. Cl. B01j 13/02; C23f 11/14; A01n 17/00
U.S. Cl. 252—316 11 Claims

Process of microencapsulation employing acid precursor (type A) gelatin as the encapsulating macrocolloid, particularly applicable to the formation of liquid center microcapsules containing a basic (cationic) nitrogen compound. For example, an aqueous solution of acid-precursor gelatin is mixed at an alkaline pH with a water-immiscible organic solvent solution of the nitrogen compound, such as an amine or quaternary. The pH of the mixture and the gelatin phase is reduced to at least 4.0 and preferably 3.0 or below, the liquid phases being intermixed to disperse and emulsify the organic solvent phase in the aqueous phase, thereby providing minute droplets of the basic nitrogen containing organic solvent surrounded by the aqueous solution of the acid-precursor gelatin. On the completion of the pH reduction, the gelatin will have formed a coating around the individual droplets to provide encapsulating skins therefor. While the encapsulated droplets can be recovered with some success at the lowest acid pH, it is much preferred to raise the pH to a pH at least above 5.5 and preferably to an alkaline pH before recovering the microcapsules. An auxiliary coating can be applied to the recovered microcapsules by contacting them with an aqueous solution of alkali-precursor gelatin.

3,666,679

CHLORINE STABLE POWDER GELLING COMPOSITION

Homer E. Crotty; Charles R. Coffey, both of Cincinnati, and Thomas C. Tesdahl, Forest Park, all of Ohio, assignors to Chemed Corporation, Cincinnati, Ohio

Continuation-in-part of application Ser. No. 749,585, Aug. 2, 1968, now Patent No. 3,578,499. This application Apr. 23, 1970, Ser. No. 31,373
Int. Cl. B01j 13/00
U.S. Cl. 252—316 2 Claims

The disclosed invention is for a gelling composition which when added to water forms a gel useful for stabilizing a chlorine release additive. A significant advantage of this invention is the increased chlorine stability and hence increased available chlorine for cleaning and sanitizing during contact of the gel and a solid surface. The gelling composition consists essentially of (A) an anionic heteropolysaccharide biopolymer gelling agent, (B) a neutral diluent selected from the group consisting of Na_2SO_4 and NaCl, (C) a linear alkyl benzene sulfonate wherein the alkyl group includes from 12 to 14 carbon atoms, (D) propylene glycol liquid dispersing agent, and (E) fluorescein dye.

3,666,680

METHOD OF COMBINING OPTICAL BRIGHTENERS WITH POLYMERS FOR STABILITY IN BLEACH AND ENCAPSULATED PRODUCT

Benjamin R. Briggs, Los Alamitos, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.

Filed Mar. 5, 1970, Ser. No. 16,926
Int. Cl. B01j 13/02; B44d 1/14
U.S. Cl. 252—316 20 Claims

Optical brighteners are protected against oxidative degradation by aggressive environments such as aqueous hypochlorite bleach to be effectively depositable onto fabrics from bleach by combining the brightener with emulsion polymer prepared from a major portion of the polymer precursors and encapsulating the brightener-polymer combination with the balance of the polymer precursors. Suitable precursors are styrene and acrylic or methacrylic acid, in weight ratios of 65 to 98 parts of the former to two to 35 parts of the latter.

3,666,681

ANTIFOAM PREPARATION FOR AQUEOUS SYSTEMS

Joseph W. Keil, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Mar. 16, 1970, Ser. No. 20,040
Int. Cl. B01d 17/00
U.S. Cl. 252—358 4 Claims

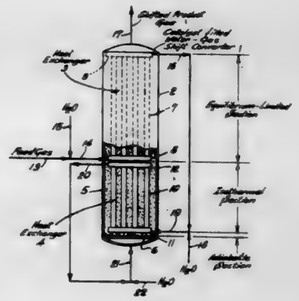
The present invention relates to an antifoaming preparation for aqueous systems consisting essentially of a water insoluble organic liquid, e.g., mineral oil; a filler; a hydroxyl endblocked organopolysiloxane or a benzene soluble organopolysiloxane resin; and an ingredient, e.g., KOH, a hydrocarbon amine, ammonia, or hexamethyldisilazane which would lend compatibility between the filler and the silicone fluid or silicone resin component. The preparations in question would be particularly useful in the pulp and paper industry.

3,666,682

WATER-GAS SHIFT CONVERSION PROCESS

James R. Muenger, Beacon, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Nov. 26, 1969, Ser. No. 880,254
Int. Cl. C01b 2/06
U.S. Cl. 252—373 10 Claims



A water-gas shift conversion process in which a feed gas mixture is subjected to successive contacts with catalyst and

the temperature of the reacting gases contacting the shift conversion catalyst is controlled by indirect concurrent heat exchange with the feed gas mixture.

3,666,683
SCINTILLATION COUNTING COMPOSITION CONTAINING OXDIAZOLE

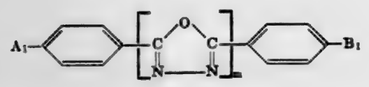
Erwin Maeder, Eichbergweg 14, Aesch/Bl; Rudolf Anliker, Rottmannsbodenstrasse 107, Binningen; Karl Schmid, Schoenenbachstrasse 38, Reinach/Bl, and Adolf Emil Siegrist, Weissensteinstrasse 37, Basel, all of Switzerland

Original application Sept., 1966, Ser. No. 577,168, now abandoned. Divided and this application June 9, 1969, Ser. No. 832,881

Int. Cl. C07d 85/54; G01t 1/204

U.S. Cl. 252—408 8 Claims

The invention relates to a composition of matter for counting atomic disintegrations of radioactive material which is accompanied by emission of β-rays which contains an oxdiazole compound of the formula



wherein A_1 is a branched chain alkyl, B_1 is hydrogen, phenyl, lower alkyl, or lower alkoxy, and m is 1 or 2. The counts per minute emitted by the material dispersed in the scintillation liquid are measured with a suitable instrument such as a liquid scintillation spectrometer.

3,666,684
METAL FERRITE CATALYST ACTIVATION WITH A LARGE AMOUNT OF HALOGEN

Frank Koslosky, Jr., Pasadena, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Filed June 1, 1970, Ser. No. 42,553

Int. Cl. B01j 11/22, 11/64; C07c 5/18

U.S. Cl. 252—415 8 Claims

A partially deactivated metal ferrite oxidative dehydrogenation catalyst can be reactivated by contacting the catalyst with a relatively large amount of halogen. For example the yield from a Mg ferrite used in the oxidative dehydrogenation of n-butenes to butadiene had declined from 55.1 to 52.4 percent after 1,350 hours on stream. The catalyst was treated with up to 6,800 ppm of chlorine and after termination of the halogen and removal of residual halogen the yield was 55.9 percent. It was not necessary to remove the catalyst for activation or to stop the oxidative dehydrogenation.

3,666,685
CATALYTIC HYDROREFINING OF PETROLEUM CRUDE OILS AND RESIDUAL OILS

Mark J. O'Hara, Prospect Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation of application Ser. No. 775,521, Nov. 13, 1968, now abandoned. This application Apr. 23, 1970, Ser. No. 43,306. The portion of the term of the patent subsequent to Aug. 25, 1987, has been disclaimed.

Int. Cl. B01j 11/82

U.S. Cl. 252—432 6 Claims

A catalyst composite comprising a metal of Group VIB and Group VIII and from about 1 to about 5 weight percent boron phosphate composited with a refractory inorganic oxide and characterized by a pore volume of at least about 0.4 cc. per gram in the 100–500 A. range. The catalyst composite is particularly useful for hydrorefining petroleum crude oils and residual crude oils.

3,666,686
PRODUCTION OF STABILIZED ALUMINUM BROMIDE SOLUTIONS

Pankajkumar Mahasukhral Trivedi, St. Louis, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.

Filed May 7, 1969, Ser. No. 822,710

Int. Cl. B01j 11/78

U.S. Cl. 252—429 3 Claims

Stabilized solutions of aluminum bromide in cyclohexane are produced by adding 0.5 – percent by volume of benzene or 0.5 – 2 percent by weight of triphenol [1,1,3(3-hydroxyphenyl) propane]. The rapid degradation of unstabilized solutions at room temperature is markedly retarded for a period of at least 30 days so that the solutions may be shipped and stored and used instead of solid aluminum bromide as a Lewis acid type catalyst.

3,666,687
SULFUR PROMOTED METAL FERRITE OXIDATIVE DEHYDROGENATION CATALYST

Louis J. Croce, Seabrook, Tex., and Laimonis Bajars, Princeton, N.J., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Filed Sept. 19, 1969, Ser. No. 859,565

Int. Cl. B01j 11/74

U.S. Cl. 252—439 10 Claims

The yield in oxidative dehydrogenation of organic compounds using metal ferrite catalyst is improved by having a sulfur promoter present either as part of the catalyst or added to the reaction with the reactants.

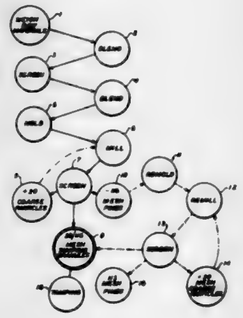
3,666,688
TAMPING MATERIAL

William Eugene McCafferty, St. Mary's, Pa., assignor to Airco Inc., New York, N.Y.

Original application Nov. 27, 1968, Ser. No. 779,659, now Patent No. 3,510,710, dated May 5, 1970. Divided and this application Apr. 1, 1970, Ser. No. 24,746

Int. Cl. H01b 1/04

U.S. Cl. 252—503 3 Claims



A tamping material for securing electrical connections to carbon blocks comprises finely divided granules composed of 85 percent to 97 percent by weight graphite and 15 to 3 percent by weight resin binder.

3,666,689
SOLID COMPOSITIONS

Aleksander Jerzy Groszek, and Rodney Ernest Wilberidge, both of London, England, assignors to The British Petroleum Company Limited, London, England

Filed Mar. 28, 1969, Ser. No. 811,644

Claims priority, application Great Britain, Apr. 2, 1968, 15,721/68

Int. Cl. H01b 1/02

U.S. Cl. 252—512 5 Claims

Polymeric compositions based on, e.g., polyethylene or poly vinyl chloride containing ultra-fine metal flakes produced by grinding metals in an organic liquid are electrically conductive. The specific resistance can be decreased in some cases to less than 10^{-1} ohm. cm.

3,666,690
SKIN CLEANSING COMPOSITION

Robert Francis Bann, Bridgewater Township, Somerset County, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 12, 1970, Ser. No. 89,065

Int. Cl. C11d 1/38

U.S. Cl. 252—547 4 Claims

A skin-cleansing composition for the removal of dye stains caused by basic triphenylmethane dyes, such as malachite green, comprising, in defined proportions, (1) a cationic surface-active quaternary ammonium salt containing a long-chain alkyl substituent, (2) mineral oil, (3) lanolin, (4) glycerine, (5) an alkali metal sulfite, (6) sodium carboxymethyl cellulose and (7) water.

3,666,691
SOLVENT RECLAIMING OF SYNTHETIC RESINS

Lester L. Spiller, 3733 East 55th St., Indianapolis, Ind.

Filed June 11, 1970, Ser. No. 45,404

Int. Cl. C08f 47/24

U.S. Cl. 260—2.3 10 Claims

Synthetic resins, and particularly polyvinyl chloride, coated on copper are reclaimed by pouring thereover a mixture of organic solvents containing trichlorethylene and dimethyl sulfoxide as the essential solvents. The solvent mixture is preheated to a temperature in the range of 50°–100° C. and the material being reclaimed is held in an autoclave at a pressure of at least 5 p.s.i. gauge so that the resin being reclaimed is contacted by the solvent mixture in both the liquid and vapor phases.

3,666,692
FLAME RETARDANT POLYPROPYLENE AND POLYURETHANE

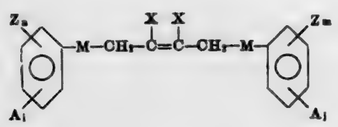
William P. Paige, and Floyd B. Nagle, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 13,825, Feb. 24, 1970, now abandoned. This application Sept. 3, 1970, Ser. No. 69,441

Int. Cl. C08g 51/58; C08f 45/58

U.S. Cl. 260—2.5 AJ 14 Claims

The addition of a substituted 2-butene having the general formula



each X independently forming either the cis or trans isomer, is F, Cl, Br, I or H where not more than one X is H, each M independently is O or S, each Z independently is Cl, or Br, each A independently is an inert substituent, such as F, I, methyl, phenyl, hydroxy, methoxy, nitro, carboxy, acetoxy, cyano, amino or sulfo, n and m are integers of 1 to 5 provided that when $n=m=1$ each Z and X is Br and $M = O$ and provided that when one X is H then n and m are integers of 3 to 5, and i and j are integers of 0 to 2 where $i \leq n-1$ and $jm-1$ to a resin of polypropylene or polyurethane makes the resultant resin fire retardant or, in greater concentrations, self-extinguishing according to Underwriters test class 2.

3,666,693
SEQUENTIAL GRAFT COPOLYMERIZATION OF ACID AND BASIC MONOMERS ONTO A PERHALOGENATED OLEFIN POLYMER

Adolphe Chapiro, and Anna-Maria Jendrychowska-Bonamour, both of Bellevue, France, assignors to Centre National de la Recherche Scientifique, Paris, France

Filed Feb. 17, 1969, Ser. No. 799,996

Int. Cl. C08f 15/40

U.S. Cl. 260—2.5 R 6 Claims

Improved process of producing semipermeable membranes by graft copolymerization, wherein a perhalogenated olefin polymer substrate has grafted thereonto copolymers having acid and basic groups respectively, where the grafting of acid and basic monomers is carried out sequentially, where the first grafted group is neutralized before the second group is grafted onto the substrate, and where substantially all pendant acid and basic functions are neutralized after grafting has been completed.

3,666,694
EMULSIFIABLE PHENOLIC RESIN COMPRISING A RESOLE AND A SOLUBLE PROTEIN

Woodrow Hayes Ingram, II, Hampden, Mass., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 7,197, Jan. 30, 1970, now abandoned. This application May 5, 1971, Ser. No. 140,554

Int. Cl. C08g 37/16, 37/18, 37/20

U.S. Cl. 260—7 15 Claims

An emulsifiable phenol-formaldehyde resole resin system and emulsions prepared therefrom which exhibit improved stability. The thermoset resin products prepared from these emulsions also display improved water resistance.

3,666,695
EPOXY RESIN ADHESIVE CONTAINING A POLYMERIC FATTY-AMIDO AMINE AND MONOMERIC FATTY-AMIDO AMINE MIXTURE AS THE CURING AGENT

George A. Jachimowicz, Edina; Mark A. Minatelli, Minneapolis, and Harold M. Preston, New Brighton, all of Minn., assignors to General Mills Chemicals, Inc.

Filed Oct. 6, 1970, Ser. No. 78,609

Int. Cl. C08g 30/14

U.S. Cl. 260—18 PN 10 Claims

An epoxy resin system useful in aqueous form and particularly useful in forming carpet-like articles, in which the epoxy resin system when cured serves to bond fibrous materials to a variety of substrates. The system is particularly useful in bonding various fibers, natural and synthetic, to vinyl based substrates, e.g., vinyl plastisols, to which adhesion in the past has been poor. The system comprises an epoxy component and a liquid amine curing agent component which is a mixture of a monomeric fatty acid amido-amine and a polymeric fat acid amido-amine.

3,666,696
COATING COMPOSITIONS COMPRISING THE REACTION PRODUCT OF AN ORGANIC POLYISOCYANATE MODIFIED WITH A MONOHYDRIC ALCOHOL AND AN OIL MODIFIED ROSINOUS MATERIAL

James Moore, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed June 11, 1970, Ser. No. 45,563
Claims priority, application Great Britain, June 6, 1969, 31,254/69
Int. Cl. C08g 17/16
U.S. Cl. 260—18 TN 8 Claims

Two-pack surface-coating compositions comprising in admixture (A) an essentially di-isocyanate product which is obtained by the reaction of a polyisocyanate of functionality of at least 3 or a mixture thereof with other polyisocyanates and a monohydric alcohol of molecular weight at least 70, and (B) the reaction product of an oil selected from castor oil, hydrogenated castor oil and mixtures thereof and a hydroxyl group-containing product based on rosin.

3,666,697
METHOD FOR PRODUCING SHAPED PLASTIC ARTICLES

Casimir C. Peloza, Rosemount, Minn., assignor to Ashland Oil Inc., Houston, Tex.

Filed Mar. 11, 1970, Ser. No. 18,765
Int. Cl. C08f 21/04; C08g 17/16
U.S. Cl. 260—22 CB 13 Claims

A method is disclosed for producing shaped plastic articles in the form of a solid water-in-oil emulsion wherein the water phase exists as discrete colloidal-size water droplets dispersed in a continuous oil phase consisting of the thermoset polymerization product of an essentially linear unsaturated polyester and a vinyl monomer. The foremost utility of the disclosed method is that it provides shaped articles whose surfaces are substantially free of irregularities in the nature of pimples.

3,666,698
WATER-SOLUBLE POLYESTER RESIN CONTAINING PHENYLINDAN DICARBOXYLIC ACID

Robert R. Harris, Burnham, Ill., and Carl H. Kressman, Long Beach, Calif., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Filed Dec. 14, 1970, Ser. No. 98,038
Int. Cl. C09d 3/64, 5/14
U.S. Cl. 260—22 M 4 Claims

Alkyd resins which contain critical amounts of tall oil fatty acid and phenylindane dicarboxylic acid (PIDA) in combination with trimetllitic anhydride and trimethylol propane gives a resin which is dispersible in water, yet has exceptionally high mildew resistance, strength, hydrolytic stability, chemical resistance, film hardness, and excellent properties of fast drying and adhesion. The resin may be deposited in an electrophoresis bath if it is first solubilized by the addition of an alkaline material. The resin is self-curing and dries in air to a hard, durable, glossy film which does not require to be baked.

3,666,699
COMPOSITIONS OF POLYSTYRENE AND POLYETHYLENE WAXES

Thomas E. Nixon; John A. Barber, and Floyd B. Nagle, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

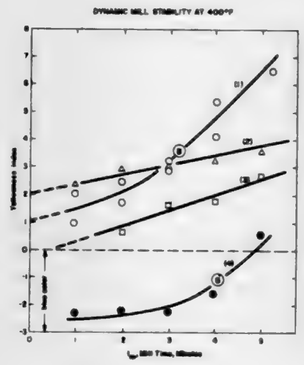
Original application Mar. 8, 1968, Ser. No. 711,509, now Patent No. 3,544,552. Divided and this application Aug. 6, 1970, Ser. No. 61,824
Int. Cl. C08f 33/02
U.S. Cl. 260—23 S 3 Claims

This invention comprises compositions of polystyrene and polyethylene waxes, together with a lubricant or mold release agent, which compositions are suitable for making fragile molded articles useful as targets in the practice of skeet shooting.

3,666,700
POLYVINYL CHLORIDE COMPOSITION

Laurence F. King, Mooretown, and William Taylor, Sarnia, Ontario, both of Canada, assignors to Esso Research and Engineering Company

Filed Dec. 3, 1970, Ser. No. 94,832
Int. Cl. C08c 11/70, 11/66
U.S. Cl. 260—28.5 D 11 Claims



A polyvinyl chloride composition is prepared from a polyvinyl chloride resin having a weight average molecular weight of about 40,000 to about 90,000 in combination with an organophosphite chelator, a thio-organotin stabilizer, and a lubricant system consisting of a white oil and a microcrystalline petroleum wax. This composition gives a product which is characterized by easy processability, high clarity, and greatly reduced yellowing tendency; thus, minimizing or eliminating the need for a color masking agent (e.g., a blue or violet toner).

3,666,701
COPOLYMER BONDING AGENT

Oren L. Marrs, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Sept. 1, 1970, Ser. No. 68,771
Int. Cl. C09j 3/26
U.S. Cl. 260—27 9 Claims

Copolymer bonding agents comprising in combination resinous tackifiers, organic solvents, and a conjugated diene-lactone block copolymer, applied as a solution or dispersion to provide a pressure sensitive adhesive, a solvent cement, and a laminating adhesive.

3,666,702
INHIBITION OF CRYSTALLIZATION OF LIQUID EPOXY RESINS

John C. Haugh, Coon Rapids, Minn., assignor to General Mills Chemicals, Inc.

Filed Oct. 12, 1970, Ser. No. 80,199
Int. Cl. C08g 53/00, 30/14
U.S. Cl. 260—29.2 EP 7 Claims

Liquid epoxy resins are stabilized against crystallization at ambient temperatures by combining therewith a crystallization inhibiting amount of 2-amino-2-ethyl-1,3-propanediol.

3,666,703
FOUNDRY SAND COMPOSITION FOR CORES AND MOLDS

Takao Murata, Yaizu, and Atsushi Kudo, Fujieda, both of Japan, assignors to Sumitomo Durez Company, Ltd., Tokyo, Japan

Filed May 13, 1969, Ser. No. 824,253
Int. Cl. C08g 51/24, 5/06
U.S. Cl. 260—29.3 9 Claims

In the production of foundry molds and cores, foundry sand grains are bound together with a binder composition comprising a mixture of (1) an aqueous phenolic resin prepared by reacting a mixture of phenol and formaldehyde in the range of 1:1.8 and 1:3.0, and optionally containing urea as a third component, and (2) cement such as Portland cement, alumina cement, magnesia cement and dolomite cement. Accelerators such as alkali metal carbonates, alkaline earth metal oxides and other metal oxides which are capable of forming coordinate bonds are also employed in the compositions. Molds and cores formed from the foregoing compositions are self-curing at room or ambient temperature in a short time.

3,666,704
PRODUCTION OF AQUEOUS DISPERSIONS OF POLYMERS OF OLEFINICALLY UNSATURATED MONOMERS

Hans-Georg Keppler, Weinheim, and Hermann Wenslau, Bad Duerkheim, both of Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhineland Rheinland-Pfalz, Germany

Filed Apr. 27, 1970, Ser. No. 32,371
Claims priority, application Germany, Apr. 30, 1969, P 19 21 946.6
Int. Cl. C08g 1/13
U.S. Cl. 260—29.6 WB 2 Claims

Production of aqueous polymer dispersions containing relatively large polymer particles by polymerizing olefinically unsaturated monomers (A) and, if desired, olefinically unsaturated monomers (A′) in aqueous emulsion in the presence of conventional dispersing agents, catalysts and previously prepared emulsion polymers of olefinically unsaturated monomers carried out by adding, during the polymerization of the monomers (A) and, if present, (A′) up to a point where 95 percent of said monomers have been converted, minor quantities of previously prepared emulsion polymers in the form of an aqueous dispersion, which emulsion polymers contain from 0.5 to 50 percent of their weight of polymerized units of olefinically unsaturated monomers (B) which when polymerized alone yield water-soluble homopolymers, the proportion of monomers (A′) in admixture with the monomers (A) being at least 20 percent (based on the proportion of polymerized units of monomers (B) in the previously prepared emulsion polymer) less than the proportion of polymerized units of the monomers (B) in the previously prepared emulsion polymer.

3,666,705
PRODUCTION OF ALCOHOL-FREE VINYLAMIDINES

Hans Peter Panzer, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed June 1, 1970, Ser. No. 42,468
Int. Cl. C08f 45/24
U.S. Cl. 260—29.6 AN 14 Claims

A reaction mixture composed of an acrylonitrile polymer, a water-soluble alkylenepolyamine and a water-soluble alcohol on heating yields a solution of a poly-2-vinylimidazoline in the alcohol. The alcohol separates, usually as a supernatant layer, when the solution is acidified with an aqueous solution of a strong acid.

3,666,706
SUBSTITUTE FOR COAL DUST IN CASTING MOLDS AS LUSTROUS CARBON-FORMING ADDITIVE

Winfried Hespers, Bielefeld, Germany, assignor to Ravensberger Eisenhutte Reinshagen & Vogt, Bielefeld, Germany

Filed Nov. 6, 1969, Ser. No. 870,553
Claims priority, application Germany, Nov. 7, 1968, P 18 07 453.8; Oct. 17, 1969, P 19 52 357.0
Int. Cl. C08f 45/24
U.S. Cl. 260—29.6 XA 10 Claims

A non-foamed, unsubstituted hydrocarbon polymer in finely divided form, of particle size less than 0.3 mm in amounts of 0.5 to 3 percent provides the lustrous or glance carbon forming constituent in place of coal dusts in a foundry molding sand composition with 6 to 8 percent bentonite as binder.

3,666,707
SLURRY ADDITIVE FOR ABLATIVE WATER FIRE EXTINGUISHING SYSTEMS

William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Turnpike, Mass.

Filed Feb. 20, 1970, Ser. No. 13,179
Int. Cl. C08g 51/42
U.S. Cl. 260—33.2 17 Claims

A shelf stable slurry for injection into ablative water fire extinguishing systems comprises a uniform suspension of polyacrylamide polymer gelling agent in a polyoxyalkylene vehicle containing a stabilizing amount of silica suspending agent.

3,666,708
METHOD FOR PREPARING STABLE POLYURETHANE SOLUTIONS

Yasuji Nakahara; Jukichi Ohmura, and Ryoji Horinaka, all of Fujishi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 13, 1970, Ser. No. 11,073
Claims priority, application Japan, Feb. 13, 1969, 44/10037
Int. Cl. C08g 22/16, 51/46, 53/00
U.S. Cl. 260—32.6 N 7 Claims

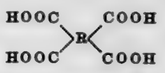
Method for producing a polyurethane solution which comprises mixing reactants of a prepolymer having terminal isocyanate groups a bifunctional chain-connecting agent having 2 hydrogen atoms capable of reacting with the isocyanate group and 0.5 – 10 mol percent of N,N-dialkylalkylene diamine per mol of the bifunctional chain connecting agent at room temperature and then subjecting the reaction mixture to heat-aging at a temperature of at least 70° C for at least 5 hours.

3,666,709
SOLVENT SOLUBLE AROMATIC POLYMIDES AND PRODUCTION THEREOF

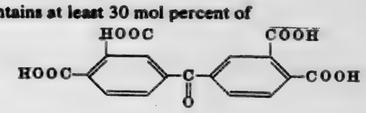
Munehiko Suzuki; Etsuo Hosokawa, both of Yokohama-shi; Misao Waki, Kawasaki-shi, and Masatada Fukushima, Yokohama-shi, all of Japan, assignors to Showa Denson Denran Kabushiki Kaisha a/k/a Showa Electric Wire & Cable Co., Ltd., Kanagawa-ken, Japan

Filed Dec. 15, 1969, Ser. No. 885,140
Claims priority, application Japan, Dec. 14, 1968, 43/91760
Int. Cl. C08g 20/00, 5/44
U.S. Cl. 260—33.4 P 31 Claims

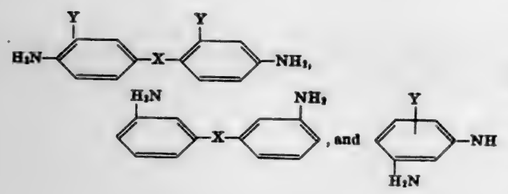
An aromatic tetracarboxylic acid which is representable by the general formula



and contains at least 30 mol percent of



and a diamine which is representable by the general formula $H_2N—R\Phi v/NH_2$ and contains at least 30 mol percent of diamines representable by any of



are heated and caused to react in substantially equal mol quantities in a phenolic solvent or in an aprotic organic polar solvent thereby to produce a new linear aromatic polyimide which is soluble in organic solvents and has high stability for preservation in the form of solutions such as varnishes. This method does not require a step of thoroughly dehydrating the aromatic tetracarbosylic acid component prior to the reaction.

3,666,710

NON-AQUEOUS DISPERSIONS

Joseph M. Makhlouf, Mars; Roger M. Christenson, Gibsonia, and Andrew Halcousis, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sept. 8, 1969, Ser. No. 856,173
Int. Cl. C08f 45/28, 47/20; C08j 1/46
U.S. Cl. 260—33.6 UA 10 Claims

A non-aqueous dispersion of polymer particles is formed by polymerizing at least one ethylenically unsaturated monomer in a dispersing liquid in the presence of a polymerizable ethylenically unsaturated carboxylic acid, an imine, and a dispersion stabilizer which is a branched copolymer having two types of polymeric components of which one type is solvated by the dispersing liquid and the other type is an anchor polymer of different polarity to the first type and being relatively non-solvatable by the dispersing liquid and being capable of being anchored to the polymerized particles of the ethylenically unsaturated monomer and said anchor polymer containing pendant groups capable of copolymerizing with ethylenically unsaturated monomers. The resulting dispersion is stable where large amounts of active or coalescing solvents are added and a coating formed from the dispersion has excellent adhesion to many substrates.

3,666,711

PRODUCTION OF FIBER REINFORCED RESIN COMPOSITES

Carolyn Ethel Mary Morris, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Mar. 10, 1970, Ser. No. 18,302
Claims priority, application Great Britain, Mar. 14, 1969, 13,576/69
Int. Cl. C08g 51/10
U.S. Cl. 260—38 8 Claims

The properties of glass fiber reinforced phenolic resin composites are improved by treating the glass fiber prior to the formation of the composite with a specified alcohol, ketone, alkylbenzene or o-amino(alkylbenzene) which improves the wetting of the glass by the resin. The invention is particularly applicable to the production of glass fiber reinforced foamed phenolic resin.

3,666,712

FLAME RETARDANT POLYMETHYL METHACRYLATE COMPOSITIONS

Edward D. Weil, Hastings-on-Hudson, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Continuation-in-part of application Ser. No. 463, Jan. 2, 1970, now abandoned. This application Apr. 6, 1970, Ser. No. 26,050
Int. Cl. C09k 3/28
U.S. Cl. 260—45.7 P 5 Claims

Self-extinguishing homo- and copolymers of methyl methacrylate (MMA) are prepared by the intimate admixture of the latter polymers with a specified 2,3-dibromopropyl acid phosphate ester. The thus treated polymers display a high degree of flame retardance without any diminution of their clarity or hardness and they may be safely employed in any application requiring their possible exposure to fire.

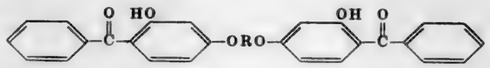
3,666,713

ULTRAVIOLET LIGHT INHIBITORS

Robert L. Wear, West St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Original application Nov. 24, 1967, Ser. No. 685,329, now Patent No. 3,580,927. Divided and this application Aug. 18, 1970, Ser. No. 64,806
Int. Cl. C08f 45/58; C08g 51/58
U.S. Cl. 260—45.8 A 6 Claims

Ultraviolet light absorbers with extremely low volatility are prepared by reacting 2,4-dihydroxybenzophenone and organic dihalides or diepoxides. The resultant compounds have the general formula



where R is a divalent organic radical. These compounds may be used as carriers for dye, permitting the internal coloring of polyester films and fibers.

3,666,714

POLYACETALS STABILIZED WITH SECONDARY ALKALI METAL PHOSPHATES

Karl-Heinz Hafner, and Harald Cherdron, both of c/o Farbwerke Hoechst AG, Frankfurt am Main, Germany

Filed Nov. 4, 1969, Ser. No. 874,018
Claims priority, application Germany, Nov. 15, 1968, P 18 09 059.0
Int. Cl. C08g 51/56
U.S. Cl. 260—45.7 P 7 Claims

Polyacetals comprising oxymethylene and oxyalkylene units in the main chain of the macromolecules are stabilized against the action of heat and oxygen by means of secondary alkali metal phosphates. Thermoplastic molding compositions prepared from the stabilized polyacetals are suitable for the manufacture of finished and semi-finished products, for example molded articles, household utensils, and parts of machines.

3,666,715

STABILIZED COMPOSITION COMPRISING α-OLEFIN POLYMERS AND MELAMINE

Abraham Kutner, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of application Ser. No. 625,308, Mar. 23, 1967, now abandoned. This application July 8, 1970, Ser. No. 53,275
Int. Cl. C08f 45/60
U.S. Cl. 260—45.8 N 6 Claims

The resistance of α-olefin polymers to copper induced oxidation is improved by adding thereto 0.01 to 2 percent melamine along with conventional antioxidants and light stabilizers. The efficiency of the melamine as a stabilizer is improved if the particle size is below about 55μ.

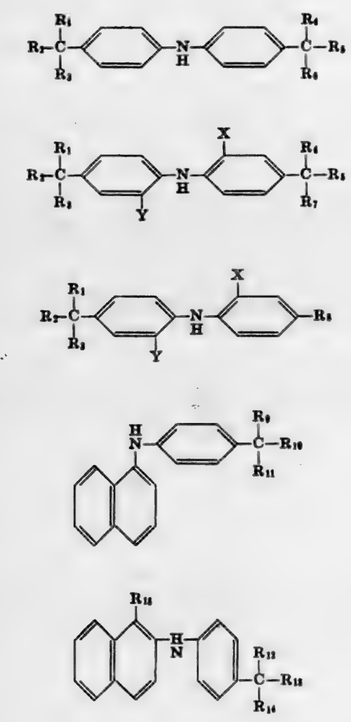
3,666,716

DERIVATIVES OF DIPHENYLAMINE AND THE PHENYLNAPHTHYLAMINES AS ANTIOXIDANTS AND AS SYNERGISTS WITH DIALKYL 3,3'-THIODIPROPIONATES

Edward L. Wheeler, Woodbury, Conn., assignor to Uniroyal Inc.

Original application Apr. 7, 1966, Ser. No. 540,817, now Patent No. 3,505,225, dated Apr. 7, 1970. Divided and this application Jan. 12, 1970, Ser. No. 2,382
Int. Cl. C08f 45/60
U.S. Cl. 260—45.9 R 5 Claims

Derivatives of diphenylamine or phenylnaphthylamine of the types



where R_1, R_9 and R_{13} are phenyl or p-tolyl groups and the remaining R's, X and Y may be alkyl or various other substituents, are useful antioxidants for lubricating oils or for various polymeric substrates (e.g. polypropylene) especially in combination with a dialkyl thiodipropionate. Typical antioxidants are 4,4'-bis-(alpha,alpha,p-trimethylbenzyl)diphenylamine made by reacting p,alpha-dimethylstyrene with diphenylamine, and N-(4-alpha,alpha-dimethylbenzylphenyl)-1-(alpha,alpha-dimethylbenzyl)-2-naphthylamine made by reacting alpha-methylstyrene with N-phenyl-2-naphthylamine.

3,666,717

POLYAMIDES STABILIZED WITH A PHOSPHINE

Geoffrey Spencer Davy, and Vincent Matthews, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Apr. 14, 1970, Ser. No. 28,499
Claims priority, application Great Britain, Apr. 15, 1969, 19,156/69
Int. Cl. C08g 51/56, 51/58, 51/60
U.S. Cl. 260—45.95 9 Claims

Synthetic linear polyamides which are stabilized against the degradative effect of heat by the incorporation therein of phosphine or of certain primary or secondary organophosphines, optionally together with a substituted phenolic or substituted diphenylamine antioxidant. These phosphines have a reduced adverse effect on the dispersion properties of titanium dioxide when used as a pigment in polyamides, compared with other phosphorus-containing stabilizers.

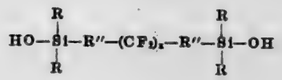
3,666,718

SILPHENYLENESILOXANE POLYMERS HAVING IN-CHAIN PERFLUOROALKYL GROUPS

William J. Patterson, Madison, and Donald E. Morris, Huntsville, both of Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 22, 1970, Ser. No. 100,774
Int. Cl. C08f 11/04
U.S. Cl. 260—46.5 P 5 Claims

Silphenylenesiloxane polymer having in-chain perfluoroalkyl groups is prepared by reacting a disilanol having the formula



where R is a monovalent hydrocarbon radical, R'' is an arylene group, and x is from two to eight with a diaminosilane which, when cured, produces a polymeric material resistant to hydrocarbon fuels and stable at elevated temperatures.

3,666,719

PROCESS FOR THE PURIFICATION OF POLYMER SOLUTIONS

Karl Morgenstern, Krefeld; Hermann Schnell, Krefeld-Uerdingen; Ludwig Bottenbruch, Krefeld-Boekum; Otto Court, Neuss; Hans-Helmut Schwarz, Krefeld-Bockum, and Hugo Vernaleken, Krefeld, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 24, 1970, Ser. No. 13,853
Claims priority, application Germany, Mar. 5, 1969, P 19 11 179.6
Int. Cl. C08g 17/13
U.S. Cl. 260—47 XA 5 Claims

Polymer solutions are purified with a detergent solution in pulsating columns with perforated bases, in which a proportion by volume of the polymer solution to the detergent solution of 0.1 is maintained in the extraction column and the detergent solution is used as the continuous phase.

3,666,720
VINYL CHLORIDE COPOLYMERS

Eric Nield, Waton-At-Stone, and John Brewster Rose, St. Albans, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of application Ser. No. 696,122, Jan. 8, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 374,181, June 10, 1964, now abandoned. This application Aug. 11, 1970, Ser. No. 63,011
Claims priority, application Great Britain, June 18, 1963, 24,223/63
Int. Cl. C08g 20/00
U.S. Cl. 260—47 UA 7 Claims

Improved thermoplastic materials are provided which are polymeric products comprising from 99 to 1 percent by weight of vinyl chloride units, from 1 to 90 percent by weight of N-aryl maleimide units and from 0 to 49 percent by weight of units derived from at least one other copolymerisable ethylenically unsaturated compound. Very interesting materials are obtained when the said compound comprises not more than 20 percent by weight of the polymeric product. The preferred products contain from 60 to 99 percent by weight of vinyl chloride residues, from 1 to 40 percent by weight of N-aryl maleimide residues and 0 to 20 percent by weight of residues derived from the other monoethylenically unsaturated compound.

3,666,721
POLYAMINE AND HYDROCARBON SULFONIC ACID ACCELERATOR COMBINATION FOR EPOXY CURING

Norman Bell Godfrey, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

Filed Oct. 13, 1970, Ser. No. 80,510
Int. Cl. C08f 30/14
U.S. Cl. 260—47 EC 9 Claims

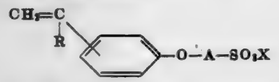
An accelerator combination of a polyamine and an organic sulfonic acid is synergistic for accelerating the cure of a polyglycidyl ether of a polyhydric phenol cured with a polyoxypropylenepolyamine. The epoxy resin product is useful in castings, coatings, adhesives, laminates, filament reinforced compositions, seamless flooring, terrazzo flooring, crushed-stone aggregates and in grouting, caulking and sealing compositions.

3,666,722
ACRYLONITRILE COPOLYMERS CONTAINING SULFONIC ACID GROUPS

Jeno Szita, Dormagen; Ulrich Bahr, Opladen-Luetzenkirchen; Herbert Marzolph, and Gunther Nischk, both of Dormagen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of application Ser. No. 654,351, July 19, 1967, now abandoned. This application Mar. 25, 1971, Ser. No. 128,179
Int. Cl. C08f 19/00
U.S. Cl. 260—49 5 Claims

This invention relates to acrylonitrile copolymers containing at least 50 percent by weight of acrylonitrile and up to 10 percent by weight of an ethylenically insaturated sulfonic acid compound of the formula



wherein R represents a hydrogen atom or a methyl group, A represents an alkylene radical and X represents hydrogen, ammonium, an alkali or an organic ammonium cation, the balance being one or more additional copolymerizable monomers, and to a process for their production by copolymerizing said monomers in an aqueous medium with a redox catalyst system or in an organic polar solvent with a radical catalyst.

The copolymers show a high degree of whiteness, outstanding thermal stability and excellent textile properties together with a high affinity for basic dyes.

3,666,723
POLYIMIDES FROM 2,6-DIAMINO-S-TRIAZINES AND DIANHYDRIDES

Raymond J. Kray, Berkeley Heights, N.J., and Roland A. E. Winter, Armonk, N.Y., assignors to Ciba-Geigy Corporation

Filed Aug. 1, 1969, Ser. No. 889,017
Int. Cl. C08g 20/32
U.S. Cl. 260—65 7 Claims

Triazine-based polyimides are prepared by first reacting dianhydrides with s-triazine compounds containing at least two primary aromatic, aliphatic or cycloaliphatic amino groups to give triazine-based polyamic acids which, on curing, yield the polyimides. The polyamic acids are soluble in organic solvents or ammonium hydroxide, the latter yielding the aqueous solutions. From said organic or aqueous solutions useful fibers, films, adhesives, coatings and composites can be prepared. The triazine-based polyimides possess high temperature oxidative stability, good mechanical properties and electrical properties and low void contents.

3,666,724
EQUILIBRATED POLYESTERS AND POLYURETHANES BASED THEREON

Fritz Hostettler, Verona, N.J., assignor to Inter-Polymer Corporation, Passaic, N.J.

Continuation of application Ser. No. 761,790, Sept. 23, 1968, now abandoned. This application Aug. 13, 1970, Ser. No. 63,635
Int. Cl. C08g 22/10
U.S. Cl. 260—75 NK 11 Claims

Copolyesterpolyols comprising the equilibration product of at least two polyols manufactured by heating at least two high molecular weight polyols, at least one of which is a polyester polyol, to a temperature of 150° to about 300° C., preferably in the presence of a polyesterification and/or ester interchange catalyst, for a sufficient period of time to produce new copolyesterpolyols which have substantially constant melting points. Such copolyesterpolyols have approximately the melting point as the combination of the ingredients synthesized by a normal copolyesterification technique. Also provided are polyurethane products derived from the copolyesterpolyols comprising solid urethane elastomers, microcellular elastomers, flexible and rigid polyurethane foams, injection-molding resins, prepolymers and the like, prepared by reaction of the copolyesterpolyols with an organic polyisocyanate and a chain extender.

3,666,725
TRIS(ISOCYANATOTOLYL) ISOCYANURATE-TOLYLENE DIISOCYANATE COMPLEXES

Carl Francis Irwin, New Castle, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 26, 1970, Ser. No. 84,150
Int. Cl. C08g 22/18, 22/28
U.S. Cl. 260—75 NT 10 Claims

An aromatic polyisocyanate which is a molecular complex consisting of one molecule of tris(isocyanatotolyl) isocyanurate associated with two molecules of tolylene diisocyanate. The complex, which is a free-flowing crystalline powder low in toxicity, reacts with active-hydrogen containing compounds to form polyurethane coatings, foams, elastomers, etc. Such polyurethane coatings have particularly outstanding resistance to weather exposure and solvent attack.

3,666,726
POLYMERS WHICH CONTAIN POLYAMIDE, UREA AND/OR URETHANE GROUPS AND PROCESS FOR PREPARING SAME

Gerhard Grogler, and Gunter Oertel, Leverkusen/Cologne, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Germany

Filed July 2, 1970, Ser. No. 52,066
Claims priority, application Germany, July 12, 1969, P 19 35 485.9
Int. Cl. C08g 22/02, 22/04
U.S. Cl. 260—77.5 CH 8 Claims

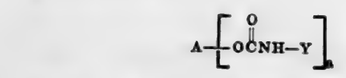
Polymers containing polyamide, urea and/or urethane groups are obtained by a process which comprises the polyaddition of aliphatic or aromatic polyisocyanates with polyfunctional aminocrotonic acid esters, the substitutents of which on the nitrogen containing additional hydroxyl or amino groups.

3,666,727
POLYMERS OF HALOGEN CONTAINING N-ALKENYL CARBAMATES

Richard J. Dolinski; Robert M. Nowak, both of Midland, and George A. Burk, Bay City, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 22, 1970, Ser. No. 48,485
Int. Cl. C08g 22/04
U.S. Cl. 260—77.5 BB 14 Claims

Polymers of halogenated carbyl-N-alkenyl carbamates represented by the formula:



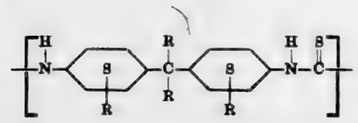
wherein A is halogenated carbyl such as haloalkyl or haloaryl, Y is alkenyl such as vinyl or allyl and *a* is 1 or 2. Polymers of such carbamates and other ethylenically unsaturated monomers are generally found to be self-extinguishing.

3,666,728
POLYTHIOUREAS AND SHAPED ARTICLES THEREOF

Willard Hallam Bonner, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 27, 1969, Ser. No. 869,870
Int. Cl. C08g 22/02
U.S. Cl. 260—77.5 CH 7 Claims

Homo- and co-polythioureas having recurring units of the formula:



wherein R is hydrogen or methyl, are useful in the preparation of shaped articles (particularly fibers).

3,666,729
PLATING RESIST SOLUTION

Kim Ritchie, Cave Creek, and Yvonne Cecile Malkiewicz, Phoenix, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed July 2, 1970, Ser. No. 52,074
Int. Cl. C08f 3/60
U.S. Cl. 260—78.4 EP 7 Claims

A catalyst-free, solvent-free plating resist solution consisting of a diallyl phthalate prepolymer having a molecular weight of about 4900 and a liquid epoxy compound such as 1, 2-epoxy ethylbenzene is disclosed. The plating resist solution contains about 0.1 to 3 parts by weight of the diallyl phthalate prepolymer to one part by weight of the liquid epoxy compound.

3,666,730
OIL-SOLUBLE INTERPOLYMERS OF N-VINYLTHIOPYRROLIDONES

Lester E. Coleman, Cleveland, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Original application July 5, 1968, Ser. No. 742,517, now Patent No. 3,519,565, which is a continuation-in-part of application Ser. No. 668,958, Sept. 19, 1967, now abandoned. Divided and this application Feb. 10, 1970, Ser. No. 14,887
Int. Cl. C08f 19/00, 41/00
U.S. Cl. 260—78.5 B 7 Claims

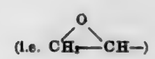
N-Vinylthiopyrrolidone, and its lower alkyl-substituted homologs, are interpolymerized with polymerizable alkyl (C_n or greater) carboxylates and (optionally) other oxygen-containing monomers to produce oil-soluble polymers. These polymers are useful in lubricating oils as viscosity index improvers, dispersants and oxidation inhibitors.

3,666,731
POLYAMIDE FILAMENTS CONTAINING HIGH VISCOSITY ANTISTATIC AGENTS

Lawrence W. Crovatt, Jr., Gulf Breeze, and Ullman C. Garrett, Jr., Pensacola, both of Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 13, 1970, Ser. No. 63,662
Int. Cl. C08g 20/38
U.S. Cl. 260—78 S 7 Claims

Static-resistant polyamide fibers are produced by dispersing from 0.1 to 20 percent by weight of a modified polyalkoxylated hydrogenated castor oil (castor wax) into the polyamide melt prior to filament formation. The modified castor wax is the addition product of castor wax and a diepoxide compound having two ethoxyline groups



as terminal groups. The modified castor wax has a higher melt viscosity than the corresponding unmodified castor wax which enables better dispersion thereof in the polyamide melt. As a result, polyamide fibers containing the modified castor wax are more easily processed and are of higher quality.

3,666,732
ETHYLENICALLY UNSATURATED DERIVATIVES OF 4-AMINOBENZOIC ACID AND POLYMERS PREPARED THEREFROM

Martin Skoultchi, Somerset, and Eric A. Meier, North Brunswick, both of N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

Filed Aug. 17, 1970, Ser. No. 64,574
Int. Cl. C08f 19/00, 19/12
U.S. Cl. 260—78.5 BB 5 Claims

Ethylenically unsaturated derivatives of 4-aminobenzoic acid are prepared by a novel method involving the reaction under controlled conditions of 4-aminobenzoic acid and various derivatives thereof with allyl chloride. The resulting monomers may, thereafter, be copolymerized with a wide variety of conventional ethylenically unsaturated, i.e., vinyl, monomers. The monomeric derivatives as well as the copolymers prepared therefrom are ultra-violet absorbers in the 280–320 millimicrons range and find a particular utility as a sun-screen agent in suntan formulations.

3,666,733
WATER INSOLUBLE HYDROPHILIC POLYMERS OF ACRYLAMIDE POLYMER

Roger Epton, Wolverhampton, England, assignor to Koch-Light Laboratories Limited, Colnbrook Buckinghamshire, England

Filed Mar. 16, 1970, Ser. No. 20,021
Claims priority, application Great Britain, Mar. 19, 1969, 14,536/69
Int. Cl. C08f *15/00, 27/06;* C08b *19/02*
U.S. Cl. 260—80.3 N 2 Claims

This invention relates to hydrophilic water insoluble polymers, their preparation and the attachment of enzyme molecules to said polymers to render said enzymes water insoluble. The polymers comprise chains having attached thereto repeating primary amide side groupings which make said polymer hydrophilic and other repeating functional side groupings at least some of which are either acid hydrazide groupings or aromatic ammo groupings. These chains of the polymers have been cross-linked so as to make the polymer water insoluble by using bisacrylamides as a comonomer.

3,666,734
COPOLYMERS OF VINYL CHLORIDE AND TERPENES

Philippe Lalet, Orthez, and Guy Teouladze, Paris, both of France, assignors to Societe Anonyme dite: Societe Nationale Des Petroles D'Aquitaine, Courbevoie, France

Filed Sept. 16, 1969, Ser. No. 858,535
Claims priority, application France, Sept. 18, 1968, 166677
Int. Cl. C08f *3/00*
U.S. Cl. 260—87.5 D 7 Claims

New vinyl resins of improved characteristics are prepared by polymerizing vinyl chloride in the presence of bicyclic terpenes.

3,666,735
PROCESS FOR IMPROVING PLASTICIZER ABSORPTION OF POLYVINYL HALIDES

Constantine Rosis, 35 Yorktown Rd., West Boylston, Mass., assignor to Borden Inc., New York, N.Y.

Filed Sept. 4, 1968, Ser. No. 757,486
Int. Cl. C08f *3/22, 1/11, 1/84*
U.S. Cl. 260—87.5 R 6 Claims

This invention relates to a method for improving the plasticizer absorption qualities of a polyvinyl halide. More particularly, this invention relates to a method as aforesaid wherein a monomeric vinyl halide is polymerized in suspension in the presence of a mineral oil having a boiling point above about 200° C.

3,666,736
LOW DENSITY ETHYLENE-BUTENE COPOLYMERS

John P. Hogan, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Mar. 24, 1969, Ser. No. 809,936
Int. Cl. C08f *15/04*
U.S. Cl. 260—88.2 R 3 Claims

Low density ethylene-butene-1 copolymers which are highly resistant to environmental stress cracking, characterized by freedom from surface stickiness, and have a ratio of weight average to number average molecular weight within the range of 6 to 20.

3,666,737
METHOD AND PROCESS OF PREPARING IMPROVED POLYETHERS

Joginder Lal, Cuyahoga Falls, and Donald E. Heppert, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of application Ser. No. 731,688, May 20, 1968, now abandoned, which is a continuation of application Ser. No. 312,315, Sept. 30, 1963, now abandoned, which is a continuation-in-part of application Ser. No. 124,015, July 14, 1961, now Patent No. 3,268,472. This application Aug. 6, 1970, Ser. No. 61,795
Int. Cl. C08f *29/12*
U.S. Cl. 260—897 A 7 Claims

A composition of matter prepared by mixing a polyhydrocarbon ether formed by the polymerization of alkylene oxides containing from two to four carbon atoms and having a molecular weight of at least 15,000 and containing two to four carbon atoms in the divalent radical between adjacent ether oxygen atoms with a polymer of a 1-olefin containing from two to eight carbon atoms and having a molecular weight of at least about 280 and containing from about 0.2 to about 5 percent by weight of sulfur and from about 0.5 to about 10 percent by weight of a ditertiary peroxide and curing the mixture.

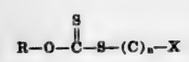
3,666,738
PREPARATION OF UNSATURATED COMPOUNDS BY HYDROLYSIS OF XANTHATE-LEWIS ACID COMPLEXES

Noel I. Burke, Danville; Douglas J. Bridgeford, Champaign, and Albin F. Turbak, Danville, all of Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

Filed Sept. 10, 1969, Ser. No. 856,821
Int. Cl. C07c *1/20;* C08b *29/00*
U.S. Cl. 260—91.3 VA 12 Claims

Simple and complex unsaturated compounds are prepared by decomposition of certain xanthate ester - Lewis acid complexes.

Xanthate esters of the form:



where R is an alkyl function having at least one H in a position alpha to the R — O bond, $(C)_n$ is a linear alkyl function either substituted or unsubstituted, with $n = 1 - 3$, X has a basicity greater than the



function and comprises a C or S containing functional group having at least one double or triple bond to a hetero atom, the functional group being connected to $(C)_n$ through C or S; are reacted with Lewis acids, either neat or in non-protonic non-aqueous solvents, to yield a Lewis acid complex of the esters. The Lewis acid - xanthate ester complex is decomposed by admixture with water or a protonic non-aqueous solvent, e.g. methanol, ethanol, etc., glycol, cellosolve, liquid ammonia, lower alkyl primary or secondary amines, aniline, etc., to yield an unsaturated derivative of R.

3,666,739
PREPARATION OF UNSATURATED COMPOUNDS BY XANTHATE DECOMPOSITION

Noel I. Burke, Danville; Douglas J. Bridgeford, Champaign, and Albin F. Turbak, Danville, all of Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

Filed Sept. 10, 1969, Ser. No. 856,813
Int. Cl. C08f *3/34, 23/00, 27/00*
U.S. Cl. 260—91.3 VA 9 Claims

Simple and complex unsaturated compounds are prepared by decomposition of certain xanthate esters,

Xanthate esters of the form:



where R is an alkyl function having at least one H in a position alpha to the R — O bond, $(C)_n$ is a linear alkyl function either substituted or unsubstituted, with $n = 1 - 3$, X has a basicity greater than the

function and comprises a C or S containing functional group having at least one double or triple bond to a hetero atom, the functional group being connected to $(C)_n$ through C or S; will decompose upon heating in water or in a protonated non-aqueous solvent, e.g. methanol, ethanol, etc., glycol, cellosolve, liquid ammonia, pyridine, lower alkyl amines, aniline, etc., to yield an unsaturated derivative of R.

3,666,740
METHOD OF PRODUCING HIGH MOLECULAR POLYALLYL ALCOHOL

Valentin Alexeevich Kargin, ulitsa Gaidara, 7, kv. 4; Lev Solomonovich Polak, Jugo-Zapad, kvartal 42a, 15, kv. 22; Viktor Alexandrovich Kabanov, Karetny ryad, 5/9, kv. 21; Vitaly Pavlovich Zubov, Rostovskaya naberezhnaya, 5, kv. 200, and Valentina Fedorovna Pankova, Daev pereulok, 6, kv. 15, all of Moscow, U.S.S.R.

Filed Aug. 14, 1969, Ser. No. 850,232
Int. Cl. C08f *1/80, 3/36*
U.S. Cl. 260—91.3 R 16 Claims

A method of producing high-molecular weight polyallyl alcohol by polymerizing allyl alcohol in the presence of an inorganic complexing agent that forms a coordination bond with the functional group of the monomer under the effect of a radical initiator. Suitable complexing agents include salts of metals of Groups I and II of the Periodic Table or acids, e.g., HCl HNO_3, H_2SO_4, etc.

3,666,741
ELECTRICALLY CONDUCTIVE FLUOROCARBON POLYMER

Harold F. Leibecki, Parma, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Continuation-in-part of application Ser. No. 631,847, Apr. 17, 1967, now abandoned. This application Jan. 22, 1970, Ser. No. 5,114
Int. Cl. C08f *3/24, 3/26, 3/28*
U.S. Cl. 260—92.1 7 Claims

Fluorocarbon polymers are impregnated with rhenium or molybdenum by immersion in liquid rhenium hexafluoride or molybdenum hexafluoride. The rhenium and molybdenum fluoride compounds are then hydrolyzed to form conductive oxides. The impregnated polymer is electrically conductive.

3,666,742
POLYMERIZATION OF CYCLIC OLEFINS CONTAINING TWELVE CARBON ATOMS

Nissim Calderon, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of application Ser. No. 785,032, Dec. 10, 1968, which is a continuation of application Ser. No. 477,035, Aug. 3, 1965, which is a continuation-in-part of application Ser. No. 448,872, Apr. 16, 1965. This application Dec. 4, 1970, Ser. No. 95,360
Int. Cl. C08f *7/02*
U.S. Cl. 260—93.1 4 Claims

This invention relates to polymers derived from the ring opening polymerization of unsaturated alicyclic compounds containing at least one alicyclic ring, said ring containing 12 carbon atoms and having two or three nonconjugated carbon-to-carbon double bonds in the cyclic ring. Methods for their preparation are also disclosed.

3,666,743
POLYMERIZATION OF 1-OLEFINS WITH TETRAKIS(BICYCLOHEPTYL)CHROMIUM COMPOUNDS AS CATALYSTS

Barton K. Bower, Newark, and Wendell P. Long, Wilmington, both of Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed Feb. 2, 1971, Ser. No. 112,016
Int. Cl. C08f *1/16, 1/42, 15/40*
U.S. Cl. 260—93.7 17 Claims

Tetrakis(1-bicycloheptyl)chromium compounds are catalysts for the polymerization of 1-olefins when activated by the addition of an organometallic compound and/or exposure to light. The polymerization process can be carried out by using a solution of the chromium compound or by extending the chromium compound on a solid support such as silica.

3,666,744
LAMINATING WAX

Ernest P. Black, West Chester, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Original application Apr. 12, 1968, Ser. No. 720,832, now Patent No. 3,626,019. Divided and this application Oct. 7, 1970, Ser. No. 78,941
Int. Cl. C08f *1/76*
U.S. Cl. 260—94.9 R 2 Claims

Laminating wax of high adhesive characteristics especially useful in the production of intercalated products is obtained from telomer resulting from a telomerization employing pseudocumene as the telogen and ethylene as the taxogen, the reaction producing said telomer being hereinafter referred to as the telomerization of ethylene on pseudocumene.

3,666,745
PROCESS FOR POLYMERIZING OLEFINS

James V. Cavender, Jr., Texas City, Tex., assignor to Monsanto Company, St. Louis, Mo.

Filed May 28, 1970, Ser. No. 41,413
Int. Cl. C08f *1/56, 3/06*
U.S. Cl. 260—94.9 C 5 Claims

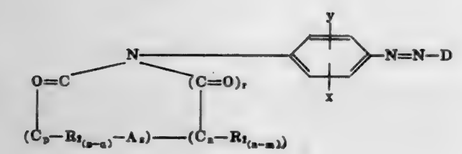
Polyolefins with characteristics which make them particularly suitable for blowing into bottles are obtained by polymerizing olefins in contact with so-called Ziegler catalysts and employing as a modifying agent for the polymerization a mixture of hydrogen and acetylene.

3,666,746
PYRROLIDONYLPHENYL AZO DYESTUFFS

Lester N. Stanley, Delmar, and Russell E. Farris, Jr., Elnora, both of N.Y., assignors to GAF Corporation, New York, N.Y.

Filed June 25, 1969, Ser. No. 836,602
Int. Cl. C09b 29/08, 29/10, 29/38
U.S. Cl. 260—152 22 Claims

Dyes for dyeing hydrophobic fibers such as acrylics and polyesters of the formula:



and quaternized derivatives thereof wherein

R's are independently selected from hydrogen, halogen, hydroxy, alkyl, substituted alkyl, aryl, substituted aryl, cycloalkyl and the like;

A is O, *N* or *S*;

n and *p* are integers from 0 to 15

n+p is at least 2;

z is an integer of 0 or 1;

r is an integer of 0 or 1;

n+p+z+r is at least 3;

m and *q* are the number of double bonds in the C_n and C_p moities;

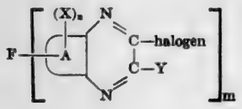
x and *y* are selected from hydrogen, halogen, lower alkyl, lower alkoxy, sulfonic acid amide and substituted derivatives thereof, carboxylic acid amides and substituted derivatives thereof, lower alkylsulfonyl, cyano, carbalkoxy, nitro, and the like; and *D* is a coupling component which is free from solubilizing sulfonic acid and carboxylic acid groups.

3,666,747
AZO DYESTUFFS

Edgar Siegel, Leverkusen, and Klaus Sasse, Cologne-Stammheim, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of application Ser. No. 171,269, Feb. 5, 1962, now abandoned. This application Nov. 13, 1968, Ser. No. 775,554
Int. Cl. C09b 62/24
U.S. Cl. 260—154 16 Claims

Fiber reactive dyestuffs for use on cellulose containing textile materials having the formula



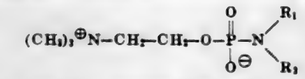
wherein F is the radical of an organic dyestuff, A is a five- or six-membered isocyclic or heterocyclic ring, X is hydrogen or an organic substituent, Y is hydrogen, halogen or an organic radical, "halogen" is a halogen atom, *m* a whole number and *n* a whole number from 1 to 3.

3,666,748
METHOD FOR PRODUCTION OF CYTIDINE (OR DEOXYCYTIDINE)-5'-DIPHOSPHATE CHOLINE AND INTERMEDIATES THEREFOR

Mikio Honjo, Takatsuki, and Yoshiyasu Furukawa, Suita, both of Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

Filed Dec. 17, 1968, Ser. No. 784,494
Claims priority, application Japan, Dec. 18, 1967, 42/81074; Mar. 5, 1968, 43/14166
Int. Cl. G07d 51/52
U.S. Cl. 260—211.5 R 3 Claims

Cytidine-5'-diphosphate choline and deoxycytidine-5'-diphosphate choline are produced by reacting cytidine (or deoxycytidine)-5'-monophosphate with a choline phosphoramidate. Choline phosphoramidates of the formula



wherein R_1 and R_2 represent hydrogen, a hydrocarbon residue having at most seven carbon atoms, or R_1 and R_2 taken together represent a five- or six-membered heterocyclic ring are prepared by reacting phosphorylcholine with an amine.

3,666,749
IRON DEXTRAN COMPLEX AND PROCESS FOR MAKING SAME

Jorgen de Musquiz Reumert, Gentofte; Ole Gylling-Pedersen, and Jose Bou Casals, both of Roskilde, all of Denmark, assignors to Aktieselskabet Roeco, Taastrupgardsveg, Taastrup, Denmark

Continuation-in-part of application Ser. No. 502,485, Oct. 22, 1965, now abandoned. This application Sept. 15, 1969, Ser. No. 858,105
Claims priority, application Denmark, Dec. 29, 1964, 6403/64
Int. Cl. C07c 47/18
U.S. Cl. 260—209 D 9 Claims

A method of making iron dextran complexes wherein ferric hydroxide is reacted with dextran or dextran glucosides, precipitating iron dextran into at least two fractions having different iron contents and subjecting one of the fractions of the iron dextran formed in the first complexing step to a second complexing step and precipitating the iron dextran into at least two fractions having different iron contents, separating and recovering the fraction having the higher iron content and recycling the fraction having the lower iron content.

3,666,750
HEMOSTATIC MATERIAL

Theodore S. Briskin, Beverly Hills, and Allen H. Remanick, Pasadena, both of Calif., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Dec. 15, 1969, Ser. No. 885,313
Int. Cl. A61l 15/00; C08b 15/02, 23/02
U.S. Cl. 260—212 6 Claims

A new and improved hemostatic material formed of an oxidized cellulosic material and method for its preparation wherein an oxidized cellulosic material is treated with a borohydride under alkaline conditions.

3,666,751
CATIONIC STARCH PRODUCT IN LIQUID FORM

Wadym Jarowenko, Plainfield, and Morton W. Rutenberg, N. Plainfield, both of N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 811,649, Mar. 28, 1969, now abandoned. This application Feb. 27, 1970, Ser. No. 15,199
Int. Cl. C08b 19/06
U.S. Cl. 260—233.3 R 7 Claims

Novel liquid cationic starch derivatives and methods for their preparation are described. The derivatives, prepared by reaction of starch with epichlorohydrin-ammonium hydroxide condensates, are useful as additives in the manufacture of paper wherein they increase the retention of inorganic pigments by the cellulose pulp and strengthen the resulting paper.

3,666,752
4,4-DIPHENYLHEXAHYDROAZEPINE COMPOUNDS

Henry Michael Holava, and Richard Anthony Partyka, both of Liverpool, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Mar. 9, 1970, Ser. No. 17,919
Int. Cl. C07d 41/04, 41/06
U.S. Cl. 260—239 B 7 Claims

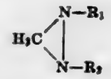
4,4-Diphenylhexahydroazepine and derivatives thereof have been found to be useful antidepressant agents in the treatment of psychic depression in mammals. 4,4-Diphenylhexahydroazepine hydrochloride has been found to be particularly promising as it is characterized by a good therapeutic index.

3,666,753
PROCEDURE FOR THE PREPARATION OF ALKYL SUBSTITUTED DIAZIRIDINES

Julien Mulders, Brussels, Belgium, assignor to Solvay & Cie, Brussels, Belgium

Filed May 29, 1969, Ser. No. 829,138
Claims priority, application Belgium, May 30, 1968, 59 054
Int. Cl. C07d 45/00, 49/02, 51/02
U.S. Cl. 260—239 AA 10 Claims

Alkyl substituted diaziridines of the formula



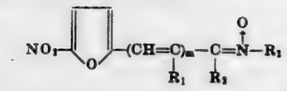
in which R_1 and R_2 may be the same or different lower alkyl groups and in which R_1 and R_2 may also be jointed together to form a five- or six-membered ring, the carbon atoms of which ring may each be substituted with a methyl group are prepared by mixing formaldehyde, at least one alkyl amine and sodium hypochlorite in an aqueous alkaline medium and then extracting the aqueous mixture with an organic nitrogen containing solvent which is selected from the group which comprises nitrobenzene, aniline, γ-collidine, α-picoline, pyridine m-toluidine and quinoline and mixtures thereof to separate the resultant diaziridine from the aqueous mixture. The diaziridine product is obtained in high yield and purity after separation of the solvent.

3,666,754
2-(5-NITROFURYL) NITRONE DERIVATIVES

Shinsaku Minami, Yamato-Kouriyama; Jun-Ichi Matsumoto, Osaka; Masanao Shimizu, Kobe, and Yoshiyuki Takase, Amagasaki, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of application Ser. No. 746,749, July 23, 1968, Original application Nov. 7, 1966, Ser. No. 592,265, now abandoned. Divided and this application July 9, 1970, Ser. No. 53,635
Claims priority, application Japan, Nov. 6, 1965, 40/68196; July 27, 1967, 42/48362; Dec. 23, 1969, 44/103620; 44/103621; Aug. 1, 1969, 44/61288; July 30, 1969, 44/60220
Int. Cl. C07d 5/30
U.S. Cl. 260—240 32 Claims

Nitrone derivatives having antimicrobial activity comprising compounds having the formula:



wherein R_1 represents a member selected from the group consisting of hydrogen, halogen, furyl and phenyl substituents; R_2 represents a member selected from the group consisting of hydrogen, an alkyl having from about one to about four carbon atoms and phenyl; R_3 represents a member of the group consisting of phenyl and $A-(X)_n$, $A-(Y)_n$, and $A-(Z)_n$ in which A represents an alkyl radical having from about one to about six carbon atoms; X represents a member selected from the group consisting of hydrogen, hydroxyl, furyl, alkyl-sulfonyloxy having an alkyl group of from about one to about four carbon atoms and alkanoyl having an alkyl group of from about one to about three carbon atoms; Y represents a member selected from the group consisting of an arylsulfonyloxy radical, an alkyl-sulfonyloxy radical having from about one to about four carbon atoms, an aroyloxy radical, an alkoxycarbonyloxy radical having an alkyl group of from about one to about four carbon atoms and a carboxyalkanoyloxy radical having from about three to about six carbon atoms and Z represents a member selected from the group consisting of hydrogen and hydroxy, *n* is an integer of from about 1 to about 3, and *m* is an integer of from about 0 to about 1.

3,666,755
2-IMIDAZOLYLBICYCLO[2.2.2]OCTANES

Arthur F. Wagner, Princeton; Paul E. Wittreich, Tenafly, and Lewis H. Sarett, Skillman, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 26, 1970, Ser. No. 23,023
Int. Cl. C07d 49/36
U.S. Cl. 260—240 F 43 Claims

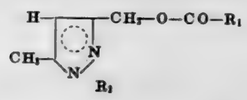
Novel bicyclo[2.2.2]octanes and their process of preparation are described. These compounds exhibit inhibition of blood platelet aggregation.

3,666,756
ESTERS OF 3-PYROZOLEMETHANOLS AND PROCESS FOR THEIR PREPARATIONS

Masataka Fukumura, Takarazuka-shi; Kozo Shimago, Minoo-shi; Shigeru Okano, Ibaragi-shi; Hiroshi Nakatani, Toyonaka-shi, and Kenji Hosaka, Minoo-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed June 16, 1969, Ser. No. 833,812
Claims priority, application Japan, June 20, 1968, 43/43081; 43/43082; Sept. 27, 1968, 43/70339; Feb. 4, 1969, 44/8658
Int. Cl. C07d 49/18
U.S. Cl. 260—240 J 11 Claims

Novel pyrazole derivatives represented by the formula:



wherein R_1 represents an alkyl group, alkenyl group, aryl group, aryloxyalkyl group, aralkyl group, aralkenyl group, or a group containing a heterocyclic ring, and R_2 is a hydrogen atom or the same group as $-CO-R_1$. The pyrazole derivatives have a good antidiabetic action, and are prepared by diacylating 3-hydroxymethyl-5-methylpyrazole with an acylating agent represented by the general formula,

$$X-CO-R_1,$$

wherein X represents a halogen atom, a group of $-O-CO-R_1$ or a group of $-O-CO-O-R_3$, R_1 has the same meaning as defined above, and R_3 represents an alkyl group having one to four carbon atoms, and, if necessary, by subjecting the thus obtained diacylated pyrazole derivatives to partial hydrolysis or aminolysis.

3,666,757
DI-HYDRO-S-TRIAZINES

Patrick Mamalis, Reigate, England, assignor to Beecham Group Limited, Brentford, England

Filed Dec. 5, 1969, Ser. No. 882,724
Claims priority, application Great Britain, Dec. 20, 1968, 60,848/69
Int. Cl. C07d 55/20
U.S. Cl. 260—249.9 9 Claims

Anti-malarial and anti-bacterial compounds and compositions are provided which are N-substituted symmetrical dihydro triazines or salts represented by 4,6-diamino-1,2-dihydro-2,2-dimethyl-1-(2-ethoxy-5-chlorobenzyloxy)-1,3,5-triazine hydrochloride. The compounds can be prepared by reacting a substituted diguanide with a carbonyl compound in the presence of a strong acid and then salifying or acylating the reaction product.

3,666,758
PROCESS FOR THE PRODUCTION OF 2-ARYL-V-TRIAZOLES

Alfons Dorlars, and Otto Neuner, both of Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 14, 1968, Ser. No. 752,491
Claims priority, application Germany, Aug. 23, 1967, F 53 312
Int. Cl. C07d 55/02
U.S. Cl. 260—240 C 3 Claims

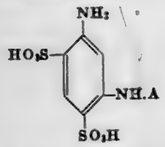
2-Aryl-v-triazoles are prepared by condensation of alpha-oximino-aryl-hydrazones or their O-acyl compounds at temperatures of about 100° to 210° C. in urea. The compounds are useful as dyestuff intermediates and as optical brighteners.

3,666,759
SUBSTITUTED ANILINO-S-TRIAZINES

Allen Crabtree, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of application Ser. No. 681,584, Nov. 8, 1967, now abandoned. This application Aug. 3, 1970, Ser. No. 60,616
Int. Cl. C07d 55/20, 55/18
U.S. Cl. 260—249.5 3 Claims

Compounds of the formula:



in which A is a halogeno-pyrimidyl or halogeno-*s*-triazinyl group are valuable dyestuff intermediates, notable for the speed of coupling of the derived diazonium salts. In the case of the triazine compounds, the heterocyclic nucleus can contain substituents other than halogen, notably methoxy, amino or sulphonated anilino and its common derivatives.

3,666,760
IODINATED 3-AMINOBENZAMIDES

James H. Ackerman, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 808,653, Mar. 19, 1969, now Patent No. 3,609,147 and a continuation-in-part of Ser. No. 715,583, Mar. 25, 1968, abandoned, Ser. No. 808,653 is a continuation-in-part of application Ser. No. 715,558, Mar. 25, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 550,614, May 17, 1966, now abandoned. This application Apr. 2, 1970, Ser. No. 25,262
Int. Cl. C07c 103/28
U.S. Cl. 260—247.2 A 3 Claims

3-Amino-2,4,6-triiodobenzoic acids optionally substituted in the 5-position by amino or carboxy or a derivative thereof react with dibasic acid anhydrides to give the corresponding cyclic imides (A), which can be hydrolyzed to the corresponding anilic acids (B). The latter can be further alkylated on the anilide nitrogen atom. Compounds A and B are useful as cholecystographic and urographic agents.

3,666,761
1-(4-PHENYL-1-PIPERIZINYL METHYL)-CYCLOPROPA[A]CYCLOPROP[A]INDENES

William John Welstead, Jr., Richmond, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Filed July 16, 1969, Ser. No. 842,354
Int. Cl. C07d 51/70
U.S. Cl. 260—268 TR 6 Claims

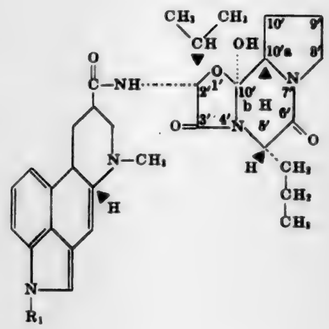
Cis and trans-1-(nitrogen-heterocyclylmethyl)cyclopropa[a]naphthalenes and 1-(nitrogen-heterocyclylmethyl)cycloprop[a]indenes useful as anti-inflammatory agents are disclosed. The trans isomers are prepared by reacting 1,1a,6,6a-tetrahydro-1H-cycloprop[a]indenecarbonyl chloride and 1a,2,3,7b-tetrahydro-1H-cycloprop[a]naphthalenecarbonyl chloride with a nitrogen-containing heterocyclic compound and reducing the amide with lithium aluminum hydride to give the reduced compounds. The cis isomers are prepared by reacting equimolar amounts of cis-1,1a,6,6a-tetrahydro-1H-cycloprop[a]indenecarboxylic acid and cis-1a,2,3,7b-tetrahydro-1H-cycloprop[a]naphthalenecarboxylic acid, a nitrogen-heterocyclic compound and dicyclohexylcarbodiimide and reducing the amides obtained thereby.

3,666,762
2'β-ISOPROPYL-5'α-N-PROPYL-9,10-DIHYDRO-ERGOPEPTINES

Stephan Guttmann, 18 Hegenheimermattweg 4123, Allschwil, and Rene Huguenin, 25 Mattstuckweg, 4153, Reinach, Basel-land, both of Switzerland

Continuation-in-part of application Ser. No. 836,153, June 24, 1969, now abandoned. This application Nov. 3, 1969, Ser. No. 873,645
Claims priority, application Switzerland, June 25, 1968, 9515/68
Int. Cl. C07d 43/20
U.S. Cl. 260—268 PE 3 Claims

The invention concerns novel compounds of the formula:



wherein R_1 is hydrogen or methyl, and acid addition salts thereof.

Processes and an intermediate employed for the production of the above compounds are also described.

The above compounds are useful in the treatment of circulartory illnesses, and the 1-methyl compound is also useful in stimulating prolactin secretion.

3,666,763
4-PHENYL ISOQUINOLINES AND PROCESS FOR PREPARING SAME

Guenter Grethe, 3 Andover Drive, North Caldwell, N.J., and Milan Radoje Uskokovic, 7 Windermere Road, Upper Montclair, N.J., assignors to Hoffman-LaRoche Inc., Nutley, N.J.

Continuation-in-part of application Ser. No. 830,125, June 3, 1969, now abandoned. This application Jan. 6, 1970, Ser. No. 1,062
Int. Cl. C07d 35/10
U.S. Cl. 260—289 R 10 Claims

Substituted 4-phenylisoquinolines prepared from the correspondingly substituted 4-phenyl-4-isoquinolinols are described. The end products are useful as antidepressants and hypotensive agents.

3,666,764
SPIROINDENYLPIPERIDINES

Kenneth N. Campbell, Evansville, Ind., and Donald E. Rivard, Medford Lakes, N.J., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Aug. 26, 1970, Ser. No. 67,228
Int. Cl. C07d 29/12
U.S. Cl. 260—293.62 7 Claims

A class of compounds comprised of 3-phenylspiroindenylpiperidines having substituents on the piperidine nitrogen selected from the group consisting of hydrogen, lower alkyl, benzyl, and phenethyl have been discovered. These compounds are useful as local anesthetic agents. One method of preparation is by heating 1,1-bis(2-dialkylaminoethyl)-3-phenylindenes to eliminate trialkylamines. Subsequent dealkylation provides 3-phenylspiro [indene-1,4'-piperidine] which is reacted with an ester having the formula RX wherein X is a reactive leaving group and R is the desired piperidine substituent. Illustrative of the embodiments are 3-phenylspiro[indene-1,4'-piperidine] and 1'-methyl-3-phenylspiro[indene-1,4'-piperidine].

3,666,765
SYNTHESIS OF 2-PYRIDONES AND DERIVATIVES THEREOF

Antoon M. Berljckere, Uccle, and Fernand G. F. Eloy, Genese, both of Belgium, assignors to Union Carbide Corporation, New York, N.Y.

Filed Oct. 27, 1969, Ser. No. 869,862
Int. Cl. C07d 43/06
U.S. Cl. 260—290 HL 17 Claims

2-Pyridones are conveniently synthesized from 2,4-pentadienoic acids by formation of the acid azide, decomposition of the azide into an isocyanate and the simultaneous cyclization of the isocyanate into the pyridone. The pyridones are readily converted into known pyridines.

3,666,766
SELECTIVE HYDROLYSIS AND CYCLIZATION OF UNSATURATED NITRILES

Joel B. Pedigo, Wheaton, Ill.; Julian Feldman, Cincinnati, and Imre A. Kereszles, Reading, both of Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Dec. 27, 1967, Ser. No. 693,735
Int. Cl. C07d 29/32
U.S. Cl. 260—293.89 13 Claims

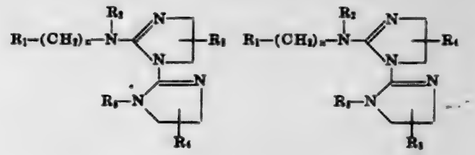
A process for selective catalytic hydrolysis and cyclization of unsaturated nitriles to the corresponding lactams, particularly conversion of 2-methylene glutaronitrile to 5-cyano-2-piperidone, the latter compound being claimed as a new composition of matter. 5-cyano-2-piperidone is especially useful for the preparation of polymers and resins such as carboxylated nylons, may be utilized to form polyamides and can be hydrolyzed to an amino diacid which can form a linear polyamide useful, after hydrolysis, to adhere nylons and suitably grafted polyethylenes to hydroxyl-containing materials.

3,666,767
2-AMINO-1-(2-IMIDAZOLIN-2-YL)-2-IMIDAZOLINES

Raymond R. Wittekind, Morristown, and John Shavel, Jr., Mendham, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jan. 28, 1970, Ser. No. 6,639
Int. Cl. C07d 31/42
U.S. Cl. 260—296 R 3 Claims

The present invention relates to 2-amino-1-(2-imidazolin-2-yl)-2-imidazolines, the free base of which has the following structural formulas:



wherein

R_1 is hydrogen, lower alkyl, cycloalkyl, aryl, substituted aryl, heterocyclic, substituted heterocyclic or aryloxy;

R_2 is hydrogen, lower alkyl, aryl and substituted aryl;

or R_1 and R_2 taken together with the nitrogen atom to which they are attached from a heterocyclic ring;

R_3 and R_4 are hydrogen, lower alkyl, aryl, or substituted aryl;

R_5 is hydrogen, lower alkyl, aryl or substituted aryl;

n is an integer from 0 to 10.

The compounds of this invention are useful as antiarrhythmic agents as well as antibacterial agents.

3,666,768
PHOSPHARYLATED 1,2,5-THIADIAZOLES

Michael D. Barker, Maidstone, Kent, England, and Peter Kirby, Modesto, Calif., assignors to Shell Oil Company, New York, N.Y.

Filed Apr. 12, 1968, Ser. No. 721,088
Claims priority, application Great Britain, Apr. 14, 1967, 17,199/67
Int. Cl. C07d 91/68
U.S. Cl. 260—302 E 9 Claims

This invention relates to novel dialkyl 3-(1,2,5-thiadiazolyl) phosphates and thionophosphates.

3,666,769
THERMALLY STABLE 2-PERFLUORO-SUBSTITUTED BENZOTHIAZOLES

Frank N. Jones, Wilmington, and Ronld D. Richardson, Claymont, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 9, 1969, Ser. No. 865,204
Int. Cl. C07d 91/44
U.S. Cl. 260—304 6 Claims

Certain substituted benzothiazoles having in their 2-position a perfluoroalkyl, perfluoroaryl, perfluoro(alkoxyalkyl) perfluoro(aryloxyalkyl) or a polyoxyperfluoroalkylene substituent free of either olefinic or acetylenic unsaturation are very stable to high temperatures and are useful as turbine fluids, hydraulic fluids, lubricants, solvents and heat-transfer fluids. These new compounds can be made by a reaction of o-aminothiophenols or with a perfluoroacid fluoride, followed by cyclization.

3,666,770

PROCESS FOR PREPARING D-5,5-DIMETHYL-Δ^2-THIAZOLINE-4-CARBOXYLIC DERIVATIVES

Malcolm R. Bell, East Greenbush; John A. Carlson, Bethlehem, and Rudolf Oesterlin, East Greenbush, all of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Jan. 27, 1970, Ser. No. 6,281
Int. Cl. C07d *91/24*
U.S. Cl. 260—306.7 4 Claims

Optically active penicillin and its derivatives are cleaved with an acid catalyst, e.g. trifluoroacetic acid, to form D-5,5-dimethyl-Δ^2-thizaoline-4-carboxylic acid derivatives useful as intermediates for the preparation of synthetic penicillin derivatives having the proper stereochemical requirements at the 2-position thereof.

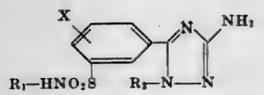
3,666,771

M-(AMINO-S-TRIAZOLYL)BENZENE-SULFONAMIDES AND THEIR PRODUCTION

Milton L. Hoefle, and Ann Holmes, both of Ann Arbor, Mich., assignors to Parke, David & Company, Detroit, Mich.

Filed July 6, 1970, Ser. No. 52,720
Int. Cl. C07d *55/06*
U.S. Cl. 260—308 R 10 Claims

Amino-s-triazolybenzenesulfonamides having the formula



where each of R_1 and R_2 is hydrogen or methyl, and X is hydrogen, methyl, methoxy, or halogen, and salts thereof are produced by cyclizing a sulfamoylbenzoic acid 2-amidinohydrazide. The compounds of the invention are useful as pharmacological agents having antiviral activity.

3,666,772

PREPARATION OF PYRAZOLINES BY CYCLIZATION OF AN AZINE

Christian H. Stapfer, Newtown, and Richard W. D'Andrea, New Hope, both of Pa., assignors to Carlisle Chemical Works, Inc., Reading, Ohio

Filed Feb. 26, 1970, Ser. No. 14,628
Int. Cl. C07d *49/10*
U.S. Cl. 260—310 D 5 Claims

Alkyl substituted pyrroles and pyrazolines are prepared by treating a ketazine or aldazine with a metal halide of the formula MX_2 where M is cobalt or nickel and X is a halogen at a temperature of 10° to 300° C.

3,666,773

2,2,3,4,5,5-HEXACHLORO-2,5-DIHYDROTHIOPHENE 1,1 DIOXIDE AND ITS USE

Don Robert Baker, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Oct. 2, 1969, Ser. No. 863,320
Int. Cl. A61k *27/00*; C07d *63/08*
U.S. Cl. 260—332.1 1 Claim

The compound 2,2,3,4,5,5-hexachloro-2,5-dihydrothiophene-1,1 dioxide and its use to control bacteria and fungi.

3,666,774

CERTAIN THIENYL ALIPHATIC HYDROCARBON AMIDES

Yoshio Suzuki, Amagasaki-shi; Shunji Aono, Toyonaka-shi, and Hideaki Fukushima, Nishinomiya-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Higashi-ku, Osaka, Japan

Filed Aug. 29, 1969, Ser. No. 854,308
Claims priority, application Japan, Sept. 7, 1968, 43/64394
Int. Cl. C07d *63/10*
U.S. Cl. 260—332.2 A 8 Claims

A novel fatty acid amide useful as an anti-arteriosclerotic agent which is represented by the formula,



wherein R represents a saturated or unsaturated straight or branched aliphatic hydrocarbon group having 15 to 25 carbon atoms which may bear a hydroxyl group, A represents a lower alkyl group, aryl group or aralkyl group and B represents a hetero-cyclic radical containing a nitrogen, oxygen or sulfur atom, such as, for example, α-(thienyl or pyridyl)-ethyl or benzyl amide of linoleic acid, isostearic acid, linolenic acid, oleic acid or safflower oil. These compounds are prepared by reacting the appropriate fatty acid or reactive derivative with an amine of the formula,



These compounds may be incorporated in foodstuffs or ingested with a suitable carrier.

3,666,775

PREPARATION OF DESA-9-EN-5-ONE STEROIDS

Milan Radoje Uskokovic, Upper Montclair, N.J., assignor to Hoffman-La Roche Inc., Nutley, N.Y.

Original application Oct. 20, 1965, Ser. No. 499,094, now Patent No. 3,574,761, which is a continuation-in-part of application Ser. No. 400,206, Sept. 29, 1964, now Patent No. 3,412,107. Divided and this application June 17, 1968, Ser. No. 737,362
Int. Cl. C07d *11/00*
U.S. Cl. 260—338 23 Claims

This invention is directed to processes for the preparation of desA-androst-9-en-5-ones and desA-pregn-9-en-5-ones which comprises subjecting the corresponding androst-4-en-one or pregn-4-en-3-one respectively to the sequential steps of ozonolysis pyrolyzation, halogenation and dehydrohalogenation. The intermediate products produced in accordance with the processes of this invention can be converted into steroid end products of the 9β, 10α-series which are pharmacologically useful as anabolic and progestational agents.

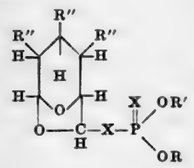
3,666,776

DIOXABICYCLO OCTANE COMPOUNDS

Norman W. Dachs, Buffalo, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Feb. 20, 1970, Ser. No. 13,235
Int. Cl. C07d *21/00*
U.S. Cl. 260—340.9 9 Claims

Compounds of the formula



are described wherein R, R′ and R″ are independently selected from the group consisting of hydrogen and lower alkyl of one to six carbon atoms ans X is oxygen or sulfur.

The compounds are preferably prepared by reacting acrolein dimer with a phosphorus compound of the formula $HXP(X)(OR')(OR)$.

The compounds are pesticidal, insectidal and acaricidal.

3,666,777

EPOXIDATION OF PROPYLENE UTILIZING MOLYBDENUM-CONTAINING CATALYST SOLUTIONS

Harold A. Sorgenti, Olympia Fields, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

Original application Apr. 2, 1969, Ser. No. 812,845, now Patent No. 3,573,226, which is a continuation-in-part of application Ser. No. 647,941, June 22, 1967, now abandoned. Divided and this application Aug. 31, 1970, Ser. No. 68,595
Int. Cl. C07d *1/12, 1/08*
U.S. Cl. 260—348.5 L 2 Claims

A process for the epoxidation of propylene utilizing as the catalyst a molybdenum-containing epoxidation catalyst solution prepared by heating molybdenum powder with a stream containing unreacted tertiary butyl hydroperoxide used in the epoxidation process as the oxidizing agent and polyhydric compounds of from 200 to 300 molecular weight and having from four to six hydroxyl groups per molecule, the polyhydric compound being formed as a by-product in the epoxidation process.

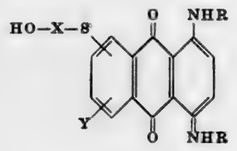
3,666,778

ANTHRAQUINONE DYESTUFFS

Walter Hohmann, Leverkusen, and Hans-Samuel Bien, Burscheid, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 20, 1969, Ser. No. 835,222
Claims priority, application Germany, June 29, 1968, P 17 68 789.7 P 17 68 788.6
Int. Cl. C09b *11/56*
U.S. Cl. 260—376 3 Claims

Dyestuffs of the formula



in which X is an optionally substituted alkylene radical;

R is an optionally substituted phenyl radical; and Y is H, Cl, Br or —S—X—OH have been prepared.

3,666,779

SULFONAMIDO CARBOXYLIC ACIDS

Helmut Diery; Siegbert Rittner, both of Kelkheim, Taunus, and Horst Lorke, Frankfurt am Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed July 11, 1968, Ser. No. 743,926
Claims priority, application Germany, July 15, 1967, P 16 44 893.4
Int. Cl. C07c *143/80*
U.S. Cl. 260—397.7 2 Claims

Agents in aqueous metal-working liquids having corrosion inhibiting action and having the general formula



3,666,780

ALKYLIDENE AND HYDROXY OR ACETOXY SUBSTITUTED ALIPHATIC CARBOXYLIC ACIDS AND ESTERS USEFUL IN INSECT CONTROL

Jean Pierre Calame, Fallanden, Switzerland, and John B. Siddall, Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of application Ser. No. 666,484, Sept. 8, 1967, now abandoned. This application Jan. 27, 1970, Ser. No. 6,292
Int. Cl. C07c *59/18, 69/66*; A01n *9/24*
U.S. Cl. 260—405 25 Claims

Hydrocarbon carboxylic acids, esters, alcohols and ethers containing from 12 to 17 carbon atoms in the hydrocarbon backbone chain and alkyl or alkylidene substituents at the C-7 and C-11 and/or double bond unsaturation between C-2,3 and/or C-5,6 or C-6,7 or C-7,8 and/or C-9,10 or C-10,11 or C-12,13 and/or fused groupings bridging positions C-2,3, C-6,7, C-10,11 are useful arthropod maturation inhibitors.

3,666,781

PROCESS FOR THE PREPARATION OF ISOPROPENYL STEARATE

Samuel Serota, and Edward S. Rothman, both of Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of Agriculture

Filed May 7, 1969, Ser. No. 822,693
Int. Cl. C07c *67/04*
U.S. Cl. 260—410.9 N 3 Claims

Stearic acid undergoes direct addition of propyne at 160° C. in the presence of zinc stearate catalyst in an inert atmosphere at a pressure of 500 pounds per square inch to form isopropenyl stearate.

3,666,782

PROCESS FOR PRODUCING VINYLCHLOROSILANES

Jeffrey Y. P. Mui, Ossining, N.Y., and Everett W. Bennett, Longmeadow, Mass., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sept. 30, 1970, Ser. No. 76,986
Int. Cl. C07f *7/14*
U.S. Cl. 260—448.2 E 4 Claims

There is described herein a process for making vinylchlorosilanes by a vapor phase reaction between vinyl chloride and chlorosilicon hydrides. The advantage of this process is that it achieves such reaction at relatively low reaction temperature such as below about 500° C so that reaction can be practiced in reactors made of metals without deleterious attack by by-product hydrogen chloride. Numerous other advantages are cited for the process.

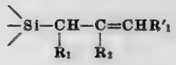
3,666,783

PROCESS FOR THE PREPARATION OF UNSATURATED ORGANOSILICON COMPOUNDS

Marcel Lefort, Caluire, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Sept. 9, 1970, Ser. No. 70,910
Claims priority, application France, Sept. 10, 1969, 6930795
Int. Cl. C07f *7/08*
U.S. Cl. 260—448.2 E 10 Claims

Organosilicon compounds having at least one



where R_1 is H or alkyl and R_2 and R'_1 are H or alkyl or together with the carbon atoms to which they are bonded form an aliphatic or aromatic ring of five or six ring carbon atoms are prepared by reacting

with zinc and a compound containing at least one Si-Cl bond in the presence of a hexa-alkylphosphotriamide or an N-alkylpyrrolidone.

3,666,784

PROCESS FOR PREPARING α,α-FLUORINATED ALKYL ISOCYANATES

Alan F. Clifford; Thomas C. Rhyne, and James W. Thompson, all of Blacksburg, Va., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Aug. 27, 1969, Ser. No. 853,541
Int. Cl. C01b *17/45*; C07c *119/04*
U.S. Cl. 260—453 P 2 Claims

This invention relates to a method for synthesizing an organic isocyanate which is doubly fluorinated at the carbon position adjacent to the isocyanate group which comprises reacting at a temperature of from room temperature up to 80° C. carbonyl fluoride with an organic nitrile, RCN, in anhydrous liquid hydrogen fluoride or an inert hydrocarbon containing catalytic quantities of fluoride to produce a compound having the formula RCF_2NCO where R is selected from alkyl, cycloalkyl, aryl, alkaryl, alkenyl, or cycloalkenyl.

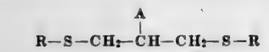
3,666,785

1,3-BIS(ALKOXY-THIO-CARBONYLTHIO)-2-TERTIARY AMINOPROPANE COMPOUNDS

Michihiko Sakai, Kyoto, Japan; Masayuki Kato, Osaka, Japan; Hikoichi Hagiwara, deceased, late of Osaka (by Reiko Hagiwara, executor), and Kazuo Konishi, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Original application Sept. 22, 1966, Ser. No. 612,059, now Patent No. 3,501,502, Original application June 25, 1962, Ser. No. 205,088, now Patent No. 3,318,936. Divided and this application Feb. 13, 1970, Ser. No. 11,345
Claims priority, application Japan, June 27, 1961, 36/23009
Int. Cl. C07c *154/00*
U.S. Cl. 260—455 B 3 Claims

Compounds of the formula



wherein R represents a lower alkoxy-thiocarbonyl group and A represents a tertiary amino group are useful as pesticides.

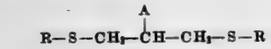
3,666,786

1,3-BIS(N,N-DILOWERALKYL-THIOCARBAMOYLTHIC(2-TERTIARY AMINOPROPANE) COMPOUNDS)

Michihiko Sakai, Kyoto; Masayuki Kato, Osaka, both of Japan; Hikoichi Higiwara, deceased, late of Osaka, Japan (by Reiko Hagiwara, executor), and Kazuo Konishi, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Original application Sept. 22, 1966, Ser. No. 612,059, now Patent No. 3,501,502, Original application June 25, 1962, Ser. No. 205,088, now Patent No. 3,318,936. Divided and this application Feb. 13, 1970, Ser. No. 11,346
Int. Cl. C07c *155/08*
U.S. Cl. 260—455 A 2 Claims

Compounds of the formula



wherein A represents a tertiary amino group and R represents a N,N-diloweralkylthiocarbamoyl group are useful as pesticides.

3,666,787

PREPARATION OF DIIMINOSUCCINONITRILE FROM HYDROGEN CYANIDE, CHLORINE AND TRIMETHYLAMINE

Owen Wright Webster, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 707,459, Feb. 23, 1968, now Patent No. 3,564,039, and a continuation-in-part of 670,763, Sept. 26, 1967, now abandoned. This application Mar. 18, 1970, Ser. No. 20,820
Int. Cl. C07c *121/20*
U.S. Cl. 260—465.5 13 Claims

The process of synthesizing diiminosuccinonitrile by the liquid-phase reaction of hydrogen cyanide with (a) chlorine or cyanogen chloride and (b) a tertiary amine or a soluble cyanide salt.

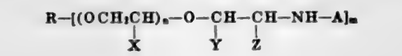
3,666,788

CYANOALKYLATED POLYOXYALKYLENE POLYAMINES

Richard Lee Rowton, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

Filed Aug. 22, 1969, Ser. No. 852,487
Int. Cl. C07c *121/42*
U.S. Cl. 260—465.5 R 9 Claims

Cyanoalkylated polyoxyalkylene polyamines of the formula



wherein A is a cyano-lower-alkyl radical or hydrogen provided at least one A is a cyano-lower-alkyl radical are useful as coupling agents for polymer formation and as curing agents in sprayed polyurea coatings.

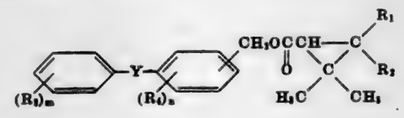
3,666,789

CYCLOPROPANECARBOXYLIC ACID ESTERS

Nobushige Itaya, Minoo-shi; Katsuzo Kameshita, Toyonaka-shi; Toshio Mizutani, Hirakata-shi; Shigeyoshi Kitamura, Toyonaka-shi; Shinji Nakai; Nobuyuki Kameda, both of Takarazuka-shi; Keimi Fujimoto, Higashiyama-ku, Tyoto, and Yoshtosi Okuno, Toyonaka-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed May 21, 1969, Ser. No. 827,490
Int. Cl. C07c *69/00*
U.S. Cl. 260—468 9 Claims

Novel cyclopropanecarboxylic acid esters having an excellent insecticidal activity and harmless property to mammals and cattles, of the formula



wherein Y is oxygen or sulfur atom, R_1 is hydrogen atom or methyl group, R_2 is methyl, 2-methyl-1-propenyl, 2-methoxycarbonyl-1-propenyl, phenyl or 3,4-methylenedioxyphenyl group when R_1 is hydrogen atom, or methyl group when R_1 is methyl group, R_3 and R_4 are same or different and are a halogen atom or methyl group, and m and n are 0 or an integer of 1 to 3, and the carboxylic acid ester is prepared by esterifying the derivatives of corresponding phenoxybenzyl or phenylthiobenzyl compounds with the carboxylic acids or their derivatives.

3,666,790

SPIRO[3,3]HEPTANE AMINO ACIDS

Larry J. Loeffler, Bethesda, Md., assignor to Merck & Co., Rahway, N.J.

Filed Apr. 1, 1970, Ser. No. 24,885
Int. Cl. C07c *125/06*, *103/09*
U.S. Cl. 260—468 R 3 Claims

Novel spiro[3,3]heptane amino acids and their derivatives are disclosed and their method of preparation is described.

3,666,791

PROCESS FOR THE PURIFICATION OF CRUDE BIS-(β-HYDROXYETHYL) TEREPHTHALATE

Yataro Chikawa; Michiyuki Tokashiki, and Nobuo Suzuki, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Continuation-in-part of application Ser. No. 780,619, Dec. 3, 1968. This application Feb. 24, 1970, Ser. No. 13,462. The portion of the term of the patent subsequent to Jan. 4, 1989, has been disclaimed
Int. Cl. C07c *69/82*
U.S. Cl. 260—475 PR 7 Claims

A process is provided for the purification of crude bis-(β-hydroxyethyl) terephthalate by crystallization. The crude bis-(β-hydroxyethyl) terephthalate is homogeneously dissolved in a solvent at a temperature higher than the apparent melting point of the crude material in the solvent and at a concentration higher than the saturation solubility of the crude material in the solvent at such apparent melting point so as to prepare the heated solution, the heated solution being rapidly cooled from its heated temperature to an optional temperature lower than the apparent melting point so as to precipitate bis-(β-hydroxyethyl) terephthalate from the heated solution as solids in other than a granular or lumpy state. The process is further characterized in that the crude bis-(β-hydroxyethyl) terephthalate or crystallized bis-(β-hydroxyethyl) terephthalate is contacted with hydrogen in the presence of a hydrogenation catalyst before, after, or both before and after the precipitation step in a state wherein the bis-(β-hydroxyethyl) terephthalate is either in a molten form or in a state of dilution or dispersion in the solvent.

3,666,792

POLYMERIC TETRAHALOTEREPHTHALATE ESTERS

Stanley H. Langer, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Oct. 13, 1969, Ser. No. 865,797
Int. Cl. C07c *69/82*
U.S. Cl. 260—475 P 3 Claims

Dimers, trimers, other oligomers, and polymers of tetrahaloterephthalate esters and gas-liquid chromatographic separations using same as the stationary liquid phase.

3,666,793

PROCESS FOR THE PRODUCTION OF γ-CHLOROACETOACETIC ACID ESTERS

August Stocker, and Karl-Josef Boosen, both of Visp, Switzerland, assignors to Lonza Ltd., Basel, Switzerland

Filed Apr. 22, 1969, Ser. No. 818,439
Claims priority, application Switzerland, Apr. 24, 1968, 61006/68
Int. Cl. C07c *67/00*
U.S. Cl. 260—479 S 13 Claims

Esters of γ-chloroacetoacetic acid may be prepared by reacting diketene and chlorine in the presence of a low boiling organic solvent at temperatures of −10° to −30° C. and esterifying the reaction product while maintaining the aforementioned temperatures. This process produces yields up to 87 percent of theoretical with product purity of 97 to 98 percent.

3,666,794

STABILIZATION OF ACRYLIC ACID OR ESTERS THEREOF

Susumu Otsuki, and Isao Miyamohara, both of Tsuno-gun, Yamaguchi-ken, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi-ken, Japan

Filed May 8, 1969, Ser. No. 823,181
Claims priority, application Japan, Jan. 22, 1969, 44/4645
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R 4 Claims

A process for inhibiting polymerization of acrylic acid or esters thereof and a process for stabilizing a distillation operation of acrylic acid or esters thereof through the joint use of multiple polymerization inhibitors, i.e., hydroquinone, phenol and air (or oxygen) in specified amounts.

3,666,795

METAL PETROLEUM SULFONATE RECOVERY

Harold C. Walters, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Nov. 9, 1967, Ser. No. 681,889
Int. Cl. C07c *13/00*
U.S. Cl. 260—504 A 7 Claims

Metal petroleum sulfonates are recovered from commercial oil-containing concentrates by diluting the concentrate with a volatilizable hydrocarbon diluent, and extracting the mixture with a lower alcohol such as methanol or ethanol. The metal petroleum sulfonate, which is useful as a detergent additive for lubricating oils, is recovered from the alcohol phase as a substantially dry powder.

3,666,796

2,2'-DISULFONATED DIALKYL SULFOXIDES AND SULFONES

Jacobus Roelof Nool, Vlaardingen, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Continuation-in-part of application Ser. No. 824,386, May 8, 1967, now abandoned, Continuation of application Ser. No. 456,825, May 18, 1965, now abandoned. This application Nov. 7, 1969, Ser. No. 874,983
Int. Cl. C07c *143/20*
U.S. Cl. 260—513 R 11 Claims

Detergent compounds which are 2,2'-disulfonated dialkyl sulfoxides and sulfones and which can be prepared by reacting an alpha olefin with a sulfur chloride to form a dichlorinated dialkyl thioether and then subjecting the thioether, in either order, to oxidation to oxidize the sulfur atom to a sulfoxide, sulfone and a mixture thereof and to sulfonation to effect replacement of the chlorine atoms by sulfonate groups.

3,666,797

METHOD OF PREPARING LIGHT-COLORED PARAFFIN SULFONIC ACID

Masuzo Nagayama, Tokyo, and Terunosuke Kawana, Funabashi-shi, both of Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Nov. 14, 1969, Ser. No. 877,013
Claims priority, application Japan, Nov. 20, 1968, 43/84770
Int. Cl. C07c *143/02*
U.S. Cl. 260—513 R 7 Claims

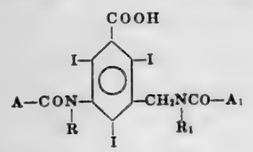
A method of preparing a light-colored paraffin sulfonic acid comprising the steps of separating a heavy layer containing paraffin sulfonic acid from an reacted mixture obtained through sulfoxidation reaction of paraffin and concentrating said heavy layer, wherein the concentration of the heavy layer is carried out in the presence of hydrogen peroxide.

3,666,798
PRODUCTION OF OPTICALLY ACTIVE CHRYSANTHEMIC ACID
Masanao Matsui, Tokyo, and Fukashi Horiuchi, Saitama-ken, both of Japan, assignors to Sumitomo Chemical Company, Ltd., Higashi-ku, Osaka, Japan
Filed Aug. 10, 1970, Ser. No. 62,617
Claims priority, application Japan, Sept. 12, 1969, 44/73014
Int. Cl. C07c 61/16
U.S. Cl. 260—514 P 8 Claims

An optical resolution method for preparation of optically active chrysanthemic acid which comprises reacting (±)-chrysanthemic acid with L-lysine to form (+)-chrysanthemic acid L-lysine salt and decomposing the salt with a dilute acid.

3,666,799
TRIIODATED TOLUIC ACIDS
Jack Bernstein, and Kathryn Alice Losee, both of New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.
Filed June 19, 1970, Ser. No. 47,882
Int. Cl. C07c 103/30
U.S. Cl. 260—518 A 8 Claims

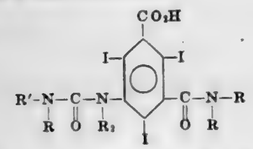
This invention relates to new carbamoyl derivatives of diaminotriiodo-m-toluic acid having the formula



and to salts and lower alkyl esters of these compounds, which are useful as radiopaque agents.

3,666,800
SUBSTITUTED TRIIODOISOPHTHALAMIC ACIDS
Jack Bernstein, and Kathryn Alice Losee, both of New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.
Filed June 19, 1970, Ser. No. 47,886
Int. Cl. C07c 103/30
U.S. Cl. 260—518 A 5 Claims

Compounds having the formula



wherein R and R_2 are hydrogen or alkyl and R′ is alkyl, as well as salts and lower alkyl esters of these compounds are useful as radiopaque agents.

3,666,801
4-TERT-BUTYLPHENYLHYDRAZONES OF PYRUVIC ACIDS
Richard A. Robinson, Evanston, Ill., assignor to G. D. Searle & Co., Chicago, Ill.
Filed Aug. 8, 1969, Ser. No. 848,704
Int. Cl. C07c 109/12
U.S. Cl. 260—518 R 4 Claims

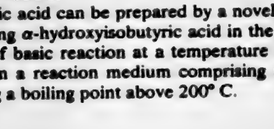
Hydrazones of pyruvic acid and substituted pyruvic acids with 4-tert-butylphenylhydrazine are described herein. They are anti-inflammatory agents. Hydrolysis of the appropriate ester gives the present acids and the esters are prepared by the reaction of the appropriate pyruvate with 4-tert-butylphenylhydrazine or by reaction of the appropriate substituted acetoacetic ester with 4-tert-butylbenzenediazonium chloride.

3,666,802
RECOVERY OF 3-(3,4-DIHYDROXYPHENYL)-L-ALANINE FROM BEANS WITH WATER
Zenon Jacura, North Plainfield; Phillip Adams, Murray Hill, and Benedict R. Juliano, Mountainside, all of N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.
Filed May 4, 1970, Ser. No. 34,573
Int. Cl. C07c 101/72
U.S. Cl. 260—519 3 Claims

L-DOPA is recovered from, preferably comminuted, beans containing it by contacting the beans with a reagent consisting essentially of liquid water. Efficacious novel products comprising L-DOPA are produced.

3,666,803
N-HYDROXYALKYL-2,4,6-TRIIODOSUCCINANILIC ACIDS
Hugo Holtermann, Baerum, Norway, assignor to Nyegaard & Co. A/S, Oslo, Norway
Filed June 6, 1969, Ser. No. 831,207
Claims priority, application Great Britain, June 11, 1968, 27,698/68
Int. Cl. C07c 103/32
U.S. Cl. 260—519 4 Claims

Compounds of the formula



wherein R^1 is an alkyl group carrying at least one hydroxyl group and salts thereof with bases. The compounds are prepared by reacting 2,4,6-triiodosuccinanilic acid with a hydroxyalkylating agent. The compounds are useful as cholecystographic agents.

3,666,804
OXIDATION PROCESS
R. Parthasarathy, Takoma Park, and Frank G. Ciapetta, Silver Spring, both of Md., assignors to W. R. Grace & Co., New York, N.Y.
Filed Oct. 26, 1966, Ser. No. 589,510
Int. Cl. C07c 51/26, 53/08
U.S. Cl. 260—530 N 10 Claims

Methods of oxidizing alpha unsaturated aldehydes to the corresponding alpha unsaturated monocarboxylic acids are disclosed. The methods are characterized in one aspect by the use of a molybdenum phosphate catalyst. Methods of producing the alpha unsaturated aldehydes starting material from the corresponding unsaturated olefins are also disclosed.

3,666,805
PREPARATION OF METHACRYLIC ACID
Theodor Volker, and Erika Pichler, both of Freiburg, Switzerland, assignors to Lonza Ltd., Gampel (Canton of Valais), Basel, Switzerland
Filed Mar. 11, 1966, Ser. No. 533,441
Claims priority, application Switzerland, Mar. 12, 1965, 3495/65
Int. Cl. C07c 57/04
U.S. Cl. 260—531 R 8 Claims

Methacrylic acid can be prepared by a novel process comprising heating α-hydroxyisobutyric acid in the presence of a compound of basic reaction at a temperature of about 160° to 340° C. in a reaction medium comprising an inert polar liquid having a boiling point above 200° C.

3,666,806
HALOADAMANTANES
Robert E. Moore, Wilmington, Del., assignor to Sun Oil Company, Philadelphia, Pa.
Filed Dec. 17, 1968, Ser. No. 784,486
Int. Cl. C07c 29/00
U.S. Cl. 260—617 F 11 Claims

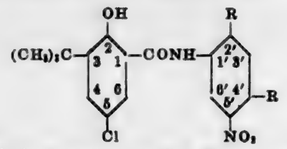
Halogenated derivatives containing the adamantane nucleus are produced by admixing, in the presence of strong sulfuric acid, adamantane or alkyl-substituted adamantane with a selected halo-yielding salt of an alkali or alkaline earth metal, or a corresponding hydrogen halide.

3,666,807
PROCESS FOR PRODUCING UREA
Akio Yamagishi, and Genya Matumoto, both of Niihama-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Higashi-ku, Osaka, Japan
Filed Feb. 7, 1969, Ser. No. 797,623
Claims priority, application Japan, Feb. 12, 1968, 43/9017
Int. Cl. C07c 127/00
U.S. Cl. 260—555 A 2 Claims

The present invention discloses a process for the synthesis of urea wherein, in a process for the synthesis of urea in combination with a process for the synthesis of ammonia, the necessity of cooling the circulating gas of the process for the synthesis of ammonia for separating ammonia for use in the synthesis of urea is eliminated, thereby not only avoiding the heat loss due to the cooling but also rendering unnecessary the facilities for the cooling. Thus, the process is made simple and economical.

3,666,808
SUBSTITUTED NITROSALICYLANILIDES
William H. Meek, Northfield, Ohio, assignor to Ferro Corporation, Cleveland, Ohio
Filed Feb. 9, 1970, Ser. No. 9,981
Int. Cl. C07c 103/26
U.S. Cl. 260—559 S 5 Claims

The compounds disclosed herein are defined by the formula



wherein R is hydrogen or methyl. These compounds are found to be particularly useful as bacteriostats, as lampricides and as differential fish toxicants. The compounds are found to be particularly effective for such purposes because of the nitro group in the 5′ position and because of the tertiary-butyl group in the 3 position.

3,666,809
METHOD FOR THE PRODUCTION OF ACRYLAMIDE CRYSTALS
Kenzo Okuno, Tokyo; Takaharu Itagaki, Kitakyushu; Yoshimasa Isogai, Tokyo; Kazuo Yoshida, Kitakyushu; Konosuke Fujiki, Kitakyushu, and Katumi Odagawa, Kitakyushu, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan
Filed Sept. 25, 1970, Ser. No. 75,692
Claims priority, application Japan, Oct. 8, 1969, 44/80543; 44/80544; 44/80545
Int. Cl. C07c 103/00
U.S. Cl. 260—561 N 7 Claims

A method for the production of acrylamide crystals, characterized in preparing acrylamide crystals from an aqueous acrylamide solution, which contains at least one kind of surfactant selected from the group consisting of a cellulose glycolic acid salt and polyoxyethylene alkyl amine- and polyoxyethylene alkyl amide-type surfactants. The resulting acrylamide crystals are of higher purity, having less susceptibility to being concreted.

3,666,810
NOVEL N-3-AMINOALKYL AMIDES, POLYMERS THEREOF, AND METHOD FOR THEIR PREPARATION
Donald I. Hoke, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio
Filed June 11, 1969, Ser. No. 832,412
Int. Cl. C07c 103/00
U.S. Cl. 260—561 N 15 Claims

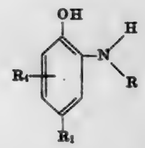
N-3-Aminoalkyl propionamides with an ether substituent on the beta carbon atom are prepared by the reaction of analogous N-3-oxohydrocarbon-substituted amides with an amine in the presence of a reducing agent, preferably hydrogen and a hydrogenation catalyst. The resulting compounds can be converted to acrylamides by pyrolysis in the presence of a strong base. The latter compounds may so be prepared by the reaction of an α,β-unsaturated amine with an acrylonitrile in the presence of sulfuric acid. They are useful for improving dyeability of fiber-forming polymers and may be polymerized to form compositions which improve paper strength and (in their quaternized form) are excellent flocculants.

3,666,811
N- 2-(DIPHENYLMETHOXY)ETHYL -N-METHYLCINNAMYLAMINE AND THE SALTS THEREOF
Cornelis van der Stelt, Haarlem, Netherlands, assignor to N. V. Koninklijke Pharmaceutische Fabrieken v/h Brocades-Stheeman & Pharmacia, Amsterdam, Netherlands
Filed July 18, 1969, Ser. No. 843,170
Claims priority, application Great Britain, July 19, 1968, 34,760/68
Int. Cl. C07c 93/08
U.S. Cl. 260—570 R 2 Claims

New diphenylmethoxyethylamino derivatives are provided in which the diphenyl group may contain halogen and lower alkyl substituents and in which the amino group may be a secondary or tertiary amino group having a phenyl-lower alkyl or a phenyl lower alkenyl substituent together with a hydrogen or lower-alkyl substituent. The new compounds have valuable therapeutic properties.

3,666,812
DIAMINO PHENOL HAIR DYEING COMPOUNDS
Gregoire Kalopissis, Paris, and Andree Bugaut, Boulogne sur Seine, both of France, assignors to Societe Anonyme Dite: L'Oreal, Paris, France
Continuation-in-part of application Ser. No. 574,860, July 11, 1966, now abandoned, which is a division of application Ser. No. 293,282, July 3, 1963, now abandoned. This application June 12, 1967, Ser. No. 645,519
Claims priority, application France, July 11, 1962, 903703; July 3, 1963, 940212
Int. Cl. C07c 91/44
U.S. Cl. 260—574 6 Claims

Compounds suitable for use in one step hair and keratin fiber dyeing compositions which do not require the use of separate dye modifiers and are exceptionally color stable, having the formula



in which R is selected from the group consisting of hydrogen and alkyll R_1 is selected from the group consisting of alkyl, alkoxy, and dialkylamino, R_4 which can be in position 5 or 6 on the ring is selected from the group consisting of hydrogen, halogen, hydroxy, alkyl, alkoxy and NH_2, and at least one of said R_1 and R_4 is said dialkylamino or said NH_2.

3,666,813
PROCESS FOR PREPARING AROMATIC HALOAMINES FROM AROMATIC NITROAMINES

Saul G. Hindin, Mendham; Daniel L. Bair, Roselle Park, and Duane R. Steele, Newark, all of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Newark, N.J.

Filed Aug. 27, 1969, Ser. No. 853,503
Int. Cl. C07c *85/10*
U.S. Cl. 260—580 6 Claims

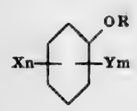
Process for preparing aromatic haloamines comprises hydrogenating the corresponding halogen-substituted nitroaromatic compound in the presence of a platinum group metal catalyst, said catalyst being modified with a metal selected from the group Pb, Bi, or Ag. The catalysts are effective at relatively mild conditions and the hydrogenation is effected with minimum dehalogenation.

3,666,814
CHLORONITROPHENYL ETHERS AS HERBICIDES

Delta W. Gier, Saint Andrews College, Laurinburg, N.C., and Daniel M. Wasielski, 10009 Mercier, Kansas City, Mo.

Division of Ser. No. 675,331, Oct. 16, 1967
Filed Mar. 3, 1970, Ser. No. 18,805
Int. Cl. C07c *49/80*
U.S. Cl. 260—590 10 Claims

Compounds of the formula



where R is alkyl, cycloalkyl, dihalo triazinyl, quinoxalinyl, alkyl quinoxalinyl, acetonyl, arylketoalkyl, epoxyalkyl, aminoarylketoalkyl, haloarylketoalkyl, X is halogen, Y is nitro, *n* is an integer of 1 to 3 and *m* is an integer of 1 to 2 have been found useful as nematocides, herbicides, fungicides and desiccants.

3,666,815
METHOD FOR THE CATALYTIC OXIDATION OF ALKYL AROMATES

Paulus I. T. Scheltus, Noordwijk, Netherlands, assignor to Nederlandse Organisatie Voor Toegepast-Natuurweten-Schappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel Er Verkeer, The Hague, Netherlands

Filed May 18, 1970, Ser. No. 38,557
Claims priority, application Netherlands, June 10, 1969, 69/08858
Int. Cl. C07c *49/78*, *31/14*, *73/08*
U.S. Cl. 260—592 7 Claims

This invention relates to the oxidation of alkyl aromatic compounds with an alkyl-substituted phthalocyanine as a catalyst and with methods for the preparation of this catalyst.

3,666,816
METHOD FOR PRODUCTION OF METHYL ISOBUTYL KETONE

Kazumi Takagi; Masahiro Murakami, and Koichi Iketani, all of Niihama-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Oct. 6, 1969, Ser. No. 864,173
Claims priority, application Japan, Oct. 12, 1968, 43/74498; Feb. 3, 1969, 44/8380; Aug. 1, 1969, 44/61162
Int. Cl. C07c *49/04*
U.S. Cl. 260—593 2 Claims

A novel method for producing methyl isobutyl ketone from acetone and hydrogen in one stage with improved conversion and selectivity by contacting acetone in liquid phase with hydrogen in the presence of a catalyst of (a) palladium and synthetic zeolite, or (b) palladium and alumina together with or without thorium oxide, zirconium oxide and/or chromium oxide, at a temperature of 100° to 250° C. and under a partial pressure of hydrogen of 0.1 to 10 kg per square centimeter.

3,666,817
TETRAKIS (HYDROXYMETHYL) PHOSPHONIUM CHLORIDE FROM PHOSPHINE AND FORMALDEHYDE

Ronald H. Carlson, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed July 13, 1970, Ser. No. 54,574
Int. Cl. C07f *9/02*
U.S. Cl. 260—606.5 F 7 Claims

A process is described for the preparation of tetrakis(hydroxymethyl) phosphonium chloride (THPC) by a direct two-step process of reacting phosphine and excess formaldehyde under pressure of from about 4 to about 15 atmospheres at a temperature of from 25° to 70° C.,, whereby a tris(hydroxymethyl) phosphine hemiacetal solution is obtained which is then treated with hydrochloric acid to produce the phosphonium chloride.

3,666,818
TRIFLUOROBUTENYL SULFIDES

Mervin E. Brokke, Richmond, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Original application Sept. 27, 1965, Ser. No. 490,664, now Patent No. 3,513,172. Divided and this application Nov. 20, 1969, Ser. No. 877,541
Int. Cl. C07c *149/12*
U.S. Cl. 260—608 4 Claims

Compounds of the formula

$$CF_2{=}CFCH_2CH_2S{-}R$$

in which R is a member selected from the group consisting of 3,4,4-trifluoro-3-butenyl, thio-3,4,4-trifluoro-3-butenyl and benzyl. The compounds are useful as nematocides.

3,666,819
PROCESS FOR PREPARING POLYHALO PHENOLS

Edwin B. Michaels, Gregory Court, Norwalk, Conn., and John W. Lee, Glen Avenue, Norwalk, Conn.

Filed July 31, 1968, Ser. No. 748,981
Int. Cl. C07t *39/32*
U.S. Cl. 260—623 R 10 Claims

A process is provided for the hydrolysis of polyhalobenzenes to polyhalophenols in good yields and purity by initially reacting ethylene glycol with an alkali metal hydroxide to obtain a mixture comprising ethylene glycol alkali metal derivative, alkali metal hydroxide and ethylene glycol, adding to the latter mixture a mono- or di-alkylated benzene, such as toluene or ethylbenzene, then introducing a polyhalobenzene, whereby hydrolysis of the latter occurs and, thereafter, recovering the hydrolyzed benzene.

3,666,820
PROCESS FOR THE PREPARATION OF ALKYL, PERFLUOROALKYL AND ARYL IODIDES

Leonard S. Silbert, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of Agriculture

Original application Feb. 28, 1968, Ser. No. 708,804, now Patent No. 3,531,535. Divided and this application Mar. 23, 1970, Ser. No. 24,924
Int. Cl. C07c *19/08*
U.S. Cl. 260—653 2 Claims

High yields of alkyl, perfluoroalkyl and aryl iodides are prepared directly from their corresponding carboxylic acids by reaction in solution with iodine and aroyl peroxide or t-butylperoxyisopropyl carbonate. The reaction is conducted at a temperature of about 110°–125° C. for about 2 to 3 hours in solvents such as 1,3-dichloropropane, 1,3-dibromopropane and 1,1,2,2-tetrachlorodifluorethane. Solvents such as 1,2-dichloroethane and carbon tetrachloride can be used as solvents but they require longer reaction times.

3,666,821
DEUTERATED METHYLENE CHLORIDE

Joseph G. Atkinson, Montreal, Quebec, and Erskine Simons, Jr., Niagara Falls, Ontario, both of Canada, assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 29, 1968, Ser. No. 756,298
Int. Cl. C07c *17/00*, *19/02*
U.S. Cl. 260—664 12 Claims

A method for the preparation of methylene-d2 chloride which comprises treating methylene chloride with (1) deuterium oxide in the presence of a catalyst and solvent; (2) a deuterated solvent in the presence of a catalyst; or (3) deuterium oxide in the presence of a deuterated catalyst and a deuterated solvent.

3,666,822
URANIUM-MOLYBDENUM OXIDATION CATALYSTS

Robert K. Grasselli, Garfield Heights, and Maria S. Friedrich, Cleveland, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of application Ser. No. 691,934, Dec. 20, 1967, now Patent No. 3,542,842. This application Mar. 5, 1970, Ser. No. 16,923
Int. Cl. C07c *5/18*
U.S. Cl. 260—680 E 8 Claims

Catalysts are provided which are useful in the oxidation of olefins to aldehydes and conjugated dienes and in ammoxidation of olefins to nitriles. The catalysts comprise the combined oxides of uranium and molybdenum and the combined oxides of uranium and molybdenum in combination with arsenic, bismuth, tin, vanadium, iron, nickel and cobalt.

3,666,823
URANIUM-ARSENIC OXIDATION CATALYSTS

Robert K. Grasselli, Garfield Heights, and Maria S. Friedrich, Cleveland, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of application Ser. No. 691,992, Dec. 20, 1967, now abandoned. This application Mar. 5, 1970, Ser. No. 16,984
Int. Cl. C07c *5/18*
U.S. Cl. 260—680 E 9 Claims

Catalysts are provided which are useful in the oxidation of olefins to aldehydes and conjugated dienes and in ammoxidation of olefins to nitriles. The catalysts comprise the combined oxides of uranium and arsenic on a catalyst support and the combined oxides of uranium and arsenic promoted by molybdenum, boron, vanadium, tin, nickel, bismuth, chromium, iron, manganese, zinc, tungsten, antimony, cerium, cobalt or rhenium.

3,666,824
HYDROEALKYLATION PROCESS AND CATALYST

John W. Jenkins, Seabrook, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed May 20, 1970, Ser. No. 39,873
Int. Cl. C07c *3/58*
U.S. Cl. 260—672 R 6 Claims

Alkylaromatics are hydrodealkylated to aromatics by passage with hydrogen over a supported catalyst of nickel and a Group *Ib* or *IIb* metal promoter at elevated temperatures.

3,666,825
PROCESS FOR ALKYLATING AROMATIC HYDROCARBONS

Bernard Torck, Chatou, and Lucien Sajus, Croissy, both of France, assignors to Institut Francais Du Petrole, Des Carburants Et Lubrifiants, Rueil-Malmaison, France

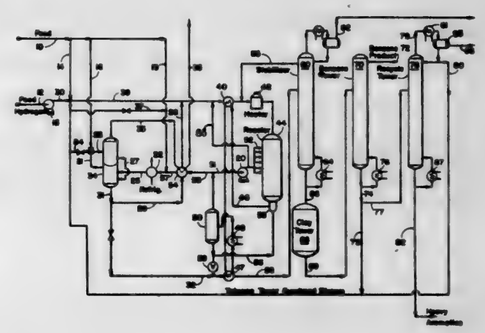
Filed Dec. 8, 1970, Ser. No. 96,276
Claims priority, application France, Dec. 11, 1969, 6943079
Int. Cl. C07c *3/56*
U.S. Cl. 260—671 R 10 Claims

Process for alkylating an aromatic hydrocarbon wherein said hydrocarbon is reacted with a member of the group consisting of the olefines and the alkyl halides in the presence of a Lewis acid of the formula R M X_{n-1}, in which R is a monovalent organic radical having one – 20 carbon atoms, selected from the group consisting of the alkyl, cycloalkyl, aryl, aralkyl and alkoxy groups, X is a halogen atom or an electronegative group, M is a metal from groups IIIb, IVb and Vb of the periodic classification of the elements and n is the highest valence of the metal, said process comprising using water in a molar proportion of from 0.01 to 5 times that of the Lewis acid.

3,666,826
PURIFICATION OF HYDRODEALKYLATION REACTION VENT HYDROGEN

Bernard I. Newberger, Brooklyn; Stanley W. Ehrlich, Far Rockaway, and Manuel N. Vergara, Rego Park, all of N.Y.

Filed Dec. 24, 1970, Ser. No. 101,321
Int. Cl. C07c *3/58*
U.S. Cl. 260—672 R 7 Claims



In a hydrodealkylation process the vent hydrogen stream from the reaction zone is contacted with 5 to 20 mole percent of liquid C_7 to C_9 aromatics in one or two stages. The mixture is then flashed to yield a liquid containing about 95 percent of the benzene entering the flashing zone.

3,666,827

QUATERNARY SUBSTITUTED HYDROCARBONS

Emil H. Carlson, Kirkwood; William C. Hammann, Creve Coeur, and Robert M. Schiola, Kirkwood, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 14, 1969, Ser. No. 877,043
Int. Cl. C07c 9/00
U.S. Cl. 260—676 11 Claims

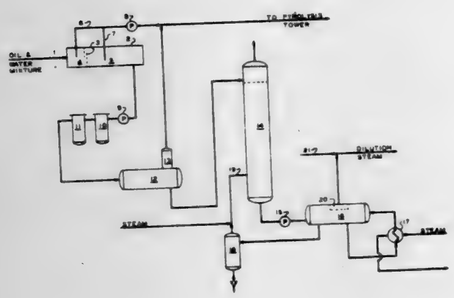
High molecular weight hydrocarbons containing from about 28 to 40 carbon atoms and from two to four gem-dimethyl units interspersed in an aliphatic chain are useful as lubricants and other functional fluids and have a wide liquid range, good thermal stability and resistance to the formation of sludge and other insoluble decomposition products due to oxidation at elevated temperatures.

3,666,828

CONDENSATE PURIFICATION AND RECOVERY FOR USE AS DILUTION STEAM TO PYROLYSIS FURNACE

Carl A. Post, and Eldred J. Cabanaw, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Sept. 14, 1970, Ser. No. 71,786
Int. Cl. C07c 3/30; C10g 9/36, 33/00
U.S. Cl. 260—683 R 9 Claims



A condensate purification and recovery method and apparatus for purifying water from the pyrolysis tower of a naphtha cracking unit which involves settling the water and separating the oil and producing dilution steam and oil, both of which are returned to the cracking unit.

3,666,829

DIMERIZATION OF PROPYLENE

Kenneth J. Frech, Tallmadge, and James J. Garmon, Hudson, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of application Ser. No. 668,264, July 14, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 539,243, Feb. 23, 1966, now abandoned, which is a continuation-in-part of application Ser. No. 312,560, Sept. 30, 1963, now abandoned. This application Oct. 29, 1969, Ser. No. 872,421
Int. Cl. C07c 3/16
U.S. Cl. 260—683.15C 4 Claims

Propylene is polymerized with an acid catalyst in an aqueous reaction mixture. During substantially the entire polymerization period there is present in the reaction mixture a dimer solvent which is sufficiently immiscible with the reaction mixture to form a second layer in the reaction zone to thus remove from the reaction mixture the dimer which is produced and thus prevent its further polymerization.

3,666,830

LEAD COMPOUND CATALYZED SILOXANE RESIN SYSTEM

Alvin J. Alekna, Scotia, N.Y., assignor to General Electric Company

Continuation of application Ser. No. 782,470, Dec. 9, 1968, now abandoned. This application Jan. 21, 1971, Ser. No. 108,652
Int. Cl. C08g 47/04, 47/10, 31/32
U.S. Cl. 260—825 6 Claims

A molding compound contains an uncured siloxane resin, a lead containing catalyst, and a silane or polysiloxane containing an appreciable amount of silanol or alkoxy groups. The molding compound is relatively stable at flow temperatures but cures rapidly at molding temperatures. The molding compound is used in the transfer molding of transistor housings.

3,666,831

THIOL-TYPE THIAMINE THIONOTHIOLCARBONATES

Akira Takamizawa, Ibaraki-shi, and Kentaro Hirai, Kyoto-shi, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Feb. 17, 1969, Ser. No. 799,899
Claims priority, application Japan, Mar. 5, 1968, 43/14148
Int. Cl. C07d 51/42
U.S. Cl. 260—256.5 B 11 Claims

Thiol-type thiamine thionothiolcarbonates, i.e. O-(lower)-alkoxycarbonyl-S-(substituted or unsubstituted)-phenylthiothiocarbonylthiamines, being prepared from S-alkali salts of O-(lower)-alkoxycarbonylthiamines by an interaction with (substituted or unsubstituted)-phenylthiothiocarbonyl group-introducing agents, or from S-alkali salts of thiamine by an interaction with the (substituted or unsubstituted)-phenylthiothiocarbonyl group-introducing agents followed by alkoxycarbonylation of the O-position, possessing anti-inflammatory activity and also rapid, prolonged and high level vitamin B_1 activity, and being sufficiently stable for various pharmaceutical preparations.

3,666,832

STABLE VINYL CHLORIDE INTERPOLYMER SYSTEMS

Charles K. Bump, Hampden, and Frank J. Hahn, Wilbraham, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 714,774, Mar. 21, 1968, now abandoned. This application July 17, 1970, Ser. No. 55,963
Int. Cl. C08q 37/32; C08f 45/56
U.S. Cl. 260—853 9 Claims

Disclosed herein are compositions of etherified aminoplast resins and copolymers of vinyl chloride and hydroxy containing fumarate diesters cured with phosphoric acid compounds. These compositions when coated on substrates, display excellent strength characteristics and light stability.

3,666,833

METHOD FOR MANUFACTURING SURFACE COATINGS AND FILMS AND SURFACE COATINGS AND FILMS FOR CARRYING OUT THIS METHOD

Horst Dallbor, and Themistoklis Katsibas, both of Hamburg, Germany, assignors to Reichhold, Albert, Chemie Aktiengesellschaft, Hamburg, Germany

Filed May 27, 1970, Ser. No. 40,757
Claims priority, application Switzerland, May 27, 1969, 7986/69
Int. Cl. C08g 22/04
U.S. Cl. 260—856 10 Claims

The invention relates to an improved method for providing surface sheetings or coatings and to a stoving enamel for carrying out this method, the enamel being resistant to solvents and alkalis, wherein the improvement comprises that the stoving enamel, applied to a metal base, hardens after three to four days' exposure to air at about 20° C so that the film does not swell under the action of water and cannot be removed by scratching, and wherein the said film is made by forming under simultaneous removal of the solvent from polyhydroxyl compounds, based on copolymers containing hydroxyl groups, copolymerized aromatic substances and polyisocyanates in solvents, without active hydrogen atoms.

3,666,834

ORIENTED THERMOPLASTIC FILMS COMPRISING POLYPROPYLENE AND POLY(PARA-TERTIARY-BUTYL-STYRENE)

Edward M. Bullard, Rochester, N.Y., assignor to Mobil Oil Corporation

Filed July 29, 1970, Ser. No. 59,331
Int. Cl. C08f 29/12
U.S. Cl. 260—897 A 2 Claims

A resinous blend composition, adaptable for fabrication into an oriented film structure having improved physical properties comprising a polyolefin such as polypropylene containing incorporated therein additive amounts, on the order of from about 10 percent to about 40 percent by weight of a tertiary butyl substituted aromatic resin, such as poly(para-tertiary-butyl styrene).

3,666,835

POLYURETHANE SYSTEMS

Hans R. Schloss, Wallington, N.J., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Apr. 16, 1970, Ser. No. 29,306
Int. Cl. C08g 41/04, 22/14
U.S. Cl. 260—858 9 Claims

Solvent-free polyurethane systems particularly useful as textile laminating adhesives comprise a hydroxyl-terminated urethane prepolymer and an isocyanate-terminated urethane prepolymer.

3,666,836

BLENDS OF POLYPROPYLENE WITH HYDROGENATED HYDROCARBON RESINS

Andrew John, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Sept. 26, 1969, Ser. No. 861,445
Int. Cl. C08f 41/12, 29/12
U.S. Cl. 260—897 A 3 Claims

Blends of polypropylene with hydrogenated polymers and copolymers of styrene. The useful polymers have a precisely defined molecular weight distribution and must be hydrogenated to the point where at least 50 percent of the aromatic unsaturation is reduced. The blends are useful in preparation of heat sealable films and capacitor dielectrics.

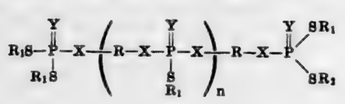
3,666,837

POLYMERCAPTO POLYPHOSPHITES

Kenneth H. Rattenbury, Morgantown, W. Va., assignor to Weston Chemical Corporation, New York, N.Y.

Filed June 24, 1969, Ser. No. 836,150
Int. Cl. C07f 9/16; B01j 1/16; C08f 45/58
U.S. Cl. 260—928 17 Claims

Compounds are prepared having the formula



where n is zero or an integer, preferably not over 9, R is a divalent aromatic, aliphatic or cycloaliphatic group, R_1 is alkyl, haloalkyl, aryl, haloaryl, alkenyl, aralkyl, haloalkenyl, cycloalkyl, X is S, Y is nothing or oxygen.

The thiophosphites are useful as antioxidants and as defoliants. The thiophosphates are useful as plasticizers and defoliants.

3,666,838

PROPENYL AND PROPADIENYLPHOSPHONIC ACIDS 2-PROPADIENYL-4-OXO-1,3-DIOXA-2-PHOSPHANAPHTHALENE-2-OXIDE

Janos Kollonitsch, Westfield, and George Gal, Watchung, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed July 14, 1969, Ser. No. 841,547
Int. Cl. C07f 9/08, 9/38, 9/40
U.S. Cl. 260—937 1 Claim

Cis-1-propenyl phosphonic acid and propadienylphosphonic acid are made from propargyl alcohol and 2-halo-4-oxo-1,3-dioxa-2-phosphanaphthalene via reaction of the two, rearrangement of the resulting propargyloxy compound, reduction of the propadienylphosphonate thus formed and/or hydrolysis of the ester function. The intermediates for example, 2-propadienyl-4-oxo-1,3-dioxa-2-phosphanaphthalene-2-oxide, are novel compounds.

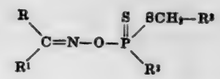
3,666,839

OXIMINOPHOSPHONODITHIOATES

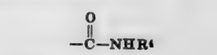
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Apr. 6, 1970, Ser. No. 26,148
Int. Cl. C07f 9/06; A01n 9/36
U.S. Cl. 260—940 10 Claims

Compounds having the formula



in which R is (1) alkyl or (2) lower alkylthiomethyl; R^1 is alkyl; R^2 is alkyl; and R^3 is (1) hydrogen, (2) lower alkylthio, (3) cyano, (4) phenylthio, (5) substituted phenylthio wherein the substituent is halogen,

(6) 

wherein R^4 is hydrogen or alkyl, (7) halophenyl, (8) phthalimido, (9) vinyl, (10) carboalkoxy, (11) alkyl, (12) ethynyl, (13) CCl_2 CR^5—wherein R^5 is hydrogen or chlorine, (14) $-CH_2OC(O)NH$(lower alkyl) or (15) benzylthio, their use as insecticides and acaricides, process for preparing the compounds, intermediates and a process for preparing intermediates.

3,666,840

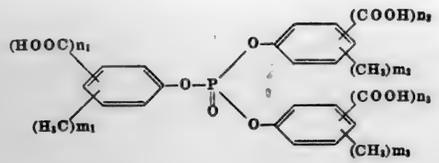
POLYCARBOXY-TRIPHENYL PHOSPHATES

Ken Ito; Hiroshi Kaminaka, both of Toyonaka-shi; Norio Kotera, Amagasaki-shi; Hiroshi Kuruma, Toyonaka-shi, and Yoshiro Murata, Minoo-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Sept. 2, 1969, Ser. No. 854,729
Claims priority, application Japan, Sept. 19, 1968, 43/68097; Feb. 26, 1969, 44/14945
Int. Cl. C07f 9/08, 9/12
U.S. Cl. 260—942 9 Claims

Polycarboxy-triphenyl phosphates are prepared by oxidizing corresponding polymethyltriphenyl phosphates. They are fire resistant and stable, and are useful not only as fire-retarding agents for high polymer materials but also as inter-

mediates for various synthetic products. When these esters and hydrolyzed, corresponding aromatic hydroxycarboxylic acids can be obtained with advantages.



wherein n_1, n_2 and n_3 are individually zero or an integer of up to 2, and $n_1 + n_2 + n_3$ is 2 or more; m_1, m_2 and m_3 are individually zero or an integer of up to 2, and $n_1 + m_1$, $n_2 + m_2$ and $n_3 + m_3$ do individually not exceed 3; and the substituted positions of the carboxyl groups are in the 3-, 4- or 5-positions of the individual phenyl groups.

3,666,841

ARYL-POLYOL PHOSPHITE HAVING TERMINAL HALIDE GROUPS

Walter R. May, St. Louis, Mo.; Dudley Bruce Merrifield, Williamsville, N.Y., and Lewis Baharah, St. Louis, Mo., assignors to Petrolite Corporation, Wilmington, Del.

Continuation-in-part of application Ser. No. 727,322, May 7, 1968, now abandoned. This application Mar. 10, 1969, Ser. No. 808,035

Int. Cl. C07f 9/12; C08f 45/58

U.S. Cl. 260—950 8 Claims

Aryl-polyol phosphites having terminal halide groups and their use as rubber stabilizers and/or anti-oxidants. The preferred embodiments are aryl-glycol phosphites having terminal halide groups.

3,666,842

PHOSPHONO THIOESTER AMIDATES

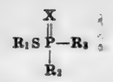
Paul C. Aichenegg, Prairie Village, Kans., assignor to Chemagro Corporation, Kansas City, Mo.

Continuation-in-part of application Ser. No. 620,664, Mar. 6, 1967. This application Dec. 31, 1969, Ser. No. 889,688

Int. Cl. C07f 9/44; A01n 9/36

U.S. Cl. 260—957 12 Claims

Compounds are prepared having the formula



where R_1 is trichloroethyl or dichlorovinyl, R_2 is lower alkyl or phenyl, R_3 is OR_4 or SR_4 or



where R_4 is alkyl, aryl, haloalkyl or haloaryl, R_5 and X is O or S. Preferably R_4 and R_5 are lower alkyl and R_6 is H or lower alkyl. The compounds are useful as nematocides, fungicides, and insecticides. Preferably R_1 is 2,2,2-trichloroethyl or 2,2-dichlorovinyl.

3,666,843

ALKYLARYLPOLYOXYALKYLENE ALKYL OR ARYL PHOSPHATES

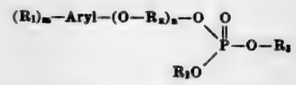
Ralph B. Fearing, Bardonia, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Feb. 23, 1968, Ser. No. 707,415

Int. Cl. C07f 9/18; D06l 1/04

U.S. Cl. 260—951 10 Claims

Compounds of the formula:



wherein R_1 is an alkyl radical of from one to 30 carbon atoms, R_2 is hydrogen, R_x is an alkylene group of from two to six carbon atoms, R_3 is an alkyl radical of from one to 10 carbon atoms or phenyl, n is an integer having a value of from 1 to 100, inclusive, m is an integer having a value of from 1 to 2, inclusive, -Aryl- is phenylene, and naphthylene and the sodium, potassium, ammonium and ethanol amino salts thereof which are useful as detergents and surfactants.

3,666,844

ALKYLARYLPOLYOXYALKYLENE N-HYDROXYALKYL PHOSPHORAMIDATES

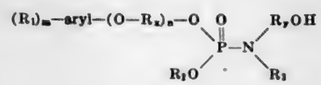
Ralph Fearing, Bardonia, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Feb. 23, 1968, Ser. No. 707,446

Int. Cl. C07f 9/22; C08g 22/44

U.S. Cl. 260—951 12 Claims

Compounds of the formula:



wherein R_1 is an alkyl radical of from one to 30 carbon atoms, R_2 is a lower alkyl and lower chloroalkyl, phenyl, benzyl, or R_1-Aryl-(O-R_x)$_n$-radical, R_3 is hydrogen, lower alkyl, phenyl, benzyl, or -R_xOH, R_x and R_y are alkylene bridges of from two to six carbon atoms, m is an integer of one or two, and n is an integer of from one to 100, and -Aryl- is phenylene, or naphthylene which are useful as dry-cleaning detergents.

3,666,845

PRODUCTION-SCALE FORMATION OF ULTRAHIGH PURITY CARBIDE POWDERS

Keith Vernon Davidson, and Donald H. Schell, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed May 6, 1970, Ser. No. 35,303

Int. Cl. G21c 21/00

U.S. Cl. 264—0.5 3 Claims

A method of forming ultrahigh purity carbide powders on a production scale which comprises blending metal oxide powders with elemental carbon powders and a partially polymerized furfuryl alcohol binder together with a suitable polymerization catalyst, extruding, polymerizing the binder, heating to 840° C for 48 hours in a soft vacuum, heating to 2,200° C for 1 hour in a helium atmosphere, cooling, crushing, and then heating to 2,000° C for 24 hours under a vacuum.

3,666,846

PROCESS OF FORMING AN ISOTOPIC HEAT SOURCE

Kenneth R. Sump; Ramon K. Robinson; Boyd D. Howard, and Kirk Drumheller, all of Richland, Wash., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Apr. 11, 1969, Ser. No. 816,482

Int. Cl. G21c 21/00

U.S. Cl. 264—0.5 9 Claims

A process of encapsulating an alpha-emitting isotope to form an isotopic heat source. Microspheres are prepared, each containing its own helium gas plenum, an alpha-emitting isotope, and containment cladding. These microspheres are sealed in a capsule with or without a metal matrix.

3,666,847

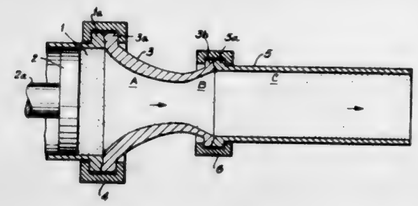
METHOD AND APPARATUS FOR CONTROLLING ORIENTATION OF NEEDLE-LIKE CARBON PARTICLES IN EXTRUDED CARBONACEOUS STOCK

Bruce L. Bailey, Lewiston, N.Y., assignor to Great Lakes Carbon Corporation, New York, N.Y.

Filed Nov. 7, 1969, Ser. No. 874,848

Int. Cl. B29f 3/04; C04b 35/54

U.S. Cl. 264—29 12 Claims



A means and method are provided for extruding compositions, particularly for extruding mixes of carbon and/or graphite particles and carbonizable binder. The means and method can additionally be employed to control the orientation of acicular particles in a composition during the extrusion thereof so as to control the properties of the extruded product.

In all cases, the extrusion die's internal configuration is defined by at least three sections comprising first a converging section, then a diverging section and then a final section of substantially constant cross-section. A section of substantially constant cross-section may also sometimes follow the converging section.

When employed in the extrusion of a carbonaceous mix containing needle-like carbon particles, dies of the present invention of appropriate design can be used to produce stock which after baking and graphitizing is characterized by having a transverse to longitudinal average coefficient of thermal expansion (CTE) ratio considerably less than that characteristic of corresponding stock in which the particles are all axially aligned.

3,666,848

METHOD OF PRODUCING CLOSED MOLD POLYURETHANE FOAM MOLDINGS FREE OF SURFACE VOIDS BY FLUSHING THE MOLD WITH A VAPORIZED HALOGENATED HYDROCARBON

Robert C. Harper, Loveland, Ohio, and Cincinnati Milling Machine Company, Cincinnati, Ohio

Filed Nov. 24, 1969, Ser. No. 879,507

Int. Cl. B29d 27/00

U.S. Cl. 264—39 11 Claims

Foamed polyurethane moldings free of surface voids and having a substantially uniform skin are formed in a closed mold which has been purged of air with a vaporized liquid halogenated hydrocarbon capable of condensing on the mold walls or dissolving in the molding composition at the temperature and pressure conditions used in molding.

3,666,849

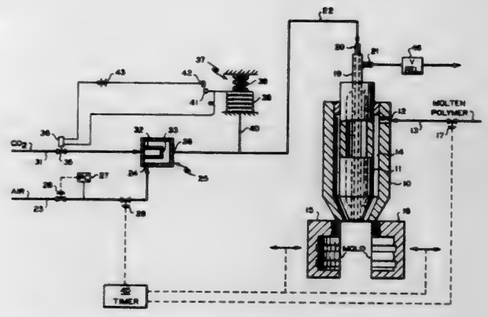
METHOD OF COOLING THERMOFORMED ARTICLES

George E. Williams, and Edward C. Held, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Original application Jan. 22, 1968, Ser. No. 699,525, now Patent No. 3,520,020. Divided and this application Apr. 3, 1970, Ser. No. 25,451

Int. Cl. B29c 17/07

U.S. Cl. 264—40 2 Claims



Cooling fluid, such as liquid carbon dioxide, is introduced into thermoformed articles to aid in cooling. A pressure switch in the blowing fluid conduit introduces the cooling fluid when the pressure of the blowing fluid reaches a first value and stops flow of the cooling fluid when a second higher pressure is reached.

3,666,850

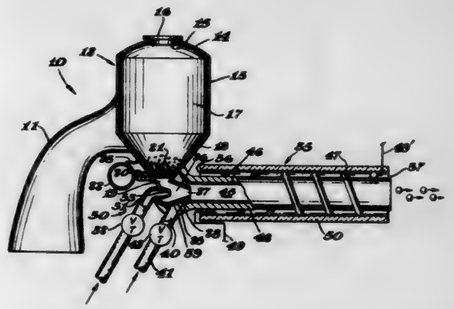
PACKAGING METHOD AND APPARATUS

Leo J. Windecker, Midland, Tex., assignor to The Dow-Chemical Company, Midland, Mich.

Continuation of application Ser. No. 595,678, Nov. 21, 1966, now abandoned. This application July 10, 1969, Ser. No. 845,658

Int. Cl. B29d 9/00

U.S. Cl. 264—45 4 Claims



Method and apparatus are disclosed for packaging wherein expandable plastic particles are heated in an applicator gun

to a temperature sufficient to cause expansion and to cause softening of the surface. The particles are carried by a hot gas stream and deposited as a coherent mass about an object to be packaged.

3,666,851
PREPARING HIGH DENSITY MAGNESIA REFRACTORIES

Asoke C. D. Chakrabarti, Vancouver, British Columbia, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

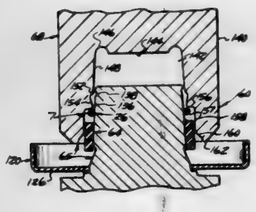
Filed Nov. 10, 1969, Ser. No. 875,567
Int. Cl. C04b *35/64*
U.S. Cl. 264—66 15 Claims

A method of preparing high density refractories of magnesia by one of (a) partially calcining magnesium carbonate and/or magnesium hydroxide, and hot pressing the partially calcined raw materials while dehydroxylation and/or decarbonation is occurring; (b) calcining magnesium carbonate and/or magnesium hydroxide, partially hydrating (or rehydrating) the calcined raw materials and hot-pressing while the dehydroxylation is occurring; or (c) mixing sinterable magnesia and/or partially hydrated material from (b) with the hydroxide or carbonate and not pressing while decomposition is occurring : followed in each case by a short stabilizing heat treatment at sintering temperatures.

3,666,852
METHOD FOR MAKING AN ELASTOMERIC ANNULAR SEAL WITH ENCLOSED GARTER SPRING

Michael J. Burke, Southfield, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed Jan. 6, 1970, Ser. No. 982
Int. Cl. B29d *3/00*; B29h *9/08*
U.S. Cl. 264—229 1 Claim



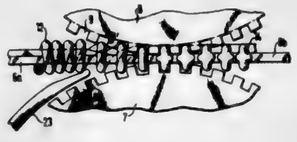
A mold assembly including an externally-tapered lower core member with an annular groove near the top and an annular shoulder and seat near the bottom and an internally-tapered upper cavity mold member cooperatively form an annular die cavity having the shape desired for the elastomeric annular seal to be formed therein. Prior to molding the seal, the upper cavity mold member is retracted and moved out of alignment with the core member and replaced temporarily by a cylindrical loading device having an annular groove for receiving a pre-tensioned annular hollow helical tension spring and below it a cylindrical end portion adapted to receive an annular charge of elastomer. In carrying out the method of this invention, an annular mounting case is placed on the seat and a collar on the loading device is moved downward so as to push the annular hollow helical tension spring and the annular elastomeric charge from the loading device onto the core member until the spring snaps into the annular groove of the latter. The loading device is then retracted and moved out of alignment with the core member and the mold cavity member moved into alignment therewith and then moved downward into telescoping relationship with the core member, moving the annular hollow helical tension spring downward and at the same time expanding and circumferentially stretching it to open up spaces between its convolutions.

As the spring is pushed downward, it pushes the elastomeric charge ahead of it into the mold chamber which shapes the seal and totally encloses the spring therein. Excess elastomer is ejected upward through the clearance between the mold and core members. Simultaneously therewith, the elastomer is pushed between the now-spaced convolutions of the expanded spring into the hollow of the spring, completely and uniformly filling it with elastomer. The upper mold cavity is then moved downward to the end of its stroke and an annular nose portion thereof cooperates with the shoulder as a fulcrum to bend the periphery of the case upward into a frustoconical flange which enters the mold chamber and becomes bonded to elastomer flowing against its opposite sides. The end of the stroke ordinarily cuts off any flash adhering to the upper end of the seal, forming a sharp sealing lip thereon. The elastomer of the seal is then cured in the mold cavity by heating the mold assembly, after which the completed seal is ejected from the core member by a conventional stripper as the mold cavity member is retracted upward.

3,666,853
METHOD OF MANUFACTURING A CONTINUOUS STRINGER FOR A SLIDING CLASP FASTENER

Ernst Popovitsch, Stuttgart-Steckfeld, Germany, assignor to Dr. Karl F. Nagele Feinmaschinenbau, Stuttgart-Hohenheim, Germany

Filed Apr. 30, 1970, Ser. No. 33,469
Claims priority, application Germany, May 2, 1969, P 19 22 605.2
Int. Cl. B29c *17/02*
U.S. Cl. 264—281 5 Claims



In manufacturing a continuous slide fastener stringer, a plastic wire is coiled into a helix abut a fixed mandrel, and the helix is withdrawn from the mandrel while its convolutions are braked on one side so that the helix is distorted. It is thereafter shaped on a heated spacing wheel, and each convolution is deformed by a toothed kinking disc. The stringer so formed has convolutions of periodically varying inclination and has alternating parallel shanks connected by inclined portions retaining the original coiling pitch and having protuberances which secure loops of sewing threads by means of which the stringer is attached to a supporting tape.

3,666,854
TEST FOR THYROID HORMONE

Anna M. Eisentraut, Dallas, Tex., assignor to Nuclear-Medical Laboratories, Inc., Dallas, Tex.

Filed July 30, 1969, Ser. No. 846,289
Int. Cl. A61k *27/04*
U.S. Cl. 424—1 9 Claims

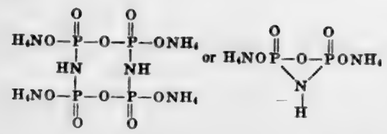
A procedure utilized in a diagnostic test for determining the level of thyroid hormone within a body fluid which includes admixing a radioactive isotope labeled hormone with a body fluid, and separating the resulting unbound hormone from the hormone bound by the hormone binding globulin and protein of the fluid by sorption of the unbound hormone by a particulate inorganic crystalline material. This sorption does not depend upon critical time or temperature limitations, and is generally conducted by thoroughly admixing the sorbent material with the solution containing the bound and unbound thyroid hormone at room temperature. The sorbent material is then separated from the resultant supernatant fluid and either the supernatant fluid or sorbent material, preferably the sorbent material, is counted with a scintillation counter to determine the labeled hormone bound to or free from the globulin.

3,666,855
ORAL COMPOSITIONS AND METHODS FOR RETARDING DENTAL CARIES AND CALCULUS

Joseph C. Muhler, Indianapolis, Ind., assignor to Indiana University Foundation, Bloomington, Ind.

Continuation-in-part of application Ser. No. 535,022, Mar. 17, 1966, now abandoned , which is a continuation-in-part of application Ser. No. 402,920, Oct. 9, 1964, now abandoned. This application Jan. 29, 1968, Ser. No. 701,067
Int. Cl. A61k *7/16*
U.S. Cl. 424—52 12 Claims

Oral compositions may include in excess of 1 percent and up to about 40 percent of ammonium salts of condensation products of ammonia and phosphorus pentoxide, e.g.,



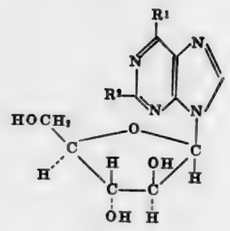
together with a carrier suitable for use in the oral cavity. Such compositions preferably also comprise stannous and fluoride ions and exhibit relatively low pH values (in the 4–5 range), and are highly effective in reducing the solubility of dental enamel. Moreover, such compositions also exhibit marked effectiveness in reducing the susceptibility of the teeth to the accumulation of dental calculus.

3,666,856
TREATING IMMUNE RESPONSE WITH AMINO PURINE DERIVATIVES

Gertrude B. Elion, Bronxville, N.Y., and Robert A. Strelitz, Edison, N.J., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C. and The Wellcome Foundation, Ltd., London, England

Filed Nov. 17, 1969, Ser. No. 877,443
Int. Cl. A61r *27/00*
U.S. Cl. 424—180 4 Claims

Compounds of the formula



where R^1 is amino or lower alkylamino, R^2 is amino or hydrogen and pharmaceutically acceptable salts thereof, provided that when R^1 is amino, R^2 is amino. The compounds are useful as immune suppressants and as antivirals.

3,666,857
AQUEOUS COMPOSITIONS CONTAINING LANOLIN OIL

Kenneth L. Russell, Nutley, N.J., assignor to Malmstrom Chemical Corp., Linden, N.J.

Continuation of application Ser. No. 178,221, Mar. 1, 1962, now abandoned. This application Mar. 4, 1966, Ser. No. 531,756
Int. Cl. A61k *7/08*
U.S. Cl. 424—240 7 Claims

A liquid fraction of lanolin is solubilized in water with a combination of (A) fatty acid soaps and/or synthetic detergents, (B) a polyoxyethylene ether of lanolin alcohol condensed with 16 mols of ethylene oxide, and (C) a higher fatty acid alkanolamide.

3,666,858
UTILIZATION OF GON-4-ENE THERAPY IN TREATMENT OF FEMALES AND IN GROWTH STIMULATION

Gordon Alan Hughes, Haverford, and Herchel Smith, Wayne, both of Pa., assignors to said Smith, by said Hughes

Continuation-in-part of application Ser. No. 489,077, Sept. 21, 1965, now abandoned , which is a division of application Ser. No. 337,823, Jan. 15, 1964, which is a division of application Ser. No. 228,384, Oct. 4, 1962, which is a continuation of application Ser. No. 51,904, Sept. 23, 1960, now abandoned , and 91,341, Feb. 24, 1961, now abandoned , and 137,535, Sept. 12, 1961, now abandoned , and 195,000, May 15, 1962, now abandoned , and 196,557, May 16, 1962, now abandoned. This application June 29, 1967, Ser. No. 649,800
Int. Cl. A61k *27/00*
U.S. Cl. 424—243 13 Claims

Methods of using certain 13-ethyl-gon-4-enes are described, namely 13β,17α-diethyl-17β-hydroxygon-4-en-3-one, and the decanoate ester of 13β-ethyl-17β-hydroxygon-4-en-3-one for growth stimulation in mammals; and 13β-ethyl-17α-ethynyl-17β-hydroxygon-4-en-3-one, to treat dysfunctions of the female reproductive system in mammals, to control cyclic regularity, and to prevent conception in female mammals.

3,666,859
3,4-DICARBETHOXY-β-PHENETHYLCARBAMIC ACID, ETHYL ESTER IN TREATING DEPRESSION

Nicholas Peter Plotnikoff, Lake Bluff, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 9, 1970, Ser. No. 96,618
Int. Cl. A61u *27/00*
U.S. Cl. 424—300 2 Claims

A method of treating the symptoms of depression comprising administering a therapeutically effective amount of 3,4-dicarbethoxy-β-phenethylcarbamic acid, ethyl ester to patients in need of such treatment.

3,666,860
SUBSTITUTED NITROIMIDAZOLYLTHIADIAZOLES AND OXADIAZOLES AS ANTIPROTOZOAL AGENTS

Gerald Berkelhammer, 147 Laurel Road, Princeton, N.J., and Goro Asato, Maddock Road, R.D. 1, Box 299C, Titusville, N.J.

Continuation-in-part of application Ser. No. 814,160, Apr. 7, 1969, now abandoned , which is a continuation-in-part of application Ser. No. 659,596, Aug. 10, 1967, now Patent No. 3,452,035, which is a continuation-in-part of application Ser. No. 604,158, Dec. 23, 1966, now abandoned. This application Apr. 22, 1970, Ser. No. 30,944
Int. Cl. A61k *27/00*
U.S. Cl. 424—270 10 Claims

The use of substituted nitroimidazolyl-thiadiazoles and oxadiazoles are described along with methods of administration

of the same. These compounds have been found useful in controlling protozoa and therefore, are antiprotozoal agents.

3,666,861
METHODS FOR TREATING MIGRAINE WHICH USE 2-(2',6'-DICHLOROPHENYL-AMINO)-1,3-DISZACYCLOPENTENE-(2)

Eleanor Zaimis, and Edda Huntington, both of London, England, assignors to Boehringer Ingelheim GmbH, Ingelheim/Rhine, Germany

Filed June 3, 1970, Ser. No. 43,197
Claims priority, application Germany, June 6, 1969, P 19 28 798.0
Int. Cl. A61k *27/00*
U.S. Cl. 424—273 **4 Claims**

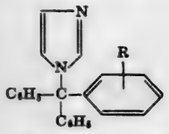
Pharmaceutical compositions for the treatment of the syndrome known as hemicrania or migraine, comprising 2-(2',6'-dichlorophenyl-amino)-1,3-diazacyclopentene-(2) or a non-toxic acid addition salt thereof as an active ingredient; and a method of treating hemicrania or migraine in humans with such compositions.

3,666,862
N-TRITYL-IMIDAZOLES AS PLANT FUNGICIDES

Karl-Heinz Buchel, Wuppertal-Elberfeld; Erik Regel, Wuppertal-Cronenberg; Ferdinand Grewe, Burscheid; Hans Scheinpflug, and Helmut Kaspers, both of Leverkusen, all of Germany, assignors to Farbenfabriken Bayer A.G.

Original application Jan. 7, 1969, Ser. No. 789,601. Divided and this application Sept. 2, 1970, Ser. No. 69,109
Claims priority, application Germany, Jan. 29, 1968, P 16 70 976.5
Int. Cl. A01n *9/22*
U.S. Cl. 424—273 **5 Claims**

Plant fungicidal compositions are produced which comprise an amount of a compound of the formula:



wherein R is cyano, sufficient to be effective for killing, combatting or controlling plant fungi, in combination with a solid or liquid diluent or carrier. Methods for killing, combatting or controlling fungal diseases in plants comprise applying to the fungi or to the plant to be protected an effective or toxic amount of the above compound.

3,666,863
SKIN-TREATING COMPOSITION AND VEHICLE FOR SKIN-TREATING AGENTS

Gunnar P. E. Swanbeck, Vaxholm, Sweden, assignor to Medisan AB, Uppsala, Sweden

Filed Mar. 4, 1969, Ser. No. 804,261
Claims priority, application Sweden, Mar. 6, 1968, 2977/68
Int. Cl. A61k *27/00*
U.S. Cl. 424—316 **13 Claims**

The present invention relates to a skin-treating composition comprising an aqueous phase in which urea and lactic acid are dissolved. Optionally, the composition of the invention may comprise a lipid phase, wetting or emulsifying agents and amino acids. The composition is per se beneficial for the treatment of certain abnormal skin conditions; it is also an excellent vehicle for therapeutically active drugs for the treatment of pathological skin conditions.

3,666,864
COMPOSITIONS AND METHODS FOR PRODUCING ANESTHESIA

Ross C. Terrell, Plainfield, N.J., assignor to Airco, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 877,031, Nov. 14, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 712,903, Mar. 14, 1968, now abandoned, and 712,912, Mar. 14, 1968, now abandoned. This application Aug. 31, 1970, Ser. No. 68,474
Int. Cl. A61k *13/00*
U.S. Cl. 424—342 **6 Claims**

The present invention relates to anesthetic compositions containing 1,1,2-trifluoro-2-chloro-2-bromoethyl difluoromethyl ether and 1,1,2-trifluoro-2-bromoethyl difluorochloromethyl ether, and to the method of anesthetizing warm blooded air breathing mammals by administering an effective amount of each anesthetic composition.

3,666,865
STABILIZED TRANS-DIETHYLSTILBESTROL FORMULATIONS

Nelson H. Ludwig, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of application Ser. No. 852,908, Aug. 25, 1969, now abandoned. This application May 13, 1970, Ser. No. 37,003
Int. Cl. A61k *27/00*
U.S. Cl. 424—346 **8 Claims**

The isomerization of trans-diethylstilbestrol to the inactive cis isomer in animal feed compositions is substantially inhibited by the addition of the combination of a phenolic antioxidant compound and a nitrogen compound or a base or basic salt.

3,666,866
INHALATION ANESTHETIC

Harry Louis Yale, New Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of application Ser. No. 365,173, May 5, 1964, now abandoned. This application June 2, 1966, Ser. No. 554,671
Int. Cl. A61k *13/00*
U.S. Cl. 424—350 **9 Claims**

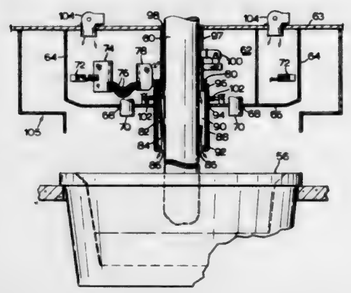
This invention relates to the compound, 3-bromo-3-chloro-1,1,1,2,2-pentafluoropropane and its use as an inhalation anesthetic.

ELECTRICAL

3,666,867
SMELTING FURNACE

Frank Walter Shaw, Welland, Ontario, Canada, assignor to Union Carbide Canada Limited, Toronto, Ontario, Canada

Filed Apr. 28, 1971, Ser. No. 138,224
Int. Cl. F27d *11/08*; **H05b** *7/10, 7/12*
U.S. Cl. 13—9 **4 Claims**



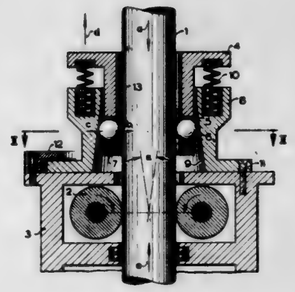
An electric smelting furnace of the open hearth type suitable for producing ferrosilicon alloy and the like is described which has improved operating efficiency and heat and dust shielding of the electrical components. The furnace includes an open hearth for containing the melt, at least one carbon electrode extending vertically into the melt and an enclosed space suspended above the furnace and enclosing the upper portion of the electrode. Current-carrying interlaced conductors extend through the enclosed space to a point adjacent the upper portion of the electrode and are connected by means of flexible conductors to vertical conductors which extend to contact plates positioned around the electrode between the enclosed space and the melt. A water-cooled jacket forms an annular chamber around the vertical conductor. Super-atmospheric pressure is maintained within the enclosed space to thereby preclude the entry of airborne foreign particles into the enclosed space.

3,666,868
SAFETY DEVICE FOR PREVENTING THE RETURN MOVEMENT OF ELECTRODES IN ELECTRIC FURNACES OR SIMILAR APPARATUSES

Herbert Pusche, Lechenich; Harry Sander, Sindorf, and Hans-Wilhelm Neuss, Bruhl, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed Jan. 4, 1971, Ser. No. 103,644
Claims priority, application Germany, Jan. 9, 1970, P 20 00 801.9
Int. Cl. H05b *7/12*
U.S. Cl. 13—15 **9 Claims**

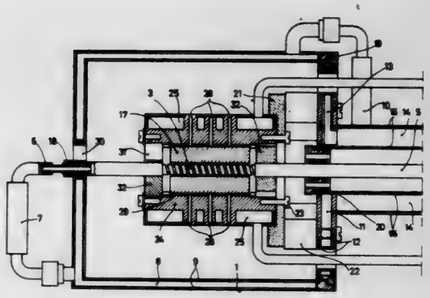
Safety device for preventing the return movement of electrodes in electric furnaces and similar furnaces or plasma burners. The safety device comprises a sleeve and a holder. The safety device comprises a sleeve and a holder. The holder is secured to the upper part of a furnace and the sleeve, supported by the holder, concentrically encircles the individual electrodes. The sleeve is formed with bores which receive electrode-clamping elements which clampingly cooperate with the electrode and the holder.



3,666,869
METHOD AND APPARATUS FOR SETTING UP A TEMPERATURE GRADIENT

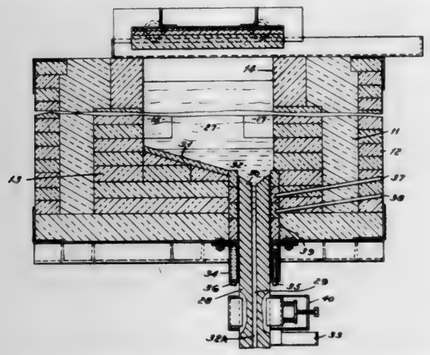
Luigi Orecchia, Gavirate, Italy, assignor to European Atomic Energy Community (Euratom), European Center Kirchberg, Luxembourg

Filed Feb. 2, 1970, Ser. No. 7,847
Claims priority, application Italy, Feb. 1, 1969, 34662 A/69
Int. Cl. H05b *5/00*
U.S. Cl. 13—20 **9 Claims**



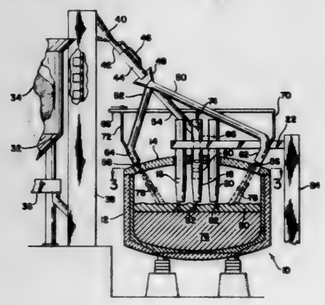
A method and apparatus for setting up a temperature gradient across a hollow member which is a good conductor of heat such as uranium carbide testpiece of simulate the thermal conditions of fuel inside a nuclear reactor. A uranium carbide hollow member has a high frequency AC heating means inside it and a cooling jacket surrounding it to provide a temperature gradient of approximately 450° C.

3,666,870
SALT BATH FURNACE FOR COPPER RECLAMATION
Eugene L. Kemper, Mt. Clemens, Mich., assignor to Upton Industries, Inc., Roseville, Mich.
Filed Apr. 19, 1971, Ser. No. 135,299
Int. Cl. H05b 3/60
U.S. Cl. 13—23 10 Claims



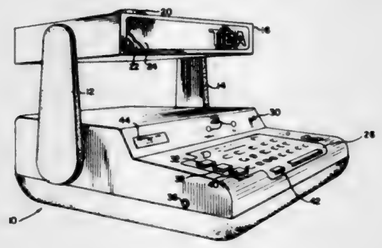
The invention relates to an electric salt bath furnace for reclamation of copper or other nonferrous metal from ferrous or other higher melting scrap containing the same. A standard type or ceramic lined salt bath furnace having electrodes for passage of current through the bath is provided with an additional electrode at the floor of the furnace. Said electrode has a discharge conduit within the same through which the molten metal is withdrawn, emerging therefrom as solid metal. During initiation of the molten metal discharge, the temperature of the entrance end of the conduit is maintained above the melting point of the metal by the heating effect of the current through the floor electrode. During the casting, the current through the floor electrode is discontinued to avoid overheating and the electrode is discontinued to avoid overheating and the electrode can be water cooled, if necessary. Sensors, preferably thermocouples, are arranged in proximity to said floor electrode to measure the temperature and to control heating and cooling of the metal passing through the discharge conduit.

3,666,871
CONTINUOUS CHARGING OF AN ELECTRIC ARC STEELMAKING FURNACE
Gee Wing Thom, Hamilton, Ontario, and Keith Wilson, Burlington, Ontario, both of Canada, assignors to The Steel Company of Canada Limited, Hamilton, Ontario, Canada and Metallgesellschaft A.G., Frankfurt am Main, Germany
Filed June 18, 1970, Ser. No. 47,449
Int. Cl. F27d 3/10
U.S. Cl. 13—33 12 Claims



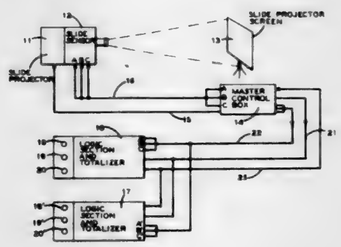
A method of steelmaking in a three phase direct arc electric furnace having a slag covered bath of molten iron bearing metal. The furnace is charged through its roof by at least three ducts and includes propelling means for directing the charge toward the bath at an angle to the horizontal in the range 40–80°.

3,666,872
TEACHING MACHINE
Carroll E. Powell, 6501 Camden Avenue, Indianapolis, Ind., and Clinton L. Carter, 9510 East Southport Road, Indianapolis, Ind.
Filed Oct. 23, 1970, Ser. No. 83,447
Int. Cl. G09b 7/04
U.S. Cl. 35—9 A 9 Claims



A teaching device having a film projector, a keyboard, a memory tape unit and logic circuitry for providing audio and visual presentations for instructional purposes. The presentation may consist of a word or object displayed on a screen which the user would identify by pressing keys on the keyboard. This response is compared with the correct one as coded on a segment of film. The memory tape unit records any auditory presentation and any spoken response by the user for comparison purposes, such as would be desired for learning of a language. Many presentations of the ways in which the machine is used permits it to be adapted to the proficiency of each user.

3,666,873
SELECTION APPARATUS AND CIRCUITRY
Ralph M. Pincus, 384 Elliot Place, Paramus, N.J.
Filed Mar. 16, 1970, Ser. No. 19,742
Int. Cl. G09b 5/00
U.S. Cl. 35—48 R 20 Claims

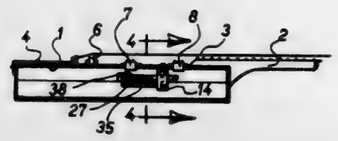


This invention is related to a method, apparatus and circuitry for enabling various competitors to determine between themselves and by virtue of a counting apparatus the correctness or incorrectness of the selection or the time required to make the selection of some display events or the like of which one display is correct and the others incorrect.

The selections are controlled from consoles each having a number of selector units corresponding to the number of possible choices from any intelligence displayed. A correct choice from one control unit in any one console will temporarily inhibit all other consoles through a master control unit and a registration of the correct selection will be made.

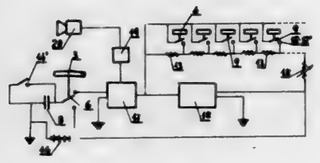
In a preferred form the invention provisions can be made whereby reponse time testing can be utilized, as well as aptitude testing, for those individuals operating at different consoles. The apparatus is particularly adapted for educational purposes, aptitude testing, scholastical testing, response time testing and serves as programmable teacher for numerous purposes.

3,666,874
TUNING FORK FOR ELECTRICALLY AMPLIFIED STRING INSTRUMENTS
Clement Labbe, 7600 Molson Street, Apt. 26, Montreal 453, Quebec, Canada
Filed May 27, 1971, Ser. No. 147,336
Int. Cl. G10h 1/00
U.S. Cl. 84—1.01 11 Claims



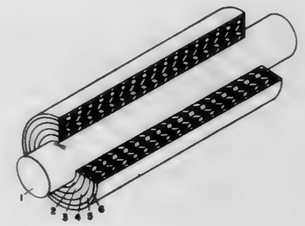
A tuning fork is mounted inside the body of an electric guitar or the like electric string instrument, adjacent a microphone thereof and manual means are provided to set the tuning fork in vibration. The sound emitted thereby is amplified by the sound amplifying system of the musical instrument, so as to be clearly audible by the musician, even when exposed to noise or sounds of other instruments in an orchestra or other music ensemble. The tuning of the instrument is therefore much facilitated. The sound emitted by the tuning fork can be easily adjusted as to its volume. The tuning fork can be stopped from vibrating. The assembly can be mounted in any existing type of electric guitars, mandolins, banjos, violins and the like electronically sound amplified string instruments having a microphone underneath the strings and mounted in the sound board.

3,666,875
ELECTRONICALLY OPERATED STRINGED INSTRUMENTS
Mario Ranzato, Via Amendola n. 2/2, 17100 Savona, Italy
Filed July 7, 1970, Ser. No. 52,960
Claims priority, application Italy, July 11, 1969, 49303 A/69; June 10, 1970, 12735 A/70
Int. Cl. G10h 3/00
U.S. Cl. 84—1.13 3 Claims



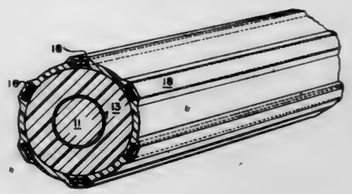
Stringed instruments such as the guitar, mandolin, contrabass and piano are operated electronically instead of by hand, plectrum or percussion. Circuitry is provided for operation and control. The instruments are otherwise conventionally constructed.

3,666,876
NOVEL COMPOSITIONS WITH CONTROLLED ELECTRICAL PROPERTIES
Eric O. Forster, Scotch Plains, N.J., assignor to Esso Research and Engineering Company
Continuation-in-part of application Ser. No. 678,655, Oct. 27, 1967, now abandoned. This application July 17, 1970, Ser. No. 55,776
Int. Cl. H01b 9/02
U.S. Cl. 174—36 4 Claims



An electrical conductor shielded with an insulating coating comprising a semi-conductive material of a polymer having a dielectric constant of at least 2.0 and a filler selected from the group consisting of electrically conductive metals and their alloys, said filler having a particle size range of about 0.05 to about 50 microns, said particles having an approximately linear distribution of particle size with an average particle size of about 1 to about 20 microns.

3,666,877
SHIELDED CABLE
Edwin H. Arnaudin, Jr., Eden, N.C., and William F. Morrison, Marion, Ind., assignors to Anaconda Wire and Cable Company
Filed May 10, 1971, Ser. No. 141,905
Int. Cl. H01b 9/02
U.S. Cl. 174—115 8 Claims

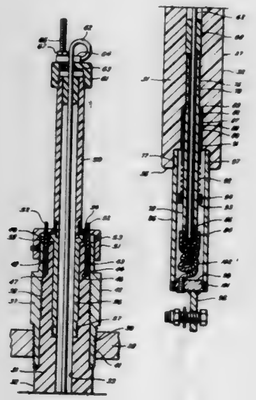


An electric power cable with a semiconducting jacket has drain conductors in the form of thin metallic strips embedded in the jacket and firmly bonded to it by means of an adhesive coating.

3,666,878
HIGH-VOLTAGE ENTRANCE BUSHING FOR AN ELECTRIC TREATER
Delber W. Turner, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.
Filed Aug. 19, 1971, Ser. No. 173,198
Int. Cl. H01b 17/26
U.S. Cl. 174—152 R 18 Claims

An entrance bushing for an electric treater subject to high voltage, temperature and pressure operating conditions. The bushing mounts in the treater by a threaded adapter on one end of an interiorly extending cylindrical Teflon member. First and second sleeves with closed ends are threaded into

the member to extend coaxially from a longitudinal passage receiving an electrical conductor connected between an external power source and internal electrical treater components. Any fluid leaking between the adapter and member is vented exteriorly of the first sleeve and passage. The second sleeve is permanently bonded and sealed to the

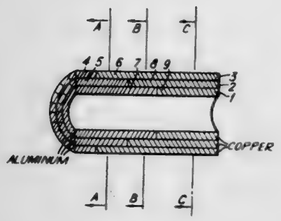


member by a polymer sealing element (fluorinated ethylene propylene resin) compressed between interengaged threads to exclude voids and mechanical-thermal induced seal disruption. A third sleeve encloses the second sleeve with an electrical interconnection provided by a flexible lead to isolate the sealing element from mechanical impacts.

3,666,879
POWER CABLE

Christian Worm Hirsch, Lysakfr, and John Normann Johnsen, Oslo, both of Norway, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 20, 1970, Ser. No. 82,248
Claims priority, application Norway, Feb. 6, 1970, 417/70; Nov. 8, 1969, 4437/69
Int. Cl. H01b 5/08
U.S. Cl. 174—128 **9 Claims**

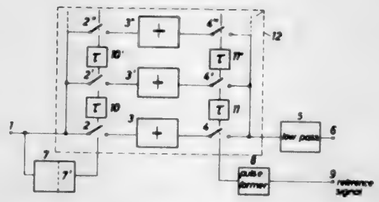


The geometric dimensions and power losses of a power cable are maintained constant along its length, notwithstanding changing ambient thermal conditions. This is made possible by changing the conductor material at different locations, for example, copper to aluminum, having different thermal resistivity. The sections of different conductor material are joined by conventional techniques such as welding, soldering, etc. Copper is used at the ends to simplify splicing.

3,666,880
CIRCUIT ARRANGEMENT FOR THE CORRECTION OF TIME ERRORS IN ELECTRICAL SIGNALS RECEIVED FROM AN INFORMATION CARRIER

Gerhard Krause, Darmstadt, Germany, assignor to Fernseh GmbH, Darmstadt, Germany

Filed Apr. 25, 1969, Ser. No. 819,177
Claims priority, application Germany, May 20, 1968, P 17 74 302.1
Int. Cl. H04n 9/02
U.S. Cl. 178—5.2 R **10 Claims**

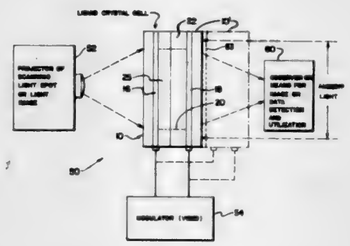


In a color TV system preferably using a tape for storing information carrying signals, which signals are color TV signals, a circuit for correcting time errors in the signals removed from said information storing means, comprising storage means, means for producing read-in pulses from the color burst of the TV signals, the read-in pulses containing said time errors, switch means connecting the read-in pulse producing means to the storage means for inserting the instantaneous value of the information carrying signals into the storage means at the rate of the read-in pulses, means for producing read-out pulses from a reference signal which is free from such time errors, switch means connecting the read-out pulse producing means to the storage means for reading out the information in the storage means at the rate of the read-out pulses and output means for receiving the time-error free information containing signals.

3,666,881
ELECTRO-OPTICAL DISPLAY DEVICE EMPLOYING LIQUID CRYSTALS

Richard J. Stein, 5 Elm Street, Great Neck, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,602
Int. Cl. H04n 9/12; G02f 1/28
U.S. Cl. 178—5.4 BD **12 Claims**

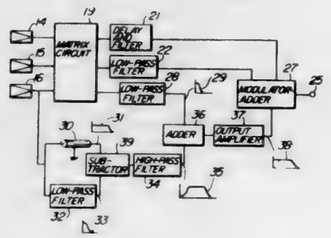


An electro-optical display system comprises a display screen including one or more juxtaposed sets of nematic liquid crystal and photoconductive layers bounded by transparent electrodes. The screen is scanned by scanning light while modulated bias voltages are applied across the liquid crystal and photoconductive layers. Images appearing on the screen are viewable by reflected ambient light to which the photoconductive layers are transparent. Colored dyes mixed with the nematic liquid crystals result in colored images on the screen. Cholesteric liquid crystal mixed with the nematic liquid crystal retains the images on the screen for predetermined periods of time. The images are viewable at either side of the screen. The screen can be internally illuminated.

3,666,882
COLOR TELEVISION PICK-UP DEVICE WITH SYNTHESIZED LUMINENCE SIGNAL

Shigeru Nishimura, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed July 25, 1969, Ser. No. 844,936
Claims priority, application Japan, July 31, 1968, 43/54728
Int. Cl. H04n 9/06
U.S. Cl. 178—5.4 TC **4 Claims**

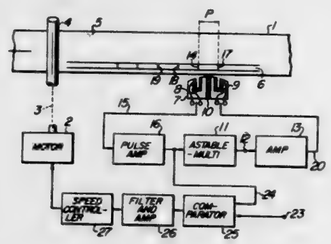


A pick-up device composed of three, "red," "green" and "blue" pick-up tubes without using any luminance signal pick-up tube, wherein a "green" signal is employed as a luminance signal in view of the fact that the "green" signal characteristic is represented by a curve similar to a human visibility curve, and wherein the apparent horizontal resolution can be prevented from being decreased even when signals available from the three pick-up tubes are deviated from each other due to unsatisfactory registration of these signals.

3,666,883
SPEED DETECTION AND CONTROL

Osahiko Yano, Kadoma; Takahiro Nakamura, Neyagawa, and Masahiro Deguchi, Yao, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 30, 1970, Ser. No. 33,265
Claims priority, application Japan, May 8, 1969, 44/36860; May 30, 1969, 44/43793; June 10, 1969, 44/46665
Int. Cl. G11b 5/26, 15/52; H04n 5/78
U.S. Cl. 178—6.6 P **8 Claims**

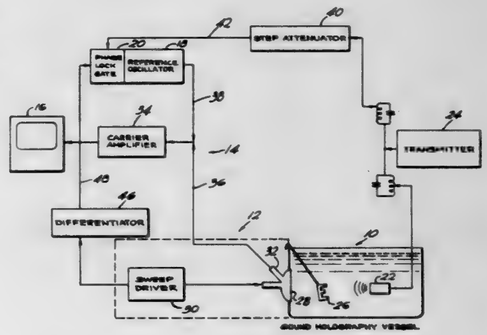


A method of speed detection comprising the steps of recording pulse signals in a travelling tape or rotating body of magnetic material with an equal distance and reproducing the recorded pulse signals to detect the speed of the tape or the body. Speed control utilizing the above detection means comprises the step of comparing the phases of said reproduced pulse signals and a reference signal of a predetermined frequency to control the tape or body to move at a predetermined speed.

3,666,884
ELECTRONIC SIMULATION OF VARIABLE INCLINATION REFERENCE BEAM FOR ACOUSTICAL HOLOGRAPHY

Harold L. Chambers, Royal Oak; Emanuel Marom, Oak Park, and Rolf K. Mueller, Brighton, all of Mich., assignors to The Bendix Corporation

Filed Jan. 24, 1969, Ser. No. 793,777
Int. Cl. H04n 7/18
U.S. Cl. 178—6.8 **9 Claims**

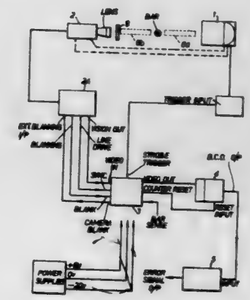


A method and apparatus for electronically simulating a plane wave reference beam of variable inclination for use in an acoustical holography system. The invention is based on the principle that the phase of a plane wave changes linearly over the plane of detection. In systems where the detection is obtained by scanning the aperture in the plane of detection, as in certain acoustical holography setups, the required reference beam simulating a plane wave can be generated by an electronic signal having a frequency slightly different from the one used to irradiate the object. The apparatus can be adjusted to obtain a simulated reference beam of any desired angle of incidence up to 90°.

3,666,885
MEASURING APPARATUS AND METHODS UTILIZING A SINGLE LINE SCAN TELEVISION CAMERA

Brian Hemsley, 71, Crimicar Drive, Fulwood Sheffield, Yorkshire; Lionel Frederick Hinbest, 53, Grenfolds Road, Grenoside, near Sheffield, and Joseph William Marshall, 55, Wollaton Avenue, Broadway, Sheffield, Yorkshire, all of England

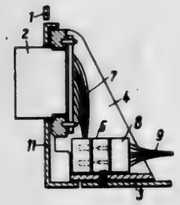
Filed Jan. 3, 1969, Ser. No. 826,734
Claims priority, application Great Britain, Jan. 4, 1968, 700/68
Int. Cl. H04n 7/02, 7/18
U.S. Cl. 178—6.8 **15 Claims**



Method of detecting a dimension of an elongated vibrating object being rolled, using a television camera, which method

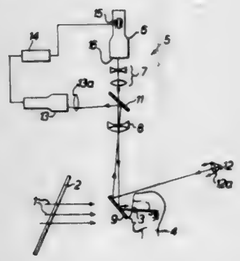
comprises periodically directing a light pulse onto an object to form a shadow image thereof in the camera, temporarily stopping the scanning beam of the camera for a period including an interval immediately following each pulse, repeatedly scanning the beam in the direction to be measured to provide video signals from successive lines, selecting a video signal corresponding to one line during each interval when the beam is operative, and deriving from the selected signal another signal having a value representative of the dimension to be measured.

3,666,886
TELEVISION CAMERA
Hans-Dieter Schneider, Gross-Gerau, Germany, assignor to Fernseh GmbH, Darmstadt, Germany
Filed Apr. 15, 1970, Ser. No. 29,056
Claims priority, application Germany, Apr. 19, 1969, P 19 20 007.8; Sept. 24, 1969, G 69 37 417.0
Int. Cl. H01j *29/02, 29/86*
U.S. Cl. 178—7.8 **11 Claims**



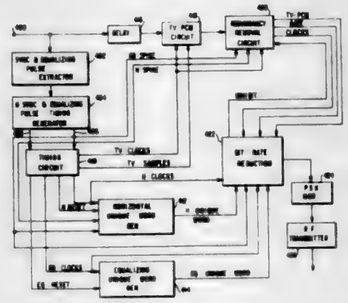
The television camera is disposed in a housing which has a recess for receiving a detachable adapter for a disconnectable junction cable of the camera. The camera plug is connected to a plurality of flexible leads, and projects loosely into the recess. The cable adapter comprises a bracket which supports a cable connector plug and an adapter socket. The camera plug is inserted in the adapter socket which is electrically connected with the cable connector plug.

3,666,887
HEAD-UP DISPLAYS
Michael H. Freeman, Denbigh Court, England, assignor to Pilkington Perkin-Elmer Limited, Liverpool, England
Filed June 24, 1979, Ser. No. 836,048
Claims priority, application Great Britain, June 29, 1968, 31,225/68
Int. Cl. H04n *7/02*
U.S. Cl. 178—7.85 **6 Claims**



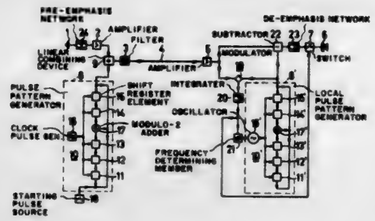
This invention relates to the provision of a head-up display system for use in vehicles such as aircraft or land vehicles. A head-up display system superimposes selected visual information on the field of view so that an observer can see not only the view but also the visual information without having to look down at a dial or the like. In the present system there is provided a source of light information signals and means for superimposing an image of the said signals on the field of view of the observer together with means for detecting any angular displacement of the superimposed image with respect to a predetermined position and for producing a control signal proportional to the displacement. Finally there is provided a means responsive to the control signal to adjust the orientation of the light information signals so that the position of the signals in the image viewed by the observer remains more or less constant.

3,666,888
PCM-TV SYSTEM USING A UNIQUE WORD FOR HORIZONTAL TIME SYNCHRONIZATION
Tadahiro Sekimoto, Tokyo, Japan, assignor to Communications Satellite Corporation
Filed June 26, 1968, Ser. No. 740,310
Int. Cl. H04n *5/38*
U.S. Cl. 178—69.5 TV **16 Claims**



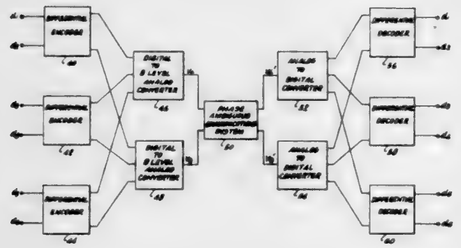
In a communication system for transmitting and receiving television information by means of digital codes, the horizontal sync pulses are transformed into a code word, thus leaving time slots in the transmitted waveform which are unoccupied by the digital picture information or the code word representing horizontal synchronization. These time slits are used to transmit additional information such as multiple sound or data channels, or bandwidth compression information. In the case of multiple sound or data channels, the channels are multiplexed and coded and transmitted during the available time slots at a bit rate which is the same as the digital picture information bit rate. In the case of bandwidth compression, an address code word is annexed to the single horizontal synchronization code word to provide an address for each line of picture information in a television frame. With all lines identified by addresses, the system compares each line of picture information with a prior line of picture information having the same address and transmits to the receiver only those lines which represent changes of a certain degree from a prior frame. As a result, redundant picture information is not transmitted thereby reducing the total amount of information transmitted, allowing the transmitter to operate at a reduced bit rate. The receiver stores all lines of information and the storage is up-dated by the received non-redundant lines of picture information. During each frame period, the receiver extracts from storage the redundant lines necessary to complete a picture frame.

3,666,889
TRANSMISSION SYSTEM
Leon Eduard Zegers; Jan Kuilman, and Wilfred Andre Maria Saijders, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Continuation of application Ser. No. 663,783, Aug. 28, 1967, now abandoned. This application July 30, 1970, Ser. No. 64,121
Claims priority, application Netherlands, Aug. 27, 1966, 6612113; Feb. 24, 1967, 6702874
Int. Cl. H04j *9/00*
U.S. Cl. 179—15 BM **27 Claims**



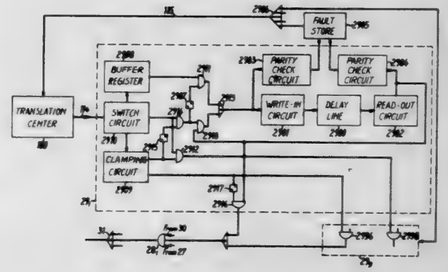
A transmission system comprising a transmitter and a receiver for transmitting information in a prescribed frequency band and transmitters and receivers to be used in said system. The transmission of the information signals may in particular be effected directly or after modulation, for example, amplitude modulation, frequency modulation or pulse modulation. The overall information to be transmitted originates from a main information source and an associated auxiliary information source having a smaller information content than the main information source.

3,666,890
DIFFERENTIAL CODING SYSTEM AND METHOD
Fred B. Wade, Ventura, Calif., assignor to American Data Systems, Inc., Canoga Park, Calif.
Filed Nov. 27, 1970, Ser. No. 93,429
Int. Cl. H04j *3/04*
U.S. Cl. 179—15 AP **30 Claims**



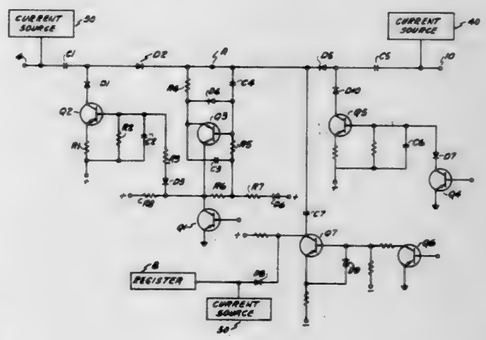
A differential coding system and method for use in a data communications system employing phase ambiguous coherent detection. The system and method includes differentially encoding a plurality of dibits through a plurality of differential encoders and corresponding outputs of the encoders into new dibit combinations before converting the new combinations to analog signals for transmission. In the receiving decoder, the process is reversed to recover the original dibits.

3,666,891
TRANSLATOR UNIT FOR TELEPHONE EXCHANGE
Christian H. Le Bellec, 21, rue Joseph Morand, Lannion, France
Filed June 29, 1970, Ser. No. 50,804
Claims priority, application France, June 30, 1969, 6922060
Int. Cl. H04q *3/47*
U.S. Cl. 179—18 ET **2 Claims**



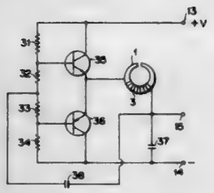
Translator of directory numbers for telephone switching network. The directory number is divided into a first part and second part which are stored in two registers. The translator essentially comprises an analysis store and a plurality of translation stores which are circulating stores all synchronous with one another. The analysis store has written therein all the values assumable by the first part number and the second part number and, associated with each of said values, the address of a given translation store. Two comparisons are made, the first between the first part of the directory number to be translated and its assumable values which results in the selection of the translation store having as its address the address associated with said first part. The second comparison is between the second part of the directory number to be translated and its assumable values which results in a read-out signal applied to the selected translation store.

3,666,892
SPEECH GATE
Alfred M. Hestad, Chicago, Ill., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed May 13, 1970, Ser. No. 36,785
Int. Cl. H04q *1/28*
U.S. Cl. 179—77 **8 Claims**



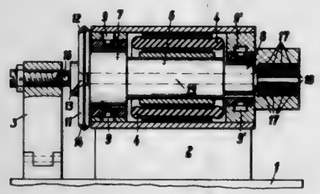
An audio frequency gate is disclosed for use in an electronic PABX. In particular, the gate enables the efficient transmission of speech and multi-frequency tones between components which are controlled by dc potentials without disrupting associated dc controls.

3,666,893
MAGNETIC ERASER WITH HEAD WINDING AS PART OF OSCILLATOR CIRCUIT
Tatsuo Fujiwara, Tokyo, and Hiromi Kusakabe, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Sept. 22, 1970, Ser. No. 74,259
Claims priority, application Japan, Sept. 25, 1969, 44/76103; Nov. 12, 1969, 44/90053; Nov. 19, 1969, 44/109195; Oct. 3, 1969, 44/94139; June 19, 1970, 45/53129
Int. Cl. G11b 5/02; H03b 5/12, 5/04
U.S. Cl. 179—100.2 D 12 Claims



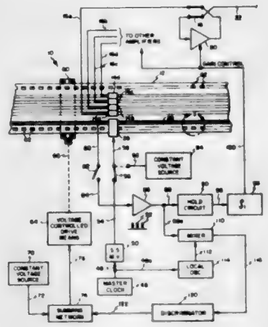
A magnetic eraser for tape recorders wherein there are received in a single casing an erase head provided with an erase coil and an oscillator for supplying the erase head with erase current using the erase coil concurrently as an oscillation coil. The circuit includes at least two transistors and a plurality of resistance elements which are interconnected so as to be particularly suitable for construction by integrated circuit techniques, the circuit being connected to the erase coil at least by a pair of capacitors.

3,666,894
DEVICE FOR THE RECORDING AND PLAYBACK OF SIGNALS ON MAGNETIC TAPE
Rudolf Prochnow, Darmstadt-Eberstadt, Germany, assignor to Fernseh GmbH, Darmstadt, Germany
Continuation of application Ser. No. 786,872, Dec. 26, 1968, now Patent No. 3,591,732. This application Jan. 19, 1971, Ser. No. 107,644. The portion of the term of the patent subsequent to July 6, 1988, has been disclaimed
Int. Cl. G11b 5/50
U.S. Cl. 179—100.2 T 5 Claims



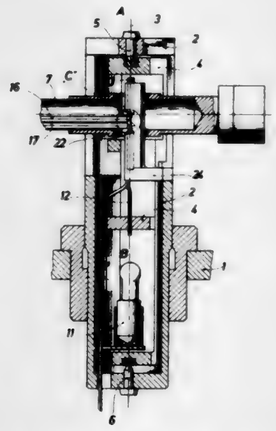
A head-wheel, carrying recording and pick-up heads for a magnetic tape recording and play-back system, is mounted on the rotor shaft of a drive motor, together with rotatable electric signal transfer means to constitute a rotor assembly which can be, as a unit, axially separated from the stator of the drive motor for the rotor assembly. The rotatable signal transfer means of the rotor are disposed in proximity of the head-wheel and have a stepped bearing dimension fitting into the supporting bearing of cooperating stationary signal transfer means of the stator.

3,666,895
FILM RECORDED VELOCITY AND DYNAMIC GAIN CONTROL MECHANISM
John C. McKechnie, Maitland, Fla., assignor to The United States of America as represented by the Secretary of the Navy
Filed Mar. 9, 1971, Ser. No. 122,400
Int. Cl. G11b 7/00, 15/44, 77/32
U.S. Cl. 179—100.3 D 5 Claims



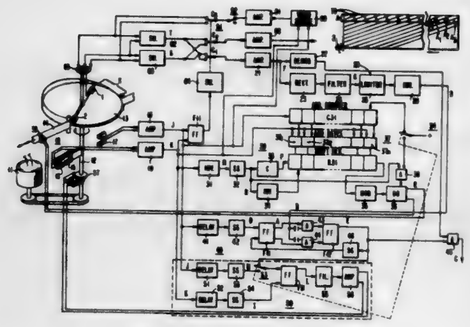
A film drive seed and gain regulated record and playback apparatus records a control track simultaneously with other parallel data tracks. The control track comprises a series of bars recorded at a predetermined frequency and having density representing the dynamic gain range of the recorded data. After processing, the control track is monitored and variations in density utilized to produce playback gain control signals for maintaining system dynamic range. Frequency of the bars during playback is compared with a known frequency by a mixer and a discriminator to provide speed control voltage signals.

3,666,896
LIGHT ELECTRIC TONE PICKUP
Eckhard Laue, St. Georgen, Black Forest, Germany, assignor to Dual Gerbruder Steidinger, St. Georgen, Black Forest, Germany
Filed Nov. 25, 1969, Ser. No. 879,693
Claims priority, application Germany, Nov. 26, 1968, P 18 10 984.7
Int. Cl. G11b 3/10; H04r 5/00, 23/00
U.S. Cl. 179—100.4 R 3 Claims



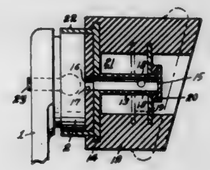
In a light electric tone pick-up, a tone arm, which comprises an immovable tone arm holding member which holds the tone arm at one end pivotally about a vertical and a horizontal axis. A light beam control is disposed at the other end of the tone arm and is connected with a sensing needle for a tone modulated groove. A light source is immovably disposed adjacent to the vertical tone-arm pivot axis. A first and a second light guide is secured in the tone arm, and each is directed with the cross-sectional face of one of its ends towards the light-beam control member and terminates with the cross-sectional face of the other of its ends close to the horizontal and vertical tone arm pivot axis in a radial plane, disposed spaced apart from each other, to the vertical tone arm pivot axis. Two lightelectric transmitters are immovably disposed adjacent the vertical tone-arm pivot axis and at a close distance opposite the cross-sectional faces of the light guides. A third light guide is secured in the tone arm and is directed with one of its ends towards the light-beam control member and terminates with the cross-sectional face of the other of its ends close to the horizontal and vertical tone arm pivot axis in a radial plane to the vertical tone arm swinging axis. Also, a fourth light guide is directed with one of its ends towards said light source and terminates with the other of its ends at a slight distance opposite the cross-sectional face of the fourth light guide.

3,666,897
RECORDING AND REPRODUCING SYSTEM WITH VIDEO HEADS READING BOTH INFORMATION DATA FROM OBLIQUE TRACKS AND ADDRESS DATA FROM THE LONGITUDINAL CONTROL TRACK
Jerome D. Harr, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 17, 1969, Ser. No. 885,765
Int. Cl. G11b 5/52
U.S. Cl. 179—100.2 T 15 Claims



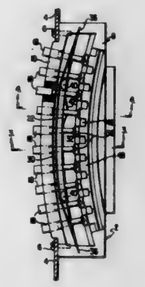
An elongated tape recording and reproducing system wherein a longitudinal control track is prerecorded on the edge of the tape either with a recording transducer, such as a magnetic head, as part of the system or off-line. After the control track is recorded, oblique video tracks are recorded on the tape with two video transducers or heads spaced 180° apart and traveling obliquely to the recorded control track. During reading of the video information, one obliquely traveling video head reads the address on the longitudinal recorded control track while the other obliquely traveling head reads the video information on the obliquely recorded video track. After the video heads have traveled 180°, their roles are reversed. That is, the video head which was reading the video information on the obliquely recorded track, now reads the address on the longitudinal recorded control track. In addition, the spacings between the address data on the control track serve as servo information for maintaining the tape and video heads in alignment.

3,666,898
QUIET LISTEN/TALK ADAPTORS FOR HANDSETS OR OTHER TYPICAL PHONES
Peter B. Ferrara, Bel Air, Md., assignor to The United States of America as represented by the Secretary of the Army
Filed Dec. 10, 1970, Ser. No. 96,797
Int. Cl. H04r 1/10
U.S. Cl. 179—180 5 Claims



A sound attenuating adaptor for detachable connection to the receiver of a telephone handset consisting of a cap of resilient sound absorbing material which slips over the receiver of the handset. The cap is provided with a valve which, when the adaptor is pressed to a user's ear, deforms, causing the valve to open and permit the user to hear sound emitted from the receiver. The valve per se may be a slit in the outer end of the cap or a disc embedded therein, which slides on a tube when the cap is deformed to expose holes and allow escape of sound.

3,666,899
PUSH BUTTON SWITCHES WITH INTERLOCKING DIAPHRAGM CONTACT
Douglas A. Kerr, Alburquerque, N. Mex., assignor to Rolamite, Incorporated, San Francisco, Calif.
Filed Jan. 4, 1971, Ser. No. 103,422
Int. Cl. H01h 9/26, 1/48
U.S. Cl. 200—5 E 11 Claims

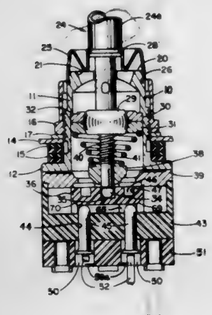


A multiple push button assembly in which the buttons are arranged in a row. The buttons are normally biased outwardly relative to the panel in which they are supported, but when one of the buttons is pushed inwardly, it is latched and remains depressed until another button in the row is depressed. Movement of the other button releases the latch from engagement with the first button, allowing it to move outwardly to its initial position. Thus, only one button in the row remains depressed at a time. Latching of the buttons is accomplished by a thin, resiliently flexible band, which is mounted in longitudinal compression against a curved guide through which the buttons project. The band also serves as a contact element.

3,666,900
PUSH BUTTON SWITCH OPERATING MEANS WITH IMPROVED JOYSTICK AND CAM STRUCTURE

Richard C. Rothweiler, Asheville, N.C.; Carl B. Sohns, Whitefish Bay, and John A. Washburn, Milwaukee, both of Wis., assignors to Square D Company, Park Ridge, Ill.

Continuation of application Ser. No. 886,290, Dec. 18, 1969, now abandoned. This application Feb. 8, 1971, Ser. No. 113,645
Int. Cl. H01h 25/04
U.S. Cl. 200—6 A 8 Claims

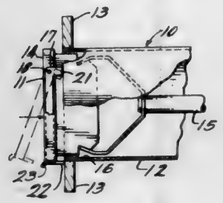


An operating arm pivotably movable selectively in opposite directions along two mutually-perpendicular paths of movement about an intermediate pivot point drives a sliding cam for operating linear reciprocative operators of a plurality of self-restoring switches by means of translating pins.

3,666,901
SWITCH ACTUATOR LOCK FOR PUSH BUTTON SWITCHES

Rudolf Weinhart, Inglewood, Calif., assignor to Master Specialties Company, Costa Mesa, Calif.

Filed Feb. 17, 1971, Ser. No. 116,084
Int. Cl. H01h 27/00
U.S. Cl. 200—42 T 7 Claims

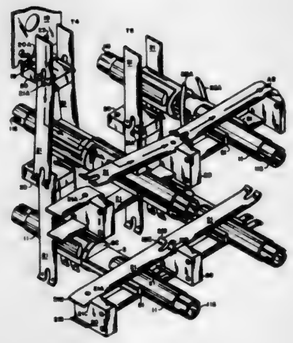


An improved lock for preventing accidental actuation of a push button switch. The switch includes an actuating button mounted to slide in a housing between a released position and an actuated position. A substantially U-shaped locking member is attached to the sides of the button to pivot between locked and released positions. When the locking member is in the locked position, tabs project towards the housing to prohibit movement of the button to the actuated position by abutting the housing. A lip projects from the locking member to facilitate pivoting of the locking member to the released position.

3,666,902
SWITCH SYSTEM

Kenneth Owen, Springfield, and Stephen W. Kershner, Falls Church, both of Va., assignors to Delta Electronics Inc., Alexandria, Va.

Filed Sept. 2, 1970, Ser. No. 68,971
Int. Cl. H01h 63/00, 19/36
U.S. Cl. 200—153 S 28 Claims

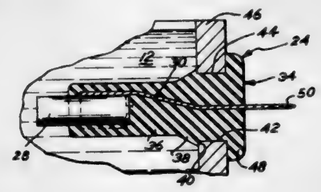


A switch system for connecting any one of a plurality of transmitters to any one of a plurality of antennas by providing a base structure on which identical module switch elements, made of conductive resilient cantilever line sections, are mounted on the front and back of a base to provide continuous vertical line conductor elements on the back connected to transmitter terminals and provide continuous horizontal line conductor sections on the front connected to antenna terminals, rotatably mounted rotors having flat conductive cam sections at right angles to each other engage the cantilevers and cross connect any one of the transmitter lines to any one of the crossing antenna lines. Each module includes a face plate carrying an insulator supporting a pair of resilient conductive cantilever line sections embracing the cam sections of the rotor to connect with similar resilient conductive cantilever sections for line continuing relation or for cross connection by the cooperating rotatably mounted rotors insulatingly supported.

3,666,903
FLUID LEVEL DETECTOR

George Thomas Bata; Winford Boyd Carruth, and Thomas Francis Gosnell, all of Baltimore, Md., assignors to The Bendix Corporation

Filed Nov. 23, 1970, Ser. No. 91,695
Int. Cl. H01h 29/00
U.S. Cl. 200—61.05 3 Claims

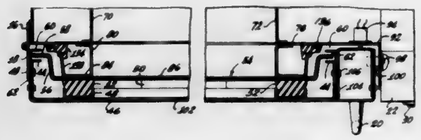


A fluid level detector for use in a master cylinder to determine if the brake fluid has dropped below a predetermined level. The fluid level detector is a three piece construction with a probe being made from a conductive, anti-corrosive substance, such as carbon, that is not subject to electrolysis formations. A retaining member formed from a non-conductive, rubber-like substance is inserted through a hole in the side of the master cylinder to secure the probe in a fixed position and, simultaneously, seals the hole in the side of the master cylinder. A conductive metal piece which extends into the retainer provides a connection to the probe from the outside of the master cylinder. As the fluid in the master cylinder drops below and out-of-contact with the probe, the resistance between the probe and the master cylinder housing will approach infinity. As the resistance approaches infinity a signal will be transmitted to an indicator to alert the operator of a low fluid level in the master cylinder.

3,666,904
MICROWAVE OVEN AND DOOR STRUCTURE FOR MINIMIZING LEAKAGE

Edward Z. Krajewski, Camarillo, Calif., assignor to Bowmar/Tic, Inc., Newbury Park, Calif.

Filed Apr. 12, 1971, Ser. No. 133,307
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 7 Claims



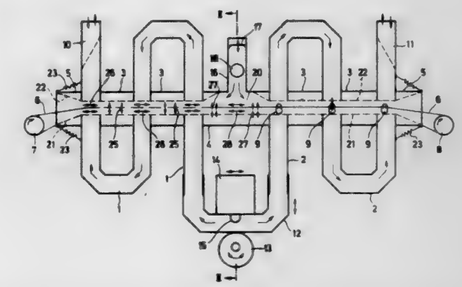
An oven structure has a front flange plate on which is a raised member that frames the oven cavity, and which has an outermost surface parallel to the flange plate. A door hinged at one end to the oven structure carries a floating pan which, via biasing elements shown as compressed rubber strips, is normally biased against a stop when the door is opened. The outer face of the pan is coated with dielectric material. When the door is closed, the coated face of the pan is brought in face-to-face engagement with the outermost surface of the frame member. The inward travel of the door upon closure causes the rubber strips to be further compressed and the lip of the pan to move free of the stop. The pan is sufficiently thin to conform to the outermost surfaces of the frame member contacted thereby, thus permitting a capacitive seal to be formed which is effective to keep leakage around the door edges to less than a milliwatt of power. In addition, the portion of the frame adjacent the flange plate is surrounded by lossy gasket material in which is embedded ferrite or other suitable microwave energy absorbing material. A door closure mechanism is shown that employs a cam which operates in conjunction with the pan biasing elements to effect desired latching of the door.

3,666,905
METHOD AND APPARATUS FOR DIELECTRIC HEATING

Paul C. Muller, Felsenau, Switzerland, and Karl H. Schneider, Opladen, Germany, assignors to Messrs. Paul Troester Maschinenbau, Hannover-Wulfel, Germany

Filed Apr. 24, 1970, Ser. No. 31,603
Claims priority, application Germany, Apr. 25, 1969, P 19 21 065.2
Int. Cl. H05b 5/00
U.S. Cl. 219—10.55 10 Claims

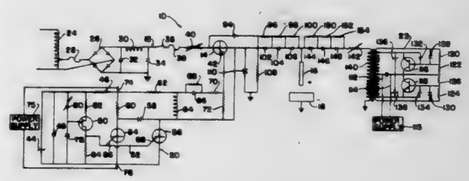
A method and apparatus for heating plastics or rubber articles of complex shape in which the articles are moved on a conveyor belt through a hollow waveguide excited with a microwave energy flow or field acting in one direction. A sinuous hollow waveguide perpendicularly communicates and intersects with the first waveguide at a plurality of spaced apart intervals and is excited with the microwave energy flow acting in a direction perpendicular to the first direction. The articles are thus exposed alternately to staggered energy flows acting perpendicularly of one another, whereby to improve the efficiency of heating and avoid local hot spots.



3,666,906
CARBIDE DEPOSITION STRUCTURE AND METHOD

Thomas D. Byrne, 4455 Knapp Avenue, N.E., Grand Rapids, Mich.

Continuation-in-part of application Ser. No. 543,350, Apr. 18, 1966, now abandoned. This application June 4, 1969, Ser. No. 840,092
Int. Cl. B23k 9/04
U.S. Cl. 219—76 12 Claims



The carbide deposition structure of the invention includes a power supply connected in series with a switch across a carbide electrode and workpiece, a low voltage, low frequency oscillator operably associated with the switch for turning the switch on and off and a high frequency, high voltage oscillator for initiating an arc between the electrode and workpiece while the switch is turned on, after which the arc is sustained by the power supply until the switch is turned off. The method of carbide deposition disclosed includes connecting a power supply across a workpiece and a carbide electrode through a switch, closing and opening the switch by means of a low voltage, low frequency signal and initiating an arc between the electrode and workpiece during the time the switch is closed by means of a high voltage, high frequency source of electrical energy and sustaining the arc between the electrode and workpiece until the switch is subsequently opened.

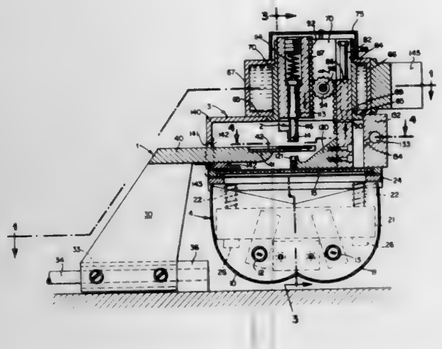
3,666,907
APPARATUS FOR ASSEMBLING FLAT PACKS

Reginald F. Nugent, Yardley, Pa., and George P. Snyder, Trenton, N.J., assignors to Time Research Laboratories, Inc., Pennington, N.J.

Filed Nov. 6, 1969, Ser. No. 874,506
Int. Cl. B23k 1/02
U.S. Cl. 219—85 8 Claims

Apparatus for connecting the bases and lids of flat packs including a dry box, flat pack handling mechanism inside of the box, an infra-red heat source outside of the box with its

energy transmitted through the window means to flat packs secured by the handling mechanism inside the box, a shuttle to take the flat packs in and out of the box and means to



vibrate the handling mechanism so as to apply vibratory mechanical energy to the flat packs when exposed to infrared energy.

3,666,908

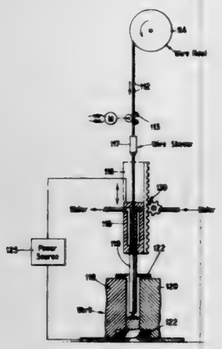
METHOD FOR VERTICAL WELDING OF ALUMINUM

Alfred Buxton Crichton, Montrose, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 039,425, May 21, 1970, now Patent No. 3,585,343. This application Mar. 31, 1971, Ser. No. 129,757

Int. Cl. B23k *9/18*

U.S. Cl. 219—73 **8 Claims**



A method for vertical welding of aluminum wherein a cavity is formed between aluminum plates by placing graphite retaining members on the outside surface thereof. At least one non-consumable guide tube is placed in the cavity and a consumable wire is passed therethrough. A halogen base flux is fed into the cavity to shield the weld puddle and to provide a medium for resistance melting. Voltage is supplied to the wire from about 40 volts and 1,300 amps to about 75 volts and 400 amps. When multiple guide tubes and wires are used, the wire is skewed prior to entry into the non-consumable guide tube and rotated as it emerges therethrough to ensure complete fusion.

3,666,909

ARRANGEMENT FOR MOUNTING, ADJUSTMENT AND MAINTENANCE OF A CYLINDER IN A HORIZONTAL POSITION FOR DEPOSITING A LAYER ON ITS SURFACE, USING THE ELECTROSLAG METHOD

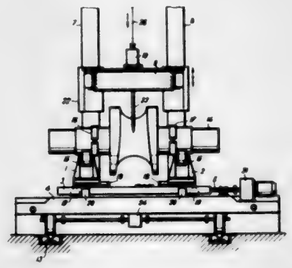
Zdenek Smitmajer; Pavel Blaskovits; Anton Krajmer, all of Bratislava, and Jiri Jebas, Chomutov, all of Czechoslovakia, assignors to Vyskumny ustav zvaracsky, odborove veduce pracovisko zvarandia, Bratislava, Czechoslovakia

Filed Mar. 10, 1970, Ser. No. 18,124

Claims priority, application Czechoslovakia, Mar. 13, 1969, 1804-69

Int. Cl. B23k *9/04*

U.S. Cl. 219—76 **2 Claims**



An arrangement for depositing a metallic layer on the surface of a cylindrical object, for instance of a grooved roll of a rolling machine or of similar objects, provided with stable supporting means of a turn-table with the welding on device, and with a platform with supporting posts for supporting the cylinder in the horizontal position, adjustable in direction of the longitudinal axis of the cylinder, with the possibility to withdraw the whole platform from the welding-on position below the welding-on device.

3,666,910

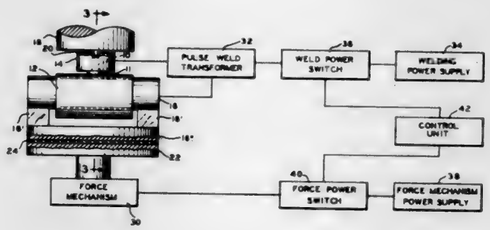
METHOD OF SOLID STATE BONDING AN ARTICLE TO A TUBE SURFACE

David G. Anderson, Bloomfield Hills, Mich., assignor to Quanta Welding Company, Troy, Mich.

Filed Feb. 3, 1971, Ser. No. 112,250

Int. Cl. B23k *11/04*

U.S. Cl. 219—107 **7 Claims**



An article of manufacture consisting of a fastener bonded to an exposed surface of a tube by a solid state pulse resistance weld at the faying interface between the fastener and the tube to form an integral unitary structure. The method of producing the unitary structure involves the utilization of unique welding structures wherein the parts being integrated are disposed in juxtaposed position followed by a time phased application of a force pulse and an electrical energy pulse to the assembled parts to produce a solid state resistance weld at the faying interface to achieve the desired structure.

3,666,911

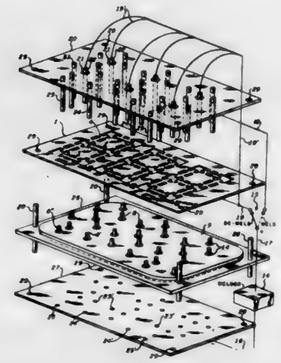
METHOD FOR MANUFACTURING PLANAR RAISED CATHODE GAS TUBES

James B. Armstrong, Phoenix, Ariz., assignor to Sperry Rand Corporation

Filed Jan. 23, 1970, Ser. No. 5,436

Int. Cl. B23k *9/00*

U.S. Cl. 219—117 **2 Claims**



A method for fabricating segmented planar raised cathode elements in an alphanumeric display gas tube employing a weld and de-weld process.

3,666,912

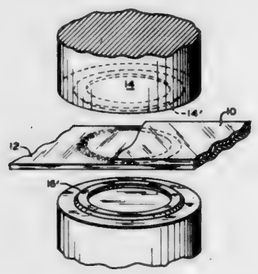
METHOD OF SOLID STATE BONDING

David G. Anderson, and John C. Parker, both of Bloomfield Hills, Mich., assignors to Quanta Welding Company, Troy, Mich.

Filed Jan. 8, 1971, Ser. No. 104,903

Int. Cl. B23k *9/00*

U.S. Cl. 219—117 **9 Claims**



An article of manufacture comprised of at least two parts of electrically conductive metal joined together in overlapped relation by a solid state resistance bond at the faying interface wherein the bond area is very precisely defined by the physical shape of the attendant electrodes. The method of bonding the parts includes the utilization of a time phase application of a force pulse and an electrical energy pulse to the assembly of the part to achieve the desired solid state pulse resistance bond.

3,666,913

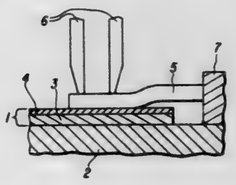
METHOD OF BONDING A COMPONENT LEAD TO A COPPER ETCHED CIRCUIT BOARD LEAD

James F. Haefling, Richardson, and Lawrence L. Meyer, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 14, 1966, Ser. No. 579,409

Int. Cl. B23k *11/20*

U.S. Cl. 219—118 **1 Claim**



This invention provides a method for bonding a copper etched circuit board lead to a component lead while eliminating blow out of the copper lead by applying an oxide to the copper lead which is relatively non-conductive at temperatures below the welding temperature but decomposible at the welding temperature. Because of the insulating properties of the oxide, a larger current passes through the component lead than the copper lead, allowing the component lead to be preheated to the bonding temperature, decomposing the oxide and thereby bonding the copper lead to the preheated component lead.

3,666,914

ELECTRICALLY HEATED DISPENSER FOR GRANULAR SUBSTANCES

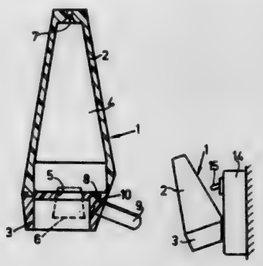
Malcolm Leonard Stephen Dean, Omapere Beach, Northland, New Zealand

Filed Aug. 19, 1970, Ser. No. 65,009

Claims priority, application New Zealand, Aug. 22, 1969, 157559

Int. Cl. H05b *3/02*; A47g *19/24*

U.S. Cl. 219—214 **7 Claims**



Dispensers for granular materials such as salt, pepper and other spices and including a container capable of enclosing the said materials therein and at least one dispensing orifice situated in the container and providing for restrained egress of said materials from the interior of the container to the exterior thereof. There is also included an electric heating means which may be wholly or partially embedded in part of the container and positioned in relation to the interior of the container such that heat when generated by said means can pass to said interior and heat granular materials when contained in the container to evaporate any moisture contained therein such that the evaporated moisture leaves the interior of the container by of the orifice. Electrical contact pins are connected to and lead from the heating means and these pins protrude generally perpendicular to a downwardly and in-

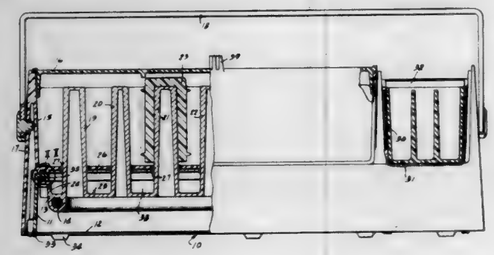
wardly inclined exterior surface of the container and are adapted to be engageable with an electric socket whereby said electric heating means can be electrically connected to a source of electric supply.

3,666,915

STEAM OR DRY HAIR CURLER HEATING APPARATUS

Robert A. De Napoli, Chicago, Ill., assignor to Northern Electric Company, Chicago, Ill.

Filed July 13, 1970, Ser. No. 54,160
Int. Cl. A45d 4/12; H05b 3/02
U.S. Cl. 219—222 12 Claims



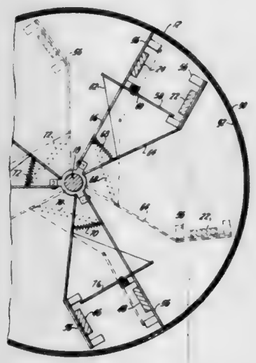
A hair curler heating apparatus providing combined heating effects so that hair curlers can be, in accordance with the preference of the user, selectively heated solely by dry heat from within or can be heated from within by dry heat and simultaneously heated from the outside by means of heated water vapor or steam to provide damp curler. The apparatus includes an electrically heated metallic base having a peripheral lip surrounding a flat, upwardly directed, water receiving, retaining and evaporating area to which a plurality of curler supporting mandrels are secured. A non-metallic chassis and housing structure to which the peripheral lip is attached in water-tight relationship supports the metallic base. A removable cover overlies the upwardly directed area and normally encloses the mandrels and any curlers thereon for retaining heated air and/or water vapor thereabout so that the curlers can be selectively heated with or without the presence of heated water vapor. A measuring cup sized to introduce an appropriate quantity of water to the upwardly directed area is provided.

3,666,916

FLUID HEATING APPARATUS

Henry W. Angelery, 19 Gwynne Court, Closter, N.J.

Filed Aug. 31, 1970, Ser. No. 68,170
Int. Cl. H05b 3/60, 1/02
U.S. Cl. 219—286 17 Claims



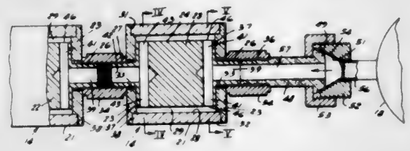
A fluid is heated as it passes through the tank of an apparatus in which one or more pairs of electrodes are provided. The fluid is heated by a current which flows between the electrodes. At least one electrode of each pair is movable so that the distance between the electrodes can be varied to modulate the current flow in accordance with the quantity of heat to be added to the fluid. Further modulation of the current can be accomplished by placing an electrically insulating shutter between the electrodes. This shutter moves in conjunction with a movable electrode to vary the extent to which it blocks the most direct current path. The electrical power used by the apparatus can be limited to prevent high peak power demands.

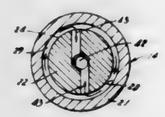
3,666,917

HEATING SYSTEM UTILIZING AN ELECTROLYTIC DEVICE IN A CLOSED HYDRAULIC CIRCUIT

William T. Oglesby, Little Rock, Ark., assignor to Hydroflow Corporation, Little Rock, Ark.

Filed Dec. 12, 1969, Ser. No. 884,482
Int. Cl. H05b 3/60; F24h 1/12, 3/06
U.S. Cl. 219—292 5 Claims





An electrolytic method and means of heating is characterized by driving an electrolytic fluid of predetermined physical characteristics through a closed hydraulic circuit including, in series arrangement, a pump for driving the fluid through the circuit, an electric heating device of the type including at least one pair of electrodes arranged to define a flow passageway within the circuit and means for applying an electric potential across the fluid to heat the fluid electrolytically and heat exchanger means configured for transferring thermal energy either to a gas, such as air in a manner to form a space heater, or to a liquid, such as water in a manner to form a domestic water heater or a water heater for a swimming pool or to any other utilitarian fluid. Each pair of electrodes includes inner and outer coaxially disposed electrodes having cylindrical confronting surfaces spaced to define an annular flow passaway. In order to eliminate eddy currents and turbulence within the passaway, the inlet and outlet conducts to and from the passageway are so formed and arranged in the inner electrode that the fluid passes through the passageway in a spiral fashion. The electrolytic fluid consists of distilled water having dissolved therein a metallic salt, such as copper sulfate, and an anionic material, such as alkyl aryl sufonate.

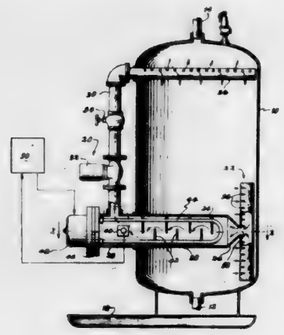
3,666,918

ELECTRIC POWERED WATER HEATING SYSTEM

John A. Clark, Jr., East Stroudsburg; Lemuel J. Morgan, Stroudsburg, both of Pa., and Robert F. Kirschner, Stoughton, Mass., assignors to The Patterson-Kelley Co., Inc., East Stroudsburg, Pa.

Continuation-in-part of application Ser. No. 28,355, Apr. 13, 1970. This application Mar. 11, 1971, Ser. No. 123,198
Int. Cl. F24h 1/20
U.S. Cl. 219—314 36 Claims

A water heating system including a tank for storing heated water for withdrawal to a point of use and having a cold water inlet for replenishing withdrawn water; a conduit having an immersion heater therewithin, the conduit having a water intake manifold for delivering water from the tank to pass in heat exchange relation with the immersion heater and having a heated water outlet arranged in flow communication with the point of use, the manifold having openings arranged in flow communication with different levels within the tank



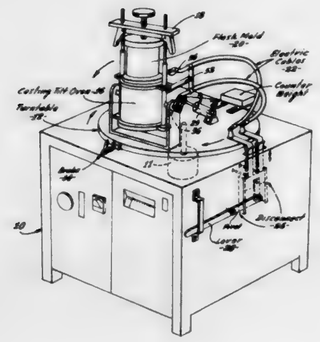
at which levels different water temperatures may exist, whereby the temperature of water passing into heat exchange relationship with the heater is an integral of the temperatures of water from the different levels; and a temperature sensor for controlling the rate of heat input to water passing through the conduit as a function of the integral temperature.

3,666,919

CASTING OVEN

Frank M. Thiel, 8828 National Boulevard, Culver City, Calif.

Filed June 14, 1971, Ser. No. 152,519
Int. Cl. F27b 14/00
U.S. Cl. 219—421 5 Claims



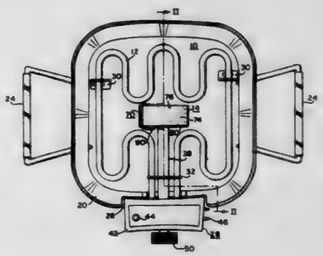
The invention is concerned with an electrically energized casting oven of the crucible type, and one which may be used, for example, for melting precious metals at elevated temperatures of the order of 2,400° F. The oven of the invention includes a coil of resistance steel, or other appropriate resistance material, rather than carbon electrodes, as the heating element.

3,666,920

BASE CONTAINING AN ELECTRIC HEATER ELEMENT AND AN AUTOMATIC TEMPERATURE CONTROL FOR SUPPORTING GLASS OR CERAMIC COOKWARE

David B. Price, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 26, 1971, Ser. No. 109,829
Int. Cl. H05b 3/68
U.S. Cl. 219—449 11 Claims



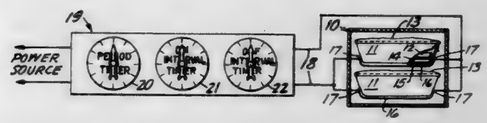
A base containing an electric heater element and controls for supporting glass or ceramic cookware and providing automatic temperature control. The control includes a bi-metal controlled switch enclosed in a metal housing having one surface, generally adjacent the bottom of the cookware, treated so as to be highly absorptive of infrared radiation incident thereon. The bi-metal then reacts in response to the amount of radiation absorbed on that surface which is directly related to the temperature of the cookware. Other surfaces of the housing are also similarly treated to aid dissipation of the heat in the control and minimize lag time between the temperature of the dish and the temperature of the controls.

3,666,921

APPARATUS AND METHOD FOR PULSE COOKING AND HEATING

Thomas S. Shevlin, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Sept. 26, 1968, Ser. No. 762,913
Int. Cl. H05b 1/02
U.S. Cl. 219—492 17 Claims

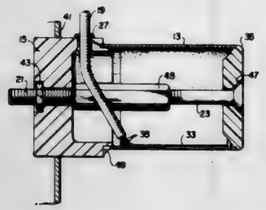


This invention is directed to a low thermal inertia heating system for pulse heating a preselected quantity of food or other materials. Pulsations of heat are produced and controlled by timing means so that a predetermined amount of heat can be generated in a predetermined heating period. Each pulsation of heat is followed by a predetermined time interval during which no power is applied allowing the heat to be absorbed or diffused in the food or material. The pulse intervals are controlled by the timing means so that the amount of heat required to cook or heat the food or material can be precisely metered and/or programmed.

3,666,922
THERMAL CONTROLLED DISPOSABLE UNIT HEATING APPARATUS

Frank W. Leitner, and Clayton O. Miller, both of Charlotte, N.C., assignors to Coltron Industries, Inc., Charlotte, N.C.

Filed Nov. 18, 1969, Ser. No. 877,654
Int. Cl. B21b 27/04
U.S. Cl. 219—469 17 Claims

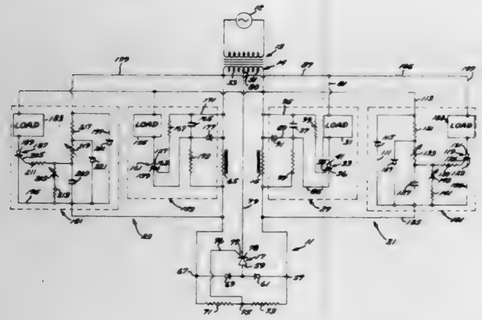


Heating apparatus for synthetic yarn processing comprising a pin or plate heater having a passive portion for attachment to a machine to provide and maintain predetermined alignment for a load contacting element of a removable and replaceable active portion. The thin load contacting element carries a thin etched foil heater and intimate resistance sensor bonded to its inner surface and is equipped with electrical leads to comprise the disposable active portion. The passive portion further thermally isolates the active portion to ensure high efficiency in transferring heat to the yarn load. Fast response inexpensive metals serve as the load contacting element so the compact low mass foil heater requires less power, responds quicker, and weighs and costs less than conventional yarn heaters.

3,666,923
CONTROL APPARATUS HAVING FULL CURRENT PULSE LOAD CONDUCTION

William W. Chambers, Anaheim, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed June 8, 1970, Ser. No. 44,381
Int. Cl. H05b 1/02
U.S. Cl. 219—499 10 Claims

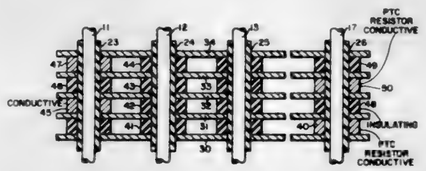


Control apparatus for connection with a pulsating current source and to control current flow to a load. The control apparatus consists of a sensing circuit including a first gate operated switch means for controlling current flow through resistance means in the bridge to create a voltage drop thereacross. A control circuit is included which has a controlled switch means for controlling the current to the controlled load. The controlled switch means includes a gate responsive to a predetermined current level to render such control switch means conductive to complete the circuit through the load. Current storage means is connected across the resistance means and with the gate of the controlled switch for storage of current during current pulses in the bridge circuit for subsequent delivery to the controlled switch gate to trigger such controlled switch during subsequent pulses. Consequently, the controlled switch means will be rendered conductive early in each pulse of current to conduct substantially full current pulses to the load.

3,666,924
ELECTRIC RESISTANCE CONVECTION HEATER

Erik Jensen, and Shelby L. Blankenship, both of Staunton, Va., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 16, 1970, Ser. No. 89,796
Int. Cl. H05b 3/10
U.S. Cl. 219—552 4 Claims

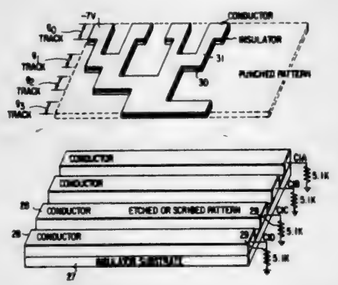


An electric resistance convection heater comprising a stack of electrically conductive fin electrodes mounted in spaced relation on a plurality of electrically insulating support elements with spacer washers therebetween, certain of said spacers being formed of insulating material and others being formed of conductive material to cause an electric current applied to different ones of said electrodes to flow serially through the electrodes in a predetermined path, and certain of said conductive spacers being formed of a material having a positive temperature resistance coefficient thus providing self-limiting response for the heater.

3,666,925
CODED TAPE AND OPEN CONTACT SENSING CIRCUIT

Ira R. Marcus, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed May 21, 1970, Ser. No. 39,402
Int. Cl. G06r 7/06
U.S. Cl. 235—61.11 A 5 Claims

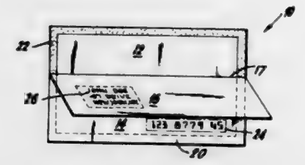


A coded tape used to preset a binary counter to any desired predetermined count is composed of two principal parts. The first part comprises an insulating layer or substrate and a conducting layer. The conducting layer is etched or scribed to divide it into a plurality of bit tracks. The second part also comprises two layers and may comprise an insulating layer and a conducting layer which are punched out in the form of the Gray Code pattern. This part is laminated to the first part to form a unitary structure. Alternatively, a conductive layer is bonded to the first part by an adhesive which acts as an insulating layer. The second conductive layer and adhesive are selectively etched to form the Gray Code pattern. One of the conducting layers is biased through a resistance to ground while the other is biased to a different potential. The binary counter is preset by positioning the tape with respect to a read head having a brush for each of the plurality of bit tracks. The code at that point on the tape is transferred from the read head through a code converter to the binary counter. A brush contacting the first conductive layer causes a binary "zero" to be read, and a brush contacting the second conductive layer causes a binary "one" to be read. The open contact sensing circuit senses when any brush is not in contact with either the first or second conductive layers and prevents the binary counter from being preset.

3,666,926
CARRIER ENVELOPE FOR MACHINE PROCESSING AND PROCESS FOR MAKING SAME

Alfred G. Conte, Jr., Princeton Junction, and Jeffrey Stanford Reinert, Haworth, both of N.J., assignors to Praxedes Systems, Inc., Princeton, N.J.

Filed Dec. 23, 1970, Ser. No. 101,000
Int. Cl. G06r 19/00; B65d 27/14
U.S. Cl. 235—61.12 R 4 Claims



A carrier envelope adapted for processing by automatic data equipment employs first and second rectangular surfaces secured along each edge parallel to the direction of document translation through reading machine equipment with an elastomeric adhesive. The carrier and, for some applications, also its contents, readily conforms to the contour of a document feeding surface and feeding path in automatic reading equipment to facilitate engagement between printed fields on the envelope and machine reading head.

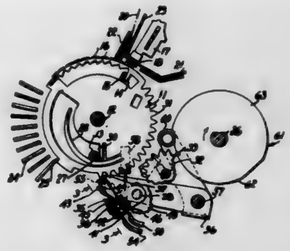
In accordance with other aspects of the present invention, the carrier envelope may be constructed in an improved manner without waste of paper stock; carrier envelopes are readily amenable to machine addressing and bulk handling; and a flap construction thereon facilitates enclosure insertation, and maintains user privacy.

3,666,927
READOUT APPARATUS

William A. Berry, Covina, Calif., assignor to Addmaster Corporation, San Gabriel, Calif.

Filed June 24, 1971, Ser. No. 156,317
Int. Cl. G06c 29/00
U.S. Cl. 235—61 PC 5 Claims

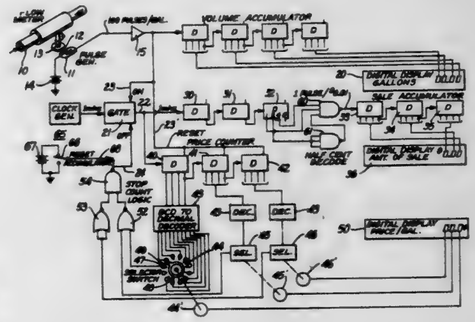
A pulse type readout apparatus for data registering machines, such as mechanical adding and calculating machines in which data is transferred from the machine to a suitable remotely controlled device in parallel fashion by pulse signals. Such signals are formed by switch contacts which are momentarily closed by gear teeth carried by denominationally arranged differential actuators of the machine. The switch contacts are selectively moved into and out of cooperative relation with the actuators.



3,666,928
GASOLINE PUMP CALCULATOR

William F. Burke, Westminster; Daniel A. Gihring, Orange, and Thomas E. Jones, Costa Mesa, all of Calif., assignors to Pan-Nova, Inc., Santa Fe Springs, Calif.

Filed Apr. 30, 1971, Ser. No. 138,912
Int. Cl. B67d 5/22
U.S. Cl. 235—92 FL 9 Claims



A calculator for use in a gasoline dispenser or the like for calculating amount of sale and volume dispensed, and for displaying the amount and volume of sale and the price per gallon. A pulse generator actuated by the flow meter provides volume pulses at a relatively low rate as a function of volume dispensed. Volume pulses are counted directly for volume computation. Each volume pulse gates on a clock pulse generator running at a relatively high rate, with the on time controlled by a preset price counter. Clock pulses are counted for amount of sale computation and are counted for gate on time control.

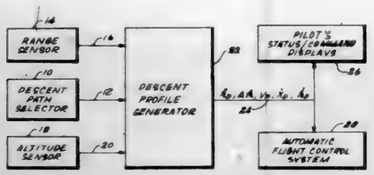
3,666,929
FLIGHT CONTROL SYSTEM FOR FOLLOWING MULTI-STAGE DESCENT PROFILE

Bruce E. Menn, Woodland Hills, Calif., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Sept. 2, 1969, Ser. No. 854,376
Int. Cl. G06f 15/50
U.S. Cl. 235—150.22 25 Claims

A flight control system for commanding an aircraft to fly a smoothly curved descent path during transition from a first linear descent path to a second linear descent path. The control system produces desired altitude information to define

an approximation to the curved descent path. The aircraft's horizontal axis is controlled during transition using desired

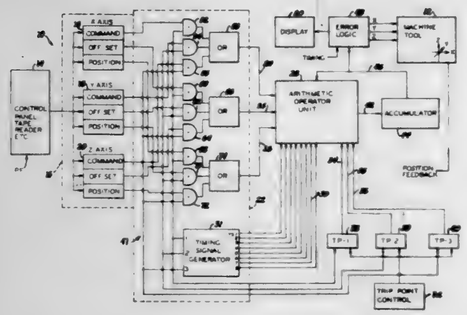


horizontal speed information dependent upon the instantaneous slope of the curved transition path.

3,666,930
TIME SHARED POSITIONING SYSTEM FOR NUMERICAL CONTROL

George H. McDaniel, Northville, Mich., assignor to The Bendix Corporation

Filed Aug. 5, 1970, Ser. No. 62,230
Int. Cl. G05b 19/22
U.S. Cl. 235—151.11 8 Claims

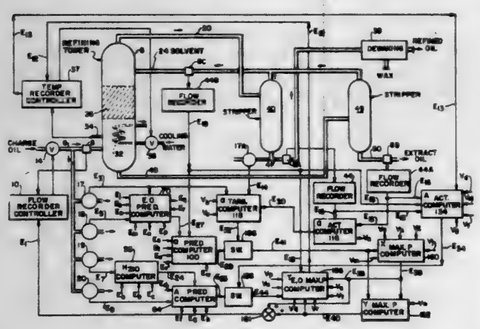


A numerical control system of the point-to-point type for a three-axis machine wherein a single arithmetic unit accommodates the arithmetic operations for all three axes in a time division multiplexed fashion.

3,666,931
CONTROL METHOD AND MEANS FOR OBTAINING OPTIMUM YIELDS OF REFINED OIL AND EXTRACT OIL FROM CHARGE OIL

Robert Alan Woodle, Nederland, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 8, 1970, Ser. No. 96,193
Int. Cl. C10g 21/00; G05b 15/02
U.S. Cl. 235—151.12 14 Claims

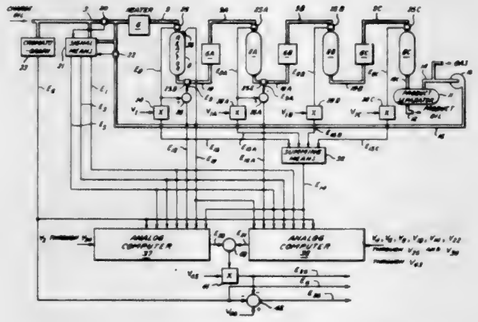


A system and method for controlling the solvent refining of a charge oil to obtain refined waxy oil of a specific quality which is subsequently dewaxed to provide refined oil. During a predetermined time period, the characteristics of the charge oil are sensed and corresponding signals provided. After the predetermined time period, characteristics of the charge oil, the refined waxy oil, extract oil and solvent are sensed and corresponding signals provided. Analog computers provide signals in accordance with equations, hereinafter disclosed, for controlling the charge oil flow rate and the temperature of the extract-mix in accordance with the condition signals and other signals corresponding to the current economic values of the charge oil, the refined oil and the extract oil.

3,666,932
MEANS AND METHOD FOR ON-LINE DETERMINATION OF THE AROMATIC, NAPHTHENE AND PARAFFIN CONTENTS OF CHARGE OIL

William D. White, Nederland, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 30, 1970, Ser. No. 102,732
Int. Cl. C10g 35/04; G06g 7/58
U.S. Cl. 235—151.12 12 Claims



Outputs corresponding to the naphthene and the paraffin volume percent contents of charge oil being reformed by a catalytic reforming unit, along with an output corresponding to the aromatic volume percent content, are provided during the reforming operation in accordance with the following equations:

$$(1)\quad [\Delta T_1 + 2.94(H-8) + 0.104662(P-550) + 0.141123(M-117.5) + 0.002308(T-930)^2 + 0.036641(H-8)(T-930)] - [85.83793 + 0.5510265(T-930) + 8.664779(RSV-0.476) + 0.0115268(P-550)(H-8) + 0.000802621(P-550)(T-930) + 2.529762(RSV-0.476)(H-8) + 0.1537442(H-8)^2] / [0.5470904 + 0.008687601(T-930) - 0.0016322(P-550)] + 62.5-2FA,$$

$$XN_1 =$$

$$(2)\quad [\Delta T_2 + 0.07751601(P-550) + 1.85(H-8) + 0.383795(M-117.5) + 13.4276(RSV-0.476) + 0.005342901(T-930)^2 + 0.061907(T-930) + 0.278497(RSV-0.476)(T-930) + 0.005999501(T-930)(M-117.5)] - [44.29602 + 0.0009998862(P-550)(T-930) + 0.2464407(H-8)^2] / [0.8316077 + 0.008959372(T-930) - 0.0024203(P-550)] + 62.5-2FA,$$

$$XN_2 =$$

(3) Naphthene content $= 0.5(XN_1 + XN_2)$

and

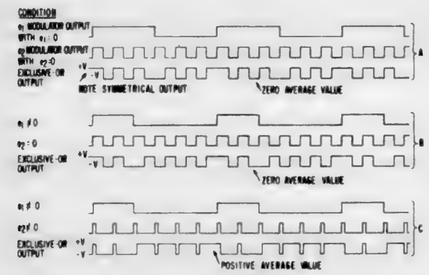
(4) Paraffin content $= 100 - FA -$ naphthene content

Where ΔT_1 and ΔT_2 are the temperature drops across the first and second reactors, FA is the aromatic content of the charge oil in percent volume, M is the average molecular weight of the charge oil, T is the weighted average reactor inlet temperature in °F, P is the inlet pressure of the first reactor in psig, H is the hydrogen to hydrocarbon mole ratio and RSV is the reciprocal liquid hourly space velocity. Signals are provided, corresponding to different sensed operating conditions and properties of the charge oil during the reforming operation, to analog computers. The analog computers provide signals in accordance with Equations 1 and 2 which are used to develop outputs corresponding to the aromatic, naphthene and paraffin contents of the charge oil.

3,666,933
FOUR QUADRANT MULTIPLIER USING PULSE WIDTH MODULATORS AND THE DIGITAL EXCLUSIVE-OR

Paul H. Grobert, Nutley, N.J., assignor to Communications & Systems, Inc.

Filed July 23, 1970, Ser. No. 57,478
Int. Cl. G06g 7/16
U.S. Cl. 235—194 2 Claims

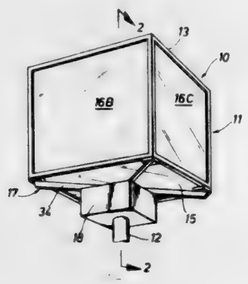


There is disclosed a four quadrant multiplier circuit and method in which the signals to be multiplied are used to pulse width modulate carrier signals of different frequencies, respectively, and the resulting pulse width modulated signals are applied to an exclusive — OR circuit. The output of the exclusive — OR circuit is filtered to remove the carrier signals and any beat frequency between the carriers so that the output will be proportional to the bi-polar product of the signals being multiplied.

3,666,934
LIGHT FIXTURE

Buell Moore, Houston, Tex., assignor to Esquire, Inc., New York, N.Y.

Filed Apr. 10, 1969, Ser. No. 815,003. The portion of the term of the patent subsequent to Oct. 5, 1988, has been disclaimed.
Int. Cl. F21v 19/00
U.S. Cl. 240—3 5 Claims

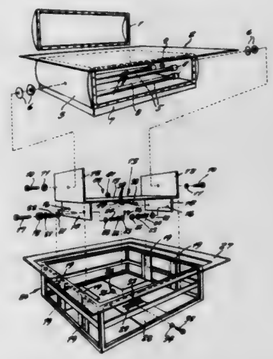


A light fixture comprising a housing having an opening intermediate oppositely facing walls to permit a lamp to be moved into and out of the interior of the housing. A closure is removably disposable across the opening to enclose the housing in weather-tight fashion. A sleeve on one of the oppositely facing walls of the housing receives an electrical socket for axial movement between retracted and extended positions. A means on the other of the oppositely facing walls provides a face of heat insulating and cushioning material for engaging the non-electrical end of the lamp when the electrical end thereof is received within the socket. The face and sleeve are spaced apart a distance which permits the electrical end of the lamp to be moved into and out of the socket when the socket is retracted. A means is provided for positioning the socket in its extended position so as to hold the opposite, non-electrical end of the lamp against the face of heat insulating and cushioning material.

3,666,935
RETRACTABLE FLOOD LAMP

Oscar G. Pritchett, 318th Fighter Interceptor Squadron, McChord AFB, Wash., and Charles E. Derry, Route #3, St. Maries, Idaho

Filed May 15, 1970, Ser. No. 37,584
Int. Cl. F21S 3/00; F21P 5/00
U.S. Cl. 240—1.2 2 Claims

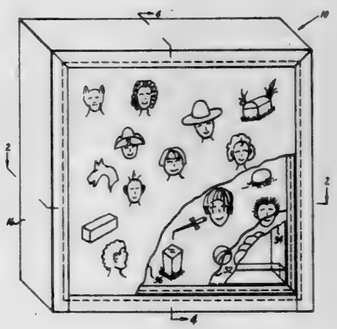


A lamp designed particularly for being flush mounted in numerous applications particularly at aircraft fields, the device comprising continually plurality of lamp bulbs which are footed within a vertically slideable carriage that is track mounted within the housing so as to bring the carriage above the surface of the ground while the housing is secured below ground, thus allowing the lamp to extend above the ground surface only when necessary.

3,666,936
SHADOW BOX

Ranson W. Webster, Jr., 8606 Cliffwood Way, and Ernst H. Jarke, III, 8467 Everglade Dr., both of Sacramento, Calif.

Filed June 30, 1970, Ser. No. 51,201
Int. Cl. F21v 33/00
U.S. Cl. 240—2 1 Claim



An enclosure having a translucent screen at the front thereof, a plastic screen having a pattern thereon parallel to and spaced from the translucent screen, and colored light

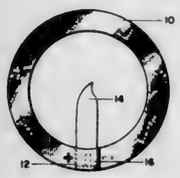
bulbs arranged on the inside surface of the rear of the enclosure for blinking various colored patterns onto the translucent screen.

3,666,937

APPARATUS FOR ILLUMINATING ORNAMENTS

Charles Franc, Lenox Hill Station 221 East 70th Street, New York, N.Y.

Filed Nov. 7, 1969, Ser. No. 874,855
Int. Cl. F21v *33/00*; G09f *13/00*
U.S. Cl. 240—6.4 6 Claims



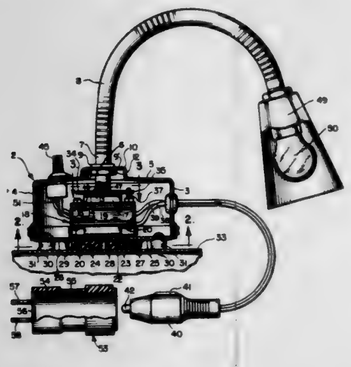
Ornaments such as greeting cards are illuminated by incandescent lamps powered by disposable batteries. The battery is provided with a recess in its casing and has its output terminals disposed therein. The base of the incandescent lamp is adapted to be received by the recess in the battery and lamp contact terminals disposed on the base engage the battery output terminals in the recess and thus detachably electrically connect the lamp to the battery and energize the lamp to produce light.

3,666,938

LAMP STRUCTURE

Frank J. Dolega, 31 Weems Street, Boca Chica R. Branch, Brownsville, Tex.

Filed Feb. 17, 1971, Ser. No. 116,086
Int. Cl. F21v *21/06*; F21s *1/12*; F21l *15/16*
U.S. Cl. 240—52.15 10 Claims



A lamp with a flexible goose neck having a swivel connection with a base which encloses a transformer, the core of which is held against the top of the bottom wall by a permanent magnet adhered to the bottom of such bottom wall and which serves to releasably mount the lamp to a metallic support such as a mechanic's bench or a car body. The magnet flux saturates the magnetic core which magnetically holds the swivel connection in any of a plurality of adjusted positions without fatiguing the flexible goose neck which in present construction eventually breaks off.

3,666,939

SHADELESS DENTAL LIGHT

Sadayasu Ota, Kyoto, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Mar. 19, 1971, Ser. No. 126,010
Claims priority, application Japan, Mar. 23, 1970, 45/27594
Int. Cl. A61b *1/06*
U.S. Cl. 240—41.15 2 Claims



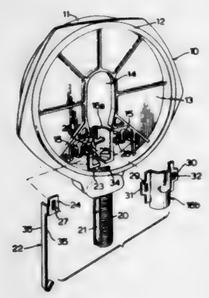
A shadeless dental light the reflector of which comprises a plurality of section mirrors arranged side by side along an elliptical arc. Each of the component section mirrors has a reflecting surface which is plain in transverse section and has a central portion of the length thereof fromed into a circular arc and portions extending from the opposite ends of the length of the central portion formed into a circular arc having a different radius of curvature than that of the central portion.

3,666,940

SHOCK RESISTANT MOUNTINGS FOR LIGHT BULBS

Hugo Magi, Etobicoke, Ontario, Canada, assignor to Dominion Auto Accesories Limited, Toronto, Ontario, Canada

Continuation-in-part of application Ser. No. 809,315, Mar. 21, 1969, now Patent No. 3,564,483. This application Apr. 27, 1970, Ser. No. 32,084
Int. Cl. F21v *15/04*; H01j *5/48*
U.S. Cl. 240—90 9 Claims



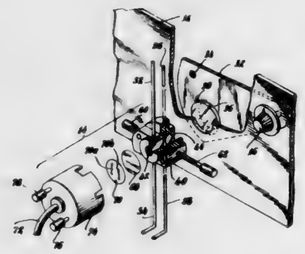
A lamp includes a housing and a socket adapted to receive a light bulb, the latter being suspended from the housing by shock resistant mounting means comprising arms each having rigid points of connection formed integral with the housing and the socket, the arms being integral with the housing and the socket and extending therebetween with the arms each being fabricated of a strip of material formed into a corrugated and having a plurality of corrugations.

3,666,941

DIFFERENTIAL FILTER FLUORIMETER

Emmett S. Watson, Jupiter, Fla., assignor to Laboratory Data Control, Inc., Danbury, Conn.

Filed Sept. 28, 1970, Ser. No. 76,073
Int. Cl. G01n *23/22*
U.S. Cl. 250—43.5 R 9 Claims



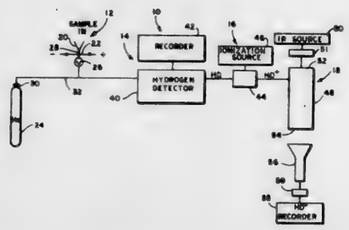
There is disclosed a double beam differential fluorimeter requiring no light chopper and characterized by unusually small cell volume and high optical efficiency. The instrument comprises a bifurcated conical light tunnel having highly reflecting internal surfaces. A transparent tube passes through each side of the bifurcated light tunnel, one for containing a sample fluid, the other for containing a reference fluid. A light source directs ultraviolet radiation into the large end of the conical tunnel. A pair of photodetectors are positioned at the small end of the tunnel, together with an ultraviolet blocking filter. Each detector is responsive, respectively, to fluorescence from the sample and reference fluids. An electrical bridge circuit compares the intensities of the fluorescence derived from the sample and reference fluids.

3,666,942

ANALYSIS OF HYDROGEN-DEUTERIUM MIXTURES

George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Harry C. Lord, III, 3740 Hampton Road, Pasadena, Calif.

Filed Nov. 6, 1970, Ser. No. 87,550
Int. Cl. G01n *21/34*
U.S. Cl. 250—43.5 R 11 Claims



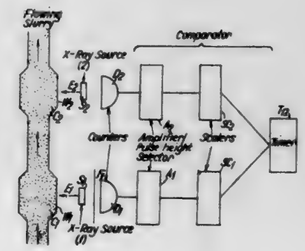
A hydrogen-deuterium mixture is partially separated by helium carrier gas chromatography to form an effluent which is measured to determine total hydrogen isotopic concentration. The HD component of the effluent is ionized to form HD^+ ions. The HD^+ 1-0 band absorption is then measured with a conventional high resolution infrared detector providing a signal indicative of absolute deuterium concentration (as HD). The H/D ratio is readily determined from the total concentration and deuterium concentration.

3,666,943

METHOD OF AND APPARATUS FOR DETERMINING THE MEAN SIZE OF GIVEN PARTICLES IN A FLUID

Kenneth Garfield Carr-Brion, and Doris Audrey Jenkinson, both of Stevenage, Hertfordshire, England, assignors to National Research Development Corporation, London, England

Filed Sept. 3, 1968, Ser. No. 756,767
Claims priority, application Great Britain, Sept. 20, 1967, 42,875/67. The portion of the term of the patent subsequent to Sept. 15, 1987, has been disclaimed.
Int. Cl. G01n *23/22*
U.S. Cl. 250—51.5 7 Claims



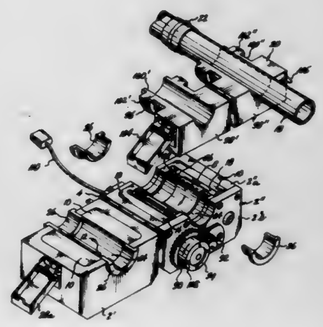
A method of determining the mean size of given solid particles in a fluid comprises passing two x-ray beams of different energies into the fluid. The energies of the two X-ray beams being such that the resulting intensity of fluorescent radiations emitted from the particles due to one beam is substantially independent of the mean size of the particles while the intensity of fluorescent radiations emitted from the particles due to the other beam is substantially dependent upon the mean size of the particles. A comparison of the intensities of these two types of emitted fluorescent radiations gives an indication of the mean particle size.

3,666,944

MEANS AND TECHNIQUE FOR MAKING RADIOGRAPHIC EXAMINATIONS

Charles P. Baldinger, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 11, 1970, Ser. No. 36,164
Int. Cl. G03b *41/16*
U.S. Cl. 250—65 R 6 Claims



A means and technique are disclosed for making a radiographic examination of a body at any or all points about the periphery thereof. According to the technique, a nuclear

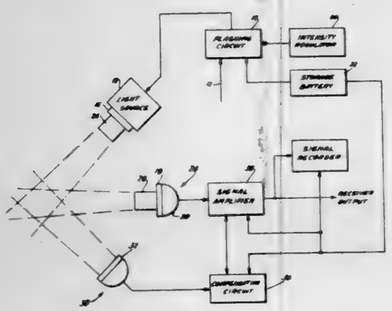
radiation source is enclosed in a recording device which is adapted to shield the source against the escape of radiation therefrom, but which has a recess in the exterior thereof across which the radiation can travel in a path confined within the device. The body is inserted into the recess so that a portion of the same is exposed to the radiation thereacross, while a section of a recording film which is sensitive to the radiation is arranged in the recess on the opposite side of the body from the source to record the character of the portion thereon. Thereafter, the body, the source, and the film are shifted in relation to one another so as to expose a different portion of the body to the path of radiation while another section of the film is arranged in the recess on the opposite side of the body from the source. Moreover, during the shifting process, radiation shielding is interposed in the path of radiation between the source and the recess so that the character of each portion of the body is separately recorded on a different section of the film.

3,666,945

ARRANGEMENT FOR MEASURING THE CONCENTRATION OF FLUORESCENT MATERIALS IN AIR AND WATER

Frank Frungel, Hamburg, Germany, and Peter Krawarik, Princeton, N.J., assignors to Impulsphysik GmbH, Hamburg, Germany

Filed July 30, 1970, Ser. No. 59,630
Claims priority, application Germany, Aug. 2, 1969, P 19 39 524.5
Int. Cl. G01n *21/22*
U.S. Cl. 250—71 R **18 Claims**



An arrangement through which the concentration of fluorescent materials, when present in low quantities, may be measured within a fluid. A transmitter is flashed periodically at a rate corresponding to the rate that measurements are taken, for the purpose of exciting the fluorescent materials. Filters and optical systems are provided at the transmitter for transmitting the appropriate light. A receiver spaced from the transmitter or light source is also equipped with appropriate filters and optical systems, and receives on a photosensor, the radiation from the fluorescent materials. The resultant electrical signals from the photosensors are amplified and compensated against daylight and cloudy effects of the medium, through an auxiliary amplifier.

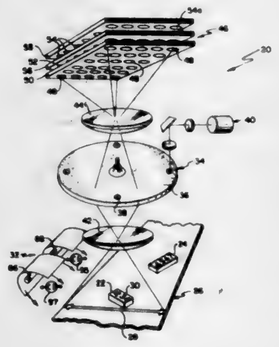
3,666,946

AUTOMATIC INFORMATION READING SYSTEM USING PHOTOLUMINESCENT DETECTION MEANS

Cebern B. Trimble, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Sept. 29, 1970, Ser. No. 76,493
Int. Cl. G01n *21/38*
U.S. Cl. 250—71 R **5 Claims**

A process for encoding data and apparatus for recording and retrieving the same. The encoding is accomplished by depositing, on an area for each datum of said data, a first plurality of binarily-weighted ink components, whose presence or absence defines the significant value of a digit, and a second plurality of binarily-weighted ink components, whose presence or absence defines the order of the digit. The inks used photoluminesce in distinct narrow wavebands when subjected to ultraviolet radiation. The apparatus for retrieving the data includes a source of ultraviolet radiation for periodically illuminating a scanning zone to where the data to be read is moved. A scanning device is used to scan the scanning zone during the period when the ultraviolet radiation is on, so as to detect the fluoresence of those ink components which are present. Each datum may also be so shaped as to be human-readable. An optical system is used to direct the detected fluoresence to an array of light-responsive members. Each member of the array is responsive to the fluorescence of only one ink component, thereby registering the presence or absence of that particular ink component in the data. Successive passes by the scanning device repeatedly scan the data, which may be randomly oriented relative to the scanning zone. Conventional logic circuitry may be used to interpret the output of the array of light-responsive members.

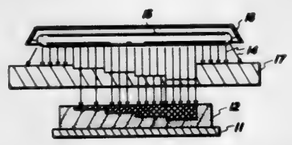


3,666,947

LIQUID CRYSTAL IMAGING SYSTEM HAVING AN UNDISTURBED IMAGE ON A DISTURBED BACKGROUND AND HAVING A RADIATION ABSORPTIVE MATERIAL DISPERSED THROUGHOUT THE LIQUID CRYSTAL

Werner Erwin Louis Haas, Webster; James E. Adams, Ontario; John B. Flannery, Jr., Webster, and Bela Mechlowitz, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 6, 1971, Ser. No. 104,347
Int. Cl. G02f *1/16*
U.S. Cl. 250—83 R **25 Claims**



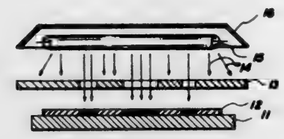
An imaging system wherein an imaging member comprising a composition comprising a material having a cholesteric liquid crystalline phase with radiation absorptive material dispersed throughout the liquid crystalline material, is provided with the liquid crystalline composition in its Grandjean or "disturbed" texture state, and the member is thermally imaged by imagewise heating image portions of said imaging material to a temperature at least about the cholesteric liquid-isotropic transition temperature range of the material and allowing said heated portions of said imaging material to return to a temperature within the cholesteric liquid crystalline mesophase temperature range of said material, whereby said imaged areas assume the focal-conic or "undisturbed" texture state in the desired image configuration. Images provided by the inventive system may be erased, and the imaging members used therein are typically reuseable.

3,666,948

LIQUID CRYSTAL THERMAL IMAGING SYSTEM HAVING AN UNDISTURBED IMAGE ON A DISTURBED BACKGROUND

Bela Mechlowitz, Rochester; James E. Adams, Ontario, and Werner Erwin Louis Haas, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 6, 1971, Ser. No. 104,348
Int. Cl. G02f *1/16*
U.S. Cl. 250—83 R **20 Claims**



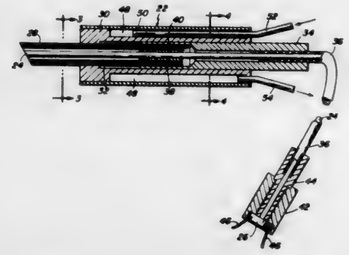
An imaging system wherein an imaging member comprising a material having a cholesteric liquid crystalline phase in its Grandjean or "disturbed" texture state is thermally imaged by imagewise heating image portions of said imaging material to a temperature at least about the cholesteric liquid crystalline-liquid isotropic transition temperature of said material and allowing said heated portions of said imaging material to return to a temperature within the cholesteric liquid crystalline mesophase temperature range of said material whereby said imaged areas assume the focal-conic or "undistrubed" texture state in the desired image configuration. Images provided by the inventive system are erasible, and the imaging members are reusable.

3,666,949

SHIELDED OPTICAL RADIATION DETECTING DEVICE

Frank A. De Falco, Marlboro, and Stephen N. Bobo, Cohasset, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Sept. 28, 1970, Ser. No. 76,182
Int. Cl. G01J *5/00*; G02b *5/16*
U.S. Cl. 250—83.3 H **10 Claims**



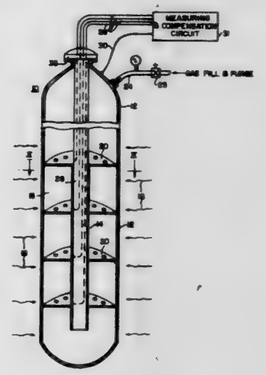
An optical radiation detecting device adapted particularly for temperature detection systems such as welding apparatus and which comprises a fluid-cooled fiber optic radiation sensing and transmitting means having means for shielding the sensing portion of the device from extraneous or stray radiation in the visible and near visible portions of the spectrum.

3,666,950

INTEGRAL MULTI-SENSOR RADIATION DETECTOR

Robert R. Ferber, Pittsburgh, Pa., and George A. Gilmour, Severna Park, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 30, 1969, Ser. No. 862,428
Int. Cl. G01t *1/18, 3/00*
U.S. Cl. 250—83.1 **11 Claims**



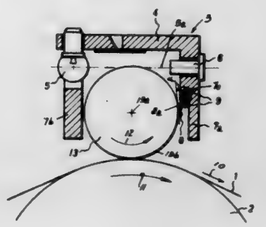
The invention is a radiation detector assembly comprising multiple independent radiation sensors positioned within a common gas enclosure and operated at substantially equal voltage.

3,666,951

DEVICE FOR DETECTING DEFECTS IN CONTINUOUS WEB MATERIAL

Kurt Gertung, Heikendorf near Kiel, Germany, assignor to Dr. Ing. Rudolf Hell

Filed Apr. 1, 1970, Ser. No. 24,479
Claims priority, application Germany, Apr. 16, 1969, G 69 15 129
Int. Cl. G01n *21/32*
U.S. Cl. 250—219 DF **10 Claims**



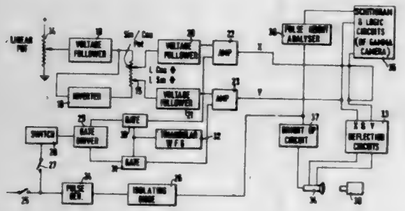
Elevational defects in a continuous web of material are detected by a sensing means including a vertically movable sensing roller positioned above a support roller and bearing down theretoward under the force of gravity so that it rests on the web supported by the support roller. Movement of the web in a first direction rotates the sensing roller in a first direction and causes the sensing roller to bear against a wiping means on a sensing roller retainer leg to remove any loose web material particles which may have adhered to the sensing roller so that false indications of elevational defects are prevented. The wiping means may include a blade ar-

ranged at an angle against the direction of rotation of the sensing roller and the blade may be a rigid member in a yieldable support or a resilient member in a resilient or rigid support.

3,666,952
APPARATUS FOR INDICATING THE POSITION OF A REFERENCE MARKER USED IN A GAMMA RAY CAMERA

Victor Ralph McCready, Sutton, and Sidney Patrick Newbery, London, both of England, assignors to National Research Development Corporation, London, England

Filed Apr. 28, 1970, Ser. No. 32,647
Claims priority, application Great Britain, Apr. 30, 1969, 22,140/69
Int. Cl. G01t 1/16, 1/20
U.S. Cl. 250—83.3 R **8 Claims**

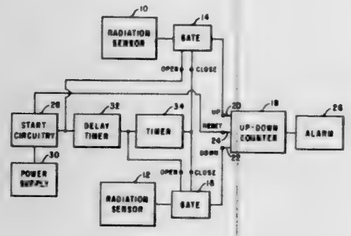


Apparatus for indicating the position of a reference marker is adapted for use with a medical gamma camera. A movable reference marker is coupled to a fixed reference member by an arm, and x and y co-ordinate voltages are generated and fed to a display screen of the gamma camera to produce a reference mark on the screen corresponding to the position of the marker.

3,666,953
UP-DOWN COUNTER FOR BACKGROUND COMPENSATION

William F. Splichal, Jr., San Jose, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Aug. 18, 1970, Ser. No. 64,714
Int. Cl. G01t 1/16
U.S. Cl. 250—83.3 R **3 Claims**

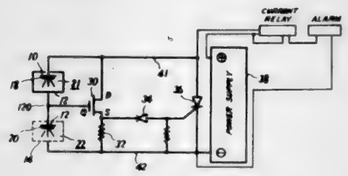


A radiation monitor provides a signal when contamination exceeds a minimum allowable proportion of background radiation. The monitor includes two sensors for separately measuring background and the total of background and contamination radiation. An up-down counter accumulates only background count for an initial time interval then deducts the total count for a second time interval while continuing to accumulate background count. Adjustable timer means allows the initial to second time interval ratio to be adjusted to set the minimum allowable contamination to background ratio. An alarm is activated if the contamination to background ratio exceeds the minimum allowable.

3,666,954
IONIZATION SMOKE DETECTOR AND LEAKAGE SENSING MEANS THEREFOR

Koju Sasaki, Tokyo; Naoki Takahashi, Fujisawa, and Akihiro Kobayashi, Yokohama, all of Japan, assignors to Nittan Company, Limited, Tokyo, Japan

Filed June 18, 1970, Ser. No. 47,427
Claims priority, application Japan, June 21, 1969, 44/48669
Int. Cl. G01t 1/18; G08b 21/00
U.S. Cl. 250—83.6 FT **5 Claims**

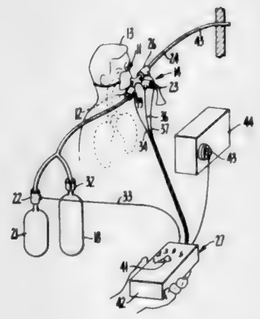


An ionization smoke detector embodying a closed ionization chamber and an open ionization chamber connected in series and interconnected with means for producing an alarm when smoke enters the open chamber, the detector further including means for sensing contamination of the leakage particularly between the electrodes in the open ionization chamber and producing an alarm when the leakage resistance falls below a selected value.

3,666,955
AUTOMATIC CONTROL SYSTEM FOR RADIOACTIVE REGIONAL VENTILATION STUDIES

Edgar L. Suprenant, 4729 Firmament Avenue, Encino, Calif.; Harold F. Rieth, P. O. Box 2102, Costa Mesa, Calif., and Clayton H. Douglas, 30489 Amber Sky Drive, Palos Verdes, Calif.

Filed July 8, 1970, Ser. No. 53,211
Int. Cl. G01t 1/20
U.S. Cl. 250—106 T **9 Claims**



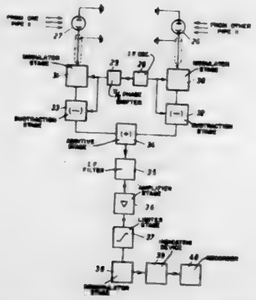
A system for obtaining a permanent visual record of the air passages of the lungs by the introduction of a measured quantity of air mixed with a radioactive gas such as Xenon (Xe^{133}) into the lungs of the subject. A conventional scintillation camera or other radioactive recording device is operated to produce a permanent visual record. A separate air reservoir provides non-tagged air to fill the breathing passages and confine the radioactive tagged air to the lungs. The apparatus operates in sequence to supply the desired quantity of

radioactive tagged air from a reservoir, followed by the measured quantity of ordinary air from a second reservoir, and then prevents exhalation during the time period necessary for the radioactive recording device to operate. The supply of premeasured quantities of tagged air and additional air insure that the subject will take only a normal size breath. Ganged stepping switches and a timing device provide automatic sequencing. A modified form of the apparatus utilizes a flexible wall radioactive gas reservoir and an associated pivoted lever which drops down to actuate a microswitch and open the valve to the additional air when the radioactive gas reservoir is depleted. A method is described in which measured quantities of tagged air and additional air are sequentially applied to the subject, exhalation is prevented during the period in which the radioactive recording is made, and exhalation is thereafter permitted.

3,666,956
METHOD AND APPARATUS FOR TELEMETERING BY MEANS UTILIZING MODULATED LIGHT BEAMS

Friedrich Karl von Willisen, Zurich, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Continuation of application Ser. No. 601,646, Dec. 14, 1966, now Patent No. 3,506,833, dated Apr. 14, 1970. This application Dec. 23, 1969, Ser. No. 887,585
Claims priority, application Switzerland, Feb. 3, 1966, 1555/66
Int. Cl. H04b 9/00
U.S. Cl. 250—199 **3 Claims**



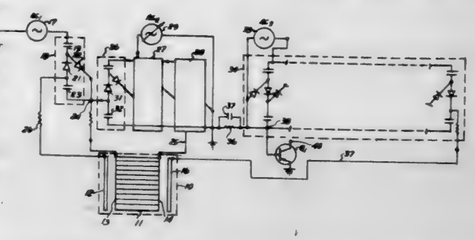
A method and arrangement for transmission and electronic evaluation of a modulated light beam used for telemetry in which the modulation signal appears as an argument of a sinusoidal function. The modulated sinusoidal function is transformed into two parallel signals phase-shifted by $\pi/2$ which are subsequently converted at a receiving station into two correspondingly phase-displaced electrical signals. The electrical signals are then mixed multiplicatively with sinusoidal signals phase displaced by $\pi/2$ having a fixed angular frequency, the products resulting from the multiplicative mixing are added, and the latter are then frequency-demodulated.

3,666,957
BRIGHTNESS LIMITER FOR IMAGE INTENSIFIERS

William R. Wyess, Livonia, Mich., assignor to The Bendix Corporation

Filed Jan. 25, 1971, Ser. No. 109,413
Int. Cl. E04g 17/06
U.S. Cl. 250—213 VT **7 Claims**

The invention is directed to a system for automatically limiting the output brightness of an image intensifier having a microchannel plate (MCP). The intensifier includes a radiation-sensitive surface which is located in the proximity of the input surface of the MCP. An output screen is located in the proximity of the output surface of the MCP. The two surfaces of the MCP are maintained at different voltages which accelerate electrons through the MCP to cause the multiplication of electrons therein. The output brightness of the intensifier is directly proportional to the current supplied to the output screen. This current is dependent upon the voltage

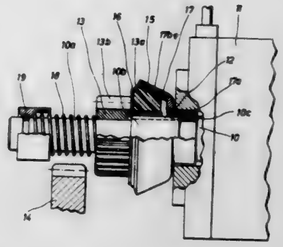


supplied across the microchannel input and output surfaces. Therefore, the system senses the output screen current and changes the voltage applied across the MCP to limit the sensed current and the output brightness to some desired level.

3,666,958
STARTER DRIVE

Walter Ruhle, Korntal, and Otto Barthruff, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 21, 1970, Ser. No. 82,608
Claims priority, application Germany, Nov. 14, 1969, P 19 57 233.9
Int. Cl. F02n 15/08
U.S. Cl. 290—48 **9 Claims**



A starter drive for combustion engines has a motor on whose rotatable output shaft is mounted a pinion having freedom of rotation as well as axial displacement relative to the shaft. A motion-transmitting arrangement is provided, including a funnel-shaped motion-transmitting element rotatable with the shaft surrounding the same and located adjacent one end of the pinion with its open side facing the latter, and an elastically yieldable annular coupling member surrounding and fast with the pinion at the one end thereof and conically converging on its outer periphery towards the funnel-shaped element so that, when the coupling member is received in the latter, frictional motion-transmission will be established between the shaft and the pinion.

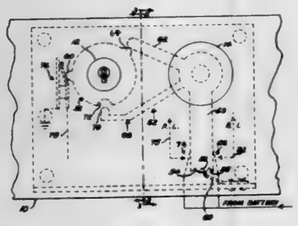
3,666,959
BATTERY PROTECTIVE MEMORY SYSTEM FOR AUTOMOTIVE VEHICLES

Clarence M. Crews, 4706 North Pacific Highway, Central Point, Oreg.

Filed Jan. 28, 1971, Ser. No. 110,547
Int. Cl. H02g 3/00
U.S. Cl. 307—10 BP **6 Claims**

A novel battery protective system for automotive vehicles is provided in which both the running lights and the parking

lights are controlled by a common light switch operator, which operator is restricted, and in some circumstances actuated, by the key controlled, ignition switch actuator. In the normal, non-operating condition of the ignition switch actuator, according to my invention, the running lights are necessarily off and cannot be turned on. The parking lights may be turned on and off manually, but are turned off and blocked against being turned on by operation of the ignition switch actuator to running position or to the utilities position. The turning of the ignition switch actuator to running position or



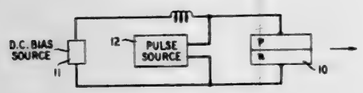
to utilities position makes possible the manual turning on and turning off of the running lights, but turns off the parking lights (if on) and blocks the turning on of the parking lights. Return of the ignition switch actuator to normal, non-operating position turns off the running lights but does not restore the parking lights. No running or parking lights will ever be turned on or left on immediately following the turning off of the ignition switch actuator. No running or parking lights will ever be turned on or left on immediately following the turning on of the ignition switch actuator. The system is foolproof.

3,666,960

REVERSE BIAS PULSING OF JUNCTION DIODES TO REDUCE DETERIORATION

Robert William Dawson, Middletown, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 22, 1970, Ser. No. 39,582
Int. Cl. H03k 17/00
U.S. Cl. 307—311 **8 Claims**



The rate at which certain types of forward-biased p-n junction diodes deteriorate is significantly reduced by the periodic application of reverse bias pulses.

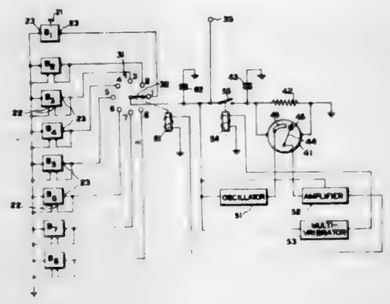
3,666,961

ELECTRICAL POWER SUPPLY

John C. Bogue, Santa Monica, and Robert I. Sarbacher, Arcadia, both of Calif., assignors to said Bogue, by said Sarbacher

Filed Nov. 24, 1969, Ser. No. 879,158
Int. Cl. H02j 7/00
U.S. Cl. 307—65 **9 Claims**

An electrical power supply, particularly adapted for intermittent use, has an extremely long standby life. A series of squib actuated primary cell electrochemical reserve batteries are controlled by a selective activation circuit, so that each reserve battery of the series is activated only after the the preceeding battery has substantially spent its useful life. The circuit responds to a drop in battery output voltage signalling



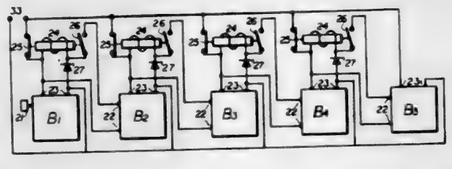
the end of the battery's useable life, to substitute the next battery in the series, and to activate it by firing its squib.

3,666,962

ELECTRICAL POWER SUPPLY

John C. Bogue, Santa Monica, and Robert I. Sarbacher, Arcadia, both of Calif., assignors to said Bogue, by said Sarbacher

Filed Dec. 15, 1969, Ser. No. 884,783
Int. Cl. H02j 7/00
U.S. Cl. 307—65 **20 Claims**



An electrical power supply, particularly adapted for intermittent use, has an extremely long standby life. A series of squib actuated electrochemical batteries are controlled by a selective activation circuit, so that each reserve or secondary battery of the series is activated only after the preceeding battery has substantially spent its useful life. The circuit responds to a drop in battery output voltage or to an increase in gas pressure within the battery encapsulation signalling the end of the battery's useable life, to substitute the next battery in the series, and to activate it by firing its squib.

3,666,963

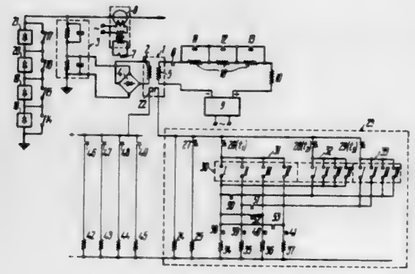
DEVICE FOR MATCHING NUMBER OF OPERATING BRIDGES ON CONVERTING SUBSTATIONS OF DIRECT-CURRENT TRANSMISSION LINES

Albert Efimovich Gurevich, ulitsa Ivana Chernykh, 1, kv. 13, Leningrad; Boris Fishelevich Rozenbljum, Artekovskaya ulitsa, 7, kv. 472, and Igor Nikolaevich Shaposhnikov, Chongarsky bulvar, 13, kv. 53, both of Moscow, all of U.S.S.R.

Filed Jan. 26, 1970, Ser. No. 5,473
Int. Cl. H02j 1/00
U.S. Cl. 307—82 **2 Claims**

A device for matching the number of operating bridges on converting substations of a direct-current transmission line comprising a comparator for comparing the voltage of the transmission pole relative to earth with the voltage of an auxiliary source which depends on the number of the operating bridges of the transmission pole, a unit for disconnecting the bridges connected to the comparator and including actuating

elements and elements with various time delays, in which the unit for disconnecting the bridges has a switch for selecting the succession of disconnection of the bridges, the number of positions of the switch corresponding to the number of bridges of the transmission poles while the commutating circuits of the switch being subdivided into groups with the number of circuits in each group being equal to the number



of positions of the switch, in which case in each group the commutating circuits on one side are interconnected and are correspondingly connected to the elements with different time delays and on the other side the commutating circuits are connected to the actuating elements of the unit for disconnecting the bridges.

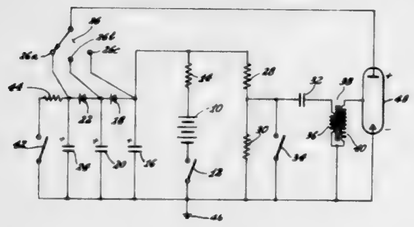
The device increases the reliability in controlling a direct-current transmission line.

3,666,964

ENERGY STORAGE AND DISCHARGE SYSTEM

Joseph E. Flynn, San Diego, Calif., assignor to Subsea Products, Inc., San Diego, Calif.

Filed Nov. 27, 1970, Ser. No. 93,101
Int. Cl. H05b 41/32, 41/38
U.S. Cl. 307—108 **13 Claims**



This system is for charging a plurality of capacitors connected in parallel. Only individual ones of the capacitors are discharged in accordance with the setting of a multi-position switch. Unidirectional members are included in the circuit for providing for the charging of all of the capacitors but the discharging of only the selected capacitors. When the capacitors discharge, they may trigger a flashtube which provides the light to take a photograph.

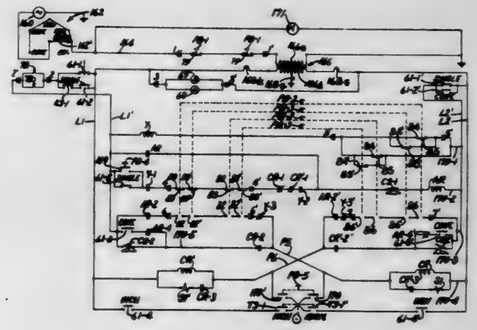
3,666,965

PRESS CONTROL APPARATUS

Kurt K. Luenser, Desota, Tex., assignor to Verson Allsteel Press Company, Chicago, Ill.

Filed Mar. 22, 1971, Ser. No. 126,809
Int. Cl. F16p 3/04
U.S. Cl. 307—112 **12 Claims**

Control apparatus and circuitry for controlling the movement of a press ram or the like including a main electrical connector means having pairs of contact terminals between which are to be connected normally open and normally closed manually operable switch means for operating the press ram or for stopping the same. The main connector means are also provided with another pair of contact terminals which, to permit operation thereof, must be externally short circuited. A connector duplicating unit in some cases also forming an operator control station unit including at least a normally closed manually operable switch is provided having input electrical connector means which may be removably connected to the main electrical connector means and at least one output electrical connector means which duplicates the main electrical connector means. The connector duplicating unit is wired to connect in series circuit relation each manually operable switch of the operator control station unit forming a part thereof and the similar switches of one or more other operator control station unit which may be connected to the one or more output electrical connector



means thereof. The circuit of the connector duplicating unit must be completed by the connection to each output electrical connector means of circuit completing means including input electrical connector means removably secured to the output electrical connector means involved. Such circuit completing means may be a terminal operator control station unit or dummy unit not requiring other units to be connected thereto or another combination connector duplicating and operating control station unit requiring such other unit. Any operator control station unit having a normally open switch means is provided with short circuit means for short circuiting the aforementioned other pair of contact terminals of the main electric connector means and any dummy unit or operator control station unit having only normally closed switch means is devoid of any short circuit connections for the aforesaid other pair of contact terminals so that the mistaken connection of such a dummy unit or operator control station unit into the main electrical connector means cannot effect the operation of the press control circuit.

3,666,966

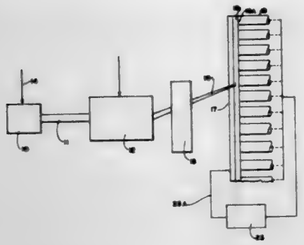
ELECTRONIC SWITCH

Wolfgang Joseph Buss, 21-2601 7th Street East, Saskatoon, Saskatchewan, Canada

Filed July 21, 1970, Ser. No. 56,823
Int. Cl. H01h 47/24
U.S. Cl. 307—117 **3 Claims**

A device for connecting a conductor electrically to one out of a number of conductor by means of a photoconductive or semi-conductive material and a light or electron beam. The

particular output to be connected to the common input is chosen by selecting the direction or the spatial position of a



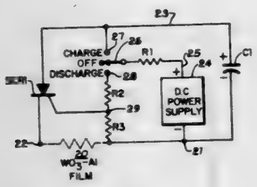
light beam. The resistance of the connection depends on the intensity of the beam.

3,666,967

SELF-DESTRUCT ALUMINUM-TUNGSTIC OXIDE FILMS

Frank Z. Keister, Culver City, and Gary S. Smolker, Los Angeles, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed May 12, 1971, Ser. No. 97,347
Int. Cl. H02h *7/20*
U.S. Cl. 307—202 **4 Claims**



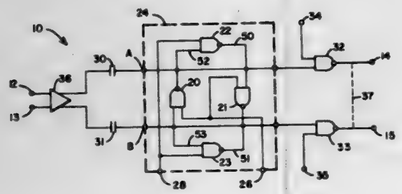
A multilayer thin film circuit board having thin film layers of the thermite reaction class, such as tungstic oxide and aluminum materials, coupled to a switched voltage source to be switched in circuit to cause ignition of the thermite layer and cause destruction of the film circuit.

3,666,968

LOW LEVEL PULSE POLARITY DETECTOR

Thomas L. Krocheski, Burnsville; Samuel A. Meddaugh, St. Paul, and John W. Staubus, Minneapolis, all of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Sept. 4, 1970, Ser. No. 69,809
Int. Cl. H03k *19/36*
U.S. Cl. 307—236 **9 Claims**



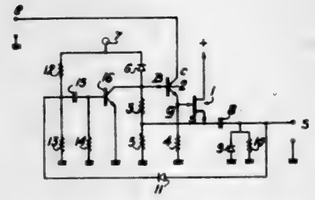
A semiconductor circuit for determining the relative polarity of the output of a binary memory system is described. The circuit includes four NAND circuits intercoupled as a flip-flop driving two NAND circuits intercoupled as strobed output gates. The relative polarity of the memory system output signal sets the flip-flop in a corresponding one of its two stable states with the strobed output gates emitting the binary significance of the memory system output signal.

3,666,969

DEVICE FOR CLIPPING ELECTRICAL SIGNALS

Christian Carriere, 75 Paris, and Roger Dupont, 91 Evry, both of France, assignors to Commissariat a L'Energie Atomique

Filed Nov. 16, 1970, Ser. No. 89,761
Claims priority, application France, Nov. 21, 1969, 6940054
Int. Cl. H03k *5/08*
U.S. Cl. 307—237 **2 Claims**



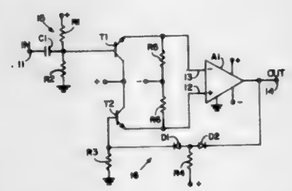
The clipping device comprises a first field-effect transistor in which the grid terminal is connected to the emitter of a second transistor, the source terminal is connected to ground through a first resistor, the drain terminal is connected to a supply source and the clipped signal is available at the source terminal; a second transistor in which the emitter is connected to ground through a second resistor, the base is connected to the source terminal of the first field-effect transistor through a third resistor and the collector constitutes the input of the clipping circuit; a diode connected between the base of the second transistor and a second voltage source in a direction which causes the diode to cut-off when the base-ground voltage of the second transistor is lower at absolute value than the value of the voltage of the second voltage source.

3,666,970

LIMITER CIRCUIT

Matthew C. Abbott, Wakefield; Albert H. Ashley, Holliston, and Kenneth A. Garrigus, Foxboro, all of Mass., assignors to GTE Sylvania Incorporated

Filed Mar. 15, 1971, Ser. No. 124,224
Int. Cl. H03k *5/08*
U.S. Cl. 307—237 **5 Claims**



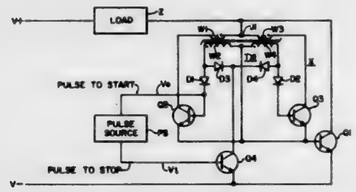
A limiter circuit employing a high gain differential voltage comparator. A positive quiescent voltage is established on the inverting input of the comparator at which input signals are applied. The output of the comparator is coupled to the non-inverting input through a feedback arrangement so as to establish a threshold voltage which is positive with respect to the quiescent voltage until the input signal exceeds the positive threshold voltage and the output of the comparator changes from a high to a low level. Then the feedback arrangement establishes a threshold voltage which is negative with respect to the quiescent voltage until the input signal exceeds the negative threshold voltage and the output of the comparator changes from the low to the high level. Thus, a square-wave output is produced at the output of the comparator.

3,666,971

PULSE CONTROL DRIVE SYSTEM FOR POWER TRANSISTORS

Bryan J. Bixby, Pittsburgh, and Derek A. Paice, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 24, 1970, Ser. No. 75,195
Int. Cl. H03k *3/30*
U.S. Cl. 307—282 **9 Claims**



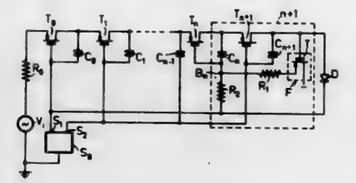
A drive system for a power device, such as a power transistor, for supplying a load wherein an oscillator is provided including a pair of devices, such as transistors, coupled by a transformer, which may comprise a saturable transformer, wherein the oscillator devices are alternately conductive and are connected in a Darlington circuit arrangement with the power devices to supply drive current thereto when conductive.

3,666,972

DELAY DEVICE

Frederik L. J. Sangster, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 12, 1970, Ser. No. 88,742
Claims priority, application Netherlands, Sept. 25, 1970, 7014135
Int. Cl. H03k *17/26*
U.S. Cl. 307—293 **4 Claims**



A capacitive delay device comprising a sequence of capacitances which have been interconnected by the main current path of at least one transistor, a feedback path being provided between the output electrode of at least one transistor and the input electrode thereof.

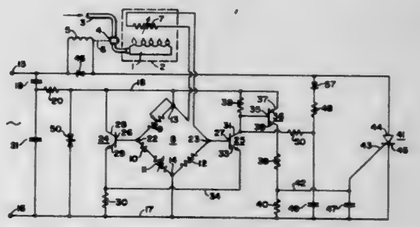
3,666,973

SOLID STATE ELECTRONIC THERMOSTAT

William H. Hulsman, Jr., Needham, Mass., assignor to Control Design, Inc., Needham, Mass.

Filed Aug. 19, 1970, Ser. No. 65,130
Int. Cl. H03k *17/00*
U.S. Cl. 307—310 **2 Claims**

An apparatus for controlling the temperature of a device such as an oven in which a resistance having a positive temperature coefficient of resistance is incorporated in one leg of a bridge and is used to detect the temperature to be controlled. The bridge is energized by an alternating voltage and any unbalance appears across output terminals which are connected respectively to the bases of a first and a second transistor also energized with the same alternating voltage. The emitters of the transistors are connected together and through a common resistance so that the initiation of current flow through one transistor will inhibit current flow through the other. Flow of current through the second transistor triggers a silicon control rectifier which in turn controls a valve which supplies fuel to a burner in the oven. The voltage supplied to the bridge leads the voltage on the control rectifier so that it is always triggered at the beginning of its conducting half cycle. A third transistor is interposed between the second transistor and the silicon control rectifier. The changes in the response of the third transistor to its ambient temperature is compensated for in one of a number of ways. One is to have an ambient temperature sensitive resistance in the leg of the bridge diagonally opposite the first leg in which the first temperature sensitive resistance is placed. A second arrangement is to insert an ambient temperature sensitive diode in a leg adjacent to the first leg. A third arrangement is to insert an ambient temperature sensitive diode across the base and emitter of the third transistor. A delay circuit is provided for charging a condensor to delay the operation of the second transistor, the charge of said condensor being permitted to build up upon the initiation of current through the first transistor.

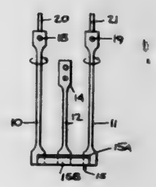


3,666,974

TORSIONAL FORK TRANSDUCERS

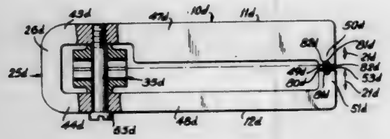
Frank Dostal, Elmhurst, N.Y., assignor to Bulova Watch Company, Inc., New York, N.Y.

Filed Jan. 16, 1970, Ser. No. 3,349
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.2 **8 Claims**



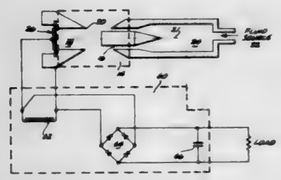
A torsional fork transducer wherein the two lines of the fork are interconnected at their feet by a piezoelectric crystal operating in the longitudinal mode, the crystal being energized at a rate determined by the natural frequency of the fork to effect torsional vibration of the tines. Oscillators derived from a pick-up electrode on the crystal are applied to the input of an electronic amplifier whose output is fed to a drive electrode on the crystal to sustain the fork in vibration.

3,666,975
ULTRASONIC MOTORS
Lewis Balamuth, New York, N.Y., assignor to Ultrasonic Systems, Inc., Farmingdale, N.Y.
Filed May 18, 1970, Ser. No. 38,149
Int. Cl. H01v 7/00
U.S. Cl. 310—8.2 **4 Claims**



An ultrasonic motor construction wherein the compressional wave mechanical energy is transmitted through a transmission member into flexural vibrational wave energy to a working tip or surface removed a distance from the transducer associated therewith. Various forms of ultrasonic motor constructions are illustrated as in the form of a welding instrument or scissor.

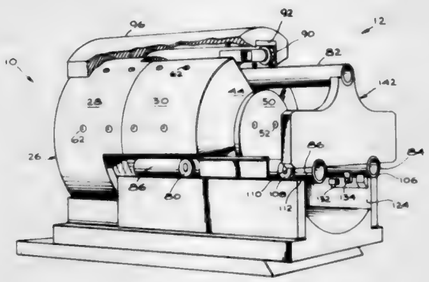
3,666,976
FLUID OPERATED ELECTRIC GENERATOR UTILIZING A PIEZOELECTRIC DEVICE
Robert D. Gourlay, Canoga Park, Calif., and Hughes Aircraft Company, Culver City, Calif.
Filed Nov. 10, 1965, Ser. No. 529,895
Int. Cl. H03k 3/35
U.S. Cl. 310—8.8 **10 Claims**



A fluid operated electric generator to convert fluid source energy, for example, in a rapidly moving vehicle or projectile to usable electrical power. The generator comprises an acoustic oscillator including an annular nozzle and an acoustically resonant cavity coaxial with the nozzle and spaced therefrom. The resonant cavity comprises a cylindrically shaped pipe having an annular knife edge facing the nozzle. Positioned at the bottom of and forming the end of the cylindrically shaped cavity is a piezoelectric disc. The fluid directed toward the cavity by the nozzle, upon striking the knife edge, produces acoustic oscillations which are stabilized at a single frequency by the resonant cavity and are coupled to the piezoelectric disc. The piezoelectric disc responsive to displacement by the acoustic oscillations provides an electrical signal at the oscillating frequency.

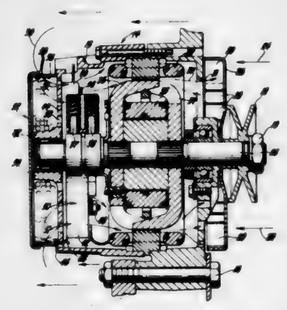
3,666,977
LINEAR POSITIONER
Clifford J. Helms, Calabasas Park, and Stellos B. Papadopoulos, Westlake Village, both of Calif., assignors to Sperry Rand Corporation, New York, N.Y.
Filed Sept. 10, 1970, Ser. No. 71,013
Int. Cl. H02k 41/02
U.S. Cl. 310—13 **13 Claims**

A linear positioner particularly useful for rapidly and precisely positioning heads with respect to a magnetic disc recording surface. The positioner includes a linear motor having a cylindrical core of magnetically permeable material and a motor housing, also of permeable material, closely magnetically coupled to the ends of the core. Permanent magnets are mounted on the inner surface of the housing, between the ends thereof, to produce a magnetic field across an air gap to the core which is of substantially uniform density along the length of the core. A coil assembly, including a rigid edge-wound drive coil mounted around the core in the air gap, is supported for horizontal movement along the core



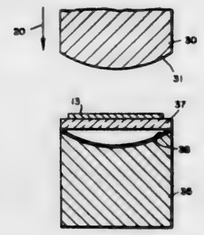
by a plurality of roller bearings. The roller bearings are mounted on bearing support rods secured to the drive coil structure and spaced around the circumference thereof. Some of the bearings are mounted for rotation about vertical spindle axes so as to engage vertical rail surfaces while other bearings are mounted for rotation about horizontal spindle axes so as to engage horizontal rail surfaces. At least some of the bearings are flexibly mounted in order to preload the bearings and assure that they roll properly on the rail surfaces.

3,666,978
SIDE PORTED INLET COVER FOR GENERATORS
Glen R. Renner, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 25, 1970, Ser. No. 92,638
Int. Cl. H02k 9/06
U.S. Cl. 310—62 **1 Claim**



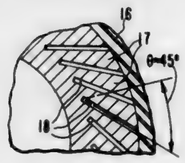
A cylindrical-like cover, the end of which is impervious to air flow and the axially extending sides of which have ports, is adapted to be removably attached to one side of a ducted end wall of an alternator housing. A voltage regulator and rectifier comprised of semiconductors are attached to the other side of the end wall in proximity to the air ducts and are cooled by means of a fan that draws air in radially through the ports in the cover when attached and axially through the ducts in the end wall. Debris of a size greater than the ports or a momentum in excess of that which can be overcome by the suction of the alternator fan is blown over the exterior of the alternator and cover by the motor fan. This prevents debris from clogging the end wall and the ducts therein, reduces the tendency of the semiconductor to overheat from the effects of such clogging, and avoids possible charging system faults associated therewith.

3,666,979
FOCUSED PIEZOELECTRIC TRANSDUCER AND METHOD OF MAKING
Jerry T. McElroy, Boulder, Colo., assignor to Automation Industries, Inc., Century City, Los Angeles County, Calif.
Filed June 17, 1970, Ser. No. 46,897
Int. Cl. H04r 17/00; G01n 29/04
U.S. Cl. 310—9.6 **11 Claims**



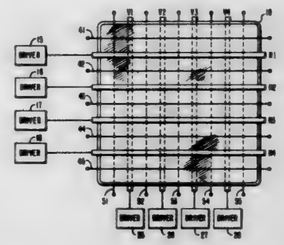
An apparatus and method for fabricating focused high frequency electromechanical transducers especially useful in ultrasonic inspection apparatus is disclosed. An initially flat or planar piezoelectric crystal is placed between a pair of members having mating surfaces contoured to correspond to the desired shape of the crystal. When the members are forced together the crystal is bent or otherwise formed into the desired shape.

3,666,980
DEPRESSABLE BEAM COLLECTOR STRUCTURE FOR ELECTRON TUBES
Samuel Robert Jackson, Santa Clara, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed Oct. 20, 1970, Ser. No. 82,376
Int. Cl. H01j 19/36
U.S. Cl. 313—39 **9 Claims**



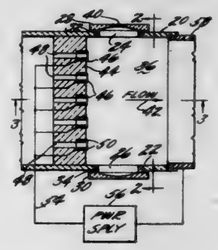
A depressible beam collector structure for electron beam tubes is disclosed. The beam collector structure includes a metallic beam collector electrode for collecting and dissipating energy of the beam. An electrically insulative ceramic sleeve surrounds the beam collector electrode for electrically insulating the collector electrode relative to the surrounds of the insulator body. An array of yieldable metallic thermally conductive cantilever fins are interposed between and interconnect the beam collector electrode with the surrounding insulative sleeve for providing a thermally conductive path therebetween. The yieldable cantilever fins conduct heat from the collector to the insulator and thence to the surrounds while preventing transmission of stress due to differential thermal expansion to the brittle insulator.

3,666,981
GAS CELL TYPE MEMORY PANEL WITH GRID NETWORK FOR ELECTROSTATIC ISOLATION
Frank M. Lay, Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 18, 1969, Ser. No. 886,100
Int. Cl. H01j 17/04
U.S. Cl. 313—190 **6 Claims**



A display panel has horizontal coordinate drive lines and vertical coordinate drive lines disposed on opposite sides of a gas-filled envelope. Additional horizontal lines disposed between the horizontal coordinate drive lines and additional vertical lines disposed between the vertical coordinate drive lines may be left unconnected or floating, or they may be connected to a common potential. The additional horizontal lines and the additional vertical lines constitute a grid network which electrostatically shields each gas cell from all remaining gas cells defined by the coordinate intersections of the vertical and horizontal coordinate drive lines.

3,666,982
DISTRIBUTIVE CATHODE FOR FLOWING GAS ELECTRIC DISCHARGE PLASMA
Walter J. Wiegand, Jr., Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Mar. 20, 1970, Ser. No. 21,259
Int. Cl. H01j 17/06
U.S. Cl. 313—205 **5 Claims**

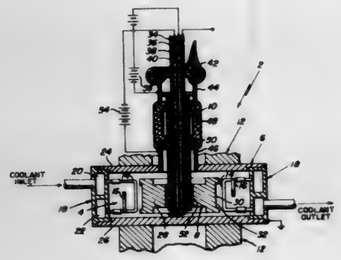


A cathode emitting electrons to form an electric discharge plasma in a flowing gas stream is oriented and disposed to cause a substantially uniform distribution of the emitted electrons throughout the gas stream. A segmented cathode embodiment permits a large surface area, the large area in turn allowing a maximum cooling effect from the flowing gas. The cathode segments are dispersed and interspersed with insulating material to avoid the current concentrations otherwise occurring at the intersections of the individual cathode segments. Also cooling limitations require that the cathode surfaces be substantially parallel to the flowing gas stream. Various configurations are disclosed for providing a proper cathode electron emission area within varying flow cross-sectional areas.

3,666,983
WAVE PROPAGATING STRUCTURE FOR CROSSED FIELD DEVICES

Hans-Joachim Krah, Burlington; John S. Sklenak, Sudbury, and William A. Smith, Winchester, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 28, 1970, Ser. No. 101,678
Int. Cl. H01j 25/34
U.S. Cl. 315—3.5 6 Claims

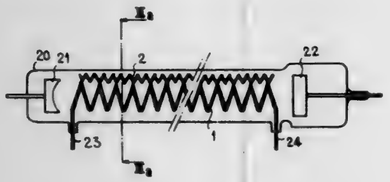


A wave propagating structure having broad bandwidth capability is disclosed for crossed field electron beam interaction devices. The thermal dissipation characteristics are programmed and customized taking into consideration beam coupling impedance, dielectric loading and suppression of undesired space harmonic modes. A structure such as a modified helix delay line is arranged with groupings of individual elements in parallel and such groupings are serially connected. A fluid coolant is circulated through the delay line and the dielectric constant characteristics of such coolant may be selected to vary the frequency determining dispersion parameters of predetermined portions of the propagating wave.

3,666,984
WIDE-BAND HIGH-POWER DELAY LINE

Gerard Kantorowicz, Paris, France, assignor to Thomson-CSF

Filed Dec. 16, 1970, Ser. No. 98,615
Claims priority, application France, Dec. 16, 1969, 6943510
Int. Cl. H01j 25/34
U.S. Cl. 315—3.5 7 Claims

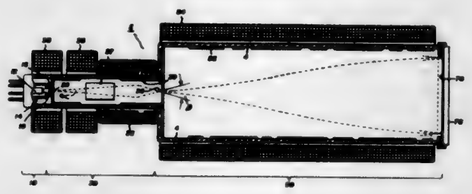


In a delay line of an electron tube for amplifying or generating microwaves, externally of and parallel to a main conductor helix within which an electron beam travels axially, there extends a secondary helix which has a pitch and a diameter half the size of those of the main helix and which is so arranged that its turns electrically contact those of the main helix at several locations along a generatrix common to both helices. The field effect generated by the secondary helix substantially diminishes parasitic phenomena that appear in a delay line having a main helix of large diameter.

3,666,985
HIGH RESOLUTION ELECTRON OPTIC SYSTEM FOR CAMERA TUBES

Kurt Schlesinger, Fayetteville, N.Y., assignor to General Electric Company

Filed Oct. 20, 1969, Ser. No. 867,829
Int. Cl. H01j 29/56
U.S. Cl. 315—31 5 Claims



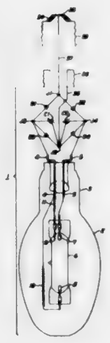
A high resolution electron optic system for camera tubes comprises a demagnification focusing stage which forms a primary focus which is a demagnified real image of a small spot-defining aperture. This primary focus is then projected into the FPS cavity. Much higher resolution and greater beam currents can be obtained.

Correction of scan distortion resulting from the cycloidal motion of the beam in the FPS cavity is obtained by twisting the deflection electrodes bounding the FPS cavity.

3,666,986
INTERNALLY RESISTIVELY BALLASTED DISCHARGE LAMP CONTAINING BRIDGE RECTIFIER

William H. Lake, Novelty, and Nicholas W. Medendorp, Willowick, both of Ohio, assignors to General Electric Company

Filed July 15, 1970, Ser. No. 54,880
Int. Cl. H01j 61/56
U.S. Cl. 315—49 12 Claims

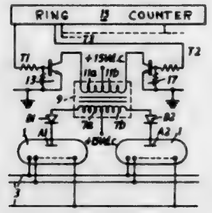


A discharge lamp comprising an arc tube and an incandescible filament connected in series within an outer jacket. An integral four-diode bridge rectifier operates the lamp on rectified alternating current and the filament limits the current through the arc tube. The lamp operates reliably with a greater proportion of the line voltage applied across the arc tube than in conventional resistively ballasted lamps, resulting in higher efficiency. One or more diodes may be paralleled by a small capacitor to provide a voltage doubling effect to start the lamp.

3,666,987
NUMBER GLOW TUBES HAVING TRANSFORMER ENERGIZING CIRCUITS

James John Drage, Uxbridge, England, assignor to Sumlock Anita Electronics Limited, Uxbridge, Middlesex, England

Filed Nov. 9, 1970, Ser. No. 87,875
Claims priority, application Great Britain, Nov. 13, 1969, 55,651/69
Int. Cl. H01j 17/48
U.S. Cl. 315—84.6 12 Claims

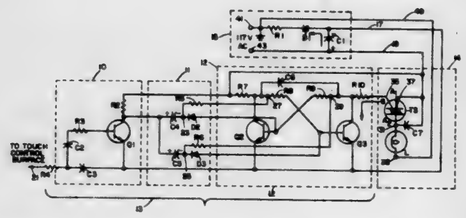


Apparatus is provided for generating electrode voltage for a number tube utilizing a center-tapped transformer to transmit pulses to a number tube anode. The transformer primary is center-tapped and supplied with opposing pulse potentials at the outer ends through non-linear resistors at a time corresponding to the appearance of voltage on a selected cathode electrode. A d.c. bias potential is connected to the tube anode to complement the pulse voltage of the transformer. The pulses are derived from a ring counter.

3,666,988
TOUCH SENSITIVE POWER CONTROL CIRCUIT

Robert E. Bellis, 700 7th Street, Boulder City, Nev.

Filed Jan. 22, 1970, Ser. No. 4,887
Int. Cl. H01h 35/00; H03k 17/72; H05b 37/02
U.S. Cl. 315—208 5 Claims



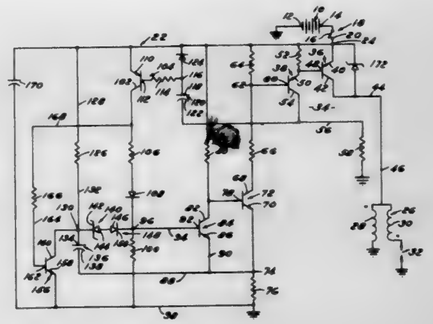
Disclosed is a capacitance responsive and touch sensitive power control circuit for an incandescent lamp or the like. A bidirectional AC semiconductor switch, such as a TRIAC, operatively connects and disconnects a lamp in series with power supply terminals, and the bidirectional semiconductor switch is alternately driven to conduction and nonconduction by a bistable flip-flop. A touch signal input circuit provides a triggering signal for the bistable flip-flop in response to body capacitance input signals applied thereto.

3,666,989
IGNITION SYSTEM SUPPLYING CONTINUOUS SOURCE OF SPARKS

Wesley D. Boyer, Franklin, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 3, 1969, Ser. No. 813,002
Int. Cl. H05b 37/02
U.S. Cl. 315—219 8 Claims

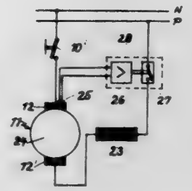
An ignition system providing a continuous source of spark ignition pulses for igniting a fuel-air mixture. The ignition system includes solid state circuit means for providing a substantially constant spark repetition rate and constant spark energy over a wide range of input voltages.



3,666,990
OVERLOAD PROTECTOR FOR ELECTRIC MOTORS WITH BRUSHES

Georg Strobl, Buhl, and Klaus Sander, Hofingen, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed May 13, 1971, Ser. No. 143,067
Claims priority, application Germany, June 6, 1970, G 70 21 203.2
Int. Cl. H02h 7/06, 5/04
U.S. Cl. 317—13 C 6 Claims



A heat responsive device, such as a bimetallic switch or a thermo couple, is positioned within a brush of the motor. The opening or closing of the switch or the voltage from the thermo couple, operates a relay or an electronic switch, such as a thyristor to disconnect the motor from current when the temperature, as an indication that the maximum permissible operating temperature of the motor has been exceeded, within the brush rises above a certain value.

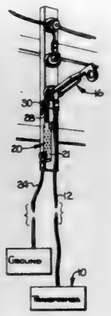
3,666,991
RESONANCE SUPPRESSING METHOD AND APPARATUS

Herman B. Wolf, Charlotte, N.C., assignor to R. H. Bouligny, Inc., Charlotte, N.C.

Filed Nov. 23, 1970, Ser. No. 91,939
Int. Cl. H02h 7/04
U.S. Cl. 317—14 5 Claims

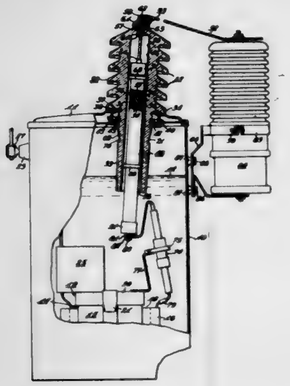
Resonance effects otherwise possibly occuring upon a change in energization of an unloaded power transformer having leads connected in a main alternating current electrical circuit are suppressed through the temporary connection

of a resonance suppressing impedance between a lead of the transformer and an electrical ground, with such electrical



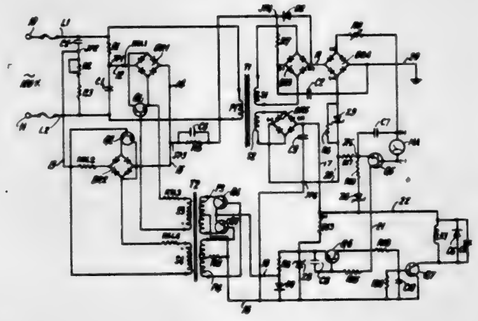
connection being maintained only through a change in the state of energization of the unloaded transformer.

3,666,992
PROTECTIVE MEANS FOR DISTRIBUTION TRANSFORMER
Ernest A. Goodman, Pittsburgh, Pa., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Oct. 22, 1970, Ser. No. 83,070
Int. Cl. H02h 7/04
U.S. Cl. 317—15 10 Claims



A distribution transformer for use on a high voltage power distribution system having high fault current capability is protected over the entire range of fault currents by a secondary breaker which opens on low magnitude currents caused by secondary faults, a protective link which melts on low magnitude primary fault currents, and in series with the protective link a current limiting fuse which does not operate in the low fault current range but interrupts low impedance, high magnitude primary fault currents. The current limiting fuse is disposed within the axial bore in a primary bushing having a conductive line shield on its inner surface to eliminate high voltage gradients in the vicinity of the fusible elements of the current limiting fuse and thus minimize corona and radio frequency voltage, and the conductive line shield is terminated at a point which provides enough electrical clearance between the line shield and the lower terminal of a melted current limiting fuse to prevent a fuse restrike or a physical or electrical bushing failure.

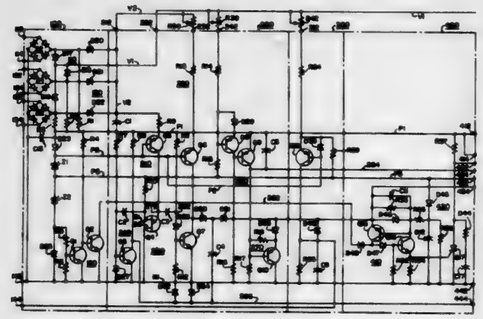
3,666,993
STATIC HAZARD DETECTOR FOR ISOLATED ALTERNATING CURRENT SUPPLY LINES
Raymond H. Legatti, Clearwater, Fla., assignor to Electromagnetic Industries, Inc., Clearwater, Fla.
Filed May 13, 1971, Ser. No. 143,096
Int. Cl. H02h 3/28
U.S. Cl. 317—18 R 12 Claims



First and second resistors are connected in series with respective capacitors at first and second junction points. The two R-C series combinations are connected between the two line conductors of an isolated AC supply line, with each capacitor being connected to a different line conductor. Each junction point is connected to one terminal of a respective full wave rectifier, and the opposite terminals of the two full wave rectifiers are connected to a third junction point. Current flow through each rectifier is controlled by a respective transistor, and the transistors are alternately triggered conductive by an oscillator. A photoelectric resistor, such as a cadmium sulphide resistor, is connected in series between the third junction point and one terminal of a third full wave rectifier having an AC potential supply thereto so as to serve as an interposed source of DC potential. A lamp subjected to the voltage of the supply line is operatively associated with the photoelectric resistor so that the impedance of the detector circuit, or the "source impedance," is varied so that the detector current is maintained at a constant value over the entire voltage range of from 102v to 132v, for a nominal 120v AC supply.

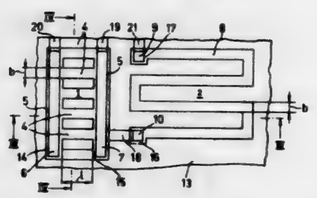
The other terminal of the DC source is connected to one terminal of a milliammeter whose opposite terminal is grounded, and diode means are connected to the millianmeter so that fault current can flow therethrough in only one direction. The milliammeter, through the mentioned circuitry, is connected alternately to the first and second junction points for flow of fault current alternately from the line conductors in only one direction to ground through the milliammeter. A switching relay controls signal lights and an alarm, and normally maintains a "safe" lamp illuminated. Upon occurrence of a fault current flow through the milliammeter, an amplifier amplifies the fault current to energize the relay to switch connections to sound an alarm, to illuminate a "hazard" lamp, or to do both. Phase shift adjustment means are associated with the R-C series combinations, and a diode is connected in by-pass relation with the third full wave rectifier to direct reverse current flow in by-pass relation to the third full wave rectifier.

3,666,994
OVERCURRENT PROTECTIVE DEVICE
John D. Watson, Portsmouth, England; Francis T. Thompson, Murrysville, Pa., and Frederick O. Johnson, Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation of application Ser. No. 765,584, Oct. 7, 1968. This application June 18, 1970, Ser. No. 47,625
Int. Cl. H01h 47/18
U.S. Cl. 317—36 TD 9 Claims



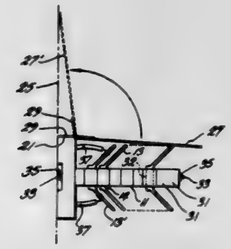
An overcurrent protective device of the time delay type is provided which is responsive to the current in an electrical circuit which is being protected. The protective device includes means for producing periodic output pulses of current each having substantially a predetermined width or duration, the frequency and magnitude of said pulses both varying with the current to which the device is responsive. When the current in the associated circuit increases to a predetermined level or value, the pulses are applied to a timing or integrating capacitor to provide an output voltage which varies in a substantially linear manner with the square of the current to which the protective device is responsive.

3,666,995
INTEGRATED SEMICONDUCTOR DEVICE
Bernardus Leonardus Wensink, and Adriaan Cense, both of Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 28, 1970, Ser. No. 32,694
Claims priority, application Netherlands, May 10, 1969, 6907227
Int. Cl. H01l 19/00
U.S. Cl. 317—101 A 4 Claims



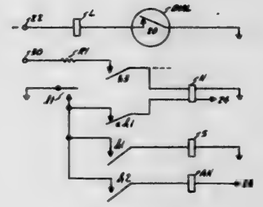
In an integrated semiconductor device according to the invention, a resistance element with small resistance comprises between its electric connections a number of parallel arranged resistance zones of the same width and thickness. The influence of inaccuracies in providing the electric connections is eliminated, and a zone of a resistance element with large resistor may have the same width and thickness as the parallel zones of the resistance element with small resistance.

3,666,996
TELEPHONE LINE TERMINAL BLOCK COVER
Bryce H. Brown, Devon Manor, Pa., assignor to Darr R. Brown, Lansing, Mich., a part interest
Filed Sept. 3, 1970, Ser. No. 69,359
Int. Cl. H01r 9/02
U.S. Cl. 317—118 4 Claims



An improved telephone line terminal block cover is disclosed. The particular block to which the invention has application is a horizontally mounted terminal block having upper and lower matched arrays of terminal clips projecting upwardly and downwardly from the upper and lower horizontal surfaces of the terminal block, respectively. The disclosure presents a flat, rigid, acid-solder resistant hinged terminal guard. The specific structure includes a hinged plexiglass or cellulose acetate door, overlying the upwardly extending terminal clips. The door is swingable upon the hinges upwardly away from the metal clips, to gain access thereto. The door shields the terminal ends from electrical shorting by accidentally dropped objects, and also guards against other terminal fouling debris, including wire clippings and/or solder drippings from soldering operations at higher level rows or banks of similar horizontally mounted terminal blocks; the guard also acts as a personnel protecting device, preventing accidental body contact with the terminals.

3,666,997
CIRCUIT FOR SPEEDING THE OPERATION OF A RELAY
Marvin Forrest Malm, Milan, Tenn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Oct. 30, 1970, Ser. No. 85,519
Int. Cl. H01h 47/22
U.S. Cl. 317—123 6 Claims

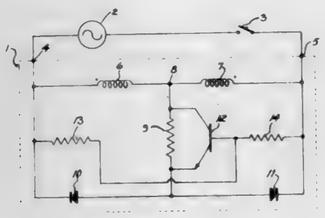


The operation of a relay is speeded up by placing its windings in series with the energized windings of a second relay. Collapse of the magnetic field in the windings of the second relay produces an EMF which is greater than that normally available for the operation of the first relay thereby causing the first relay to be energized with a higher potential, and to operate more quickly.

3,666,998
RELAY INPUT CIRCUIT

Wayne H. Wielebski, Milwaukee, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Feb. 4, 1971, Ser. No. 112,530
Int. Cl. H01h 47/04
U.S. Cl. 317—123 8 Claims

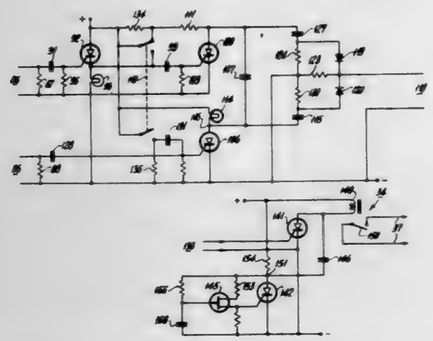


A relay coil is divided into two series connected sections and a dissipation resistor is connected in series with one lead of both sections to improve the drop out response of the relay. The dissipation resistor is shunted by a transistor the base of which is connected through coupling resistors to the other leads of the coil sections. The transistor operates as a switch to short circuit the dissipation resistor when power is applied to the relay coil to retain the pick up response of the relay. An alternative embodiment has a single coil section and coupling resistor. The dissipation resistor is connected to one lead of the coil section and the coupling resistor connects the transistor base to the other lead.

3,666,999
APPARATUS FOR PROVIDING SIGNALS CORRESPONDING TO THE VISCOSITY OF A LIQUID

Sam L. Moreland, Jr., Groves, Tex.; Nelson B. Haskell, Jefferson County, and Thomas B. Smitherman, East Baton Rouge Parish, both of La., assignors to Texaco, Inc., New York, N.Y., by said Moreland

Filed June 22, 1970, Ser. No. 48,243
Int. Cl. H01h 47/24, 47/32
U.S. Cl. 317—127 13 Claims



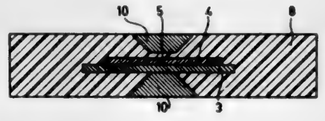
Apparatus, which may be used with a computer, senses the passage of the meniscus of a liquid column between two predetermined levels. The time for the passage of the meniscus of the liquid column corresponds to the viscosity of the liquid. As the meniscus of the liquid column passes between a light source and a photo tube arranged at each predetermined level, the quantity of light from the light source reaching a photo tube changes causing an output from the photo tube to change accordingly. Trigger circuits convert the changes in the photo tube outputs to pulses. A logic circuit has two input circuits, each input circuit being connected to a different trigger circuit and having trippable means. Each trippable means is tripped by the first pulse from a corresponding trigger circuit so that the logic circuit is responsive to only the first pulse from each trigger circuit to provide two output pulses. The time interval between the two output pulses is substantially equal to the passage time of the liquid column. A relay is energized in response to the two output pulses from the logic circuit for the time interval between the two output pulses to effectively provide input signals to the computer which may compute the liquid's viscosity.

The trippable means in the logic circuit must be reset before another viscosity measurement can be made.

3,667,000
INTEGRATED HALL-EFFECT DEVICE

Hendrik Jan Bergmans, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 25, 1969, Ser. No. 852,644
Claims priority, application Netherlands, Aug. 31, 1968, 6812451
Int. Cl. H01l 5/00
U.S. Cl. 317—235 R 4 Claims

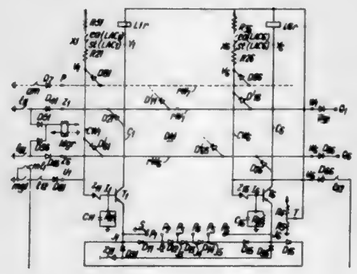


An integrated Hall-effect device is described in which a part of a semiconductor body serves as a Hall element and in which an amplifier circuit is incorporated in the remaining part, which semiconductor body is connected to conductors and is incorporated in an envelope of synthetic material. The envelope at the area of the lower and upper side of the Hall element contains recesses extending to the proximity of the semiconductor body in which poleshoes of a ferromagnetic material can be incorporated in order to concentrate the magnetic field at the Hall element.

3,667,001
SELECTION CIRCUIT

Stephane Marcel Clement Victor Simon, Brussels, and Henri Albert Juli Verhille, Borgerhout, both of Belgium, assignors to International Standard Electric Corporation

Filed Dec. 10, 1970, Ser. No. 96,754
Claims priority, application Netherlands, Dec. 31, 1969, 6919630
Int. Cl. H01h 47/22
U.S. Cl. 317—137 15 Claims

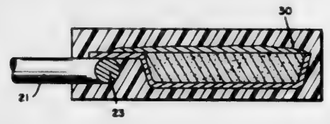


Selective transfer circuit using transistors and diodes. A time variable gating signal is applied to a coincidence gating chain to trigger a selected transistor into conduction thereby activating an output device individual to the activated transistor. Isolating diodes are used to prevent cross activation of transistors.

3,667,002
STRIP CONFIGURATION FOR CAPACITORS

Gerhart P. Klein, Manchester, Mass., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Original application Apr. 19, 1968, Ser. No. 722,702, now Patent No. 3,530,342. Divided and this application June 1, 1970, Ser. No. 54,066
Int. Cl. H01g 9/05
U.S. Cl. 317—230 10 Claims

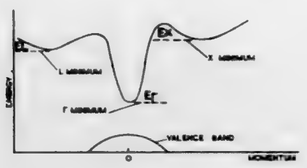


The present invention relates to a configuration which is an integral part of the anode structure of an electrolytic capacitor. A strip of film-forming metal includes at least one appendage which has formed therein a depression which serves as the retaining means for a bonded mass of film-forming metal. The appendage also includes a reduced neck portion. The appendage and the mass of film-forming metal have an oxide layer, a semiconductor layer and a conductive layer formed thereover. Terminal means includes one extremity having a bent end portion connected to the reduced neck portion and includes another extremity having a substantially flatten end portion connected to the conductive layer carried by the bonded mass of film-forming metal.

3,667,003
THREE VALLEY TRANSFERRED ELECTRON OSCILLATOR

Cyril Hilsum, Malvern, and Huw David Rees, Malvern Link, both of England, assignors to Minister of Aviation Supply in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Apr. 21, 1971, Ser. No. 136,152
Claims priority, application Great Britain, Apr. 22, 1970, 19,350/70
Int. Cl. H01l 3/20, 5/00
U.S. Cl. 317—234 R 8 Claims

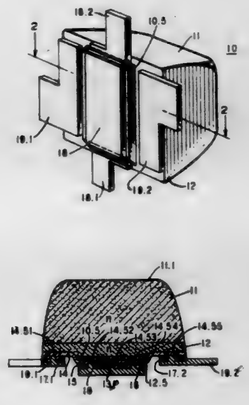


A semiconductor device includes a piece of semiconductor material exhibiting transferred electron effects between three sets of conduction band valleys, which sets consist of a set of lowest energy, a set of highest energy and a set of intermediate energy, and in which the set of lowest energy has an energy density of states smaller than that of either of the other two sets and in which the rate at which electrons are scattered between the set of lowest energy and the set of intermediate energy is less than both the rate at which electrons are scattered between the set of lowest energy and the set of highest energy and the rate at which electrons are scattered between the set of intermediate energy and the set of highest energy, and means for applying voltages across the piece of semiconductor material, whereby electron transfer occurs between the different sets of valleys. Also included in the device are means for controlling the current flowing such that it is free of dipole domains. The semiconductor material may be either InP_xAs_{1-x} $(1 \geq x \geq 0.75)$ or $In_yGa_{1-y}Sb$ $(0.05 \leq y \leq 0.30)$.

3,667,004
ELECTROLUMINESCENT SEMICONDUCTOR DISPLAY APPARATUS

Matthew Kuhn, Warren Township, Somerset County, and Norman Edwin Schumaker, North Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 26, 1970, Ser. No. 84,049
Int. Cl. H01l 15/00
U.S. Cl. 317—234 R 10 Claims



An electroluminescent semiconductor display comprises a plurality of electroluminescent semiconductor devices, which are electrically connected together in a rectangular random access type of beam lead array. Each electroluminescent device includes an N-type gallium phosphide semiconductor base member of one conductivity type having a mesa in which a P-N junction is located. A beam lead array parallel to the x direction contacts the P-type zone through apertures in a light reflecting coating on the plateau surface of each of the mesas, whereas a beam lead array parallel to the y direction contacts each of the N-type base regions in two separate portions thereof, thereby avoiding the need for any leads which are in the path of the emitted light. The shape and conductivity profile of the N-type zones in the base region and the plateau are tailored in order to serve as efficient electrical crossover conductors for the beam leads in the y direction as well as to reduce light absorption.

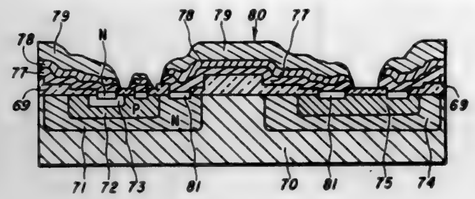
3,667,005
OHMIC CONTACTS FOR SEMICONDUCTORS DEVICES

James A. Cunningham, Richardson, and Coy D. Orr, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Original application June 30, 1966, Ser. No. 561,845, now Patent No. 3,616,401. Divided and this application Aug. 3, 1970, Ser. No. 67,654
Int. Cl. H01l 1/14
U.S. Cl. 317—234 R 7 Claims

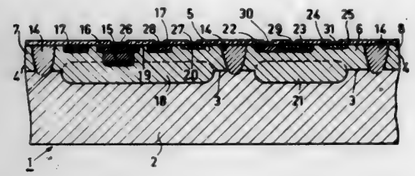
Disclosed are methods for depositing multilayer ohmic contacts upon a substrate of semiconductor material disposed within a low pressure chamber; such including for example the particular features of upward sputtering of the

various metal films, simultaneous sputtering of platinum with gold utilizing a sputtering cathode composed of platinum and gold, and adding hydrogen into an inert sputtering atmosphere to eliminate undesirable formation of oxides. This



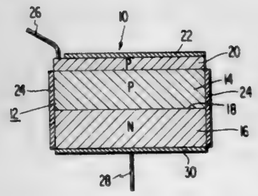
invention provides imporved adhesion of the sputtered metal films to the semiconductor surface and the silicon oxide, and provides the formation of the metal film which is substantially free of pin holes and which has substantially uniform resistivity.

3,667,006
SEMICONDUCTOR DEVICE HAVING A LATERAL TRANSISTOR
Heniz Walter Ruegg, Hausen, Switzerland, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 19, 1970, Ser. No. 12,547
Int. Cl. H01l *11/06*
U.S. Cl. 317—235 R **5 Claims**



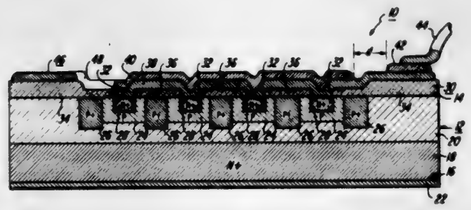
The invention relates to a semiconductor device having a substrate of the one conductivity type on which an epitaxial layer divided into islands of the opposite conductivity type is provided and in which at least one island comprises a lateral transistor and a buried layer of the opposite conductivity type. In order to obtain both a small vertical emitter injection and a high collector-base breakdown voltage, the emitter zone has a larger thickness than the collector zone and, in contrast with the collector zone, the emitter zone reaches up to the buried layer. No additional manufacturing step is necessary for the manufacture.

3,667,007
SEMICONDUCTOR ELECTRON EMITTER
Henry Kressel, Elizabeth, and Jacques Isaac Pankove, Princeton, both of N.J., assignors to RCA Corporation
Filed Feb. 25, 1970, Ser. No. 13,980
Int. Cl. H01l *15/00*
U.S. Cl. 317—235 R **5 Claims**



An electron emitter comprising a body of a semiconductor material which is adapted to generate light therein when properly biased but which is a poor absorber of the generated light. On a surface of the body is a thin region of a semiconductor material which is a good absorber of the generated light and which has an index of refraction which substantially matches the index of refraction of the material of the body. The thin semiconductor material region is adapted to absorb the light from the body and convert the light into free electrons. On the surface of the semiconductor material layer is a thin film of an electropositive work function reducing material which is adapted to emit the electrons formed in the semiconductor material layer.

3,667,008
SEMICONDUCTOR DEVICE EMPLOYING TWO-METAL CONTACT AND POLYCRYSTALLINE ISOLATION MEANS
Fredric Leroy Katnack, Somerset, N.J., assignor to RCA Corporation
Filed Oct. 24, 1970, Ser. No. 84,958
Int. Cl. H01l *11/00, 15/00*
U.S. Cl. 317—235 R **8 Claims**


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3,667,014
EXCITER ARRANGEMENT FOR SYNCHRONOUS MOTORS

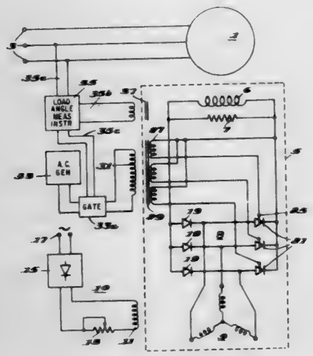
Wilfried Merhof, Baden, and Renato Noser, Ennetbaden, both of Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Continuation of application Ser. No. 723,144, Apr. 22, 1968, now abandoned. This application Nov. 17, 1970, Ser. No. 90,431

Claims priority, application Switzerland, May 26, 1967, 7471/67

Int. Cl. H02p 1/46

U.S. Cl. 318—167 3 Claims



An arrangement for controlling excitation of the field coil on the rotor of a synchronous motor during starting as well as during running at synchronous speed includes a rectifier bridge mounted on the rotor having controllable rectifiers in one bridge half and uncontrollable rectifiers in the other bridge half. The rectifier bridge is supplied with current from an exciter alternator also integrated into the rotor structure. During starting and up to near synchronous speeds the controllable rectifiers are blocked so as to block current flow from the motor field coil through the bridge. Thereafter, these rectifiers become unblocked and feed continuous current to the field coil.

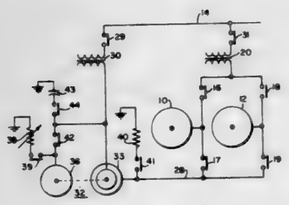
3,667,015
ALTERNATING CURRENT MOTOR STARTING APPARATUS AND METHOD

Gurney L. Godwin, Pittsburgh, and Lee A. Kilgore, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 18, 1970, Ser. No. 47,297

Int. Cl. H02p 1/52

U.S. Cl. 318—171 6 Claims



A starting set including an induction machine and a synchronous machine is brought up to speed before connection to the main motor that is to be started. The induction machine may have a number of poles that is a fraction, such as one-half, of the poles of the synchronous machine of the starting set so that the secondary of the wound rotor motor produces a voltage at that fraction of the line frequency at full speed. Alternatively, the induction machine and the synchronous machine of the starting set may have the same or nearly the same number of poles but the machines are concatenated to provide the desired frequency change. After the starting set is up to full speed, the main motor is connected to the secondary of the wound rotor motor and accelerates to a speed near synchronism with the secondary supply. If the main motor is a synchronous machine it is then synchronized with the secondary supply by applying field excitation. Means are then provided to increase the load on the synchronous machine of the starting set. The starting set is then disconnected from the power line so that it will begin to decelerate and, when brought to as low a speed as possible, the main motor will be running at nearly line synchronous speed and can be synchronized with the line.

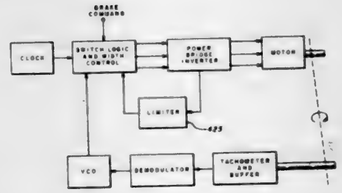
3,667,016
REGENERATIVE BRAKING CIRCUIT FOR INDUCTION MOTORS

John C. G. Dunfield, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed May 3, 1971, Ser. No. 139,477

Int. Cl. H02p 3/18

U.S. Cl. 318—209 6 Claims



An induction motor is normally driven from a clock source acting through a power bridge inverter. Braking is accomplished by substituting a feedback signal for the clock signal. A tachometer in the feedback loop monitors the actual motor speed and cooperates to produce a feedback signal having a frequency characteristic that represents a predetermined fraction of the actual motor speed. When the feedback signal is applied to the motor through the power bridge inverter, the excitation frequency becomes and remains less than the frequency necessary to maintain the prevailing motor speed so that the motor operates in a negative slip mode in which it is quickly brought to a smooth stop.

3,667,017
STARTER DEVICE FOR SINGLE PHASE AC MOTORS

Antonio Ramirez, 5885 Park Avenue, Montreal, 152 Quebec, Canada

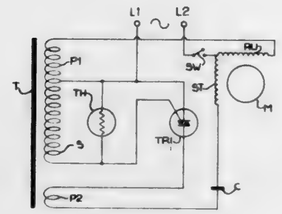
Filed Apr. 26, 1971, Ser. No. 137,199

Claims priority, application Canada, Jan. 13, 1971, 102099

Int. Cl. H02p 1/44

U.S. Cl. 318—221 E 4 Claims

A starter device for a single phase A.C. motor having a main winding and a starting winding adapted for connection to a single phase A.C. source. The starter device includes a semi-conductor switching device having a control electrode and a transconductive path, and a transformer having a first and a second primary windings arranged to generate opposite fluxes in the transformer core, and a secondary winding. The starter device includes a circuit for connecting the first primary winding in series with the main winding of the motor and another circuit for connecting the second primary winding in series with the transconductive path of the switching device and with the starting winding of the motor. The control electrode of the switching device is connected to the secondary winding of the transformer whereby the voltage induced in the secondary winding by the initial inrush of current flowing through the first primary winding upon starting of the motor will render the switching device conductive to permit energization of the starting winding of the motor to start the same. The flux produced by the second primary winding shortly after initiation of conduction in the switching device will oppose the flux created by the first primary winding and so reduce the voltage induced in the secondary winding to stop conduction through the switching device and thus disconnect the starting winding of the motor.



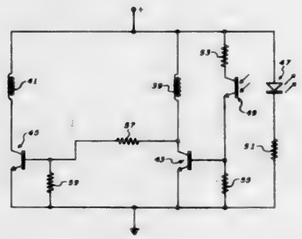
3,667,018
BRUSHLESS DC MOTOR HAVING ELECTRONIC COMMUTATION RESPONSIVE TO ROTOR POSITION AND INDUCED ARMATURE WINDING VOLTAGE

Rodney G. Rakes, Bristol, Tenn., assignor to Sperry Rand Corporation

Filed Sept. 28, 1970, Ser. No. 76,113

Int. Cl. H02k 29/00

U.S. Cl. 318—254 4 Claims



A single sensor brushless DC motor contains two windings that are alternately energized to sustain rotor rotation and includes transistor switches in series with each motor winding. The transistor in series with the first winding is driven directly from the sensor so as to energize the first winding when the sensor is illuminated and that transistor is driven into saturation. The transistor in series with the second winding has an input terminal coupled to the first motor winding so as to react to voltages induced in the first winding during times when the first winding is de-energized.

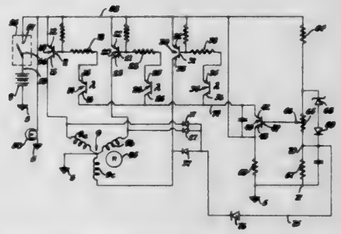
3,667,019
CONTROL CIRCUIT FOR ADJUSTING AND REGULATING THE SPEED OF A BRUSHLESS DIRECT CURRENT MOTOR RESPONSIVE TO VOLTAGES INDUCED IN THE ARMATURE WINDINGS

James O. Elliott, Xenia, and George W. Jackson, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 12, 1970, Ser. No. 79,729

Int. Cl. H02k 29/00

U.S. Cl. 318—254 4 Claims



A control circuit for adjusting and regulating the speed of a brushless direct current motor having three "wye" connected armature coils, a permanent magnet field and a rotatable shaft. Each motor armature coil is connected in series with the collector-emitter electrodes of a respective switching transistor across a source of direct current supply potential, the base-emitter electrodes of each switching transistor being connected across the source of direct current supply potential through a respective photosensitive electrical switching device and the collector-emitter electrodes of a control transistor. A selectively variable magnitude of a direct current control potential is applied across the base-emitter electrodes of the control transistor and the photosensitive electrical switching devices are sequentially illuminated as the shaft rotates to sequentially establish the switching transistor base-emitter drive circuits. A direct current regulating potential generated in the motor armature coils as they are "cut" by the flux produced by the permanent magnet field is of a magnitude proportional to the speed of the motor and is applied in a reverse polarity relationship to the control potential for regulating the speed of the motor.

3,667,020
SPEED CONTROL APPARATUS FOR MOTORCAR ENGINE

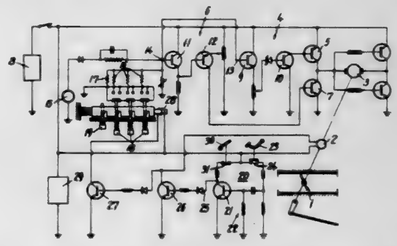
Takaya Senzaki, Omiya, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 7, 1970, Ser. No. 52,928

Claims priority, application Japan, July 7, 1969, 44/53078

Int. Cl. H02p 1/40

U.S. Cl. 318—297 3 Claims



An internal combustion engine of a vehicle is controlled in its speed of operation by an electric motor which is coupled to the throttle valve of the engine via an electromagnetic clutch. Speed selector devices regulate the introduction of

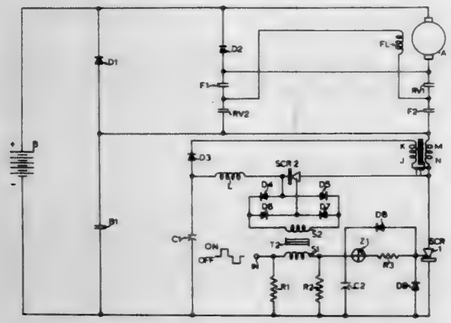
corresponding resistances into the motor supply circuit to control the degree of opening of the throttle valve, and upper and lower limit detection circuits effect operation of the motor to regulate engine speed within prescribed limits at a selected speed. A release circuit is operated by the vehicle brake to return the speed setting to engine idle while the clutch is temporarily opened and the release circuit is operated by the accelerator pedal to open the clutch and permit manual control of the engine speed.

3,667,021

SERIES MOTOR CONTROL CIRCUIT USING THYRISTORS ENERGIZED BY DIRECT CURRENT

Albert W. Anderson, and Charles E. Konrad, both of Roanoke, Va., assignors to General Electric Company

Filed Sept. 11, 1970, Ser. No. 71,317
Int. Cl. H02p *5/16*
U.S. Cl. 318—341 **6 Claims**



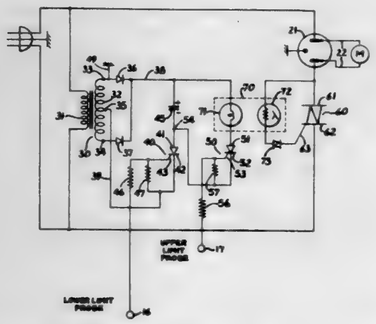
A commutation control circuit for a motor including a power thyristor and an auxiliary thyristor for switching the power thyristor under control of a variable frequency pulse generator making use of a capacitor for commutation charged by a transformer, the charge on the capacitor being established to be ready for commutation whenever the power thyristor is gated, and the charging current being derived from a direct current source such as a lead/acid storage battery. The circuit specifically uses a positive pulse for causing conduction of the power thyristor and a negative pulse for switching the power thyristor "off."

3,667,022

CONTROL FOR SUMP PUMP

James L. Quinn, 6143 West Touhy Avenue, Chicago, Ill.

Filed Sept. 2, 1970, Ser. No. 68,940
Int. Cl. G05b *13/00*
U.S. Cl. 318—482 **7 Claims**



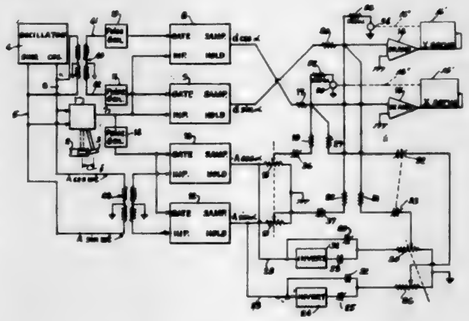
A control for a motor driving a sump pump having lower and upper limit probes which includes first and second silicon controlled rectifiers having electrodes which are coupled to the respective probes. The anode-cathode circuit of the second silicon controlled rectifier includes a lamp having an associated photocell. The photocell is connected to the control electrode of a bilateral solid state switch, or triac, which is in series with the motor. The first silicon controlled rectifier is supplied with half-waves of a-c. so that it conducts when the lower limit probe is submerged, but is non-latching. Responsive to such conduction is a capacitor which applies direct voltage to the second silicon controlled rectifier so that the latter latches on when the upper probe becomes submerged. Thus when the water in the sump is pumped down, out of contact with the upper limit probe, the motor continues to be energized. However, when the water is pumped below the level of the lower limit probe, the first silicon controlled rectifier becomes non-conducting and the capacitor no longer applies direct voltage to the second silicon controlled rectifier so that the latter becomes unlatched, thereby turning off the motor. The silicon controlled rectifiers are supplied with current from an isolated secondary winding and the circuit is further isolated from the motor by lamp and photocell.

3,667,023

TRACER CONTROL SYSTEM

Marcel R. Sommeria, Palos Heights, Ill., assignor to Hyper-Loop, Inc., Summit, Ill.

Filed Mar. 30, 1970, Ser. No. 23,703
Int. Cl. G05b *19/36*
U.S. Cl. 318—578 **12 Claims**



A tracer control system employs a plurality of sampling devices for decoding signals representing information relating to the magnitude and direction of deflection of a stylus associated with a tracer head. The signals from the sampling devices are mixed with the outputs of other sampling devices, which outputs are representative of reference signals, to produce control signals to control the drive of the stylus relative to a template.

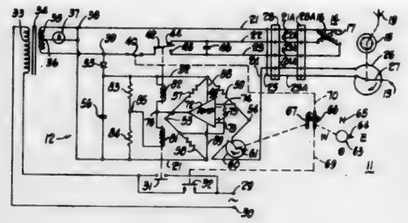
3,667,024

BIDIRECTIONAL SERVOMOTOR SYSTEM

Andrew F. Deming, Alliance, Ohio, assignor to The Alliance Manufacturing Company, Inc.

Filed Apr. 21, 1971, Ser. No. 135,852
Int. Cl. G05b *11/14*
U.S. Cl. 318—674 **20 Claims**

A servomotor system is disclosed which may be used for an antenna rotator or the like with a bidirectional AC motor controlled as to direction by a low voltage relay having double throw contacts. A DC bridge is energized from a rectifier and has an output to a differential amplifier which energizes a high voltage relay and a low voltage relay in selective conditions. For bridge output in a first direction of unbalance, both relays are energized and for bridge output in the opposite direction of unbalance, only the high voltage relay is energized to provide energization to the entire servomotor system.

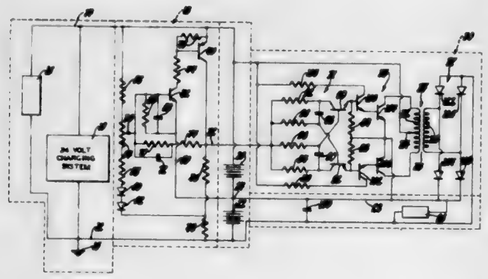


3,667,025

DUAL VOLTAGE SYSTEM

Robert W. Campbell, and Donald L. Cummins, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed June 21, 1971, Ser. No. 154,816
Int. Cl. H02j *7/14*
U.S. Cl. 320—15 **4 Claims**



Two 12-volt batteries are connected in series across the output of a 24-volt charging system, and a DC to DC converter is connected between the output of the charging system and a junction between the batteries. To maintain equal voltages across both batteries, the voltage at the junction is compared with a reference voltage by a voltage regulator that is operatively connected with a DC to DC converter to maintain a regulated output therefrom to the junction.

3,667,026

AUTOMATIC TEMPERATURE RESPONSIVE BATTERY CHARGING CIRCUIT

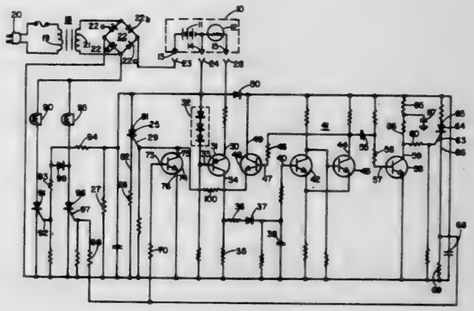
Henry A. Bogut, and Leon Jasinski, both of Chicago, Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 2, 1970, Ser. No. 94,261
Int. Cl. H02j *7/04*
U.S. Cl. 320—36 **16 Claims**

A charger for charging a battery at a first predetermined rate and automatically terminating said charge rate when the battery temperature rises, in response to the charging current, to a point indicating full charge. The battery has a thermistor mounted therein which changes resistance as the battery temperature changes.

The charger includes a charging circuit and silicon controlled rectifier in series with the battery. A sensing circuit, coupled to the thermistor, senses a thermistor resistance indicative of less than a full charge and changes from a first to a second state. If the thermistor resistance indicates a full charge, the sensing circuit changes from the second to the first state.

A switch circuit connected to the sensing circuit and the rectifier gate electrode is responsive to changes from the first to the second state to trigger the rectifier into conduction



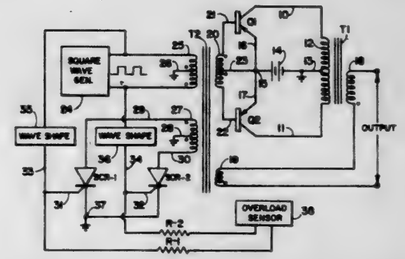
and allow charging of the battery at the predetermined rate. A latch circuit connected to the sensing circuit and rectifier gate electrode operates in response to the sensing circuit changing from the second to the first state to inhibit further conduction of the silicon controlled rectifier. The latch circuit is de-energized, allowing further conduction of the silicon controlled rectifier, by removal of the battery from the battery charger.

3,667,027

INVERTER CIRCUIT WITH STABILIZED FREQUENCY UNDER ALL LOAD CONDITIONS

Ricky Martin, Los Angeles, Calif., assignor to Bell Electronic Corp.

Filed Mar. 30, 1971, Ser. No. 129,477
Int. Cl. H02m *1/18*
U.S. Cl. 321—11 **5 Claims**



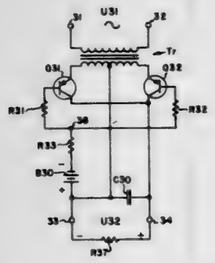
An inverter circuit utilizing a saturable core driving transformer to drive the switch elements includes a generator to pass a stabilized frequency square wave to the driving transformer to stabilize the switching frequency of the inverter to match the stabilized frequency of the square wave. Additional switch means coupled to the driving transformer are responsive to the square wave to short circuit, alternately, portions of the driving transformer at points in time at which the square wave changes polarity thereby forcing the flux to reverse and prevent any frequency drift should the feedback current from the output transformer of the inverter exceed the current supplied by the square wave signal. The additional switches also serve to hold the inverter in an off condition by turning both switches on simultaneously.

3,667,028

RECTIFIER CIRCUIT INCLUDING TRANSISTORS

Axel Leufgen, Muehlheim am Main, Germany, assignor to Dienes-Honeywell Holding GmbH, Muehlheim am Main, Germany

Filed Oct. 26, 1970, Ser. No. 83,917
Claims priority, application Germany, Nov. 18, 1969, P 19 57 786.7
Int. Cl. H02m 7/12
U.S. Cl. 321—47 5 Claims



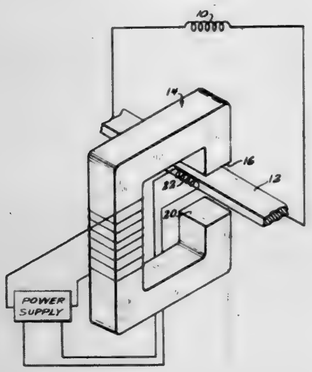
A rectifier circuit which uses transistors, is unaffected by changes in ambient temperature and frequency, and shows a linear relation between input AC and output DC. In the invention, the diode or diodes of a rectifier circuit are replaced by the emitter-collector path of a transistor (Q) and the base electrode of the transistor is connected to one of the output terminals 3 by means of a resistor R1 having a high resistance compared to the base input resistance of the transistor.

3,667,029

METHOD AND MEANS FOR CHARGING OR DISCHARGING SUPERCONDUCTING WINDINGS

Wilfried H. Bergmann, Leerfeldstr. 10, Munich 45, Germany

Filed Apr. 15, 1970, Ser. No. 28,893
Int. Cl. G05f 3/02
U.S. Cl. 323—8 10 Claims



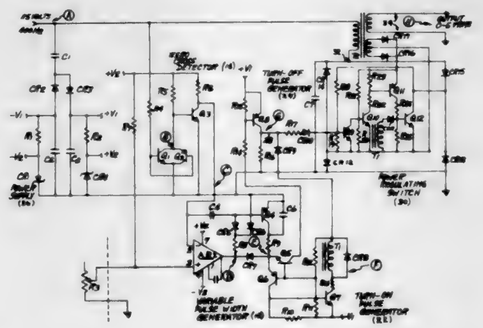
A winding of superconducting material is charged by electrically shorting the winding with a hard Type-II series superconducting material and cooling the winding and shorting material to a superconducting temperature. A magnetic flux is generated to penetrate the shorting material to establish therein fluxoids and a temperature gradient is established across the shorting material to cause motion of the fluxoids across the shorting material into the magnetic circuit of the winding to effect charging or discharging thereof.

3,667,030

AC-TO-AC POWER REGULATION CIRCUITS HAVING LOW E.M.I. AND SHORTED LOAD PROTECTION

David R. Gordon, Des Moines, and Gary L. Tarbox, Seattle, both of Wash., assignors to Pacific Electro Dynamics, Inc., Bellevue, Wash.

Filed Feb. 26, 1970, Ser. No. 14,511
Int. Cl. G05f 5/00
U.S. Cl. 323—24 8 Claims



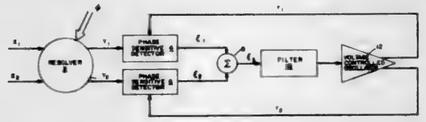
AC-to-AC power regulation circuits with power switch means in series with the line and load, the conduction period or angle of the power switch means being controlled to regulate the power output. Transistor type power switch means is turned on at zero current phase and turned off at the end of the desired conduction period. Capacitative line filtering is employed to minimize electromagnetic interference (e.m.i.), with marked weight reduction as compared with conventionally used inductive line filtering, rendering the circuits especially advantageous for aircraft use, such as for lamp dimmers, windshield temperature controllers, and aircraft AC power supplies in general. Bi-directional transistor type power switch means in circuits of the present invention, with proper bias, are inherently current-limiting and therefore can be operated into a short circuit load without damage to the power regulation circuit. Such power switch means, as contemplated by the invention, are power transistors, in contrast to conventionally used silicon controlled rectifiers (SCRs).

3,667,031

PHASE-LOCKED RESOLVER TRACKING SYSTEM

Duncan B. Cox, Jr., Manchester; Kenneth Fertig, Brookline, and Donald E. Fulton, Everett, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 18, 1970, Ser. No. 64,781
Int. Cl. H03d 1/00
U.S. Cl. 323—101 8 Claims



An improved phase-locked feedback loop which functions in conjunction with a resolver as an efficient and highly accurate tracking system for continually tracking the angle information in modulated resolver output waveforms. The improvement basically comprises a phase-locked loop incorporating as many phase-sensitive detectors as there are resolver outputs, each detector operating on one of the output windings of the resolver, the circuit being configured so as to provide resolver-angle to phase-angle conversion with

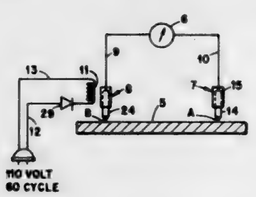
substantially increased accuracy and performance improvement.

3,667,032

METAL IDENTIFICATION METER EMPLOYING THE THERMOELECTRIC EFFECT

James E. Summers, Jr., 117 Columbia Drive, Oak Ridge, Tenn.

Filed Oct. 7, 1969, Ser. No. 864,363
Int. Cl. G01r 5/22; 324 32
U.S. Cl. 324—32 4 Claims



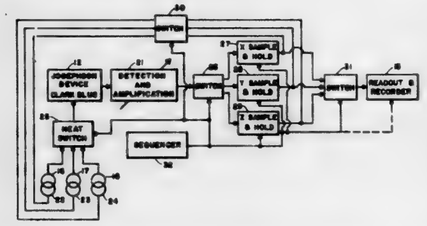
A metal comparator employing the thermoelectric effect of dissimilar metals joined in a circuit with a voltage indicator and employing two probes of identical metallic composition, one of the probes being heated to a temperature greater than ambient temperature.

3,667,033

CRYOGENIC SINGLE SENSOR THREE COMPONENT MAGNETOMETER

Charles R. Davis, Sunnyvale, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Apr. 6, 1971, Ser. No. 131,621
Int. Cl. G01r 33/02
U.S. Cl. 324—43 R 10 Claims



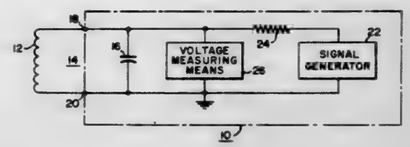
This invention relates to an improved magnetometer using sense loops of superconducting wire. A Josephson device is used to sense the induced current flowing in the wire and to control a bucking current to nullify the current flowing in the loop. The amount of current required to reduce the current to zero is used as a measure of the intensity of the magnetic field inducing the superconducting current flow. A system for sharing a single Josephson device in a plurality of sense loops is a component part of the system of the invention.

3,667,034

METHOD OF TESTING AN ELECTRICAL WINDING INCLUDING THE STEP OF CONNECTING THE WINDING TO PROVIDE A TANK CIRCUIT

John A. Freeze, South Boston, Va., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 26, 1970, Ser. No. 50,152
Int. Cl. G01r 31/02, 31/06
U.S. Cl. 324—55 9 Claims



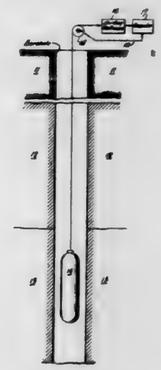
A non-destructive method of testing electrical windings, including the steps of providing a tank circuit using the winding to be tested as part of the tank circuit, and tuning the tank circuit to resonance. The resonant frequency, and maximum voltage across the tank circuit at resonance, are used to determine if there are faults in the winding.

3,667,035

NUCLEAR MAGNETISM LOGGING

Charles P. Slichter, Champaign, Ill., assignor to Texaco Development Corporation, New York, N.Y.

Filed Mar. 17, 1970, Ser. No. 20,207
Int. Cl. G01n 27/78
U.S. Cl. 324—0.5 R 28 Claims



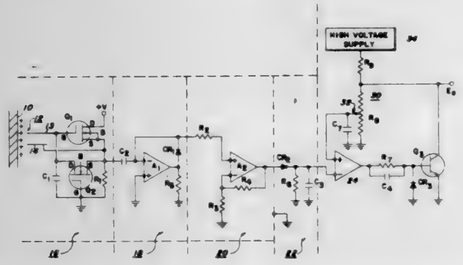
Method and apparatus for analyzing earth materials in situ along a bore hole on the basis of their nuclear magnetic properties. A logging instrument is passed through the bore hole with means to subject a region including earth material in situ to a relatively strong D.C. magnetic field, which may be oriented in any direction and which may be relatively inhomogeneous, for polarizing susceptible nuclei in said material, including selected nuclei therein. The logging instrument also contains means for applying an alternating magnetic field to the same region, including polarized nuclei therein, in a direction transverse to the earth's magnetic field and at a frequency corresponding to the Larmor precession frequency of the selected nuclei in the earth's field. While the alternating field is being applied, the D.C. polarizing field in the region including said material is terminated within a predetermined time interval, i.e., turned off sufficiently slowly to provide an adiabatic variation of the D.C. field and sufficiently quickly to terminate the D.C. field within a time interval less than the characteristic thermal relaxation time of the selected nuclei. Since the frequency of the alternating field is such that it produces resonance in the earth's field alone, turning off the polarizing field sweeps the nuclei onto driven resonance. The alternating field is then abruptly terminated in said region including said polarized nuclei so that the selected polarized nuclei precess freely about the earth's relatively homogeneous magnetic field. A characteristic of the resulting free precession condition of the selected nuclei is detected. In accordance with a preferred embodiment, the free precession condition is detected by phase coherent detection utilizing a reference signal produced in timed correla-

tion with the alternating field. Advantageously, in accordance with a further feature of the invention, computer of average transient signal averaging techniques, such as the type known as boxcar integration (digital or analogue), are employed for enhancement of the detected free precession signal with respect to the noise.

3,667,036
ELECTROMETER AMPLIFIER CIRCUITS

Ned Jay Seachman, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Jan. 23, 1970, Ser. No. 5,441
Int. Cl. G01r 27/00, 5/28, 1/30
U.S. Cl. 324—72 12 Claims

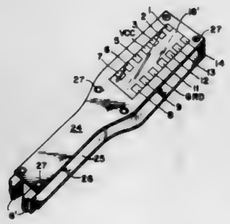


Electrometer amplifier circuits for producing a voltage signal which is proportional to the electrostatic potential on an insulator. In a first embodiment, the electrometer amplifier circuit is controlled such that the output voltage is equal to the sensed electrostatic potential or multiples thereof. In a second embodiment, the circuit output nulls about the surface potential on the insulator.

3,667,037
POCKET SIZE INTEGRATED CIRCUIT LOGIC ANALYZER

Eugene F. Kierce, Ballston Lake, N.Y., assignor to The General Electric Company

Filed Nov. 12, 1969, Ser. No. 875,997
Int. Cl. G01r 15/12, 19/14
U.S. Cl. 324—73 R 9 Claims

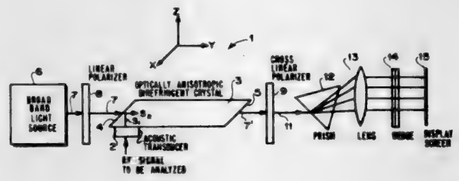


A method and apparatus employing a plurality of leads corresponding in number and respectively engaging the leads of a flat pack to be tested as it is functioning under power in circuit, wherein a plurality of flat pack function indicating lights are powered by a plurality of flat pack lamp drivers that receive their power from the power input of the flat pack to be tested and receive their operating signals from the remaining leads of the flat pack to be tested. The entire unit is compact and may be clipped in the pocket of an operator. The input leads are cantilevered springs biased away from corresponding slots within a housing head that fits over the flat pack to be tested. The power for driving the analyzer is received solely from the circuit board containing therein the flat pack to be tested and the lamp drivers assure that there will be no material alteration in the flat pack to be tested as it operates in circuit.

3,667,038
ACOUSTO-OPTIC RF SPECTRUM ANALYSIS METHOD AND APPARATUS

Leonard S. Cutler, and Donald L. Hammond, both of Los Altos Hills, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed June 17, 1970, Ser. No. 46,910
Int. Cl. G01r 23/16, 27/06
U.S. Cl. 324—77 R 8 Claims

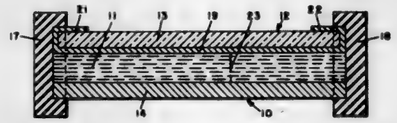


An acousto-optic RF spectrum analysis method and apparatus is disclosed wherein radio frequency energy to be spectrum analyzed is employed to excite an acoustic wave in an optically anisotropic medium. A linearly polarized white light beam is collinearly diffracted on the acoustic wave in the anisotropic medium to diffract light of the first polarization and of a frequency related to the frequency of the acoustic wave into light of the second polarization. The diffracted output light is then analyzed to separate light of the first polarization from light of the second polarization. The separated light is spectrum analyzed to obtain a spectrum corresponding to the spectrum of the radio frequency energy to be analyzed.

3,667,039
ELECTRICITY MEASUREMENT DEVICES EMPLOYING LIQUID CRYSTALLINE MATERIALS

Andre Garfein, Brighton; Wilhelm Rindner, Lexington, and David C. Rubin, Somerville, all of Mass., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed June 17, 1970, Ser. No. 47,061
Int. Cl. G01r 27/22; G08b 23/00
U.S. Cl. 324—92 7 Claims

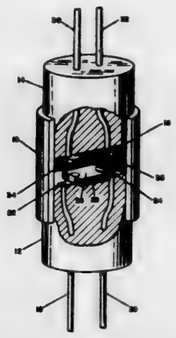


Disclosed are measuring instruments utilizing liquid crystalline elements that exhibit visible change in response to input signals above given threshold levels. By applying the input signals non-uniformly so that the threshold value is exceeded in only certain portions of the liquid crystalline element, visible discontinuities are created therein. The locations of these discontinuities are made dependent on the magnitudes of the input signals, direct readouts of which are provided by suitably calibrated indicia.

3,667,040
SENSOR FOR DETECTING RADIO FREQUENCY CURRENTS IN CARBON BRIDGE DETONATOR

Abraham Grinoch, Morristown, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Sept. 28, 1970, Ser. No. 76,124
Int. Cl. G01r 5/26, 21/04
U.S. Cl. 324—106 2 Claims



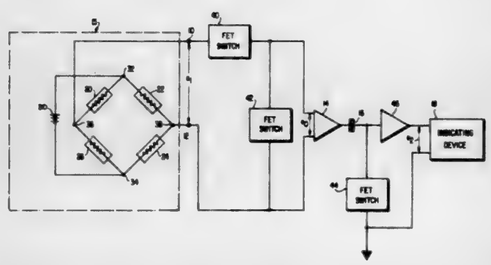
This invention relates to an improved apparatus for monitoring induced electromagnetic current in carbon bridge detonators. A heat detecting means is held in close proximity to a chip bridge resistor, which simulates the carbon bridge in a carbon bridge detonator, to measure the heat radiated therefrom.

The invention described herein may be manufactured, used and licensed by or for the Government for governmental purposes without the payment to me of any royalty thereon.

3,667,041
AUTOMATIC ZERO CIRCUITRY FOR INDICATING DEVICES

Donald A. Senour, Carlisle, Mass., assignor to BLH Electronics, Inc., Waltham, Mass.

Filed Dec. 4, 1969, Ser. No. 882,000
Int. Cl. G01r 1/02, 1/30
U.S. Cl. 324—130 1 Claim

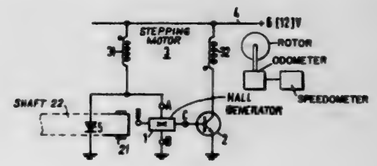


Automatic zero circuitry for low-level signal indicating devices is provided which includes a capacitor at the output of an amplifier for storing a charge, during a given period of time, equal to the drift or offset voltage of the amplifier such that during a measuring period of time, the indicating device will give a true and correct reading. A dual slope integrator in combination with a plurality of field-effect-transistors enables the proper time periods for the storing and reading operations described above.

3,667,042
CIRCUIT ARRANGEMENT FOR REMOTE INDICATION OF THE ROTARY MOVEMENT OF A SHAFT

Walter Engel, Nurnberg-Eibach; Dieter Flachsbarth, Ruckersdorf, and Hermann Schwarz, Henfenfeld, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 28, 1969, Ser. No. 871,897
Claims priority, application Germany, Nov. 14, 1968, P 18 08 768.8
Int. Cl. G01p 3/54
U.S. Cl. 324—174 2 Claims

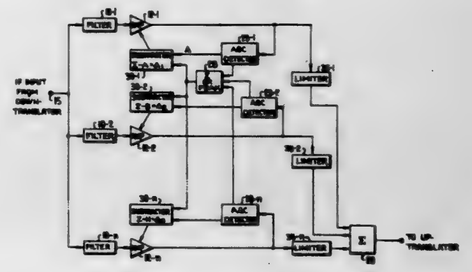


An electronic pulse generator has a permanent magnet driven by a shaft and a stationary Hall generator in operative proximity with the magnet. The base electrode of a transistor is directly connected to one of the Hall voltage electrodes of the Hall generator. The stator winding of a stepping motor is connected to the emitter-collector circuit of the transistor, is driven by the Hall voltage via the transistor, and in turn drives a speedometer coupled to the transistor.

3,667,043
CONSTANT GAIN BANDWIDTH PRODUCT COMMUNICATION SATELLITE REPEATER

James D. Ahlgren, McLean, Va., assignor to Telcom, Inc., McLean, Va.

Filed Sept. 19, 1969, Ser. No. 859,282
Int. Cl. H04b 7/20
U.S. Cl. 325—3 10 Claims



A transponder is rendered capable of automatically adjusting its bandwidth to accommodate the applied input signal. The input signal is applied in parallel to a plurality of signal channels which include filters of differing bandwidths and amplifiers having nominal gains arranged such that the product of amplifier gain and filter bandwidth is the same for all channels. The signal levels from all channels are compared and that channel providing the signal of highest level is permitted to transmit and the others are inhibited. Inhibition of channels may take the form of automatic gain control of the channel amplifiers or selective gating by means of appropriate logic circuitry.

3,667,044

EMERGENCY LUNAR COMMUNICATIONS SYSTEM

Otha H. Vaughan, Huntsville, and Lee B. Malone, Athens, both of Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Nov. 3, 1970, Ser. No. 86,417
Int. Cl. H04b 7/14
U.S. Cl. 325—4 5 Claims



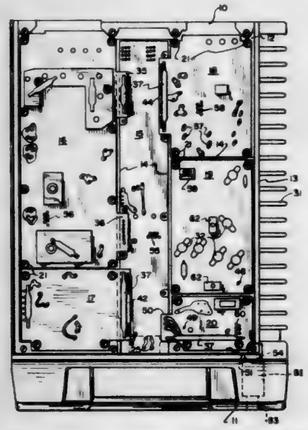
A communication system for emergency use on the moon that includes three transceivers. One of the transceivers is carried by an astronaut and another is positioned at a basecamp. The system also includes a hand held launcher and rocket vehicle that is utilized by the astronaut to launch a third relay transceiver in an upward trajectory above the lunar surface. The relay transceiver is mounted in the rocket vehicle and functions to relay voice communications between the two transceivers located on the lunar surface.

3,667,045

CHASSIS AND MONITORING ARRANGEMENT FOR ELECTRICAL APPARATUS

Jimmy Paul Combs, Palatine, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 25, 1970, Ser. No. 49,699
Int. Cl. H04b 1/38
U.S. Cl. 325—15 11 Claims



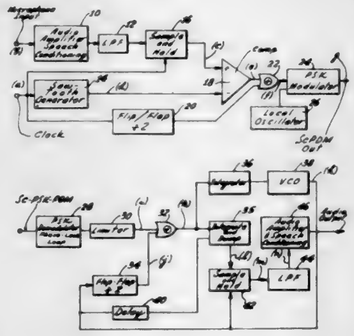
Electrical apparatus including components on plurality of chassis boards each having conductors thereon forming electrical circuits. The boards may be secured in cooperative relationships on a frame or housing structure, with the boards having portions in overlying relation with disengageable connecting means for interconnecting the circuits on the boards. The electrical equipment may be a mobile radio receiver and transmitter, with one board being a control board and the other boards coupled thereto having the radio receiver and radio transmitter components thereon. The control board has a connector thereon for making external connections to the circuit thereof, which is interconnected to the circuits on the receiver and transmitter boards. The control, receiver and transmitter boards are accessible for servicing, and have sockets for receiving a control plug and a test plug from a test set for monitoring the signals in the circuits. The individual chassis boards can be replaced without removing the housing from the vehicle in which it is installed.

3,667,046

VOICE TRANSMISSION AND RECEIVING SYSTEM EMPLOYING PULSE DURATION MODULATIONS WITH A SUPPRESSED CLOCK

Ralph W. Schoolcraft, Torrance, Calif., assignor to The Magnavox Company, Torrance, Calif.

Filed Oct. 9, 1969, Ser. No. 865,145
Int. Cl. H04b 1/00
U.S. Cl. 325—38 16 Claims



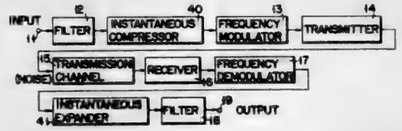
A voice transmission system including coded voice information using pulse duration modulation (PDM) with a suppressed clock and wherein this suppressed clock pulse duration modulated voice signal is used to modulate a phase shift keying modulator (PSK). The receiver includes a phase shift keying demodulator which feeds a limiter having a wide bandwidth so as to achieve the highest possible processing gain. The receiver also includes a voltage controlled oscillator which is fed an error signal derived from an integrator so as to produce an output signal from the voltage controlled oscillator to replace the suppressed clock.

3,667,047

IMPROVED SPEECH ARTICULATION FREQUENCY MODULATION COMMUNICATION SYSTEM

Masahiro Iwasaki; Nobuyuki Goto, both of Yokohama-shi; Hiroya Fujisaki, and Kunihiko Niwa, both of Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Oct. 7, 1969, Ser. No. 864,492
Claims priority, application Japan, Oct. 11, 1968, 43/73744; 43/73745; 43/73746
Int. Cl. H04b 1/66
U.S. Cl. 325—45 9 Claims



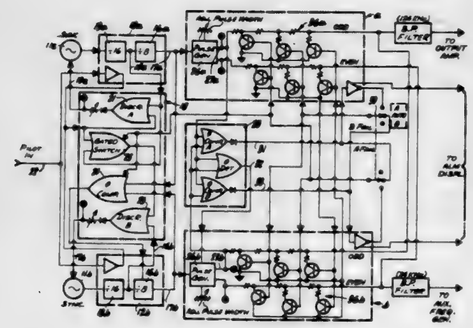
The present invention provides a frequency modulation communication system wherein there is disposed in the transmitting side a first filter capable of furnishing transmission signals with such frequency characteristics of the voiced and unvoiced speech signal components as to allow information to be transmitted at the maximum rate possible with said transmission signals as well as with the transmission channel used and in the receiving side a second filter capable of bringing the frequency characteristics of signals received and frequency demodulated there back to the original state when said received signals were initially transmitted, thereby enabling the articulation of transmission signals to be improved with the said transmission channel, or enabling the same articulation of transmission signals to be maintained with a compressed frequency band width of the transmission channel and the prescribed frequency bandwidth to be compressed without any inconvenience.

3,667,048

CARRIER SUPPLY WITH SYNCHRONOUS REDUNDANCY

Kjell T. Hansen, Mountain View, Calif., assignor to Farinon Electric, San Carlos, Calif.

Filed Nov. 13, 1970, Ser. No. 89,240
Int. Cl. H04b 1/02; H04j 1/06
U.S. Cl. 325—157 14 Claims



A redundant carrier supply which includes a pair of parallel channels each of which receives a base frequency from an associated crystal controlled oscillator and provides output pulses of high harmonic content which are linearly added and which are maintained without phase and amplitude interruptions if either channel fails. Each of said channels includes frequency dividers, pulse generators and attenuator networks. A sync control circuit is connected between the channels for maintaining the operation of the oscillators in synchronism, phase control circuits are connected between the channels for maintaining the signals in the channels in phase, and attenuator circuits are provided in each channel for maintaining the output constant in the event of failure in either channel.

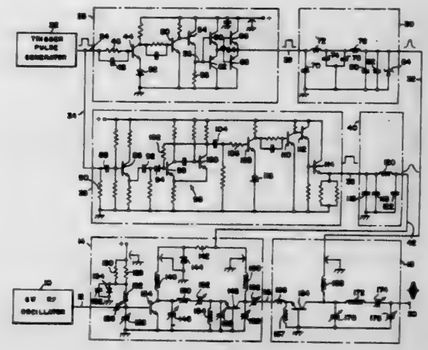
3,667,049

RADIO FREQUENCY PULSE TRANSMITTER

Nathaniel S. Ostroff, Perkasie, and Willie Rose, North Wales, both of Pa., assignors to Acrodyne Industries, Incorporated, Willow Grove, Pa.

Filed Oct. 30, 1970, Ser. No. 85,566
Int. Cl. H03k 7/00; H04b 1/04
U.S. Cl. 325—164 11 Claims

In a pulse transmitter for airborne distance measuring equipment, the final stage of a two-stage RF amplifier is modulated by a primary modulating pulse having a gradual rise and decay, and the drive stage is modulated by a secondary modulating pulse which envelopes the primary modulating pulse in time so that the final stage has adequate drive before the primary modulating pulse occurs.

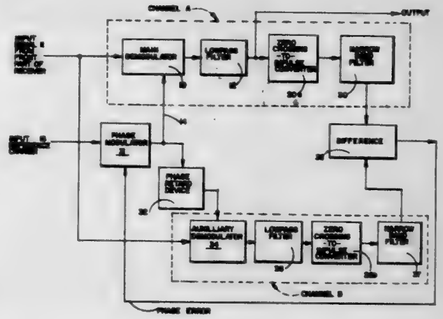


3,667,050

COARSE CARRIER PHASE CORRECTION SYSTEM

Earl D. Gibson, Huntington Beach, Calif., assignor to North American Rockwell Corporation

Filed Nov. 27, 1970, Ser. No. 97,422
Int. Cl. H04b 1/26
U.S. Cl. 325—323 8 Claims



In the present invention a first and second demodulating means each demodulate the received signal against a reference carrier. The same reference carrier is used for both demodulating means with the exception that the carrier which enters the second demodulating means is shifted in phase by a small fixed amount. The two demodulated signals are then fed to independent zero-crossing detector means, which detector means provide output signals proportional to the phase difference between the reference carrier signal used with each of the associated demodulators and the desired (correct) carrier signal.

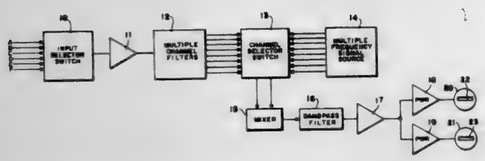
A difference means senses the output signals from each of the zero-crossing detectors to provide an error signal proportional to the phase difference between the two output signals. The error signal is then utilized by a phase modulator to control the phase of the reference carrier signal which is fed to the first and second demodulators to minimize the phase difference between the reference carrier and the desired carrier signal.

3,667,051

MULTI-CHANNEL FREQUENCY MONITOR

Glidden J. Barstow, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 22, 1971, Ser. No. 117,573
Int. Cl. H04l 27/16
U.S. Cl. 325—363 6 Claims



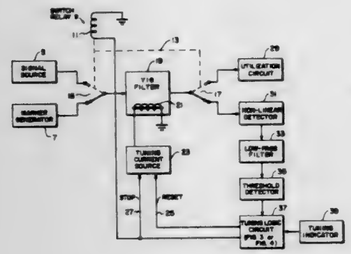
A frequency monitor visually displays the operative accuracy of any selected channel from a source of multi-channel signals. The accuracy of operation of upper and lower frequency sidebands defining each selected channel is visually displayed on vibrating reed meters which are preferably coded visually in color and/or shape so as to render the display immediately indicative of whether the selected channel is functioning within predetermined tolerances. Such a visual display renders the desired indication of the degree of operative accuracy without the requirement for specially trained personnel, interpretative decisions, or the manipulation of relatively complex instrumentation such as a frequency analyzer.

3,667,052

CIRCUIT FOR ACCURATE TUNING OF A YITTRIUM IRON GARNET (YIG) FILTER

Frank V. Effenberger, 403 Newark Avenue, Point Pleasant Beach, N.J.

Filed Feb. 20, 1970, Ser. No. 13,265
Int. Cl. H04q 3/18
U.S. Cl. 325—452 5 Claims



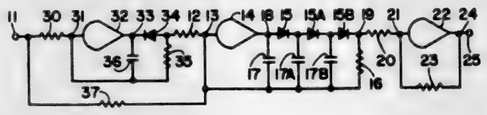
The magnetically tuned broadband YIG filter characterized by a predetermined passband at its half power points has a plurality of marker frequencies spaced apart by the width of the passband applied to its input while the magnetic tuning flux is varied in programmed fashion. Detector circuitry connected to the filter output produces a beat frequency equal to the frequency span of the passband each time the filter's half power points are brought into coincidence with a pair of the marker frequencies. A programmed tuning logic circuit keeps track of the number of coincidences of the half power points and successive marker frequency pairs tuned through and automatically halts the flux variation when the filter is tuned to the programmed marker frequency pair. The tuning circuitry can be disconnected after the tuning operation.

3,667,053

DIODE LAG CIRCUIT

Francis G. Shinskey, Foxboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Filed June 7, 1967, Ser. No. 644,219
Int. Cl. H03k 5/159
U.S. Cl. 328—55 4 Claims



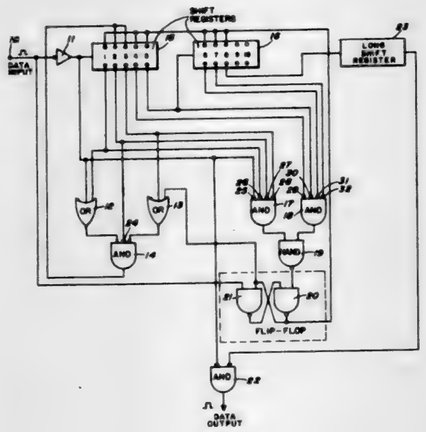
It is found that the voltage drop across a diode is approximately proportional to the logarithm of the current therethrough; this relationship may be employed to generate a variable time constant lag when incorporated in the feedback circuit of a simple amplifier; distributed lags may be generated by employing a series of diodes in the feedback circuit.

3,667,054

PULSE TRAIN DECODER WITH PULSE WIDTH REJECTION

George P. Nelson, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 10, 1971, Ser. No. 114,276
Int. Cl. H03k 5/20
U.S. Cl. 328—111 3 Claims



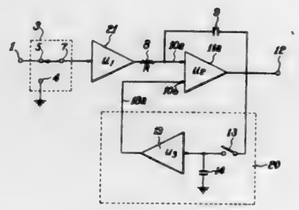
Logic circuitry to decode a series of pulses in an IFF system. Decoding is accomplished by sensing the presence of multiple pulses in a distinct time relationship with each other and excluding those pulse trains in which the individual pulses do not have the correct time relationship. The width of the individual pulses is also used as a decoding criteria and if a particular pulse does not have the correct width by being either too narrow or too wide, it is not considered for time position decoding.

3,667,055

INTEGRATING NETWORK USING AT LEAST ONE D-C AMPLIFIER

Kozo Uchida, Tokyo-to, Japan, assignor to Iwasaki Tsushinki Kabushiki, a/k/a Iwatsu Electric Co., Ltd., Tokyo-to, Japan

Filed June 24, 1970, Ser. No. 49,294
Claims priority, application Japan, June 28, 1969, 44/51173; 44/51174; May 13, 1970, 45/40037; 45/40038; 45/40039; 45/40040
Int. Cl. H03k 5/00
U.S. Cl. 328—127 19 Claims



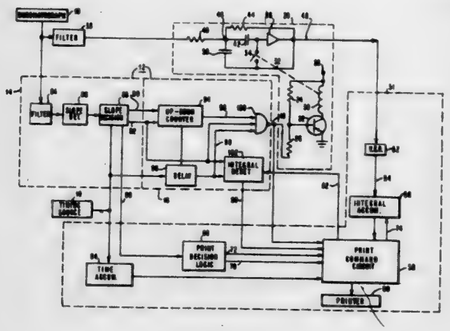
An integrating network for performing integration of an input voltage by the use of an integrator comprising time-constant means and a d-c amplifier, wherein a drift memory circuit is provided between the output and input of the integrator for feeding back in the opposite polarity the output of the d-c amplifier to the input of the integrator in a case of no input of the d-c amplifier so as to obtain a stationary condition and for continuously sending out, as a feedback signal, a voltage fed back to the input of the integrator at the stationary condition, the feedback signal having a value substantially equal to the drift voltage of the d-c amplifier converted in terms of the input of the d-c amplifier, whereby an input voltage is integrated in the integrating network without error caused by the drift of the d-c amplifier.

3,667,056

SAMPLE, HOLD, AND SUBTRACT CIRCUIT

Robert W. Allington, and Herbert C. Griess, both of Lincoln, Nebr., assignors to Instrumentation Specialties Company, Lincoln, Nebr.

Filed Nov. 17, 1970, Ser. No. 90,249
Int. Cl. H03k 17/16
U.S. Cl. 328—151 11 Claims



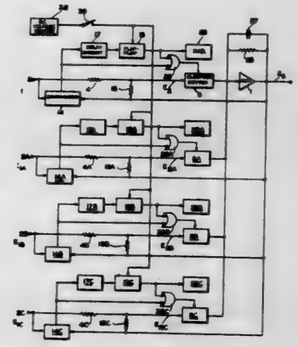
To correct the drifting baseline of a chromatographic signal, a sampling, holding, and subtracting circuit of a baseline correction apparatus samples the signals during clock pulses from a timing source and stores the values of the signals across a capacitor. When a slope detector in the baseline correction circuit senses that the slope of the signal starts to deviate from the baseline and form a peak, the sample, hold and subtract circuit stops sampling and storing new values and subtracts the last stored value from the signal.

3,667,057

METHOD AND MEANS FOR PROVIDING AN OUTPUT CORRESPONDING TO THE AVERAGE OF ACCEPTABLE INPUT SIGNALS

George H. Pfersch, Jr., Dover, and Jerry Doniger, Montvale, both of N.J., assignors to The Bendix Corporation

Filed May 22, 1970, Ser. No. 39,817
Int. Cl. G06g 7/14; H03k 5/20
U.S. Cl. 328—156 3 Claims



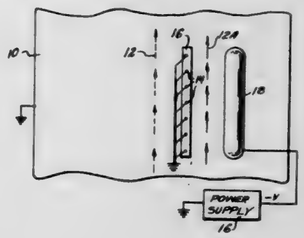
A circuit has averaging means for providing an output corresponding to the average acceptable input signals, a comparator for comparing each input signal to the average output, and switching means controlled by the comparator for eliminating unacceptable input signal from the average when the signals differ a predetermined amount from the average output.

3,667,058

ELECTROSTATIC ACCELERATED-CHARGED-PARTICLE DEFLECTOR

Alfred W. Maschke, Wheaton, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Apr. 8, 1970, Ser. No. 26,576
Int. Cl. H01j 29/70; H05h 7/10, 13/04
U.S. Cl. 328—229 4 Claims

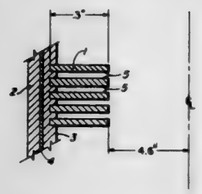


An electrostatic accelerated-charged-particle deflector includes a first electrode and a plurality of wire second electrodes spatially mounted with respect to each other and the first electrode to permit the passage of the accelerated charged particles between the first electrode and the second electrodes. A power supply is connected to establish a voltage gradient between the first electrode and the wire electrodes normal to the direction of motion of the charged particles to interact therewith and deflect the charged particles. The potential gradient is established with the wire second electrodes being electrically positive in potential relative the first electrode.

3,667,059
ALL-METAL DISCHARGE TUBE

James A. Phillips; Aldred E. Schofield, and William L. Briscoe, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 9, 1971, Ser. No. 122,401
Int. Cl. H05h *1/02*
U.S. Cl. 328—233 6 Claims

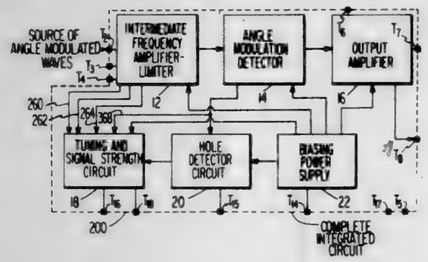


In a fast linear or toroidal zeta pinch device a discharge tube which fits precisely into the primary winding of said device, said tube being a series of anodized aluminum rings stacked upon each other and held together by a nonconducting epoxy layer which is coated with a slightly conducting layer, and then an outer structural layer.

3,667,060
BALANCED ANGLE MODULATION DETECTOR

Jack Avins, Princeton, N.J., assignor to RCA Corporation

Filed Aug. 26, 1970, Ser. No. 66,945
Int. Cl. H03d *3/02*
U.S. Cl. 329—103 13 Claims



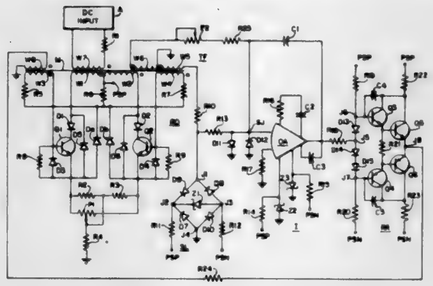
A balanced angle modulation detector having first and second angle modulation wave transmission circuits comprising; a differential limiter, balanced switching means, and a single tuned circuit for generating a quadrature signal wave such that a linear discriminator characteristic is obtained. One of the transmission circuits comprises a phase lag network including a resistor and inductor connected in series coupled to an inductor and capacitor connected in parallel. The quadrature signal wave voltage, developed across the tuned circuit, is coupled with the in-phase signal wave voltage to the input electrodes of a balanced switching device whereby the modulating signal information is recovered from the angle modulated wave.

3,667,061
BIDIRECTIONAL DC SIGNAL DETECTOR WITH TRANSFORMER ISOLATION

John A. Riley, Williamsville, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 16, 1970, Ser. No. 55,316
Int. Cl. H03k *9/08*
U.S. Cl. 329—104 9 Claims

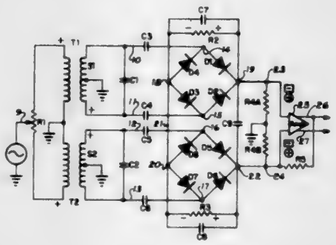
A system for detecting a direct current (DC) signal in magnitude and direction, when electrical isolation is required between the DC signal being detected and the stage producing the output signal, employing an oscillator whose mark and space time durations are modulated according to the magnitude and direction of the DC signal being detected and wherein the so-modulated output of the oscillator is symmetrically amplitude limited to provide signals having a DC component corresponding to the DC signals being detected and the DC components are extracted to provide an output indication of the magnitude and direction of the DC signal being detected.



3,667,062
ACTIVE LINEAR DISCRIMINATOR CIRCUIT

Gary O. White, 7503 Cedar Hollow Drive, Louisville, Ky.

Filed Mar. 30, 1971, Ser. No. 129,494
Int. Cl. H03d *3/26*
U.S. Cl. 329—142 7 Claims



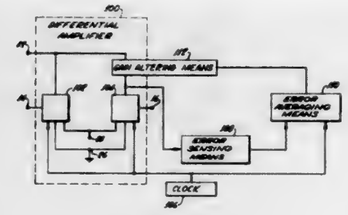
An active linear discriminator circuit having a transformer with a center-tapped primary and two center-tapped secondaries tuned on opposite sides of a desired center frequency, each tuned secondary output being demodulated to direct current (D.C.) levels applied across respective resistor and capacitor networks to produce a zero output when the input frequency is the desired center frequency and to produce positive and negative outputs in opposite relation proportional to input deviation above or below the center frequency.

3,667,063
DIFFERENTIAL AMPLIFIER CIRCUIT

William Richard Boyd, Lafayette, and Robert C. Franklin, Los Gatos, both of Calif., assignors to Beckman Instruments, Inc.

Filed Apr. 27, 1970, Ser. No. 32,147
Int. Cl. H03f *19/00*
U.S. Cl. 330—2 16 Claims

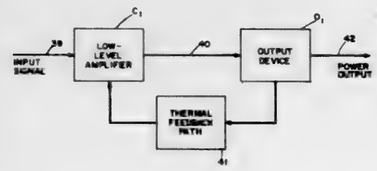
An electronic circuit for balancing a differential amplifier by periodically equalizing the inputs of the amplifier and monitoring the output of the amplifier with equalized inputs. The output of the amplifier is then used to balance the amplifier by changing the current in one leg of the differential amplifier circuit until the output level correctly indicates the equalized inputs.



3,667,064
POWER SEMICONDUCTOR DEVICE WITH NEGATIVE THERMAL FEEDBACK

Richard D. Thornton, Concord, and John M. Borky, Hull, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 19, 1969, Ser. No. 825,491
Int. Cl. H03f *3/14*
U.S. Cl. 330—23 14 Claims

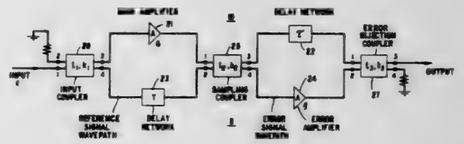


A composite power semiconductor is disclosed which is adapted to avoid second breakdown and therefore provide stable operation. The composite semiconductor consists of an array of parallel-connected integrated circuits constructed in a single chip, each circuit comprising an output power device, for connection between an electric power source and a load, and one or more associated low-level control amplifiers. The effect of the thermal instability called second breakdown in such an array is to channel a disproportionate amount of electric current through the output device undergoing second breakdown, thereby increasing the temperature of the affected output device, thereby increasing the current, etc. until failure occurs. In the power semiconductor disclosed, the output power device and associated low-level amplifier are thermally closely coupled so that each is at all times substantially at the temperature of the other or bears a predetermined temperature relationship therewith, and the two are interconnected in a fashion that will produce high electrical gain. There is negative thermal feedback so that a change in power dissipation with resulting temperature change in the output device causes the low-level amplifier to alter the electric current carried by the output device. For example, an increase in temperature which will tend to cause the output device to conduct a larger amount of electric current and which will also tend to cause the low-level amplifier to conduct a larger amount of current, can have the result, because of the close thermal coupling and interconnection, of maintaining the output current substantially constant.

3,667,065
FEED-FORWARD AMPLIFIER HAVING ARBITRARY GAIN-FREQUENCY CHARACTERISTIC

Henry Richard Beurrier, Chester Township, Morris County, and Harold Seidel, Warren, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 4, 1970, Ser. No. 69,757
Int. Cl. H03f *3/68*
U.S. Cl. 330—124 R 4 Claims

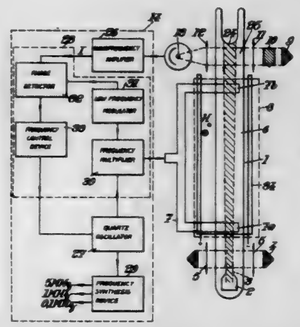


Frequency-shaping of the gain characteristic of a feed-forward, error-corrected amplifier using main and error amplifiers having essentially flat, or frequency-independent gain characteristics, is achieved by tapering the power division characteristics of: the input coupler, which extracts a reference signal component from the input signal; the sampling coupler, which compares the output from the main amplifier with the reference signal to form an error signal; and the error injection coupler, which injects the error signal into the main signal path. In a second embodiment of the invention, the band-shaping burden is shared between the amplifiers and the couplers.

3,667,066
OPTICALLY PUMPED ALKALI ATOMIC BEAM FREQUENCY STANDARD

Alfred Kastler; Maurice Arditi, both of Paris, and Pierre Cerez, Antony, all of France, assignors to Agence Nationale De Valorisation De La Recherche (Anvar),, Puteaux, France

Filed July 7, 1969, Ser. No. 840,139
Claims priority, application France, July 8, 1968, 158241
Int. Cl. H01s *1/06;* H03b *3/12*
U.S. Cl. 331—3 9 Claims

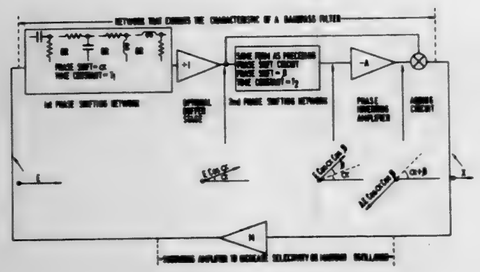


The frequency standard comprises an oven producing a beam of Rb^{85} and Rb^{87}, a lamp using Rb^{85} for enriching the level $F = 1$ of the fundamental state of the atoms of Rb^{87}, a hyperfrequency cavity equalizing the population of the levels $F = 1$, $m_F = 0$ and $F = 2$, $m_F = 0$ of this state, a lamp using Rb^{87} or natural Rb filtered by a vat containing Rb^{85} for producing transitions between the levels $F = 1$ of the fundamental state and an excited level, and a detector completed by an electronic unit coupling a quartz oscillator to the atomic resonance.

3,667,067
ELECTRONIC CIRCUIT SUITABLE FOR USE AS FREQUENCY SELECTIVE AMPLIFIER OR OSCILLATOR

Derek Alfred Levell, 88 Galley Lane, Arkley, Barnet, England

Filed Mar. 18, 1971, Ser. No. 125,723
Claims priority, application Great Britain, Mar. 23, 1970, 14,038/70
Int. Cl. H03b *5/20*
U.S. Cl. 331—59 12 Claims

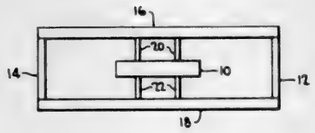


An electronic circuit has two similar phase shift networks connected in cascade between a circuit input and the input of an amplifier providing a 180° phase-shift between its input and output. The output of the amplifier and first network are combined and the combination applied to the circuit output, providing an overall frequency response exhibiting a resonant frequency. The networks may be connected together via a buffer amplifier, and each comprises a resistance and a reactance interconnected to provide a phase lead or lag. The resonant frequency may be varied by varying the gain of the amplifier or the resistance or reactance of one or both networks. Variable gain feedback circuitry may be connected between the circuit output and input, so that the circuit is selectively operable as a frequency selective amplifier or oscillator in accordance with the gain of this circuitry.

3,667,068
NUCLEAR CHARGED SELF-SUSTAINING LASER

Clyde A. Morrison, Wheaton; Donald E. Wortman, Rockville, and Ruben T. Farrar, Wheaton, all of Md., assignors to The United States of America as represented by the Secretary of the Army

Filed Aug. 17, 1970, Ser. No. 64,426
Int. Cl. H01s *3/09*
U.S. Cl. 331—94.5 13 Claims



A nuclear charged solid state laser for which no external power supply is required. A large class of single crystals are disclosed which contain a stable isotope that is potentially radioactive. The crystal is doped with a laser impurity ion and is irradiated with nuclear energy such that the stable isotope becomes radioactive to provide a pumping source for the laser impurity ions therein. Optical resonator means can be provided by coating both ends of the crystal with highly reflective surfaces. The radioactive isotope provides a continuous internal power supply over the lifetime of its decay, thus providing a potentially compact, portable and inexpensive solid state laser device.

DESIGNS

MAY 30, 1972

223,695
GLOVE

Edna May Kirby, 33 Woodlands Ave., Walsall, England

Filed Mar. 24, 1970, Ser. No. 22,036
Claims priority, application Great Britain Sept. 27, 1969
Term of patent 3½ years
Int. Cl. D2—*06*
U.S. Cl. D2—375



223,697
TIE ROD WRENCH

Walter Harold Finley, Orange County, Calif. (200 N. Gilbert St., Apt. 12, Anaheim, Calif. 92801)

Filed Dec. 7, 1970, Ser. No. 26,341
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—21



223,696
FOLDABLE TRAP RAKE

Ralf Francis Mervyn Roughsedge, 1 Nancy St., St. Marys, near Sydney, New South Wales, Australia

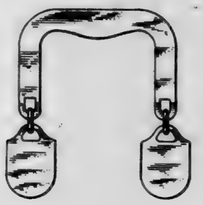
Filed Sept. 25, 1970, Ser. No. 25,198
Claims priority, application Australia Apr. 20, 1970
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—13



223,698
LUGGAGE HANDLE OR THE LIKE

Simon Javkin, 160 West End Ave., New York, N.Y. 10023

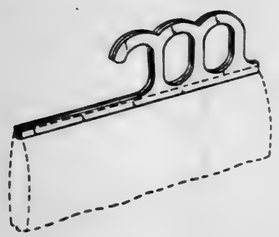
Filed Nov. 18, 1969, Ser. No. 20,163
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—154



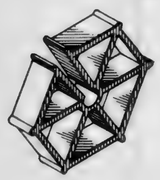
223,699
COMBINED CLOSURE AND HANDLE FOR A CARRIER BAG
Seymour Kamins, Oceanside, Daniel Gelles, Kerhonkson, and Jerry Horodecky, Jackson Heights, N.Y., assignors to CTP Industries Inc., Brooklyn, N.Y.
Original design application Mar. 19, 1969, Ser. No. 16,328. Divided and this application Mar. 20, 1970, Ser. No. 22,223
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—154



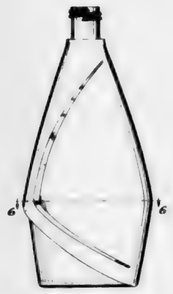
223,700
COMBINED CLOSURE AND HANDLE FOR A CARRIER BAG
Seymour Kamins, Oceanside, Daniel Gelles, Kerhonkson, and Jerry Horodecky, Jackson Heights, N.Y., assignors to CTP Industries Inc., Brooklyn, N.Y.
Original design application Mar. 19, 1969, Ser. No. 16,328. Divided and this application Mar. 20, 1970, Ser. No. 22,224
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—154



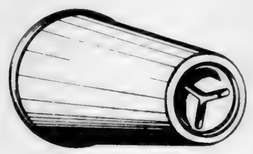
223,701
SUPPORT FOR CONCRETE REINFORCING ROD
John W. Lausch, 17784 Ash, Fountain Valley, Calif. 92708
Filed Sept. 4, 1970, Ser. No. 24,836
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—228



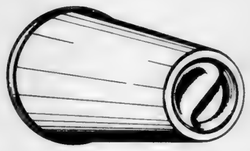
223,702
BOTTLE OR SIMILAR ARTICLE
Elliott E. Blank, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Dec. 4, 1970, Ser. No. 26,279
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—66



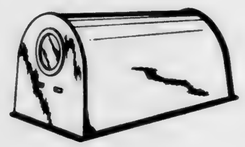
223,703
CUP
George A. Cheladze, Phoenix, Ariz., assignor to Carthage Cup Company, Carthage, Tex.
Filed Mar. 2, 1970, Ser. No. 21,670
Term of patent 14 years
Int. Cl. D7—*01*; D9—*03*
U.S. Cl. D9—220



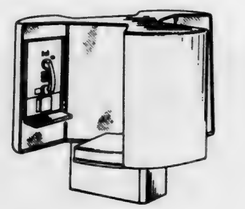
223,704
CUP
George A. Cheladze, Phoenix, Ariz., assignor to Carthage Cup Company, Carthage, Tex.
Filed Mar. 2, 1970, Ser. No. 21,882
Term of patent 14 years
Int. Cl. D7—*01*; D9—*03*
U.S. Cl. D9—220



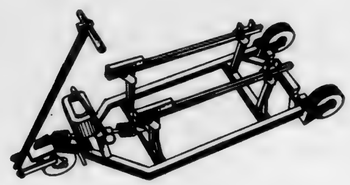
223,705
SNOWMOBILE SHELTER
Charles T. McCutcheon, Ferry Ave., Charlevoix, Mich. 49720, and John D. Cole, 3860 Honey Hill Lane, Dayton, Ohio 45405
Filed Mar. 11, 1970, Ser. No. 21,867
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



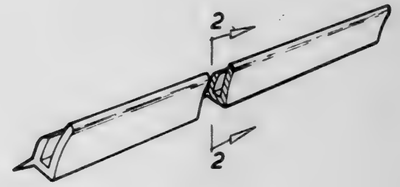
223,706
TELEPHONE BOOTH
Richard J. Hughes and Thomas W. Steinbach, Park Ridge, Ill., assignors to Acoustics Development Corporation, Northbrook, Ill.
Filed Feb. 8, 1971, Ser. No. 113,777
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D13—1



223,707
DOLLY FOR SUPPORTING HELICOPTER AND THE LIKE
James Salisbury, 2455 23rd St., Santa Monica, Calif. 90405
Filed Oct. 26, 1970, Ser. No. 25,672
Term of patent 3½ years
Int. Cl. D12—*02*
U.S. Cl. D14—3



223,708
SEALING STRIP PRIMARILY FOR THE SLIDING ROOF OF A VEHICLE OR SIMILAR ARTICLE
Harry Edwards, Solihull, England, assignor to Weathershields Limited, Birmingham, England
Filed June 30, 1970, Ser. No. 23,766
Claims priority, application Great Britain Dec. 31, 1969
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6



223,709
SNOWMOBILE SEAT
Yves Anselme Lapointe, Valcourt, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada
Filed Nov. 2, 1970, Ser. No. 25,769
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—24



223,710
LIQUID RECEPTACLE FOR VAPORIZER
Nat Camp, 395 Westchester Drive, Port Chester, N.Y. 10573
Filed Dec. 18, 1970, Ser. No. 26,560
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—148



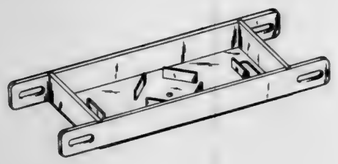
223,711
IGNITER OR SIMILAR ARTICLE
Stanley J. Matys, Lancaster, N.Y., assignor to Igniters, Inc., Lancaster, N.Y.
Filed June 15, 1970, Ser. No. 23,489
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—129



223,712
ROOF INSULATION VENTILATOR
Robert W. Mason, Port Credit, Ontario, Canada, assignor to Marathon Equipment & Supply Limited, Weston, Ontario, Canada
Filed Aug. 21, 1970, Ser. No. 24,632
Term of patent 14 years
Int. Cl. D23—*04*; D29—*02*
U.S. Cl. D23—153



223,713
GAME BOX
Charl - P. Reay, 1116 Watson Woods Drive, St. Louis, Mo. 63122
Continuation of design applications Ser. No. 16,181, Mar. 11, 1969, and Ser. No. 20,623, Dec. 29, 1969, both now abandoned. This application Dec. 24, 1970, Ser. No. 26,737
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



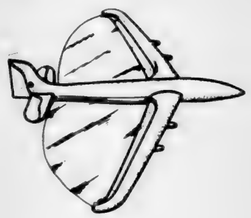
223,714
COMBINED GAME BOARD AND CHIP HOLDER OR THE LIKE
Don W. Kester, 5125 S. Medley Court, Seattle, Wash. 98118
Filed Nov. 23, 1970, Ser. No. 26,112
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



223,715
SNOW SCOOTER
Clarence R. Lennox, 7032 82nd St., Edmonton, Alberta, Canada
Filed Apr. 23, 1970, Ser. No. 22,580
Claims priority, application Canada Nov. 26, 1970
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15



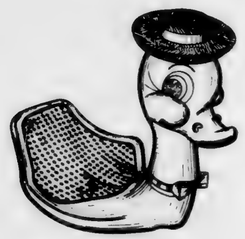
223,716
KITE
Chan Choong, 96 Violet House, 291 Ngau Tau Kok Road, Kowloon, Hong Kong
Filed Nov. 23, 1970, Ser. No. 26,124
Claims priority, application Great Britain June 9, 1970
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



223,717
SEAT FOR A HOBBY HORSE OR THE LIKE
Cid Garrison, 150 E. 69th St., New York, N.Y. 10021
Filed Nov. 24, 1970, Ser. No. 26,146
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



223,718
SEAT FOR A HOBBY HORSE OR THE LIKE
Cid Garrison, 150 E. 69th St., New York, N.Y. 10021
Filed Nov. 24, 1970, Ser. No. 26,147
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—15



223,719
NAPKIN HOLDER
Ruth L. Dixon, 6487 Scimitar Drive, San Diego, Calif. 92114
Filed June 17, 1970, Ser. No. 23,535
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—20



223,720
LAMP
George A. Klupp, Jr., 419 Cook Ave., Billings, Mont. 59102
Filed Oct. 30, 1970, Ser. No. 25,781
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20



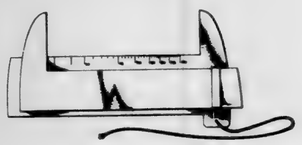
223,721
POCKET LIGHTER
Peter Weissman, Schnaittach, Germany, assignor to Consul Gesellschaft mit beschrankter Haftung, Nuremberg, Germany
Filed Oct. 19, 1970, Ser. No. 25,552
Claims priority, application Germany May 19, 1970
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27



223,722
CHARCOAL FIRE STARTER
Adrian W. Stehouwer, 353 Michigan St. NE., Grand Rapids, Mich. 49503
Filed Oct. 23, 1970, Ser. No. 25,625
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D48—27



223,723
DISTANCE SIGHT MEASURING DEVICE
Maxwell O. Thompson, 701 Lokchapee Drive, Macon, Ga. 31204
Filed July 21, 1970, Ser. No. 24,045
Term of patent 14 years
Int. Cl. D10—*08*
U.S. Cl. D52—6



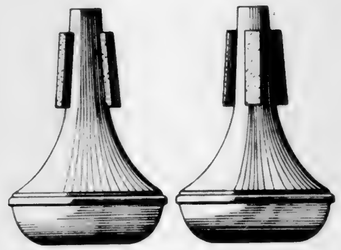
223,724
WATER METER DIAL COVER
Paul H. Wallace, R.R. 1, Cynthiana, Ind. 47612
Filed Sept. 17, 1970, Ser. No. 25,033
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D52—6



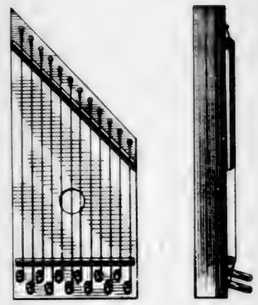
223,725
ELECTRONIC MICROMETER
Makoto Takagi, Tokyo, Japan, assignor to Tokyo Seimitsu Co., Ltd., Tokyo, Japan
Filed Sept. 24, 1970, Ser. No. 25,172
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D52—6



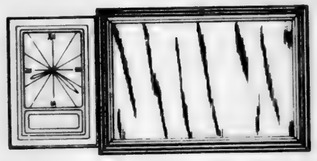
223,726
MUTE
Gordon Thomas Crown, 4116 Greenview Ave., Chicago, Ill. 60613
Filed Apr. 16, 1970, Ser. No. 22,464
Term of patent 14 years
Int. Cl. D17—*99*
U.S. Cl. D56—1



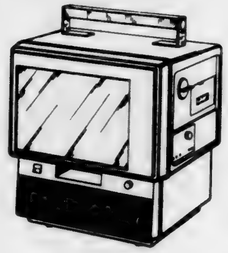
223,727
HARP
Henry Levin, 80 St. Marks Place, New York, N.Y. 10003
Filed Aug. 19, 1970, Ser. No. 24,581
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1



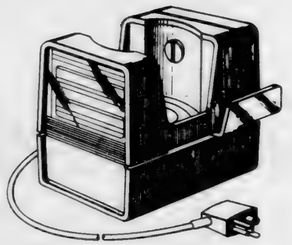
223,728
COMBINED REAR PROJECTION VIEWER AND CLOCK
Willis L. Wells, Clayton, Mo., assignor to VueTech Corporation, St. Louis, Mo.
Filed May 13, 1970, Ser. No. 22,945
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1



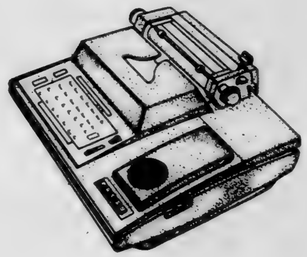
223,729
MOTION PICTURE SOUND PROJECTOR-VIEWER UNIT
Isao Katayama, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, and Matsushita Electric Industrial Co., Ltd., both of Osaka, Japan, fractional part interest to each
Filed Nov. 23, 1970, Ser. No. 26,116
Claims priority, application Japan May 23, 1970
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1



223,730
CAMERA FLASH ATTACHMENT OR SIMILAR ARTICLE
Edward K. Bullock, Marblehead, and Edward F. Burke, Jr., Reading, Mass., James M. Conner, Westchester, N.Y., Milton S. Dietz, Lexington, and John B. Morse, Cambridge, Mass., and Alvin R. Tilley, Red Bank, N.J., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Dec. 24, 1970, Ser. No. 26,636
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1

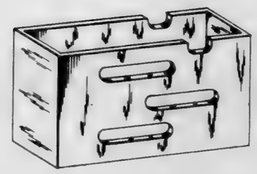


223,731
COMBINED TYPEWRITER, RECORDING DEVICE AND ENCLOSURE THEREFOR
Clarence D. Zierhut, 16909 Flanders, Granada Hills, Calif. 91344
Filed Sept. 30, 1970, Ser. No. 22,244
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11

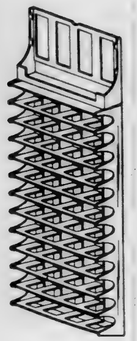




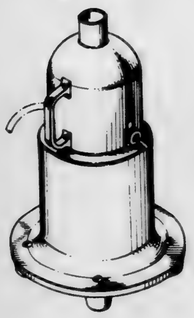
223,732
REMINDER INDEX BOX
Stephen B. Misenko, 1350 E. Boston Road, Broadview Heights, Ohio 44147
Filed Mar. 10, 1970, Ser. No. 21,835
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D74—2



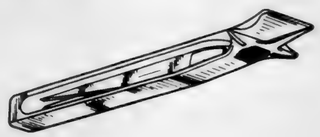
223,733
CIGARETTE MERCHANDISER
Robert B. Nielsen, Park Ridge, Ill., assignor to Frank Mayer & Associates, Inc., Grafton, Wis.
Filed Dec. 7, 1970, Ser. No. 26,342
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D80—9



223,734
HOUSING FOR BLOWER, VACUUM OR SIMILAR AIR CIRCULATING DEVICE
Joseph A. La Barber, Kern City, Calif., assignor to Henry Weiland, Hacienda Heights, Calif.
Filed Sept. 1, 1970, Ser. No. 24,796
Term of patent 14 years
Int. Cl. D24—*99*; D15—*05*
U.S. Cl. D83—1

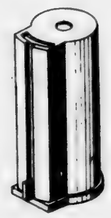


223,735
SUTURE CUTTER
Albert E. Straus, Erie, Pa., assignor to Perry Plastics, Inc., Erie, Pa.
Filed June 15, 1970, Ser. No. 23,467
Term of patent 14 years
Int. Cl. D24—*03*; D28—*03*
U.S. Cl. D83—12





223,736
COMBINED COMB AND CANNISTER CARRIER
Alan E. Legere, 9 Superior St., Lynn, Mass. 01902
Filed June 1, 1970, Ser. No. 23,234
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10



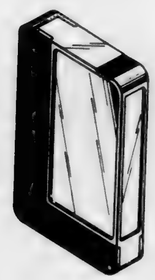
223,737
HAIR SPRAY SHIELD
Eva North Smith, 2104 E. Stop 12 Road, Apt. C, Indianapolis, Ind. 46227
Filed Nov. 27, 1970, Ser. No. 26,199
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10



223,738
BRUSH
Karl A. Stein, 12 Beverly Place, Dayton, Ohio 45419
Filed Feb. 26, 1971, Ser. No. 119,441
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D86—13



223,739
STORAGE CASE FOR A MAGNETIC TAPE CASSETTE
Reinhold M. Weiss, Chicago, and T. Michael Dennehey, La Grange, Ill., assignors to Memorex Corporation
Filed Sept. 14, 1970, Ser. No. 24,968
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1



223,740
TIRE
Hannelore Weinhold, Hanau am Main, Germany (% Fort Dunlop, Erdington, Birmingham 24, England)
Filed Oct. 30, 1970, Ser. No. 25,756
Claims priority, application Great Britain May 1, 1970
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



223,741
RAZOR OR SIMILAR ARTICLE
William R. Pomper, Highland Park, Ill. (140 S. Dearborn St., Chicago, Ill. 60603)
Filed Jan. 5, 1971, Ser. No. 104,192
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3



LIST OF PATENTEES

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PATENTS WERE ISSUED ON THE 30TH DAY OF MAY, 1972

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Alderfer, Sterling W., to Teledyne, Inc., mesne. Method for making industrial rolls. 3,666,589, Cl. 156-172.000

Alekna, Alvin J., to General Electric Company. Lead compound catalyzed siloxane resin system. 3,666,830, Cl. 260-825.000

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Allard, Jean. Mowing device for cutting vegetation adjacent a fence. 3,665,685, Cl. 56-10.400

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Alt, Anton, to Fischer, Georg, Aktiengesellschaft. Method for the introduction of volatile additives into a melt. 3,666,449, Cl. 75-130.

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Amoco Production Company: *See—*
Wilder, Lawrence B., 3,666,304.

Amosov, Pavel Evgenievich; Imyanitov, Leonid Mikhailovich; Smekhov, Vitaly Konstantinovich; and Trofimov, Valery Leonidovich. Screw-rotor machine for compressible fluids. 3,666,384, Cl. 418-201.

AMP Incorporated: *See—*
Brown, Christopher Kingsley; Cea, Carmen Achille; and Warne, Thomas Parkison, Jr., 3,665,574.

Ampex Corporation: *See—*
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Anderson, Albert L.: *See—*
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Anderson, Richard N.; and Uetrecht, James W., to Crown Controls Corporation. Lift truck safety control. 3,666,052, Cl. 187-9.

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Effenberger, Frank V. Circuit for accurate tuning of a yittrium iron garnet (YIG) filter. 3,667,052, Cl. 325-452.

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Ellis, Charles B., to Lennox Industries, Inc. Compressor block with banded motor. 3,666,380, Cl. 417-415.

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Gaudin, Jean, to Societe de Constructions Mecaniques de Creil. Braking device for use in winding multiple strips upon a common mandrel. 3,666,195, Cl. 242-75.2
Gaudry, Paul Emile. Electric motor brush spring. 3,666,258, Cl. 267-179.000
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Gieseke, Hans Alwin Erich, deceased (by Gieseke, Ingrid Nora Hansine, heir); Nogaj, Alfred; Schiefer, Josef; and Rinkler, Heinrich, to Farbenfabriken Bayer Aktiengesellschaft. Method of and apparatus for drying wet filament tows. 3,665,613, Cl. 34-9.

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Gilham, George Henry, deceased (by Gilham, Gay Maude, administratrix); and Door, Wesley R., to USM Corporation, mesne. Ring cutting tool. 3,665,797, Cl. 83-411.000

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Godwin, Gurney L.; and Kilgore, Lee A., to Westinghouse Electric Corporation. Alternating current motor starting apparatus and method. 3,667,015, Cl. 318-171.

Goeldner, Richard W., to Aqua-Chem, Inc., mesne. Reverse osmosis liquid separation apparatus. 3,666,109, Cl. 210-321.

Goffe, Charles A., to Eastman Kodak Company. Element, composition and process. 3,666,477, Cl. 96-114.100

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Goldman, Wolf: *See—*
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Green, Harry W., to Standard Products Company, The. Apparatus for multi-stage treatment of waste material. 3,666,106, Cl. 210-201.000

Greene, Michael L., to United States of America, Navy. Coring apparatus for taking samples of the ocean floor. 3,666,028, Cl. 175-189.000

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Grobert, Paul H., to Communications & Systems, Inc. Four quadrant multiplier using pulse width modulators and the digital exclusive-or. 3,666,933, Cl. 235-194.

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Groth, Rolf; Van Boort, Henricus Johannes Joseph; and De Neve, Gerard Marie Jules, to U.S. Philips Corporation. Method of manufacturing glass articles having a heat-reflecting film. 3,666,534, Cl. 117-97.000

Groth, Rolf; Van Boort, Henricus Johannes Joseph; De Neve, Gerard Marie Jules; Bullard, Edward M.; and Bullard, Edward M., to U. S. Philips Corporation Mobil Oil Corporation Mobil Oil Corporation. Method of manufacturing glass articles having a heat-reflecting film Oriented thermoplastic films comprising polypropylene and poly(para-tertiary-butyl- styrene) Oriented thermoplastic films comprising polypropylene and poly(para-tertiary-butyl- styrene). 3,666,834, Cl. 260-897.

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Gurevich, Albert Efimovich; Rozenbljum, Boris Fishelevich; and Shaposhnikov, Igor Nikolaevich. Device for matching number of operating bridges on converting substations of direct-current transmission lines. 3,666,963, Cl. 307-82.

Gurkin, Martin; Sanderson, Gary Warner; and Graham, Harold Nathan, to Lipton, Thomas J., Inc. Process for making a spray-dried instant tea of desired bulk density. 3,666,484, Cl. 99-77.000

Gust, Raymond E., to Courtesy Products Corporation. Beverage dispensing apparatus having adjustable piston stroke. 3,666,142, Cl. 222-16.000

Gustafson, Roy H. J. A., to Sperry Rand Corporation. Submersible vehicle bouyancy control. 3,665,884, Cl. 114-16.00e

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Gutshall, Charles E., to Textron, Inc. Drill screw. 3,665,801, Cl. 85-41.

Guttmann, Stephan; and Huguenin, Rene. 2' β-Isopropyl-5' α-n-propyl-9,10-dihydro- ergopeptines. 3,666,762, Cl. 260-268.

Guyaux, James R., to FMC Corporation. Cargo handling apparatus. 3,666,127, Cl. 214-512.000

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Haertling, Gene H., to United States of America, Atomic Energy Commission. Ferroelectric ceramic materials. 3,666,666, Cl. 252-62.900

Hafner, Karl-Heinz; and Cherdron, Harald. Polyacetals stabilized with secondary alkali metal phosphates. 3,666,714, Cl. 260-45.7

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Hall, Roger P., to SCM Corporation. Method of bonding a resinous film to a substrate using high energy radiation. 3,666,591, Cl. 156-272.

Haller, John, to Federal-Mogul Corporation. Method of making composite wear resistant articles, such as face seals. 3,666,456, Cl. 75-208.000

Halliburton Company: *See—*
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Hallman, Newt M., to Universal Oil Products Company. Hydroprocessing product separation. 3,666,658, Cl. 208-103.

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Hansen, Kjell T., to Farinon Electric. Carrier supply with synchronous redundancy. 3,667,048, Cl. 325-157.

Hanson, Laurence B.; and Arthur Wallace W., to Gardner-Denver Company. Collaring timing control system for rock drills. 3,666,025, Cl. 173-112.000

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Harmens, Alexander, to Petrocarbon Developments Limited. Synthesis of ammonia. 3,666,415, Cl. 23-199.000

Harper, Robert C., to Cincinnati Milling Machine Company. Method of producing closed mold polyurethane foam moldings free of surface voids by flushing the mold with a vaporized halogenated hydrocarbon. 3,666,848, Cl. 264-39.

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Harris, Frank L.; and Levine, Sidney. Process for anodizing aluminum materials. 3,666,638, Cl. 204-35.00n

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Hashimoto, Yoshiaki; and Hayakawa, Masatosi, to Chukyo Electric Co., Ltd. Apparatus for controlling rectilinear motion. 3,665,812, Cl. 92-24.

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Hauser, Paul; Pfister, Walter; Stucki, Hans Ulrich; Teuwen, Heinz; Fuhring, Heinrich; and Sieber, Johannes Helmut, to Bohler & Weber K.G.-Maschinenfabrik-Augsburg. Apparatus for finishing fibrous material. 3,665,734, Cl. 68-18.

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Hayami, Tadao, to Kabushiki Kaisha Koparu. Device for selectively switching-over the speed of feeding film in motion picture projector. 3,666,357, Cl. 352-180.000

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Heller, William C., Jr. Printing method using electric through-field to indelibly lodge particles. 3,665,856, Cl. 101-426.

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Helms, Clifford J.; and Papadopoulos, Stelios B., to Sperry Rand Corporation, mesne. Linear positioner. 3,666,977, Cl. 310-13.

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Kern, Thomas W.; Barringer, George L.; Wands, William Ross; Leonard, Charles W.; and Goodman, Gerald W., to Kern Roll and Rubber Company. Expander roll assembly with oil-mist lubrication. 3,666,049, Cl. 184-6.260

Kerr, Douglas A., to Rolamite, Incorporated. Push button switches with interlocking diaphragm contact. 3,666,899, Cl. 200-5.00f

Kershner, Stephen W.: *See—*
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Kigane, Koji; Ishihara, Nobuji; and Kametaka, Atushi, to Teijin Limited. Process for the production of microporous structures. 3,666,542, Cl. 117-135.5

Kikkoman Shoyu Co., Ltd.: *See—*
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Kilgore, Lee A., to Westinghouse Electric Corporation. Electrical apparatus with frequency controlled load compensation. 3,667,012, Cl. 318-161.

Kilgore, Lee A.: *See—*
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Killian, Claud R. Jet engine sound suppressor. 3,666,044, Cl. 181-33.

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Skora, Robert F., 3,665,922.
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Kimura, Kenji; Watando, Kousaku; and Kadota, Osamu, to Nippon Kokan Kabushiki Kaisha. Apparatus for compressing scrap into a block and conveying the same. 3,665,848, Cl. 100-218.000

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King, Ernest Frederick, Jr.: *See—*
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Kingshott Investments (Proprietary) Limited: *See—*
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Kingshott, Patricia Alexandra, to Kingshott Investments (Proprietary) Limited. Method of straightening keratinous fibres. 3,665,935, Cl. 132-7.

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Kitano, Ichiro; and Matsumura, Hiroyoshi, to Nippon Selfoc Kabushiki Kaisha, a/k/a Nippon Selfoc Co., Ltd. Spherical lens structures. 3,666,347, Cl. 350-96.00b

Kitano, Yukio, to Showa Denko Kabushiki Kaisha. Method for manufacturing cryolite with high purity. 3,666,406, Cl. 23-88.

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Klein, Gerhart P., to Mallory, P. R., & Co., Inc. Strip configuration for capacitors. 3,667,002, Cl. 317-230.000

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Kobayashi, Akiyoshi, to Toyoda Koki Kabushiki Kaisha. Feed mechanism for machine tool. 3,665,786, Cl. 74-625.000

Kobayashi, Takanori, to Mitsubishi Denki Kabushiki Kaisha. Control device for fixed point stop mechanism for sewing needle. 3,665,876, Cl. 112-219.00a

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Kobayashi, Tetsuji; Sasaki, Tetsuo; Takayanagi, Seiichi; and Sugita, Toru, to Tokyo Shibaura Electric Co., Ltd. Catheter type semiconductor radiation detector. 3,665,916, Cl. 128-2.00r

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Koch, Claude V.; and Storms, Donald G., to AMF Incorporated. Spring blades for contact arms and the method for making the same. 3,665,881, Cl. 113-119.000

Koch-Light Laboratories Limited: *See—*
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Kollonitsch, Janos; and Gal, George, to Merck & Co., Inc. 2-Propadienyl-4-oxo-1,3-dioxa-2-phosphanaphthalene- 2-oxide. 3,666,838, Cl. 260-937.000

Kollonitsch, Janos; and Scott, Alan N., to Merck & Co., Inc. Process for preparing 2-hydroxyalkyl-4(5)-nitro- imidazoles. 3,666,644, Cl. 204-158.0ha

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Korchynsky, Michael; Grozier, John David; and Mihelich, John L., to Jones & Laughlin Steel Corporation. High-strength low-alloy steels having improved formability. 3,666,570, Cl. 148-36.000

Korchynsky, Michael; Grozier, John David; Mihelich, John L.; Bell, John R.; and Luyckx, Leon, to Jones & Laughlin Steel Corporation. High-strength low-alloy steels. 3,666,452, Cl. 75-123.00e

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Kotting, Fritz; and Gas, Gottfried, to Wernicke & Co., Firma. Method for the production of the circumference of a spectacle lens. 3,665,659, Cl. 51-323.000

Kovac, Frederick J.; and Rye, Grover W., to Goodyear Tire & Rubber Company, The. Tire cord, etc.. 3,665,994, Cl. 152-359.000

Kowal, Leonard J., to Imperial-Eastman Corporation, mesne. Method of making up an expandable insert fitting. 3,665,591, Cl. 29-507.

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Krammer, Robert, to Rapistan Incorporated. Tow line switch. 3,666,050, Cl. 104-130.000

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Krause, Gerhard, to Fernseh GmbH. Circuit arrangement for the correction of time errors in electrical signals received from an information carrier. 3,666,880, Cl. 178-5.20r

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Krejan, Friedhelm; Beese, Ferdinand; Hufner, Hans; Riedel, Franz; and Holzmann, Rainer, to Kieserling & Albrecht, Th. Apparatus for grinding of rod-shaped workpieces. 3,665,649, Cl. 51-137.

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Kruger, Stanley. Clasp for bracelets and the like. 3,665,565, Cl. 24-265.

Krynock, Robert A.; and Ruhe, Robert W., Jr., to FMC Corporation. Vibrating screen for fine screening of liquids. 3,666,095, Cl. 209-254.000

Kubasta, James W., to Shell Oil Company. Offshore gas flare apparatus. 3,666,395, Cl. 431-202.

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Kuhn, Matthew; and Schumaker, Norman Edwin, to Bell Telephone Laboratories, Incorporated. Electroluminescent semiconductor display apparatus. 3,667,004, Cl. 317-234.00r

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Kutner, Abraham, to Hercules Incorporated. Stabilized composition comprising α-olefin polymers and melamine. 3,666,715, Cl. 260-45.80n

Kvalheim, Andrew, to Kvalheim Machinery Co. Adjustable trim saw apparatus for miter cuts and saw kerfs. 3,665,982, Cl. 143-6.00h

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Lake, William H.; and Medendorp, Nicholas W., to General Electric Company. Internally resistively ballasted discharge lamp containing bridge rectifier. 3,666,986, Cl. 315-49.

Lal, Joginder; and Heppert, Donald E., to Goodyear Tire & Rubber Company, The. Method and process of preparing improved polyethers. 3,666,737, Cl. 260-897.00a

Lalet, Philippe; and Taouladre, Guy, to Societe Anonyme dite: Societe Nationale des Petroles d'Aquitaine. Copolymers of vinyl chloride and terpenes. 3,666,734, Cl. 260-87.5

Lamb, Ross H. Converter bracket for lift bucket. 3,665,622, Cl. 37-117.5

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Lanfermann, Willy, to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H. Longwall mining machine. 3,666,320, Cl. 299-53.

Lange, Joachim; Malitschek, Otto; and Mader, Fred, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Method of improving wax-containing self-polishing emulsions and product. 3,666,500, Cl. 106-6.000

Langer, Stanley H., to Wisconsin Alumini Research Foundation. Polymeric tetrahaloterephthalate esters. 3,666,792, Cl. 260-475.

Laplume, Jacques, to Societe d'Etudes Techniques et d'Entreprises Generales (SODETEC). Teaching machine in which instruction items are projected by an image projector. 3,665,615, Cl. 35-9.00a

LaPorte, Pierre. Apparatus controlling the mechanism throwing clay targets in ball traps. 3,665,909, Cl. 124-9.000

Larrigan, Harry J.: *See—*
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Laue, Eckhard, to Dual Gerbruder Steidinger. Light electric tone pickup. 3,666,896, Cl. 179-100.40r

Laufer, Helmut, to Bosch, Robert, G.m.b.H. Device for adjusting the timing in fuel injection pumps. 3,665,907, Cl. 123-139.00e

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Legatti, Raymond H., to Electromagnetic Industries, Inc. Static hazard detector for isolated alternating current supply lines. 3,666,993, Cl. 317-18.00r

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Russell, Ronald R. Child-proof container. 3,666,338, Cl. 312-215.
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Sakai, Michihiko; Kato, Masayuki; Hagiwara, Hikoichi, deceased (by Hagiwara, Reiko, executor); and Konishi, Kazuo, to Takeda Chemical Industries, Ltd. 1,3-Bis(alkoxy-thio-carbonylthio)-2-tertiary-aminopropane compounds. 3,666,785, Cl. 260-455.
Sakai, Michihiko; Kato, Masayuki; Hagiwara, Hikoichi, deceased, late of Japan, (by Hagiwara, Reiko, executor); and Konishi, Kazuo, to Takeda Chemical Industries, Ltd. 1,3-Bis(N,N-diloweralkyl-thiocarbamoylthio(2-tertiary aminopropane compounds. 3,666,786, Cl. 260-455.
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Smith, Matthew, to Kelley Company, Inc. Dockboard. 3,665,538, Cl. 14-71.
Smith, Paul T., to Sel-Rex Corporation. Gold plating bath and process. 3,666,640, Cl. 204-44.
Smith, Ralph E., to ICM, Inc. Duplicator control for card punch. 3,666,172, Cl. 234-19.000
Smith, Vernon O.; and Dietrich, Alfred T., to Overhead Door Corporation. Adjustable dock seal assembly. 3,665,997, Cl. 160-41.
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Societe Generale de Constructions Electriques et Mecaniques (Alsthom): *See—*
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Sorgenti, Harold A., to Atlantic Richfield Company. Epoxidation of propylene utilizing molybdenum- containing catalyst solutions. 3,666,777, Cl. 260-348.501
Sorteberg, Johannes. Negatively preloaded thrust unit. 3,666,257, Cl. 267-170.000
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St. Clair, Maurice W. Walking method and apparatus for ski boots. 3,665,620, Cl. 36-7.5
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Stahl, Robert Michael, to RCA Corporation. Tape player with fast tape winding mechanism. 3,666,153, Cl. 226-178.000
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Stanley, Lester N.; and Farris, Russell E., Jr., to GAF Corporation. Pyrrolidonylphenyl azo dyestuffs. 3,666,746, Cl. 260-152.
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Stapfer, Christian H.; and D'Andrea, Richard W., to Carlisle Chemical Works, Inc. Preparation of pyrazolines by cyclization of an azine. 3,666,772, Cl. 260-310.00d
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Starline, Inc.: *See—*
Ferris, Robert G.; and Ferris, Howard J., 3,665,671.
Starr, Irving. Bubble pipe toy. 3,665,637, Cl. 46-6.000
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Stein, Richard J. Electro-optical display device employing liquid crystals. 3,666,881, Cl. 178-5.4
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Stockebrand, Thomas C., to Digital Equipment Corporation. Position locating system. 3,665,608, Cl. 33-1.00m
Stocker, August; and Boosen, Karl-Josef, to Lonza Ltd. Process for the production of α-chloroacetoacetic acid esters. 3,666,793, Cl. 260-479.00s
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Strobl, Georg; and Sander, Klaus, to Bosch, Robert, G.m.b.H. Overload protector for electric motors with brushes. 3,666,990, Cl. 317-13.00c

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Stuller, Howard E.; and Baker, Jerry D., to Clark Equipment Company. Hydrostatic vehicle-4 wheel drive, 4 wheel steering. 3,666,034, Cl. 180-6.48

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Stumpf, Robert J., to Kimberly-Clark Corporation. Disposable diaper with improved liner material. 3,665,921, Cl. 128-287.

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Susuki, Rinnosuke; Hoshi, Hiroshi; and Araki, Shinichi, to Raion Yushi Kabushiki Kaisha. Method for manufacture of corrugated synthetic resin sheets. 3,666,590, Cl. 156-210.000

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Swanbeck, Gunnar P. E., to Medisan AB. Skin-treating composition and vehicle for skin-treating agents. 3,666,863, Cl. 424-316.000

Swanson, Wayne L. Method and apparatus for handling articles in transit. 3,665,866, Cl. 105-369.

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Tanaka, Eihachiro; Onodera, Yutaka; Fukuda, Takeji; Yamashita, Tsutomu; Saito, Tetsuo; and Kumia, Shoji, to Research Institute for Iron, Steel and other metals. of the Tohoku University. Method of manufacturing superconductive materials. 3,665,595, Cl. 29-599.000

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Tanaka, Hiroshi; Takahashi, Shinkichi; and Tosaka, Umi, to Canon Kabushiki Kaisha. Electrophotographic process and apparatus involving persistent internal polarization. 3,666,365, Cl. 355-17.

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Wurm, Joseph-Gerard; and Payrissat, Maurice, to European Atomic Energy Community (Euratom). Method of decanning nuclear fuel elements having a can of stainless steel. 3,666,425, Cl. 23-324.000
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Zaydel, Wieslaw S., to General Motors Corporation. Closure latch. 3,666,307, Cl. 292-216.000
Zegers, Leo Eduard; Kuilman, Jan; and Snijders, Wilfred Andre Maria, to U.S. Philips Corporation, mesne. Transmission system. 3,666,889, Cl. 179-15.
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Zummler, Donald R.; McLain, Bruce H.; Sallee, John P.; and Ashton, Shirley B., to United States of America, National Aeronautics and Space Administration! Air Control Industries, Inc. Low-mass truss structure Electrostatic air cleaner. 3,665,679, Cl. 55-137.

LIST OF REISSUE PATENTEES

TO WHOM

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Anderson, Charles M., to The Galigher Co. Flotation machine and stator therefor. Re. 27,380, 5–30–72, Cl. 209–169.
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Little, Lawrence L., to The Battelle Development Corp. Preparation of imitation sour cream. Re. 27,381, 5–30–72, Cl. 99—54.
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Pickup, Robert E., to Extracorporeal Medical Specialties, Inc. Roller pump heads. Re. 27,376, 5–30–72, Cl. 417—477.
Puerckhauer, Gerhard W. R., Burt K. Sagawa, and Bruce W. Wittnebel, to Minnesota Mining and Mfg. Co. Image receptor sheets containing organic silver salts and metal ion image. Re. 27,375, 5–30–72, Cl. 96—94.
Roberts, Raymond J., and G. Hoyle, to Consarc Corp. and British Iron and Steel Research Association, Consumable electrode furnace for electroslag refining. Re. 27,379, 5–30–72, Cl. 13—9.
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Bullock, Edward K., E. F. Burke, J. M. Conner, M. S. Dietz, J. B. Morse, and A. R. Tilley, to Polaroid Corporation. Camera flash attachment or similar article. 223,730. 5–30–72, Cl. D61—1.
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Kester, Don W. Combined game board and chip holder or the like. 233,714, 5–30–72, Cl. D34—5.
Kirby, Edna M. Glove. 223,695, 5–30–72, Cl. D2—375.

Klupp, George A., Jr. Lamp. 223,720, 5–30–72, Cl. D48—20.
La Barber, Joseph A., to Weiland, Henry. Housing for blower vacuum or similar air circulating device. 223,734, 5–30–72, Cl. D83—901.
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Smith, Eva N. Hair spray shield. 223,737, 5–30–72, Cl. D86—10.
Stehouwer, Adrian W. Charcoal fire starter. 223,722, 5–30–72, Cl. D48—27.
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Weissman, Peter, to Consul Gesellschaft mit beschrankter Haftung. Pocket lighter. 223,721, 5–30–72, Cl. D48—27.
Wells, Willis L., to VueTech Corp. Combined rear projection viewer and clock. 233,728, 5–30–72, Cl. D61—1.
Zierhut, Clarence D. Combined typewriter, recording device and enclosure therefor. 223,731, 5–30–72, Cl. D64—11.

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137 3,665,679
158 3,665,680
260 3,665,681
337 3,665,682
372 3,665,683
385 3,665,684

CLASS 56
10.4 3,665,685
11.3 3,665,686
12.9 3,665,687
14.6 3,665,688
27.5 3,665,689
255 3,665,691
295 3,665,692
320.1 3,665,693
341 3,665,690

CLASS 57
34R 3,665,694
58.91 3,665,695
157F 3,665,696

CLASS 58
23 3,665,697
3,665,698
28 3,665,699
57 3,665,700
91 3,665,701
126A 3,665,702
152H 3,665,703

CLASS 59
85 3,665,704

CLASS 60
23 3,665,705
39.72P 3,665,706
54 3,665,707
220 3,665,708
226A 3,665,709
258 3,665,710
286 3,665,711
314 3,665,712

CLASS 61
1F 3,665,713
23 3,665,714
25 3,665,715
35 3,665,716
39 3,665,717
43 3,665,718
45F 3,665,719
46 3,665,720
3,665,721

CLASS 62
68 3,665,722
196 3,665,723
3,665,724
3,665,725
262 3,665,726
3,665,727
320 3,665,728

CLASS 63
32 3,665,729

CLASS 65
11W 3,666,431
27 3,666,432
158 3,666,433
177 3,666,434
182A 3,665,730

CLASS 66
50R 3,665,731
84 3,665,732
87 3,665,733

CLASS 68
18C 3,665,734

CLASS 69
30 3,665,735

CLASS 70
78 3,665,736
118 3,665,737
211 3,665,738
237 3,665,739
276 3,665,740
384 3,665,741

CLASS 71
87 3,666,435

CLASS 72
4 3,665,742
11 3,665,743
129 3,665,744
186 3,665,745
239 3,665,746
304 3,665,747

CLASS 73
1A 3,665,748
12 3,665,749
15R 3,665,750
15.6 3,665,751
32 3,665,752
37.9 3,665,753
67.8R 3,665,754
73 3,665,755
88.5 3,665,756
94 3,665,757
140 3,665,758
188 3,665,759
3,665,760
190R 3,665,762
3,665,763
190 3,665,761
231 3,665,764
337 3,665,765
342 3,665,766
356 3,665,770
407R 3,665,767
432R 3,665,768
517 3,665,769

CLASS 74
29 3,665,771
75 3,665,772
230.17 3,665,781
231R 3,665,773
242.9 3,665,780
325 3,665,774
424.8R 3,665,782
473P 3,665,776
473R 3,665,775
492 3,665,777
3,665,778
498 3,665,783
501 3,665,784
543 3,665,785
625 3,665,786
674 3,665,787
751 3,665,788
813L 3,665,789
866 3,665,779

CLASS 75
.5BA 3,666,437
.5R 3,666,436
10 3,666,438
49 3,666,439
76 3,666,440
78 3,666,441
84 3,666,442
84.1 3,666,443
84.4 3,666,444
94 3,666,445
101BE 3,666,446
108 3,666,447
122 3,666,448
123E 3,666,452
130B 3,666,449
134H 3,666,450
147 3,666,451
175.5 3,666,453
200 3,666,454
201 3,666,455
208 3,666,456

CLASS 81
43 3,665,790
125 3,665,791

CLASS 83
1 3,665,792
2 3,665,793
156 3,665,796
253 3,665,794
395 3,665,795
411 3,665,797
575 3,665,798

CLASS 84
1.01 3,666,874
1.13 3,666,875
422 3,665,799

CLASS 85
5 3,665,800
41 3,665,801

CLASS 89
1B 3,665,802
7 3,665,803
14C 3,665,804

CLASS 90
14 3,665,805

CLASS 91
35 3,665,807
52 3,665,806
272 3,665,808
363A 3,665,809
420 3,665,810
492 3,665,811

CLASS 92
24 3,665,812
30 3,665,813
71 3,665,814
107 3,665,815
121 3,665,835
168 3,665,816

CLASS 93
61R 3,665,817
81R 3,665,818
3,665,819

CLASS 94
39 3,665,820
46 3,665,821
50R 3,665,822
3,665,823

CLASS 95
4.5 3,665,825
10CD 3,665,826
10CT 3,665,824
11R 3,665,828
11.5R 3,665,827
31CA 3,665,829
31FL 3,665,830
39 3,665,831
3,665,832
44R 3,665,834
53.3 3,665,833

CLASS 96
1R 3,666,458
1.8 3,666,459
29R 3,666,457
29 3,666,460
35.001 3,666,461
36.1 3,666,462
41 3,666,463
45 3,666,465
48 3,666,464
3,666,466
56 3,666,468
66 3,666,469
75 3,666,467
82 3,666,470
85 3,666,471
88 3,666,472
91D 3,666,473
91 3,666,474
94 Rg.27,375
109R 3,666,475
109 3,666,476
114.1 3,666,477
114.5 3,666,478
116 3,666,479
124 3,666,480

CLASS 98
1.5 3,665,836
40DL 3,665,838
40D 3,665,837

CLASS 99
1 3,666,481
30 3,666,482
54 Re.27,381
65 3,666,483
77 3,666,484
88 3,666,485
91 3,666,486
106 3,666,487
107 3,666,488
3,666,489
108 3,666,490
124 3,666,491
135 3,666,492
139 3,666,493
140R 3,666,494
3,666,495
3,666,496
212 3,666,497
216 3,666,498
238.1 3,666,499
238.6 3,665,839
261 3,665,840
281 3,665,841
332 3,665,842
419 3,665,843

CLASS 100
4 3,665,844

27 3,665,845
162 3,665,846
218 3,665,848
231 3,665,847
245 3,665,849

CLASS 101

93C 3,665,850
3,665,852
114 3,665,851
247 3,665,853
269 3,665,854
336 3,665,855
426 3,665,856

CLASS 102

1R 3,665,857
27R 3,665,858
45 3,665,859
70.2 3,665,860
93 3,665,861
103 3,665,862

CLASS 104

25 3,665,863
88 3,665,864
130 3,666,050

CLASS 105

183 3,665,865
369A 3,665,866

CLASS 106

6 3,666,500
14 3,666,501
22 3,666,502
30 3,666,503
38.35 3,666,504
39R 3,666,505
41 3,666,506
44 3,666,507
52 3,666,414
98 3,666,509
181 3,666,510
183 3,666,508
210 3,666,511
213 3,666,512
288B 3,666,513
3,666,514
314 3,666,515

CLASS 108

25 3,665,867
29 3,665,868
53 3,665,869

CLASS 110

1A 3,665,870
8C 3,665,871

CLASS 112

67 3,665,872
79A 3,665,873
118 3,665,874
218A 3,665,875
219A 3,665,876
235 3,665,877
252 3,665,878
265 3,665,879
417 3,665,880

CLASS 113

119 3,665,881

CLASS 114

.5F 3,665,882
16E 3,665,883
3,665,884
61 3,665,885
73 3,665,886
221 3,665,887

CLASS 117

3.4 3,666,516
5.3 3,666,531
7 3,666,517
17.5 3,666,518
3,666,519
22 3,666,520
26 3,666,521
33 3,666,522
3,666,523
36.4 3,666,524
36.8 3,666,525
46CB 3,666,526
47A 3,666,527
49 3,666,528
50 3,666,529
54 3,666,530
76F 3,666,532
93.1GD 3,666,533
97 3,666,534
98 3,666,535
106R 3,666,536
114R 3,666,537
121 3,666,538
124F 3,666,539
129 3,666,540
132CF 3,666,541
135.5 3,666,542
136 3,666,543
137 3,666,544
138.8F 3,666,545
201 3,666,546
212 3,666,547
3,666,548
3,666,549
217 3,666,550
218 3,666,551
227 3,666,552
228 3,666,555
229 3,666,553
230 3,666,554

CLASS 118

58 3,665,888
412 3,665,890
505 3,665,889
637 3,665,891

CLASS 119

29 3,665,892

CLASS 122

6A 3,665,893
374 3,665,894
406ST 3,665,895

CLASS 123

18A 3,665,896
25B 3,665,897
32EA 3,665,898
3,665,899
3,665,900
3,665,901
32ST 3,665,902
102 3,665,903
117A 3,665,904
119C 3,665,905
136 3,665,906
139E 3,665,907
148E 3,665,908

CLASS 124

9 3,665,909
11 3,665,910
24 3,665,911

CLASS 125

11AT 3,665,912

CLASS 126

25R 3,665,913
41R 3,665,914
200 3,665,915

CLASS 127

7 3,666,556
32 3,666,557

CLASS 128

2R 3,665,916
3,665,917
156 3,665,918
277 3,665,919
287 3,665,920
3,665,921
290W 3,665,923
290 3,665,922
305 3,665,924
323 3,665,925
326 3,665,926
335.5 3,665,927
350R 3,665,928
494 3,665,929

CLASS 131

21R 3,665,930
3,665,931
3,665,932
25 3,665,933
183 3,665,934

CLASS 132

7 3,665,935
9 3,665,936
11 3,665,937
33R 3,665,938
3,665,939
53 3,665,940

CLASS 134

1 3,666,558
3 3,666,559
58R 3,665,941
167R 3,665,942
200 3,665,943

CLASS 135

1R 3,665,944

CLASS 136

6 3,666,560
86B 3,666,562
86R 3,666,561
120FC 3,666,563
3,666,565
170 3,666,564
202 3,666,566

CLASS 137

14 3,665,945
68 3,665,946
81.5 3,665,947
3,665,948
3,665,949
107 3,665,950
117 3,665,951
246 3,665,952
246.22 3,665,953
268 3,665,954
495 3,665,955
505.11 3,665,956
509 3,665,957
522 3,665,958
551 3,665,959
3,665,960
608 3,665,961
624.13 3,665,962
625.48 3,665,963
630.13 3,665,964

CLASS 138

39 Re.27,378
42 3,665,965
93 3,665,966
137 3,665,967
141 3,665,968
178 3,665,969

CLASS 139

20 3,665,970
33 3,665,971
68 3,665,972
71 3,665,973
126 3,665,976
127P 3,665,974
127R 3,665,975
387 3,665,977

CLASS 140

93A 3,665,978
93.4 3,665,979

CLASS 141

183 3,665,980
329 3,665,981

CLASS 143

6H 3,665,982
68F 3,665,983
157R 3,665,984

CLASS 144

34E 3,665,985
288A 3,665,989
288 3,665,986

CLASS 146

81R 3,665,987
227 3,665,988

CLASS 148

1.5 3,666,567
6.2 3,666,568
12 3,666,569
36 3,666,570
104 3,666,571
134 3,666,572
175 3,666,573
188 3,666,574

CLASS 149

19 3,666,575
3,666,576
3,666,577

CLASS 150

52R 3,665,990
3,665,991

CLASS 152

208 3,665,992
356 3,665,993
359 3,665,994

CLASS 156

3 3,666,578
16 3,666,579
18 3,666,580
39 3,666,581
63 3,666,582
82 3,666,583
84 3,666,584
85 3,666,585
98 3,666,586
155 3,666,588
172 3,666,589
199 3,666,587
210 3,666,590
272 3,666,591
285 3,666,592
3,666,593
291 3,666,594
305 3,666,597
324 3,666,595
344 3,666,596
361 3,666,598
380 3,666,599
382 3,666,600
527 3,666,601
580 3,666,602
583 3,666,603

CLASS 157

1.1 3,665,995

CLASS 160

1 3,665,996
41 3,665,997

CLASS 161

2 3,666,604
3.5 3,666,605
37 3,666,606
44 3,666,607
62 3,666,608
109 3,666,609
113 3,666,610
147 3,666,611
165 3,666,612
168 3,666,613
183 3,666,614
185 3,666,615
186 3,666,617
235 3,666,618

CLASS 162

30 3,666,619
76 3,666,620
198 3,666,621

CLASS 164

76 3,665,998
283 3,665,999

CLASS 165

8 3,666,000
19 3,666,004
29 3,666,002
39 3,666,003
105 3,666,005
164 3,666,006
166 3,666,007
177 3,666,008

CLASS 166

.5 3,666,009
134 3,666,010
187 3,666,011
224 3,666,012
241 3,666,013
271 3,666,014

CLASS 169

5 3,666,015
31R 3,666,016

CLASS 171

27 3,666,017

CLASS 172

130 3,666,019
612 3,666,020
669 3,666,018

CLASS 173

12 3,666,021
80 3,666,022
93.5 3,666,023
105 3,666,024
112 3,666,025
152 3,666,026
169 3,666,027

CLASS 174

36 3,666,876
115 3,666,877
128 3,666,879
152R 3,666,878

CLASS 175

4.56 3,666,030
189 3,666,028
374 3,666,029

CLASS 176

38 3,666,616
3,666,622
60 3,666,623
64 3,666,624
68 3,666,625
86 3,666,626

CLASS 177

186 3,666,031
256 3,666,032

CLASS 178

5.2R 3,666,880
5.4BD 3,666,881
5.4TC 3,666,882
6.6P 3,666,883
6.8 3,666,884
3,666,885
7.8 3,666,886
7.85 3,666,887
69.5TV 3,666,888

CLASS 179

15AP 3,666,890
15BM 3,666,889
18ET 3,666,891
77 3,666,892
100.2D 3,666,893
100.2T 3,666,894
3,666,897
100.3D 3,666,895
100.4R 3,666,896
180 3,666,898

CLASS 180

6.48 3,666,033
3,666,034
25A 3,666,035
43R 3,666,036
64A 3,666,037
66B 3,666,038
105E 3,666,039

CLASS 181

31B 3,666,041
31R 3,666,040
33HA 3,666,043
33E 3,666,044
33K 3,666,042

CLASS 182

20 3,666,045
145 3,666,046
185 3,666,047

CLASS 184

6.26 3,666,049
7E 3,666,048

CLASS 187

1 3,666,051
8.5 3,666,053
9 3,666,052
10 3,666,054

CLASS 188

1B 3,666,056
3,666,057
1C 3,666,055
106A 3,666,058
106R 3,666,059
112 3,666,060
206R 3,666,061

CLASS 192

21 3,666,063
70.28 3,666,062
84PM 3,666,064
103A 3,666,065

CLASS 193

43B 3,666,066

CLASS 194

58 3,666,068
497.022 3,666,067

CLASS 195

68 3,666,627
80R 3,666,628
81 3,666,630
127 3,666,629
3,666,631

CLASS 197

6.2 3,666,072
16 3,666,069
18 3,666,070
60 3,666,071

CLASS 198

1 3,666,073
3,666,076
16R 3,666,074
3,666,075
29 3,666,077
33AA 3,666,079
33AD 3,666,078
38 3,666,080
43 3,666,081
130 3,666,082
136 3,666,083
160 3,666,084
193 3,666,085
219 3,666,086

CLASS 200

5E 3,666,899
6A 3,666,900
42T 3,666,901
61.05 3,666,903
153S 3,666,902

CLASS 203

56 3,666,632
95 3,666,633

CLASS 204

15 3,666,634
3,666,635
16 3,666,636
30 3,666,637
35N 3,666,638
38C 3,666,639
44 3,666,640
67 Re.27,383
141 3,666,642
141.9 3,666,641
158HA 3,666,644
158R 3,666,643
159.22 3,666,645
160.1 3,666,646
180P 3,666,647
180R 3,666,648
181 3,666,649
195G 3,666,651
195P 3,666,650
195R 3,666,652
243R 3,666,653
3,666,654
299 3,666,655

CLASS 206

45.34 3,666,087
46L 3,666,088
52W 3,666,089
56AB 3,666,090

CLASS 208

48AA 3,666,656
58 3,666,657
103 3,666,658
208R 3,666,659
243 3,666,660

CLASS 209

12 3,666,091
73 3,666,092
74 3,666,093
111.5 3,666,094
169 Re.27,380
254 3,666,095
259 3,666,096

CLASS 210

49 3,666,663
58 3,666,664
82 3,666,097
83 3,666,098
3,666,099
3,666,100
90 3,666,101
138 3,666,102
152 3,666,103
164 3,666,104
198 3,666,105
201 3,666,106
238 3,666,107
305 3,666,108
321 3,666,109
469 3,666,110
521 3,666,111
3,666,112

CLASS 211

26 3,666,113
49R 3,666,114
50 3,666,115

CLASS 214

16.1ED 3,666,116
17D 3,666,117
38B 3,666,118
41 3,666,119
77P 3,666,121
3,666,123
77R 3,666,122
90R 3,666,120
138 3,666,124
141 3,666,125
302 3,666,126
512 3,666,127
514 3,666,128
515 3,666,129
621 3,666,130
3,666,131

CLASS 219

10.55 3,666,904
3,666,905
22 3,666,915
73 3,666,908
76 3,666,906
3,666,909
85 3,666,907
107 3,666,910
117 3,666,911
3,666,912
118 3,666,913
214 3,666,914
3,666,915
286 3,666,916
292 3,666,917
314 3,666,918
421 3,666,919
449 3,666,920
469 3,666,922
492 3,666,921
499 3,666,923
552 3,666,924

CLASS 220

9LG 3,666,132
15 3,666,133
31R 3,666,134
36 3,666,135
39R 3,666,136
3,666,137
53 3,666,138
85S 3,666,139

CLASS 221

46 3,666,140

CLASS 222

1 3,666,141
16 3,666,142
61 3,666,143
70 3,666,144
107 3,666,145
132 3,666,146
309 3,666,147
396 3,666,148
453 3,666,150

CLASS 223

85 3,666,149

CLASS 225

2 3,666,151

CLASS 226

50 3,666,152
111 3,666,156
178 3,666,153
195 3,666,154

CLASS 227

110 3,666,155
131 3,666,157

CLASS 228

3 3,666,160
12 3,666,161
25 3,666,158
49 3,666,159

CLASS 229

1.5B 3,666,162
14B 3,666,163
23AB 3,666,166
23R 3,666,164
3,666,165
37R 3,666,167
40 3,666,168

CLASS 232

43.2 3,666,169

CLASS 233

1A 3,666,170
26 3,666,171

CLASS 234

19 3,666,172

CLASS 235

61PC 3,666,927
61.11A 3,666,925
61.12R 3,666,926
92FL 3,666,928
150.22 3,666,929
151.11 3,666,930
151.12 3,666,931
3,666,932
194 3,666,933

CLASS 236

15A 3,666,173

CLASS 237

2R 3,666,174

CLASS 238

152 3,666,175

CLASS 239

2R 3,666,176
77 3,666,177
3,666,178
206 3,666,181
327 3,666,182
463 3,666,183
512 3,666,184
587 3,666,179

CLASS 240

1.2 3,666,935
2 3,666,936
3 3,666,934
6.4 3,666,937
41.15 3,666,180
3,666,939
52.15 3,666,938
90 3,666,940

CLASS 241

17 3,666,185
45 3,666,186
90 3,666,187
213 3,666,188

CLASS 242

7.21 3,666,189
3,666,190
18R 3,666,191
55.19A 3,666,192
68.3 3,666,193
72 3,666,194
75.2 3,666,195
78 3,666,196
84.1R 3,666,197
107.4 3,666,198
149 3,666,199
163 3,666,200
180 3,666,201
182 3,666,202
188 3,666,203
189 3,666,204
192 3,666,205
3,666,206
197 3,666,207
198 3,666,208

CLASS 244

7C 3,666,209
43 3,666,210
54 3,666,211
62 3,666,212
77D 3,666,213
118P 3,666,214
122AB 3,666,215
137 3,666,216

CLASS 246

34CT 3,666,217

CLASS 248

4 3,666,218
15 3,666,219
52 3,666,220
96 3,666,221
146 3,666,222
149 3,666,223
203 3,666,224
205A 3,666,225
214 3,666,226
228 3,666,227
250 3,666,228

CLASS 249

66 3,666,229

CLASS 250

43.5R 3,666,941
3,666,942
51.5 3,666,943
65R 3,666,944
71R 3,666,945
3,666,946
83R 3,666,947
3,666,948
83.1 3,666,950
83.3H 3,666,949
83.3R 3,666,952
3,666,953
83.6FT 3,666,954
106T 3,666,955
199 3,666,956
213VT 3,666,957
219DF 3,666,951

CLASS 251

63.5 3,666,230
129 3,666,231
3,666,232
151 3,666,233
3,666,234
205 3,666,235
306 3,666,236
367 3,666,237

CLASS 252

8.9 3,666,661
33.6 3,666,662
62.9 3,666,665
3,666,666
87 3,666,667
90 3,666,668
132 3,666,669
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3	3,666,364		167	3,666,371		CLASS 417	15	3,666,383		3,666,862	261	3,666,388
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	3,666,365			CLASS 461	358	3,666,378		CLASS 424	316	3,666,863	380	3,666,390
56	3,666,366		8	3,666,372	395	3,666,379	1	3,666,854	342	3,666,864		CLASS 431
	CLASS 356		247	3,666,373	415	3,666,380	52	3,666,855	346	3,666,865	12	3,666,391
5	3,666,367			CLASS 415	423	3,666,381	180	3,666,856	350	3,666,866	78	3,666,392
21	3,666,368		100	3,666,374	439	Re.27,382	240	3,666,857		CLASS 425	90	3,666,393
71	3,666,359		112	3,666,375	477	Re.27,376	243	3,666,858	111	3,666,385	95	3,666,394
72	3,666,360			CLASS 416	533	3,666,382	270	3,666,860	155	3,666,386	202	3,666,395
88	3,666,362										264	3,666,396

CLASSIFICATION OF DESIGNS

D 2—	375	223,695		220	223,703	D23—	129	223,711			223,718	D56—	1	223,726
D 8—	13	223,696			223,704		148	223,710	D44—	20	223,719			223,727
	21	223,697	D06—	181	223,733		153	223,712	D48—		223,720	D61—		223,728
	154	223,698	D13—	1	223,705	D34—	5	223,713		27	223,721			223,729
		223,699			223,706			223,714			223,722			223,730
		223,700	D14—	3	223,707		15	223,715	D52—	6	223,723	D64—	11	223,731
	228	223,701		6	223,708			223,716			223,724	D74—	2	223,732
D 9—	66	223,702		24	223,709			223,717			223,725	D83—	1	223,734

		12	223,735											
D86—		10	223,736											
			223,737											
		13	223,738											
D87—		1	223,739											
D90—		20	223,740											
D95—		3	223,741											

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P. —	30	3,201	P. —	33	3,197									

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PATENTS

1	:	3,665,692		3,665,764		3,666,247		3,666,961		3,666,599		3,666,223
		3,665,708		3,665,769		3,666,270		3,666,962		3,666,602	16	: 3,665,553
		3,665,758		3,665,775		3,666,274		3,666,964		3,666,634		3,665,752
		3,666,119		3,665,776		3,666,281		3,666,967		3,666,667		3,666,592
		3,666,222		3,665,785		3,666,293		3,666,976		3,666,705		3,666,815
		3,666,718		3,665,790		3,666,297		3,666,977		3,666,715		3,667,046
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		3,667,009		3,665,792		3,666,349		3,667,027		3,666,819		3,665,515
		3,667,016		3,665,820		3,666,358		3,667,033		3,666,982		3,665,546
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2	:	3,665,693		3,665,855		3,666,372		3,667,048		3,666,162		3,665,604
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		3,665,892		3,665,867		3,666,377		3,667,051		3,666,412		3,665,633
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		3,666,915		3,665,944		3,666,445	8	: 3,665,530		3,666,514		3,665,704
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		3,665,634		3,666,130		3,666,818		3,665,844		3,666,059		3,666,145
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		3,665,636		3,666,143		3,666,890		3,666,160		3,666,100		3,666,205
		3,665,638		3,666,146		3,666,897		3,666,178		3,666,107		3,666,227
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		3,665,674		3,666,188		3,666,919		3,666,257		3,666,383		3,666,273
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		3,665,713		3,666,207		3,666,929		3,666,376		3,666,895		3,666,381
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39 : 223,727
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42 : 223,735
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